
# Mitigating secondary agency problems: Examining the impact of share option compensation for non-executive directors on CEO pay incentives and earnings management.

by
Akios Majoni (MJNAKI001)

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Department of Finance and Tax
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**Supervisors:**
Professor Leonard Rosenthal
Department of Finance
Bentley University (United States)

Professor Enrico Uliana
Department of Finance and Tax
University of Cape Town (South Africa)

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## ABSTRACT

This thesis investigates the following objectives: first, it analyses trends in share option compensation for NEDs during the pre–King III period (before they were stopped). The idea is to determine whether the decision to stop them was triggered by a significant increase in their use. The trend analysis is extended to observe changes in the use of share options for NEDs over the full sample period. The intention of this sub–objective is to measure the extent of compliance to King III's requirement to stop the use of share option compensation for NEDs. Second, the study exploits the natural experiment, presented by King III's requirement to stop the use of share option compensation for NEDs, to investigate the impact of share option compensation for NEDs on monitoring executives. In addition, the study investigates how institutional and blockholder ownership affect the relationship between share option compensation for NEDs and monitoring (to see whether they are substitutes). Both institutional and blockholder owners consist of heterogeneous categories with different monitoring incentives; hence, a further analysis examines the moderating impact of these different categories of stakeholders. To measure the level of monitoring, the study focuses on two of the biggest agency problems in South Africa: design of CEO compensation and levels of earnings management.

The study is based on a sample of 110 non–financial companies (55 in the treatment group and 55 in the control group) listed on the Johannesburg Stock Exchange (JSE), South Africa, over the period 2002–2016. The bulk of the data used was hand–collected from annual reports, the rest was sourced from financial databases such as Bloomberg, Iress and DataStream. The difference–in–difference regression analysis is the main methodology used but for comparison purposes, the study also applies the normal Ordinary Least Squares (OLS) regression and fixed effects model. To control for the endogeneity problem, the study is based on a natural experiment, which is dubbed the 'gold standard' for addressing endogeneity problems. Addressing the endogeneity problem is key to satisfactorily settling the debate on the effectiveness of equity–based compensation in mitigating secondary agency problems.

The results of the trend analysis show that the growth in share option compensation for NEDs was not statistically significant during the pre–King III period. These results rule out the possibility that King III's recommendation to stop the use of share option compensation for NEDs was driven by an explosion in their use. As expected, after the introduction of King III, the use of share options declined significantly – an indication that companies largely complied with the requirement to stop the use of share options as compensation for NEDs. However, not all companies are compliant; this is not surprising, as King III was based on the 'apply or explain' approach.

Regarding the impact of share option compensation on monitoring, the results consistently show that removing share option compensation for NEDs does not weaken monitoring; it either improves monitoring, or it has no effect. Based on these findings, it is not worthwhile, for shareholders, to use share option compensation for NEDs. They come at a cost, they dilute the shareholding structure yet removing them does not weaken monitoring. Overall, the results support King III's recommendation to stop the use of share option compensation for NEDs. The results also show that the presence of institutional and blockholder ownership does not improve monitoring after the removal of share option compensation. Hence, neither of these two stakeholders are a substitute monitoring mechanism for share option compensation for NEDs. This is inconsistent with the substitution-monitoring hypothesis. These findings persist, even after a sub–sample analysis of the two categories of institutional ownership (monitoring and non–monitoring institutional owners). A further analysis of different categories of blockholder ownership shows that family, pension and foreign blockholder are not a substitute monitoring mechanism for NEDs share option compensation. But the results for government blockholders contradict this; they are a substitute for share option compensation when analysing real–activities manipulation. However, for the rest of the settings they are not a substitute monitoring mechanism. This confirms the view that different blockholders have different incentives to monitor management, which affects organisational outcomes.

The study makes the following contributions: (i) It contributes to the literature by addressing the endogeneity problem using a natural experiment. (ii) The study focuses on a unique institutional context, largely ignored by prior studies on this subject. (iii) The study contributes to the crafting of future corporate governance principles in South Africa and the rest of world, specifically on the design of incentive compensation for NEDs. (iv) By investigating the interaction effects of institutional/blockholder ownership and their different categories, the study provides evidence for the substitution-monitoring hypothesis in South Africa. (v) On the use of share option compensation for NEDs, this study contributes to the literature by showing its impact on mitigating agency problems specifically related to the design of CEO pay incentives.

***Key words***: *NEDs, share option compensation, secondary agency problems, earnings management, CEO compensation, corporate governance.*

## DECLARATION

I, Akios Majoni, do hereby declare that the work presented in this thesis, is my own, except where acknowledged and that this thesis or any part of it, has not been previously submitted for the award of a degree at any university.

Signed ..... Signed by candidate .....

Akios Majoni

Student Number: MJNAKI001

## DEDICATIONS

To my amazing mother, Joyce Majoni nee Matara, who worked hard to educate me.

To my one and only, beloved son, Victor,"Tibu" Tasimba, who not only inspired me to work harder but he would grab my hand, pull me to the door and give me a signal for me to go to work.

To my late grandfather, Tibu, who raised me and taught me to be responsible.

To my grandmother, Mai Kiro, and my late father who taught me to value education and to be hard working.

# TABLE OF CONTENTS

## LIST OF ABBREVIATIONS

| | |
|---|---|
| CEO | Chief executive officer |
| SA | South Africa |
| JSE | Johannesburg Stock Exchange |
| US | United States of America |
| NEDs | Non-executive directors |
| OLS | Ordinary Least Squares |
| DiD | Difference-in-difference |
| SOX | Sarbanes-Oxley |

## LIST OF TABLES

## LIST OF FIGURES

# 1. CHAPTER ONE: INTRODUCTION

## 1.0 Introduction

Agency problems (between shareholders and management[1]) have been an enduring subject of research for a period spanning over eight decades. The key focus has been on finding effective mechanisms of mitigating them (Fama & Jensen, 1983; Shleifer & Vishny, 1997; Masulis & Reza, 2015). Agency problems manifest in different forms, which include managers profiting from the information asymmetry between them and their principals (Fama & Jensen, 1983); opportunistic behaviour; misuse of company resources, personal enrichment; and investing in unprofitable and value–destroying acquisitions and projects for the purposes of empire building (Shleifer & Vishny, 1997).

Several internal mechanisms (e.g. the board of directors and debt financing) and external mechanisms (e.g. capital markets, legal and regulatory tools, product market competition) exist to mitigate agency problems. The board of directors – specifically non-executive directors (NEDs) – are regarded as the preferred choice of agents to monitor management and mitigate agency problems (Fama & Jensen, 1983). NEDs are expected to be independent, which makes them better placed to be impartial and objective in dealing with agency problems (Platt & Platt, 2012). The inside or executive directors are part of management of the company, and have little incentive to monitor effectively (Sengupta & Zhang, 2015). Notwithstanding these views by Fama and Jensen (1983) and Platt and Platt (2012), prior studies (see Jensen, 1993; Perry, 2000; Fich & Shivdasani, 2005; Brick & Chidambaran, 2008; Lin & Lin, 2014; Zhou et al., 2017) have shown that NEDs may not always work in the best interests of shareholders. This gives rise to a second layer of agency problems, which Perry (2000) defined as 'secondary agency problems'[2]. In this study, agency problems between shareholders and management will be referred to as 'agency problems' while those between shareholders and NEDs will be referred to as 'secondary agency problems', which are the focus of this thesis.

Secondary agency problems reflect conflict of interest or misalignment of goals and interests between shareholders and NEDs (Perry, 2000). They arise when NEDs (who are entrusted with several tasks: to monitor management, represent shareholder interests, and mitigate primary agency problems) fail to perform their duties, and collude with management to take actions that

[1] 'Management' refers to the CEO and executives working for the firm on a full–time basis.

[2] The term was first used by Perry (2000) to refer to agency problems between NEDs and shareholders. The term implies that agency problems between management and shareholders are primary agency problems. The term 'secondary agency problems' is used interchangeably with 'poor monitoring by NEDs'.

will enrich themselves and the managers, to the detriment of shareholder interests (Andreas, Rapp & Wolff, 2012). The existence of secondary agency problems is owing to a number of factors – chief among them NEDs lacking the motivation, sufficient interest and economic incentives to monitor management and protect the interests of shareholders (Denis, 2001; Bebchuk, Fried & Walker, 2002). Basically, secondary agency problems reflect a lapse in monitoring by the NEDs[3].

The demise of several high-profile companies from developing and developed markets over the past few decades reflects the existence of – and consequently the need to mitigate – secondary agency problems. Examples include Enron and WorldCom in the US; Polly Peck, Barings Bank and Maxwell Group in the United Kingdom; Pasminco and Parmalat in Italy; HIH, Ansett Airline and One–Tel in Australia; and Société Générale in France (Marx, 2008). One of the most cited reasons for these corporate scandals is poor monitoring or failure by the board of directors to prevent the detrimental actions of management. The cases of Enron and WorldCom are examples of companies that collapsed despite having a majority of their NEDs on the board (Peng, 2004). Cases of corporate failures in South Africa include Masterbond Group, Fidentia, JCI–Randgold, Masterbond, Leisurenet, MacMed and Regal Treasury Bank. Sarra (2004) attributes the collapse of these entities to several factors, including fraudulent activities by management, weak boards of directors who failed to act independently, and the boards' failure to monitor management to ensure that they did not engage in self-dealing. Cases of corporate failure reflect corporate governance weaknesses and the existence of secondary agency problems, in South Africa and the rest of the world. Secondary agency problems affect the proper functioning of financial markets, may trigger a crisis of confidence among investors, destroy shareholder value due to declining share prices, and negatively affect economic growth and employment (Claessens, 2006).

## 1.1 Background to the study

Corporate governance codes and academic researchers emphasise equity-based compensation (share grants and share option grants) to NEDs and board independence as two important mechanisms for mitigating secondary agency problems (Jensen & Murphy, 1990; Ryan Jr & Wiggins III, 2004; Alves, 2014). These two mechanisms touch on the possible root causes for NEDs losing their motivation and objectivity in monitoring management. In addition, these two mechanisms are within the control of the shareholders, and adopting them reflects some proactive action on their part.

[3] The term 'secondary agency problems' will be used interchangeably with 'ineffective monitoring' and 'lapse in monitoring' by NEDs.

The question of whether equity-based compensation for NEDs is effective in mitigating secondary agency problems is a contentious one. In answering it, prior studies have presented two contradictory arguments, both supported by empirical evidence. The first line of argument (the incentive-alignment hypothesis) views equity-based compensation as an effective mechanism for mitigating secondary agency problems (Perry, 2000; Fich & Shivdasani, 2005; Ahmed & Duellman, 2007). The studies referenced argue that it gives NEDs a financial stake in the performance of the firm, thereby motivating them to behave like shareholders. Further, it has the effect of aligning their interests and goals with those of the shareholders, consequently incentivising NEDs to be vigilant in monitoring management decisions (Carey, Elson & England, 1996; Yermack, 2004; Shen, 2005) and to provide effective oversight (Bhagat & Black, 1999). In this respect, prior academic studies (see Farrell, Friesen & Hersch, 2008; Mkrtchyan, 2012; Lahlou & Navatte, 2017) observed an upward growth trajectory – over 647%, in some cases – in the use of equity to compensate NEDs over the past two decades in the US. This growth is partly sustained by influential US-based professional bodies that encourage and support the use of share grants and share options to remunerate NEDs; examples include the National Association of Corporate Directors (NACD), the Blue-Ribbon Commission Report on Director Compensation, and the California Public Employees Retirement System (CalPERS). Prior studies that support this view have reported a positive relationship between equity-based compensation for NEDs and improved monitoring using proxies such as improved firm performance (Morck, Shleifer & Vishny, 1988; Cordeiro, Veliyath & Neubaum, 2005; Adithipyangkul & Leung, 2017); executive turnover after poor performance and compensation (Bhagat & Black, 1999; Perry, 2000; Fich & Shivdasani, 2005; Mkrtchyan, 2012); risk preferences (Boumosleh, 2005; Podder, Skully & Kym, 2013); hostile takeovers and acquisitions (Shivdasani, 1993; Bhagat & Black, 1999; Perry, 2000; Fich & Shivdasani, 2005; Mkrtchyan, 2012; Lahlou & Navatte, 2017); the quality of financial reporting (Gong & Li, 2007; Bierstaker et al., 2012; Du & Lin, 2015) and reduced information asymmetry (Boumosleh, Cline & Yore, 2012; Hwang, Kim & Pae, 2013; Jeong & Kim, 2013; Sengupta & Zhang, 2015; Kim et al., 2018).

While some researchers, corporate governance codes and empirical evidence provide support for the use of equity-based compensation as an effective mechanism for mitigating secondary agency problems, a contradictory view exists: the rent extraction view[4], which is also supported by empirical evidence and corporate governance codes, from other countries. This conflicting line of argument views equity-based compensation for NEDs as a mechanism that is not only ineffective, but also has the potential to exacerbate secondary agency problems. Dalton and Daily (2001) as well as Frey and Osterloh (2005) argue that equity-based compensation creates a strong

[4] The rent extraction view is also called the 'private benefits hypothesis'.

relationship between NEDs' wealth and share price (and share price volatility). This has the effect of impairing their independence, and consequently their ability to make independent and objective decisions when those decisions have a direct impact on their wealth. This has the consequence of impairing their independence and consequently their ability to make independent and objective decisions which have a direct impact on their wealth.

Furthermore, Dalton and Daily (2001) argue that using the same pay-performance standard – for example, share options compensation – for both management and non-executive directors creates a common interest between two agents who hold an information advantage over the shareholders. This creates a disincentive for NEDs to discourage management from focusing on the short term by indulging in unethical activities that inflate the share price (or share price volatility) and increase their wealth in the short term, but not the shareholders' wealth in the long run (Frey & Osterloh, 2005). Prior studies that support this view have reported a positive link between NEDs' equity-based compensation and factors that reflect evidence of poor monitoring or misalignment of interests between shareholders and NEDs. These factors include excessive earnings management, with the intention of manipulating the share price to their benefit (Cullinan, Du & Wright, 2008; Boumosleh, 2009; Magilke, Mayhew & Pike, 2009; Liao & Ferris, 2018); misstatement of financial statements because of fraud or errors (Archambeault, DeZoort & Hermanson, 2008; Cullinan, Du & Wright, 2008; Persons, 2012); backdating stock options (Byard & Li, 2004; Minnick & Zhao, 2009); fraud and lawsuits (Beasley, 1996; Crutchley & Minnick, 2012; Persons, 2012); and mutual backscratching between NEDs and management (Brick, Palmon & Wald, 2006; Xie, 2013; Lin & Lin, 2014).

The recommendations of the King III corporate governance code, in South Africa, are consistent with the rent extraction view, which considers equity-based compensation an ineffective mechanism that can exacerbate secondary agency problems. The King III[5] code, introduced in 2010, disallows NEDs from receiving share option compensation. The King III requirement follows similar moves in countries such as Australia, the United Kingdom and Malaysia, which have recommended remunerating NEDs with compensation based on their time and effort, and not on compensation whose value is derived from the performance of the firm (Chen, Ho & Zhu, 2013). Despite share option compensation for NEDs being the key change made by the King III code, no empirical research has investigated the trends in NEDs compensation in South Africa. The requirement to stop share option compensation for NEDs is likely to result in a downward

[5] The King III corporate governance code is referenced as 'King Committee on Corporate Governance, 2009'.

trajectory for the practice in South Africa – which contradicts the trend in the US, where their use is encouraged.

## 1.2 Motivation for the study

The first motivation for investigating the impact of share option compensation for NEDs on monitoring is that the prior studies discussed in the background to this study and detailed in Chapter Three (sections 3.2.3 and 3.2.4) have reported mixed findings on the subject – an indication that the matter is not yet settled, and requires further investigation. There are several possible reasons for the inconclusive and conflicting results: the first is that the endogeneity[6] problem was not addressed by prior studies, or it's addressed using ineffective techniques. NEDs' equity-based compensation and the secondary agency conflict proxies are likely to be endogenously determined (both are determined by industry and firm characteristics); hence they may affect each other simultaneously, resulting in a situation in which causality will run in both directions (from the independent to the dependent variable, and vice versa) (Schultz, Tan & Walsh, 2010). The presence of the endogeneity problem produce misleading results (Wintoki, Linck & Netter, 2012; Antonakis et al., 2014) and which makes difficult to make inferences regarding causality (Roberts & Whited, 2013).

As detailed in Section 3.2.5 of Chapter Three, most prior studies that have examined the impact of share option compensation for NEDs did not address the endogeneity problem. The few studies that have did not use a natural experiment; they used different techniques that have several shortcomings. For example, most of the authors (e.g Ronen, Tzur & Yaari, 2006; Minnick & Zhao, 2009; Deutsch & Valente, 2013; Chen, Ho & Zhu, 2013; Podder, Skully & Kym, 2013; Sengupta & Zhang, 2015; Lahlou & Navatte, 2017) used the two-stage instrumental variables approach to control for both omitted variable bias and reverse causality. This is the most popular approach to be applied by prior studies that focused on the effectiveness of equity-based compensation in mitigating secondary agency problems. However, this method relies on finding valid, relevant and appropriate instruments; in addition, it is not effective in addressing simultaneity bias (Coles, Lemmon & Meschke, 2012). Kim et al. (2018) used propensity score matching, which to some extent mirrors an experiment. However, the treatment effect induced by propensity score matching is not random (unlike in natural experiments), which makes it ineffective in controlling for omitted, unobservable factors and simultaneity bias (Shipman, Swanquist & Whited, 2016).

[6] Simultaneity bias and omitted variable bias.

Fich and Shivdasani (2005) and Linn and Park (2005) used lagged control variables to control for simultaneity bias. The key assumption in using lags is that all observable and unobservable factors that jointly affect the dependent and independent variables are included in the model. This is highly unlikely; thus, it may not be effective in addressing simultaneity bias and omitted variable bias.

Magilke, Mayhew & Pike (2009) used the randomised experimental design, viewed as the 'gold standard' technique for addressing endogeneity, especially causality (Antonakis et al., 2014). However, it suffers from one key shortcoming: it is not easy to implement on a large scale. Its applicability is limited to small and specific sample groups, which makes it impossible to generalise the results generated (Antonakis et al., 2014).

The second reason for conflicting results is the use of different time periods in different studies. The sample periods in prior studies range from 1980 to 2018, which is long enough for the context and environment to change. For example: within that period, South Africa attained freedom from apartheid, introduced four different corporate governance codes (King I to King IV), and changed the Companies Act. All these affected the corporate governance context and environment.

The third reason is that prior studies have focused on different settings and board functions where secondary agency problems can be observed. For example, various studies researched the board's advisory role in acquisitions (Shivdasani, 1993; Mkrtchyan, 2012; Lahlou & Navatte, 2017); their role in monitoring financial reporting to curb accrual earnings management (Boumosleh, 2009); executive options backdating (Byard & Li, 2004; Minnick & Zhao, 2009); their role in monitoring firm performance (Bhagat, Carey & Elson, 1999; Fich & Shivdasani, 2005); and their role in dismissing non-performing executives (Bhagat, Carey & Elson, 1999; Perry, 2000). Examining one performance area of the board may not give an accurate picture, because the roles of the board span several areas. There is a potential problem of focusing on the area where the board performs very well while ignoring other areas in which they perform poorly. Given the possibility that focusing on different aspects of the board's key functions may produce different results, it is imperative to extend the work of prior studies on this subject by focusing on other board functions that were not covered before but represent settings in which secondary agency problems can be observed. Such board functions include the design of executive compensation and other aspects of financial reporting quality, such as real-activities manipulation.

The second motivation for this study is the King III requirement disallowing the use of share options compensation for NEDs. This requirement is a shift from the King II[7] code, which allowed the use of incentive compensation for NEDs. But this shift presents two unique opportunities.

The first opportunity is that it provides a natural setting within which to investigate the effectiveness of share options in mitigating secondary agency problems. Natural experiments are viewed as the 'gold standard' technique for addressing endogeneity problems, especially causality (Wintoki, Linck & Netter, 2012). A natural experiment tackles the endogeneity problem by providing an exogenous shock to the independent variable of interest (share option compensation, in this case); which allows researchers to observe its causal effect on the dependent variables, while using control firms to provide counterfactual evidence (Duncan, Magnuson & Ludwig, 2004; Chhaochharia & Grinstein, 2009; Guo & Masulis, 2015). Thus, natural experiments can be an effective technique to establish causality between corporate governance and firm outcomes, and satisfactorily settle the debate on the effectiveness of equity-based compensation in mitigating secondary agency problems.

The second opportunity comes from the fact that the King III requirement to stop the use of share option compensation for NEDs is in stark contrast to the requirements of the US code of corporate governance (the Sarbanes Oxley, or SOX), on which most prior studies on secondary agency problems focused. In addition, King III contradicts the advice of a number of influential bodies from the US (the National Association of Corporate Directors (NACD), the Blue Ribbon Commission Report on Director Compensation, and the California Public Employees Retirement System (CalPERS) that have promoted to the use of share option compensation for NEDs (Farrell, Friesen & Hersch, 2008; Mkrtchyan, 2012; Lahlou & Navatte, 2017). This contradiction raises several questions regarding equity-based compensation for NEDs and secondary agency problems in South Africa. For example, why is the King III code against the use of share option compensation for NEDs, when it is favoured in other countries? Is it because it is ineffective, or that it exacerbates secondary agency problems in South Africa? If that is the case, what factors make it ineffective in South Africa, but effective in other countries where it is adopted and encouraged? Could it be that it *is* also effective in South Africa, but other mechanisms for mitigating secondary agency problems – such as institutional or blockholder ownership, or an independent board – are more effective, and good substitutes for equity-based compensation? Could it be that the South African cultural and institutional setting does not require the use of such incentives, or that it hinders their effectiveness? The last question is that of how share options have evolved over the past

[7] The King II corporate governance code is also cited as (King Committee on Corporate Governance & Institute of Directors, 2002)

years in South Africa in order for them to draw the attention of the King Committee on Corporate Governance and the Institute of Directors of South Africa.

The third motivation is the dearth of empirical research, in South Africa, on secondary agency problems and equity-based compensation for NEDs. A literature search on popular databases such as Google Scholar, EBSCO and the University of Cape Town (UCT) Library database found no studies at all on that subject. There seems to be a lack of research on how equity-based compensation for NEDs – specifically share option compensation – has evolved over time; the determinants of equity-based compensation; and more importantly, on whether it is effective in enhancing monitoring and mitigating secondary agency problems between NEDs and shareholders. Most prior studies on equity-based compensation for NEDs and secondary agency problems have focused on the US market (Ronen, Tzur & Yaari, 2006; Cullinan, Du & Wright, 2008; Archambeault, Dezoort & Hermanson, 2008; Persons, 2012; Crutchley & Minnick, 2012; Sengupta & Zhang, 2015; Keune & Johnstone, 2015; Lahlou & Navatte, 2017).

The uniqueness of the South African institutional setting creates a need to carry out a study on the effectiveness of equity-based compensation for NEDs. It differs from other countries such as the US regarding several factors. One, the level of institutional holdings and blockholdings is (relatively) higher in South Africa (Ntim, 2013; Ntim, 2015). Two, South Africa is characterised by (relatively) weaker shareholder activism, compared to developed countries (on which most prior studies focused) (King Committee on Corporate Governance & Institute of Directors, 2002; Mangena & Chamisa, 2008; Jallow et al., 2012; Ntim, Ntim, Opong & Danbolt, 2012; Viviers, 2015), and a relatively smaller and less liquid market, which limits diversification and the exit strategy. Three, the definition of 'board independence' in the King III code is unique in the sense that it does not consider those directors who receive share option compensation (or any remuneration contingent on the performance of the company) to be independent. This stricter definition of board independence in SA may have a significant impact on how share options affect monitoring; it can be a substitute for or a complement to the effect of share options.

The fourth motivation is the paucity of empirical research on the interaction of NEDs' compensation and institutional ownership/blockholder ownership in mitigating secondary agency problems. Very few studies have examined the interaction of these two specific mechanisms jointly. Most of those discussed in Chapter Three examined the two variables separately. The study by Adithipyangkul and Leung (2017) is an exception, examining the interaction between equity-based compensation for NEDs and blockholder ownership. However, that study (i) focused only on blockholders and debtholders, ignoring institutional ownership; (ii) combined share grants and share options, in spite of their differing profiles which induce different

levels of risk aversion to NEDs (more detail in Section 3.2.2 of Chapter 3)[8] ; and (iii) treated blockholders as a homogenous group, though their diversity affects their monitoring incentives, which affect organisational outcomes (Cronqvist & Fahlenbrach, 2008; Edmans and Holderness, 2017). This area requires research attention for two reasons. The first is that in their review paper on blockholder ownership, Edmans and Holderness (2017) called for researchers to investigate how blockholder ownership interacts with other corporate governance mechanisms (such as board characteristics) in the monitoring process. Their suggestion is based on the substitution-monitoring hypothesis, which argues that two corporate governance mechanisms can either complement each other, or be substitutes for each other (Mishra & Nielsen, 2000). The second reason is that understanding the relationship between the two is useful for regulators and shareholders, who need to know whether to apply both or only one of them.

## 1.3 Problem statement

Corporate governance codes and academic researchers have emphasised equity-based compensation for NEDs as one of two important mechanisms for mitigating secondary agency problems (Jensen & Murphy, 1990; Ryan Jr & Wiggins III, 2004; Alves, 2014). However, empirical studies on this topic have presented conflicting views and empirical findings; some find it effective (Fich & Shivdasani, 2005; Ahmed & Duellman, 2007; Boumosleh, Cline & Yore, 2012; Hwang, Kim & Pae, 2013; Jeong & Kim, 2013; Sengupta & Zhang, 2015; Kim et al., 2018), while others find it to be a driver for secondary agency problems (Frey & Osterloh, 2005; Archambeault, Dezoort & Hermanson, 2008; Minnick & Zhao, 2009; Magilke, Mayhew & Pike, 2009; Crutchley & Minnick, 2012; Adithipyangkul & Leung, 2017). These contrasting views supported by empirical evidence indicate that this matter has not been settled. The problem is that the importance and effectiveness of equity-based compensation for NEDs in mitigating secondary agency problems is still unclear; it requires further investigation, in a setting that controls for endogeneity effectively. In addition, its effectiveness in other settings – such as the design of executive compensation, and monitoring of real-activities manipulation – is unknown, as these settings were not covered by prior studies. Yet they are viewed as the biggest agency problems in South Africa (a detailed discussion on this is presented in Section 2.3 of Chapter Two), so they provide a rich setting for investigating the impact of monitoring by NEDs.

[8] Section 3.2.2 of Chapter 3 presents a detailed discussion on the profiles of share grants and share option and how they induce different behaviours to NEDs.

The impact of NEDs' equity-based compensation on monitoring can be moderated by other corporate governance and related factors (Cordeiro, Veliyath & Neubaum, 2005). This view is supported by Mishra and Nielsen's (2000) analogy, which shows that corporate governance mechanisms can be either substitutes or complements. In this respect, the question of whether institutional/blockholder ownership and equity-based compensation for NEDs are substitutes or complements is unknown.

The need to investigate these issues is important in South Africa, for the following reasons. First, the requirement by the King III code to stop the use of share options compensation for NEDs provides a natural experiment that makes it possible to address the endogeneity problem, infer causality, and provide evidence to settle the debate on the effectiveness of equity-based compensation for NEDs in monitoring. Second, as detailed in Section 1.2, the South African institutional setting is unique; hence it deserves research attention.

## 1.4 Research objectives

One of the requirements of the King III corporate governance code was to stop the use of share options to compensate NEDs. This represented a 'shifting of the goal posts' from the predecessor code, King II, which allowed the use of share options as a form of compensation for NEDs. The first research objective is to examine trends in the use of share option compensation for NEDs, during the pre-King III period and over the full sample period. This objective is split into two parts: the first examines trends in the use of share option compensation for NEDs during the pre-King III period. The purpose of this research question is to get an understanding of what triggered the King Committee to focus on share option compensation for NEDs. Was it because there was a tremendous increase in their use, or were there other reasons? The second part of the first research objective is to examine the trends in the use of share option compensation for NEDs over the full sample period (2002–2016). The intent is to examine how the use of share option compensation changed over time, and to determine whether companies complied with the King III requirement to stop the use of share option compensation for NEDs.

The fact that there was a shift in requirements for share option compensation from King II to King III provides a natural experiment that is key to addressing the endogeneity problem, which could be the reason for the conflicting results from prior studies. Therefore, the second research objective is to investigate how the removal of share options compensation for NEDs affected

monitoring of the two biggest agency problems[9] in South Africa, being CEO compensation (specifically CEO pay incentives) and the quality of financial reporting. Quality of financial reporting is measured using the level of earnings management, proxied by discretionary accruals and real-activities manipulation. The impact on CEO pay incentives is measured using the sensitivity of CEO pay to both financial and share price performance.

In their review paper, Edmans and Holderness (2017) called for researchers to investigate how blockholder ownership interacts with other corporate governance mechanisms in monitoring process. Their suggestion is based on the substitution-monitoring hypothesis (Mishra & Nielsen, 2000). This study heeds that call; thus, the third and fourth research objectives investigate how institutional ownership and blockholder ownership respectively affect the relationship between share option compensation and monitoring of financial reporting quality and CEO pay incentives. These objectives examine how the removal of share option compensation has affected monitoring in companies with different ownership structures, focusing on institutional and blockholder ownership. Different categories of institutional and blockholder ownership have different incentives for monitoring, which affects organisational outcomes (Almazan, Hartzell & Starks, 2005). Not all institutional/blockholder owners are good monitors; some are active monitors, some are passive, still others may connive with management to expropriate wealth for their own benefit, at the expense of other shareholders. The study goes further, to analyse the impact of various categories of institutional and blockholder ownership on monitoring by NEDs after the removal of share option compensation.

## 1.5 Research questions

This thesis seeks to answer the following questions:

1) How has the use of share option compensation for NEDs changed during the pre-King III period and over the full sample period?
2) What is the effect of removing share option compensation for NEDs on CEO pay incentives (sensitivity of CEO pay to financial and share price performance)?
3) What is the effect of removing share option compensation for NEDs on earnings management (discretionary accruals and real-activities manipulation)?
4) How does institutional ownership affect the relationship between share option compensation for NEDs and CEO pay incentives?

[9] Section 2.3 of Chapter Two provides motivation for and a discussion of why this study classifies CEO compensation and earnings management as the biggest agency problems in South Africa.

5) How does institutional ownership affect the relationship between NEDs share option compensation and earnings management?
6) How does blockholder ownership affect the relationship between NEDs share option compensation and CEO pay incentives?
7) How does blockholder ownership affect the relationship between NEDs share option compensation and earnings management?

## 1.6 Research design

The sample for this thesis was drawn from all non-financial companies listed on the Johannesburg Stock Exchange (JSE). The study identified 80 non-financial companies that used share option compensation for NEDs over the sample period. Given that the study applies the difference-in-difference method, the researcher identified 55 companies that previously remunerated NEDs with share option compensation, but stopped in the post-King III period. These were matched by size and industry to control companies (those that had never paid share option to NEDs over the sample period); hence, the final sample totaled 110 companies.

The key data set was hand-collected from annual reports. These included data for share options, share grants and other forms of compensation for NEDs and CEOs; data on corporate governance variables, such as board independence; and data regarding NEDs. Annual reports were used because the available databases did not supply reliable data; also, some details of share options (such as time to maturity, and the exercise prices) were not available from the databases.

Data analysis was based on descriptive statistics, univariate analysis and the difference-in-difference regression analysis. The removal of share option compensation for NEDs presented a natural experiment, so a difference-in-difference regression analysis using fixed effects estimators was applied to examine how this change affected CEO incentives and earnings management. For comparison purposes, the study also applied other methods that had been used by prior studies: the normal fixed effects model and the normal OLS model.

## 1.7 Contribution of the study

This thesis contributes to the literature and practice in the following ways: first, the study contributes to the literature by addressing the endogeneity problem using a natural experiment. According to Wintoki, Linck and Netter (2012), a natural experiment is a superior, 'gold standard' technique for addressing endogeneity problems and establishing causality between corporate governance mechanisms and firm outcomes. This is key to satisfactorily settling the debate on

the effectiveness and causal impact of equity-based compensation in mitigating secondary agency problems, and is important because of the conflicting evidence and views from prior studies, as discussed in Section 1.3. A natural experiment is determined by external factors, which can be regulatory changes or a force of nature; hence it provides an exogenous shock to the independent variable, which makes it effective in addressing endogeneity problems (Wintoki, Linck and Netter, 2012). Despite the advantages of the natural experiment approach, no prior studies on equity-based compensation for NEDs have used it, perhaps because it was not available at the time the studies were done. Most of the studies that have examined the impact of share option compensation for NEDs did not address the endogeneity problem[10]. The few that have, used techniques with several shortcomings, which are not effective in establishing causality; these include the two-stage instrumental variable, lagged variables, propensity score matching, and the fixed effects model. A study by Magilke, Mayhew & Pike (2009) is an exception; it used a randomised experimental design, which – like a natural experiment – is also viewed as a 'gold standard' for addressing the endogeneity problem (Antonakis et al., 2014). However, its results cannot be generalised for a different context or sample group (Antonakis et al., 2014).

Generally, corporate governance studies are marred by endogeneity problems (Wintoki, Linck and Netter, 2012). In this study, it is likely that share option compensation for NEDs and secondary agency proxies are endogenously determined (both are determined by firm and industry characteristics). The endogeneity problem produces misleading results (Wintoki, Linck & Netter, 2012; Antonakis et al., 2014) – "*it leads to biased and inconsistent parameter estimates that make reliable inference virtually impossible*" (Roberts & Whited, 2013, p. 494); thus it can be viewed as the possible root cause of the conflicting results reported by studies that investigated the impact of equity-based compensation for NEDs. Hence, the endogeneity concerns had to be addressed with a natural experiment.

Second, the study contributes to the growing literature on secondary agency problems (monitoring by NEDs) by focusing on the South African context, which has been overlooked by prior studies. Some studies have pointed to the dearth of research on secondary agency problems (see Perry, 2000; Linn & Park, 2005; Kor, 2006; Deutsch, Keil & Laamanen, 2007; Deutsch, Keil & Laamanen, 2011). The uniqueness of South Africa, in terms of factors that interfere with the effectiveness of corporate governance mechanisms in mitigating secondary agency problems, offers opportunities to investigate this topic. The South African context is unique in many ways; it has a unique definition of board independence that is more strict than most, and it is

[10] More detail is shown in Section 3.2.5 of the Literature Review, and a summarised version is presented in the motivation section of this Introduction (Section 1.3).

characterised by high institutional ownership, high blockholder ownership and weaker shareholder activism (Jallow et al., 2012; Viviers, 2015). According to the current literature, it appears this type of setting has not been analysed for secondary agency problems. The majority of the studies on corporate governance in South Africa have focused on the primary agency problems between shareholders and management (Hall, 1998; Mangena & Chamisa, 2008; Ntim, 2009; Steyn & Stainbank, 2013; Ntim, 2013; Ntim, 2015; Pamburai et al., 2015).

Third, the results of this study contribute to the crafting of future corporate governance principles in South Africa and the rest of world, specifically on incentives for NEDs. The results are also useful in the design of compensation for NEDs, as they show the impact of share option compensation for NEDs on secondary agency problems. This answers the question of whether the King III code improved or worsened the strength of corporate governance mechanisms in South Africa by stopping the use of share option compensation for NEDs. The findings of this study support the recommendations of the King III code that the use of share option compensation for NEDs should be stopped. They show that there is either an improvement or an insignificant change in monitoring after the removal of share option compensation for NEDs. This is a clear indication that it is not worthwhile for shareholders to use share options to compensate NEDs. It is more beneficial to remove them, because they come at a cost, and they dilute the shareholding structure. Yet removing them does not weaken monitoring; it may improve it, and at worst it will not have a significant effect.

Fourth, by investigating the interaction effects of institutional/blockholder ownership and their different categories, the study provides evidence for the substitution-monitoring hypothesis in South Africa. The intention of this is to show the institutional settings under which it is effective or ineffective to use or to avoid using share option compensation for NEDs. This is important to several groups (regulators, corporate governance bodies and shareholders) interested in knowing the circumstances or the context under which the use of share option compensation is effective. The results imply that, in general, neither blockholder nor institutional ownership are a substitute monitoring mechanism for share option compensation for NEDs. In addition, part of the results show that it is more beneficial to shareholders, from a monitoring perspective, if share option compensation is avoided when the ownership profile is dominated by government blockholders; and it is more harmful to shareholders to remove share option compensation for NEDs if the ownership profile is dominated by monitoring institutions, non-monitoring institutions and pension blockholder. Removing share option compensation for NEDs has no effect if the ownership profile is dominated by family blockholders and foreign blockholders.

Fifth, on the use of share option compensation for NEDs, this study contributes to the literature by showing its impact on mitigating agency problems specifically related to the design of CEO pay incentives. Prior studies on the impact of share option compensation for NEDs ignored CEO pay-performance sensitivity as a dependent variable; yet it is a proxy for one of the biggest agency problems in South Africa. Section 2.3 of Chapter Two justifies the view that CEO compensation (specifically, its disconnect with performance) and earnings management are two of the biggest agency problems in South Africa; hence the need for researchers to examine them. In addition, very few studies have investigated the impact of share option compensation for NEDs on earnings management. The study by Boumosleh (2009) is an exception; however, it has three shortcomings: (i) it is now outdated – its sample period ended in 1998. This creates the need to update this area of research by focusing on a more recent period; (ii) it is limited to US data – an update could focus on South Africa; and (iii) it is limited to the use of discretionary accruals transactions as a proxy for earnings management – the author ignored real-activities manipulation as a measure of earnings management, despite empirical evidence showing that real-activities manipulation is the preferred choice for manipulating earnings, and that executives view the two as substitutes (Graham, Harvey and Rajgopal, 2005; Cohen & Zarowin, 2010; Zang, 2008).

After controlling for endogeneity using a natural experiment and the difference-in-difference regression (with fixed effects estimators), this study shows that the removal of share option compensation for NEDs has no effect on the sensitivity of CEO pay to share price performance and the two measures for earnings management, which means no effect on monitoring. However, the sensitivity of total CEO pay to financial performance increases after the removal of share options, suggesting that removal improves monitoring. The impact of institutional and blockholder ownership and their various categories are presented above, in the fourth point of this section, Section 1.7. For comparison purposes, the study also analyses the results without controlling for endogeneity, using the normal OLS regression. The results are consistent with the difference-in-difference method on the two forms of earnings management and the sensitivity of total CEO pay to share price performance. However, the results differ on the sensitivity of CEO pay to financial performance: under the OLS model, share option compensation does not have a significant relationship with the sensitivity of CEO pay to financial performance; but under the difference-in-difference method, sensitivity increases significantly after removing share options compensation. The results of the fixed effects model (without the difference-in-difference model) are inconsistent with the results of the normal OLS regression and the difference-in-difference regression – they show that share option compensation improves monitoring of discretionary accruals and CEO pay-performance sensitivity to share price returns, while there is no significant effect on CEO pay-performance to share price returns and real-activities manipulation. These

inconsistent results between the fixed effects model and the difference-in-difference models mirror the contradictory results from prior studies, and reveal the importance of controlling for endogeneity.

## 1.8 Outline of Thesis Chapters

This thesis is organized as follows;

### Chapter Two: South African context

This Chapter provides an overview of the South African institutional context, focusing on the corporate governance landscape and legal and regulatory issues. Regarding the corporate governance landscape, the focus is on the transition from King II to King III, and on a discussion of agency problems in South Africa. The objective of this section is threefold: (i) to provide the country context for the study, which informs some of the research design choices; (ii) to present the factors that make South Africa unique compared to other countries such as the US, on which most prior studies on secondary agency problems have focused; and (iii) to show that both types of agency problems (between management and shareholders, and between NEDs and shareholders) occur in South Africa, and to highlight earnings management and inefficient CEO compensation as the biggest agency problems in South Africa.

### Chapter Three: Literature Review

This Chapter is divided into three sections. The first gives an overview of corporate governance issues, discussing primary agency problems and the key mechanisms for mitigating them. The objective of this first section is twofold: (i) to show why boards of directors – and specifically NEDs – are regarded as the preferred mechanism for mitigating agency problems; and (ii) to show how secondary agency problems[11], which are the main subject of this thesis, arise. The second section discusses the various economic incentives for NEDs. This is followed by views, arguments and empirical evidence on the impact of equity–based compensation for NEDs in addressing secondary agency problems. The discussion on economic incentives unpacks share option compensation as the most controversial form of equity-based compensation. Lastly, this Chapter provides a discussion on how institutional and blockholder ownership affects monitoring. The overall objective of this Chapter is to discuss theories for each area mentioned, followed by a discussion of prior studies, culminating in the identification of areas possibly requiring further research. Each of these sections starts with an introduction which specifies the objective for that section, and provide the highlights of the issues covered in that section. After each introduction comes the main body of the section, discussing the issues in more detail; and lastly, each section has a summary and conclusion

[11] 'Secondary agency problems' is used interchangeably with 'poor monitoring by NEDs'.

### Chapter Four: The conceptual framework and hypothesis development

This section delves into the theoretical framework of the research questions, and develops the hypotheses to be tested. The focus of the Chapter is on three areas: (i) the trends in NED share-option compensation in South Africa; (ii) the impact of share-option compensation for NEDs on CEO incentives and on earnings management; and (iii) how institutional/blockholder ownership affects the relationship between share-option compensation and monitoring of CEO compensation and the quality of financial reporting.

### Chapter Five: Research design and methods.

This chapter provides a description of and justification for the sample selection process, the data and variables used, and the empirical models applied to test the hypotheses. In addition, it discusses the descriptive statistics, the correlation of independent variables and the parallel trends assumptions which must be satisfied for the difference-in-difference regression. The chapter is divided into three sections: the first describes the sample selection process and the data used, the second discusses the empirical models used, and the last section presents and discusses the descriptive statistics, correlations matrix and the parallel trends assumption.

### Chapter Six: Results Analysis

This chapter discusses the results of the research questions and hypotheses tested. The first section presents the trends in share option compensation during the pre-King III period and over the full sample period from 2002-2016. The second section presents the impact of removing share option compensation for NEDs, on CEO compensation and then earnings management. The third section discusses how institutional ownership and blockholder ownership (and their various categories) moderate the relationship between share option compensation for NEDs and monitoring of CEO compensation and earnings management. For each research question there is a univariate analysis followed by a regression analysis. The last section of the chapter discusses the results from the sensitivity analysis; that is, after controlling for autocorrelation and heteroscedasticity, for the alternative cut-off period for the implementation of King III and for the normal OLS and the fixed effects regression.

### Chapter Seven: Conclusion, Summary of findings, implications, limitations and avenues for future research

This chapter concludes the thesis. It starts by recapping the research objectives, followed by a summary of the key findings for each research question and the implications of these findings. The second part of the chapter details the contribution of the research; this is followed by the limitations of the research, and some ideas on areas that can be pursued for further research. The last part is a conclusion for the Chapter.

# 2. CHAPTER TWO: SOUTH AFRICAN CONTEXT

## 2.0 Introduction

This Chapter provides an overview of the South African institutional context, focusing on the corporate governance landscape and legal and regulatory issues. Regarding the corporate governance landscape, the focus is on the transition from King II to King III, and on a discussion of agency problems in South Africa. The objective of this section is threefold: (i) to provide the country context for the study, which informs some of the research design choices; (ii) to present the factors that make South Africa unique compared to other countries such as the US, on which most prior studies on secondary agency problems have focused; and (iii) to show that both types of agency problems (between management and shareholders, and between NEDs and shareholders) occur in South Africa, and to highlight earnings management and inefficient CEO compensation as the biggest agency problems in South Africa.

## 2.1 Overview of the South African corporate governance landscape

Since 1994, South Africa has taken significant measures to improve its corporate governance structures. The first significant milestone was the introduction of the formal code on corporate governance, King King I Corporate Governance Code (King I), in 1994. It was based on the 'comply or explain' approach; which means that compliance was not compulsory, but failure to comply would require an explanation. King I provided a structured framework to be followed by companies, identifying, emphasising and recommending several key ingredients of good corporate governance. A few examples: disclosure of remuneration policy in the financial statements (without disclosing salaries); a well-constituted, independent board; a unitary board structure, in that the roles of chairperson and CEO are held by different people; holding board meetings once a quarter; and that the board appoint the audit and remuneration committees. It also called on companies to exercise "accountability, responsibility, fairness and social responsibility". However, King I suffered from several shortcomings; for example, it was silent on the use of share option compensation for NEDs, it did not specify the minimum number of NEDs on the board or the minimum number of independent NEDs on the board, and it did not require the chairperson to be independent; he or she only needed to be a NED. The King 1 code was revised in 2002 to pave the way for King II.

### 2.1.1 King II Corporate governance code

King II[12] was an extension of King I, and also took the 'comply or explain' approach. It maintained some of the King I guidelines, such as the unitary board structure, number of board meetings per quarter, no CEO duality, not allowing the role of board chairperson and CEO to be held by the same person, and disclosure of remuneration policy in the financial statements. However, it also made significant changes to the King I requirements. For example, it allowed companies – with shareholder approval – to grant share options to NEDs; it required the board chairperson to be independent, instead of just being a NED; it required the board to be constituted by the majority of the independent NEDs; it extended the mandate of the board to appoint the nomination committee (over and above appointing the audit and remuneration committees); and it recommended that the audit committee be constituted by a majority of independent members, including the chairman. It also provided criteria for defining board independence: Section 2.4.3 of King II defined an independent director as a board member who: does not represent a shareholder with a significant interest to be able to control management; is not employed by the company, and has not worked for the company or a subsidiary or sister company in an executive capacity for the past three years; is not close family of someone employed by the company or previously employed by the company in the past three years; has not provided any professional service, and is not a customer of or supplier to the company or group of companies; and does not have any business interests with the company or group, or any sort of relationship with the company which could interfere with his or her independence. However, King II also had several shortcomings; it allowed companies – with shareholder approval – to grant share options to NEDs and it did not suggest a minimum number of audit committee meetings per year, or of audit committee members, or of executive directors on the board.

### 2.1.2 King III Corporate governance code

Due to the introduction of the Companies Act no. 71 of 2008 ('the Act'), and changes in international governance trends, King II was revised, and replaced by King III. The King III code was issued on 1 September 2009, with an effective date of 1 March 2010. Though the King III report built on and expanded the key features of King II, it also introduced several new guidelines and principles not covered by King II. King III emphasised inclusive corporate governance focusing on stakeholder interests – in contrast to codes from liberal market economies such as

[12] The King II code is also cited as (King Committee on Corporate Governance & Institute of Directors, 2002)

the US and UK, which focus on shareholder wealth maximisation (Andreasson, 2011). It also changed the way companies perceive the application of the code, by changing the 'comply or explain' concept to the 'apply or explain' concept. Regarding the remuneration of NEDs, King III required them to stop receiving share options as a form of compensation. This recommendation was a significant shift from its predecessor code, which allowed NEDs to be remunerated through share options but after shareholder approval. It also required the remuneration policy to be approved by shareholders. Regarding board composition, King III specified two as the minimum number of executive directors on the board; it also recommended two as the minimum number of audit committee meetings per year, and required the audit committee to be constituted by at least three members, all independent.

The criteria for independence also changed; under the King III regime these became stricter, with more specific requirements in terms of shareholdings. King III (2010, section 67) defines board independence as a NED who *"is not a representative of a shareholder who has the ability to control or significantly influence management or the board, does not have a direct or indirect interest in the company which exceeds 5% of the group's total number of shares in issue, does not have a direct or indirect interest in the company which is less than 5% of the group's total number of shares in issue, but is material to his personal wealth, has not been employed by the company or the group of which it currently forms part in any executive capacity, or appointed as the designated auditor or partner in the group's external audit firm, or senior legal adviser for the preceding three financial years; is not a member of the immediate family of an individual who is, or has during the preceding three financial years, been employed by the company or the group in an executive capacity; is not a professional adviser to the company or the group, other than as a director; is free from any business or other relationship (contractual or statutory) which could be seen by an objective outsider to interfere materially with the individual's capacity to act in an independent manner, such as being a director or a material customer of or supplier to the company; or does not receive remuneration contingent upon the performance of the company".* The definition of board independence as prescribed by the King III code is unique; and it differs from the King II requirements, in the sense that it does not consider those directors who receive share option compensation to be independent. King III also disqualifies from independence NEDs with at least 5% shareholdings, or less than 5% shareholdings if such is significant to their personal wealth. Given this definition, the NEDs who qualified as independent under King I and II would not qualify under the King III requirements. In addition, NEDs who qualify as independent directors in countries such as the US, Spain, Australia and others would not receive the same qualification in South Africa.

King III maintained some of the requirements that existed during the King II period, including: splitting the role of CEO and board chairperson; a unitary board structure, with the majority being NEDs; an independent board chairperson; board meetings to be held on a quarterly basis; and the board to appoint the audit, remuneration and nomination committees.

### 2.1.3 Johannesburg Stock exchange listing requirements

The Johannesburg Stock Exchange (JSE) adopted the King III report by making compliance with it a requirement for companies to list on the JSE: Section 3.84 of the JSE listing requirements makes the application of King III mandatory. The JSE requires companies to declare how they have applied the King III guidelines, failing which they are required to issue a statement detailing their reasons for non-compliance with any of the guidelines (Solomon & Maroun, 2012). If these two actions are not taken, the company's shares maybe be suspended from trading. The effective date for King III implementation was 1 March 2010. However, the JSE extended the implementation of the requirement to stop the issuing of share options (or to clear outstanding balances of share options) for NEDs to 1 April 2011 (GoldFields, 2010).

## 2.2 Institutional context of South Africa

Several factors make South Africa a unique and interesting case for studying the impact of internal corporate governance mechanisms in mitigating secondary agency problems. These factors include: the size of the economy, the weak regulatory environment, the level of institutional ownership, and the level of blockholder ownership. Overall, South African corporate governance is weaker than in developed countries. Possible reasons include: weak enforcement of corporate regulations (Ntim, 2009); weaker shareholder activism, compared to developed countries (King Committee on Corporate Governance & Institute of Directors, 2002; Mangena & Chamisa, 2008; Jallow et al., 2012; Ntim, Opong & Danbolt, 2012; Viviers, 2015); and a relatively smaller and less liquid market, which limits access to huge amounts of money, diversification and exit strategies.

### 2.2.1 The South African capital market

South Africa is the second-largest economy in Africa, with a significant influence on the continent (Ntim, 2013), and was the first developing or emerging country to pioneer the publication of corporate governance codes, in 1994 (Mangena & Chamisa, 2008). However, relative to more developed countries such as the US, Australia and those of Europe, the South African market is relatively small and illiquid, with fewer listed companies, below 500 (Ntim, 2013). The illiquid market makes takeovers difficult to implement. Takeovers require high levels of market liquidity, which gives bidders access to a significant amount of cash within a short space of time (Minnick

& Zhao, 2009). Takeovers are also expensive and time consuming, which makes them ineffective for dealing with minor agency problems (Denis, 2001).

Despite an illiquid capital market that is not conducive to takeovers, the regulations governing takeovers in South Africa are more in favour of the shareholders than the board (Davids, Norwitz & Yuill, 2010). This makes South African companies more vulnerable to takeover bids. The Companies Act (2008) prohibits the board from taking frustrating action to block a takeover bid, or denying shareholders an opportunity to evaluate the bid offer. Examples of frustrating actions that are prohibited include: issuing unissued shares, or granting share options; acquiring or disposing of assets; and making abnormal distributions when the timing is not conducive without getting approval from the panel regulating takeovers. Other provisions of the Companies Act (2008) that seek to protect shareholders include requiring a takeover transaction (involving the whole company or a bigger portion of the company's assets) to pass only if it is approved by a special resolution of shareholders. If the transaction is opposed by at least 15% of the votes cast, then the transaction requires court approval. In addition, any shareholder who is against the transaction may apply to the court for the transaction to be set aside. After comparing the takeover laws of the US and South Africa, Davids, Norwitz and Yuill (2010) concluded that South African companies are more vulnerable to takeover bids than US companies. Despite the Companies Act (2008) of South Africa being viewed as pro-takeover, the implementation side may be negatively affected by the level of capital development, the illiquidity of the JSE, or the length of the timeframe required to consummate a takeover. Even though the capital markets – and specifically the takeover market – exists as a mechanism for mitigating agency problems, it suffers from serious challenges that make it difficult to implement in South Africa.

### 2.2.2 Shareholder activism in South Africa

One of the reasons corporate governance mechanisms are relatively weak in South Africa compared to developed countries is relatively weaker shareholder activism (King Committee on Corporate Governance & Institute of Directors, 2002; Mangena & Chamisa, 2008; Jallow et al., 2012; Ntim, Opong & Danbolt, 2012). A recent study by Viviers (2015) confirmed the low levels of shareholder activism in South Africa, despite the existence of a conducive environment for them to add value. Firstly, agency problems that need shareholder activism do exist in SA; a survey by Viviers (2015) noted high executive remuneration which is not linked to performance, and little disclosure on remuneration for executives, as the key concerns raised by shareholders. Secondly, the illiquidity and lack of breadth on the JSE (with fewer than 500 companies) limits diversification and options for shareholders who are keen to implement an exit strategy from poorly managed companies; this leaves the voice strategy as the only viable option for shareholders. (Viviers (2015)

singled out one vocal and active individual activist, Theo Botha, as an exception.) In developed markets, shareholder activists play an important role in subjecting management and the board to scrutiny, by exposing and questioning their incompetence and negligence (Jallow et al., 2012), challenging managerial actions, demanding accountability, and influencing management to create value for shareholders (Gillan & Starks, 2000).

### 2.2.3 The legal, regulatory framework and agency problems in South Africa

The legal and regulatory mechanisms in South Africa may not be effective in mitigating primary agency problems, for the following reasons: (i) It can be difficult to prove, in a court of law, that decisions by management were made in bad faith. This is a condition the court requires to act on punishing managers (Jensen, 1993; Shleifer & Vishny, 1997); (ii) the nature of the legal system does not allow all shareholders, including minorities, to exercise their rights. For example, shareholders must be present in person or by proxy (with no option for online voting) for them to vote at an annual general meeting[13]. This discourages voting by small investors (Grundfest, 1990); (iii) An analysis of South African corporate law by Lekhesa (2009) reveals that managers interfere in voting process by shareholders which makes it possible for them to manipulate the voting in their favour. Managers control the agenda, what shareholders vote on, how proposals are packaged, the timing of the vote, and when shareholders are informed of the issues to be voted on. In addition, Lekhesa (2009) pointed out that managers may conceal vital information – such as full details of the directors that are up for election – that could be used to make informed decisions when voting. As a result, shareholders are vulnerable to manipulation by management, who do have full and detailed information, and they end up rubber-stamping management proposals; (iv) the Companies Act (2008) makes it a requirement for shareholders to approve a disposal only if the company is disposing of a large part of its assets, or all of its assets. This makes it possible for management to get away with small but significant value-destroying disposals.

### 2.2.4 Institutional and blockholder ownership in South Africa

The South African corporate setting is characterised by concentrated ownership and high levels of institutional ownership (Jallow et al., 2012). This is evidenced by complex cross-ownership and pyramid-ownership structures (Ntim, 2013; 2015). According to data from Thompson Reuters, from 2013 to 2016 the level of institutional ownership ranged from 23% to 26%, while the level of blockholder ownership ranged from 43% to 46% over the same period. Institutional ownership can improve the monitoring and corporate governance of a firm; institutional investors are large

[13] Section 63 of the Companies Act specifies that at shareholders' meetings, voting may either be by show of hands or by polling. There is no provision for online voting or mailing a proxy.

and sophisticated, and they have the motivation, expertise, and economies of scale to monitor and pressure management to act in the best interests of the shareholders (Elyasiani & Jia, 2010). A contrasting view is that institutional investors may exacerbate agency problems, especially in situations where they have existing and potential business relations with the firm that they need to protect (Cornett et al., 2007). They may choose not to challenge management, even going to the extent of colluding with management to advantage themselves as the expense of the dispersed small shareholders (Elyasiani & Jia, 2010). The same arguments for and against institutional investors also apply to block shareholders. Overall, the presence of blockholder and institutional investors influences corporate governance, which consequently affects secondary agency problems. Hence, both may have a complementary or substitution effect, or they can hinder the effectiveness of other corporate governance mechanisms such as board independence and equity-based compensation. Section 3.4 and 3.5 of the Literature Review below provide a well-rounded and detailed discussion, supported by empirical evidence, of how institutional/blockholder ownership affects monitoring.

## 2.3 Agency problems in South Africa

### 2.3.1 Agency problem– South African corporate scandals

A review of corporate failures and scandals provides more details about the specific agency problems prevalent in South Africa. The collapse of the Masterbond Group, Fidentia, JCI-Randgold, Masterbond, Leisurenet, MacMed and Regal Treasury Bank (Sarra, 2004) were all attributed to fraudulent activity by management, and weak boards of directors – specifically NEDs – who failed to monitor management effectively and put an end to self-dealing. The Leisurenet gym company was declared insolvent; the company lost money because the managing director was involved in self-dealing activities. He used company resources to buy assets from his own company at inflated prices (without declaring a conflict of interest). To cover up, the executives mispresented the financials to hide the true financial condition of the company. The executives falsely doubled the worth of the subscriptions of their gym members, inflated their debtors figure, and failed to disclose contingent liabilities amounting to close to R1 billion (Smith, 2002).

Du Toit (2012) used newspaper articles from the *Business Day,* the *Mail and Guardian, Financeweek,* and *The Citizen* to provide a detailed account of the failure of Beige Holdings Limited, Johannesburg Consolidated Investments (JCI), Macmed Healthcare Limited, Saambou Holdings Limited and Tigon Limited. Macmed and Beige Holdings were declared insolvent because of empire building, which resulted in resources being channelled from profitable units to new operations. This depleted the financial resources of the company. The executives also

stole money from the company using secret banking accounts. The executives concealed their financial misappropriation by inflating the revenues and profits. They raised false sales invoices and overstated the amount of stock on hand. It is reported that the manipulation of earnings was so significant that in 1999, Macmed's financials showed a profit of close to R51 million, despite the company actually making a loss of R95 million. The false financial picture allowed the executives to sell their shares, exercise their share options profitably, and continue borrowing from the banks to cover the financial hole. Johannesburg Consolidated Investments (JCI) faced cash flow problems, because of huge debt, for a period of more than five years. These problems were concealed by manipulating financial statements; the executives inflated the assets and understated the liabilities to present a higher net asset value.

In the case of Saambou, the executives were involved in numerous financial frauds; for example, they understated liabilities amounting to R69 million, and they used company resources to prop up the share price by lending money to other companies to buy their own Saambou shares. The executives also received performance bonuses based on falsified financial statements.

With Regal Treasury bank, the CEO – who was also the chairperson – was paid excessively, and was involved in self-dealing transactions for his personal benefit. He also fired directors and employees who questioned his fraudulent transactions. The inquiry into the failure of the bank concluded that monitoring by the NEDs was poor. They failed to execute their duties objectively to protect the interests of the shareholders (Reserve, 2001).

More recently, in 2017, Steinhoff International – a company listed on the JSE and headquartered in South Africa – came close to collapse. The Steinhoff saga was dubbed *"the biggest case of corporate fraud in South African business history"* (Naudé et al., 2018, p. i). Over the past few years the company had engaged on a rapid expansion drive. This was funded through by issuing massive debt and equity. From 2008 to 2016 equity increased by 916%, from R25 billion to R254 billion; while debt grew by 659%, from R17 billion to R129 billion, over the same period (Viljoen, 2018). Just as in the cases of Macmed and Leisurenet, the acquired operations were neither profitable nor generating enough cash. To deal with this, the executives resorted to earnings manipulation. The testimony by the former Chief Financial Officer (CFO), Ben la Grange, to the Parliamentary Portfolio Committee of South Africa gave more details about how the earnings were manipulated. The executives would make sales to a fictitious ('dummy') company, which was funded by Steinhoff itself. He also said that the acquisition of assets was done at overstated prices; some of the transactions were done through third parties who were influenced by the CEO, Markus Jooste (Klein, 2018). The scandal saw the Steinhoff share price dropping by 98% to

R1.60, as at 7 December 2018 (Mchunu, 2018), from a high of R96.85 on 31 March 2016 (Rossouw & Styan, 2018).

### 2.3.2 Agency problems in South Africa– a review of empirical studies

Viviers (2015) conducted a survey, using proxy voting outcomes, of issues raised by shareholders in South Africa. The study noted several important points, for example finding that remuneration policies attract more opposition (relative to other items on the agenda) from shareholders during annual general meetings. The main concerns from shareholders were excessive executive remuneration not linked to performance, and little disclosure on remuneration for executives. Empirical evidence exists to support some of the concerns raised by shareholders; Bussin and Modau (2015) reported a weakening relationship between executive CEO compensation and performance, and a shift away from performance-aligned contracts for CEOs of South African companies. Bradley (2013) found no link between pay and performance for CEOs of South African companies. Lessambo (2016) concurs with this view in part, specifying corporate greed and excessive compensation as possible causes of the corporate scandals in South Africa.

Further evidence of primary agency problems in South Africa were documented by empirical studies that reported various problems in companies characterised by weak corporate governance systems. Mangena and Chamisa (2008) examined "the relationship between corporate governance structures and incidences of listing suspension from the JSE". The study shows that companies with relatively weak corporate governance structures, as indicated by the absence of an audit committee and a lower proportion of NEDs, have a higher likelihood of being suspended from the JSE. Using primary data techniques, Hall (1998) report the existence of agency problems in South Africa using a sample of 61 listed companies. The results show that shareholders and managers had divergent goals, which the study concluded was evidence of the existence of agency problems. A study by Steyn and Stainbank (2013), however, did not find evidence of primary agency problems in South Africa. They concluded that executives do not aim to maximise their remuneration. However, this study suffers from two limitations. First, the authors did not specify the components used to calculate executive compensation. Also, they named McGregor's BFA database as their source for data on executive compensation. A check on McGregor's BFA reveals that the database shows only cash compensation, without including other forms of compensation such as share grants, share options and long-term share incentives. Therefore, the study excluded a large portion of executive compensation, which is likely to be used by executives to maximise their own self-interest. Several studies have shown how executives abuse share options to maximise self-interest (see Bebchuk, Grinstein & Peyer, 2010; Holman, Shev & Zheng,

2010; Tee & Wiley, 2018). Cash compensation is one of the most direct and narrow settings for investigating primary agency problems. Given its prominence, executives are highly unlikely to use it as a primary conduit for pursuing their own self-interest. The results of the study by Steyn and Stainbank (2013) could well be different if the net is cast wider, to include equity-based compensation as well as less obvious, indirect and non-financial pieces of evidence such as managerial entrenchment, managerial risk aversion, earnings management, value-destructive expansion and value-destructive diversification. In addition, the level of executive compensation does not reveal much about the optimality of the compensation. It does not reflect the extent to which the compensation is tied to shareholder wealth and/or financial performance. A better proxy for reflecting the existence (or lack thereof) of agency problems could be CEO pay-performance sensitivity, or the sensitivity of the CEO equity incentives (Tang, 2014).

The magnitude of discretionary accruals and abnormal cash flows reported by this study (in Section 5.3.1 of Chapter Five below), based on the sample population, show evidence of earnings management in South Africa. The mean for discretionary accruals is around 3% of total assets, while for real-activities manipulation, it is around 1%. The numbers are comparable to those of prior studies that have reported significant evidence of earnings management – for example for discretionary accruals, Ali and Zhang (2015) reported a mean and median of 0.54% and 0.36% respectively, while Mao and Renneboog (2015) and Qi et al. (2017) reported mean discretionary accruals of 3% and 0.3% respectively. For real-activities manipulation, Ali and Zhang (2015) reported a mean and median of -1.9% and -1.86%, while Cohen, Dey and Lys (2008) reported a mean and median of -2% and 1% for abnormal cash flows. Based on these levels, all the studies mentioned above have reported significant evidence of earnings management.

### 2.3.3 Agency problems in South Africa conclusion.

The common denominator in all the South African corporate scandals mentioned is the manipulation of earnings to hide the true financial condition of the company. This manipulation is done through fictitious sales, sales to dummy companies, inflating assets, and understating liabilities. These corporate scandals show that any form of financial misappropriation, theft, losses, rapid expansion and value-destroying acquisition may be camouflaged by falsifying earnings, assets or liabilities, or all of these. Everything comes down to earnings management. Therefore, investigating the levels of earnings management could be the key to unearthing the unseen shenanigans that go on behind the walls. They may be invisible, but the financial statements – which are the source of information for detecting earnings management – must be published for listed companies.

The earnings management problem is strongly connected to the second-biggest agency problem, which is high executive pay that is not linked to performance. The manipulation of financials boosts the share price, which allows executives to receive performance bonuses, cash in on their share options, and dispose of their shares in the company. The insights gained from the corporate scandals mentioned, coupled with the survey by Viviers (2015), show that earnings management and inefficient executive remuneration are at the centre of agency problems in South Africa; hence the need for research that focuses on these two problems.

It should also be noted that all the corporate scandals discussed above happened under the 'watchful' eye of each company's NEDs. According to Mallin (2011), the boards of some of the failed companies comprised some of the most "respectable" NEDs in Africa. With Steinhoff, the board was made up of the majority independent board members since 2008, which was in compliant with the King III code. Lessambo (2016) concurs with this view, arguing that the problem is also with ineffective NEDs, who fail to monitor the executives and just rubber-stamp their decisions. These insights show the existence of secondary agency problems in South Africa. Furthermore, they reflect the need to investigate the overall effectiveness of NEDs in monitoring the biggest agency problems in South Africa, which are earnings manipulation and excessive compensation that is not tied to performance.

## 2.4 Conclusion

This section provided an overview of the corporate governance landscape in South Africa. It shows the key highlights of the corporate governance codes, and how they changed from the King II code of 2002 and the King III code of 2010. The transition between the King II and King III codes – specifically the recommendation to stop the use of share option compensation for NEDs – presents a natural experiment, which informs the research design of this study. This section also showed the uniqueness of the corporate governance landscape in South Africa, which justifies focusing on the country. A few examples include relatively weak shareholder activism, a high level of institutional and blockholder ownership, and that King II and King III are not regulations, but take the 'comply or explain' approach and the 'apply or explain' approach respectively. The JSE adopted these King Codes; being compliant is now a listing requirement, or companies must explain the reasons for not complying or applying its recommendations. This section also shows executive compensation and earnings management as the biggest agency problems in South Africa (based on corporate scandals reported, prior literature and articles studied). Some of the corporate scandals happened under the supposedly watchful eye of NEDs – an indication that secondary agency problems exist in South Africa.

# 3. CHAPTER THREE: LITERATURE REVIEW

## 3.0 Introduction

This Chapter is divided into three sections. The first gives an overview of corporate governance issues, discussing primary agency problems and the key mechanisms for mitigating them. The objective of this first section is twofold: (i) to show why boards of directors – and specifically NEDs – are regarded as the preferred mechanism for mitigating agency problems; and (ii) to show how secondary agency problems[14], which are the main subject of this thesis, arise. The second section discusses the various economic incentives for NEDs. This is followed by views, arguments and empirical evidence on the impact of equity–based compensation for NEDs in addressing secondary agency problems. The discussion on economic incentives unpacks share option compensation as the most controversial form of equity-based compensation. Lastly, this Chapter provides a discussion on how institutional and blockholder ownership affects monitoring. The overall objective of this Chapter is to discuss theories for each area mentioned, followed by a discussion of prior studies, culminating in the identification of areas possibly requiring further research. Each of these sections starts with an introduction which specifies the objective for that section, and provide the highlights of the issues covered in that section. After each introduction comes the main body of the section, discussing the issues in more detail; and lastly, each section has a summary and conclusion.

## 3.1 An overview of corporate governance

### 3.1.1 Introduction

The objective of this subsection is twofold: to show why boards of directors (and specifically NEDs) are regarded as the preferred mechanism for mitigating agency problems, and to show how secondary problems – which are the main subject of this thesis – arise. It starts with a discussion of primary agency problems, followed by a discussion of the various mechanisms for resolving them. This is followed by a discussion on secondary agency problems, focusing on how they emerge, how they are defined, and their characteristics.

### 3.1.2 The agency problem between shareholders and management

In modern corporations, primary agency problems arise due to conflicts of interests between shareholders and management. According to Shleifer and Vishny (1997), this results from the separation of ownership and control. The primary interests of shareholders lie in maximising

[14] 'Secondary agency problems' is used interchangeably with 'poor monitoring by NEDs'.

invested wealth through share price appreciation and dividend receipts (eventually, if not immediately). On the other hand, management may not own the company, but they run the company on behalf of the shareholders, and they possess full, effective control rights (Fama & Jensen, 1983). Managers have significant discretion in the allocation of shareholder funds, and they possess superior information about the fortunes of the firm than the shareholders (Shleifer & Vishny, 1997). In performing their duties, managers have a fiduciary duty to act in the best interest of the shareholders; however, sometimes they are motivated to pursue their own self-interest, which can be inconsistent with the interests of the shareholders. The effective control rights, plus the information asymmetry between manager and shareholders, combined with a manager's desire for self-recognition, power and self-enrichment, create fertile ground for managers to engage in self-dealing at the shareholder's expense (Shleifer & Vishny, 1997; Minnick & Zhao, 2009), and this is what is referred to as the primary agency problem or just agency problems.

Primary agency problems have been illustrated through documented cases of expropriation of company resources, misallocation of company resources, managerial shirking, managerial consumption of perquisites (plush offices, plush carpets, expense-account meals, company jets), excessive compensation, transfer pricing, irrational expansion, and investing in value-destroying projects in pursuit of more power (Shleifer & Vishny, 1997; Denis, 2001). Other less obvious examples include managers' desire to remain in power even if they are no longer competent, paying high wages to employees in order to buy peace with unions and workers (Bertrand & Mullainathan, 2003), managerial risk aversion, resisting value-increasing takeovers (Shleifer & Vishny, 1997; Denis, 2001), and avoiding difficult and costly decisions associated with shutting down old plant and creating new plant (Bertrand & Mullainathan, 2003). In South Africa, cases of opportunistic managerial behaviour have been documented in several corporate scandals; for example, Masterbond Group, Fidentia, JCI-Randgold, Masterbond, Leisurenet, MacMed, Regal Treasury Bank. Enquiries into the collapse of these institutions revealed some of the reasons for their failure: fraud and dishonesty by senior executives; executives taking excessive cash bonuses, stock options and other benefits; insider trading; embarking on unprofitable empire-building; self-dealing transactions, resulting in senior executives pocketing huge financial gains; and chairmen and executives not representing shareholders in good faith. In most cases the executives would try to hide these shenanigans by manipulating earnings, assets and/or liabilities. Corporate governance structures in these companies were also reported to be weak (Sarra, 2004). A detailed discussion of these corporate governance scandals may be found in Chapter Two above.

#### 3.1.2.1 Mechanisms to mitigate primary agency problems

Several corporate governance mechanisms exist to mitigate primary agency problems. These mechanisms serve to improve the monitoring of managers, and to align their interests with those of the shareholders. The mechanisms can be split into two categories, internal and external. Internal mechanisms include the board of directors, compensation plans, ownership structures and debt financing. External mechanisms include the capital markets, legal- and regulatory-based mechanisms, and product market competition (Denis, Hanouna & Sarin, 2006).

##### 3.1.2.1.1 External mechanisms

The external mechanisms for corporate control include; the capital markets, legal and regulatory based mechanisms and product market competition.

The capital markets:

An efficient capital market can discipline managers and incentivise them to serve the best interests of the shareholders. Capital market discipline takes place primarily through punishing the share price (through selling off shares) and engaging in takeovers that target poorly governed and poorly performing firms. Through a takeover, an acquirer can replace the poor-performing management and improve the operations of the firm (Shleifer & Vishny, 1997). However, takeovers are associated with several drawbacks. They require a liquid market that allows the bidder to access significant cash resources within a short space of time (Minnick & Zhao, 2009). Takeovers are expensive and time consuming, which makes them ineffective for dealing with minor agency problems (Denis, 2001). Section 2.1.1 of Chapter Two above discusses the feasibility of take–overs in South Africa, considering the existing regulations and the level of capital market development. This discussion shows that the level of capital market development and the level of liquidity make it difficult to implement takeover transactions in developing markets such as South Africa. Even though the capital markets exist as a mechanism of mitigating agency problems, but it suffers from serious challenges that make it difficult to implement.

In developed markets, shareholder activists play an important role in placing management and the board under scrutiny by exposing and questioning their incompetence and negligence. However, the South African setting is characterised by relatively weak shareholder activism compared to developed countries (King Committee on Corporate Governance & Institute of Directors, 2002; Jallow et al., 2012; Ntim, Opong & Danbolt, 2012; Viviers, 2015).

Legal, regulatory based mechanisms

This is a system of laws and regulations that govern the firm. It provides shareholders with a form of recourse, should managers violate the terms of the contract, while the judiciary system allows

them to enforce their rights (Low, 2009). Shareholders have a legal right to elect board members and vote on key strategic decisions such as expansions, mergers and acquisitions, and liquidations (Shleifer & Vishny, 1997). Section 2.1.3 of Chapter Two above discusses the reasons the South African legal and regulatory system may not be effective in mitigating or handling primary agency problems. It shows why it is possible for management to get away with small but significant value-destroying actions.

Product market competition

The market for a firm's product can be a mechanism that incentivises management to create shareholder value. Management's misuse and misallocation of company resources and inefficiencies due to poor corporate governance systems will be reflected in high costs of capital and uncompetitive pricing, consequently leading to poor performance, financial distress and eventually, bankruptcy (Denis, 2001). However, product market competition is not swift to respond to agency problems. It takes a long time; and by the time it takes effect, it may be too late to save the company from collapse (Jensen, 1993). Thus, it is not effective in mitigating the loss of company resources. Product market competition works effectively if the environment is competitive. In some South African industries – such as the sugar industry – competition is hindered by government protection.

#### 3.1.2.1.2 Internal mechanisms

These refer to mechanisms inside the firm that help to mitigate agency problems. They include debt financing, managerial equity ownership, and the board of directors.

Debt financing

Debt financing induces monitoring by lenders, and requires the borrower to make specific payments by specific dates. This has a disciplining effect, and helps to mitigate primary agency problems in several ways (Denis, Hanouna & Sarin, 2006). It forces management to make a commitment to paying out future cash flows; failure will be default which lead to bankruptcy. The need to make regular interest payments incentivises management to operate efficiently.

It reduces the amount of free cash flows which could be misappropriated by management (Jensen, 1986; Agrawal & Knoeber, 1996; Denis, 2001). The disciplining effect of debt can be significant, especially to firms where the agency costs of free cash flows are high; for example, companies with low growth prospects but huge potential to generate cash flows. In the US, such companies could be taken over through leveraged buy-out transactions (Jensen, 1986). However, the effect of debt is less important in companies where the opportunities and pressures to waste

cash flows (by investing in unprofitable projects) are relatively low – for example, companies with a combination of little or no free cash flows but which operate in a rapidly growing industry with many opportunities for highly profitable investment projects (Jensen, 1986; Agrawal & Knoeber, 1996; Denis, Hanouna & Sarin, 2006).

Board of directors

Fama and Jensen (1983) view the board of directors as the "top level court of appeals" responsible for mitigating agency problems between shareholders and management. The board's responsibilities include monitoring the activities of management; monitoring decision-making and performance on behalf of shareholders; hiring and determining compensation for management; evaluating top management, and dismissing them in cases of poor performance; and reviewing and approving strategic decisions, business plans and annual budgets for the firm (Denis, Hanouna & Sarin, 2006). Furthermore, the board has the authority to approve the following issues: the release and publication of annual financial statements and interim reports; the issue of shares and annual budgets; the dividend policy, takeovers and mergers; and the listing and delisting of the company's shares. The board also makes recommendations to shareholders to approve some ordinary or special resolutions. From the resource dependency perspective, the board is a source of advice to management (Westphal, 1999). An effective board should veto strategic decisions that could potentially destroy shareholder value (Weisbach, 1988).

The board is comprised of executives and NEDs. The executive directors are involved in the current management of the company; for example, the Chief Executive Officers (CEOs) and Chief Financial Officers (CFOs). Their presence on the board is regarded as an important source of inside and company-specific knowledge and information (Pfeffer, 1972). They are viewed as not best suited to undertaking the monitoring role, for a number of reasons: they are themselves management, so they cannot monitor themselves; they are not independent of management, because they are currently employed by the company; and for those with rank below that of CEO, their future careers within the company are dependent on the CEO, and hence their voting is more likely to be influenced by the CEO (Mizruchi, 1983). On the other hand, NEDs are not employed by the company (Mizruchi, 1983). NEDs fall into two categories: grey and independent NEDs. Grey NEDs include those directors who meet one of the following criteria: they have a consulting contract with the firm, are former employees, represent a specific shareholder, or are related to a senior manager in the firm. Independent NEDs have no ties to the firm other than their service on the board (Platt & Platt, 2012).

Independent NEDs carry the responsibility of monitoring management and mitigating primary agency problems (Roberts, McNulty & Stiles, 2005; Sengupta & Zhang, 2015) – the reason being that they do not have (or should not have) any ties with the firm other than their service on the board (Platt & Platt, 2012). Hence, they are expected, under the agency theory, to be impartial, independent and objective in monitoring management. For the same reason, prior research and corporate governance regimes view NEDs as an important and preferred-choice mechanism that can effectively reduce agency problems between managers and shareholders (Fama & Jensen, 1983). The King III code emphasises the role played by NEDs in providing independent, objective judgments on issues facing the company; thus, it requires them to constitute the majority of the board seats. In the US, the Sarbanes-Oxley Act (2002), or SOX – the rules adopted by the New York Stock Exchange and NASDAQ – support the same call. They require the board of a publicly traded company to have a majority of independent NEDs. They also require compensation and nominating committees to be made up entirely of independent NEDs (Linck, Netter & Yang, 2009). The United Kingdom (UK) Corporate governance code also requires NEDs to make up the majority on a nomination committee.

Several empirical studies provide evidence of the effectiveness of NEDs in mitigating agency problems and enhancing shareholder value. Companies with a high proportion of NEDs were found to be associated with: high probability of CEO resignation/turnover following poor performance (Weisbach, 1988; Guo & Masulis, 2015); lower likelihood of engaging in earnings management (Klein, 2002; Xie, Davidson & DaDalt, 2003; Peasnell, Pope & Young, 2005; Alves, 2014; Chen, Cheng & Wang, 2015); less chance of engaging in accounting fraud and financial misstatements (Beasley, 1996; Dechow, Sloan & Sweeney, 1996); more accurate earnings forecasts and more useful information to investors (Ajinkya, Bhojraj & Sengupta, 2005); and greater target shareholder gains in tender offers (Cotter, Shivdasani & Zenner, 1997). Furthermore, Byrd and Hickman (1992) find that bidder firms with a majority of NEDs make better acquisitions; and Weisbach (1993) reported a lower probability of company takeovers for companies with additional NEDs. Collectively, these studies show that NEDs can be effective in mitigating primary agency problems. However, the collapse of several companies such as Enron and WorldCom was an indication that NEDs can fail to provide effective oversight of management. Enron and WordCom are cited as high-profile cases of financial fraud that occurred when their boards were made up of 60% and 45% NEDs respectively (Tosi, Shen & Gentry, 2003; Abdullah & Nasir, 2004). In South Africa, an enquiry into the collapse of Regal Bank judged that the board of directors – specifically the NEDs – had failed to act diligently, or to exercise the care and skill reasonably expected of persons of their expertise (Sarra, 2004).

### 3.1.3 Agency problems between shareholders and NEDs (secondary agency problems)

Despite being considered the best choice as delegated agents for dealing effectively with primary agency problems, NEDs may potentially create secondary agency problems (Perry, 2000; Fich & Shivdasani, 2005). 'Secondary agency problems' refers to problems that arise when the interests of NEDs and shareholders diverge (Jensen, 1993; Perry, 2000). They can also be viewed as ineffective or poor monitoring by NEDs; they arise in situations in which NEDs exercise less vigilance in monitoring management, and when they engage in collusive behaviour with management to take actions that are unjustifiably beneficial to them but detrimental to shareholders (Cordeiro, Veliyath & Neubaum, 2005). Brick, Palmon and Wald (2006), Xie (2013) and Lin and Lin (2014) report evidence of collusion between management and NEDs. They find a positive relationship between excess compensation for CEOs and excess compensation for NEDs, all of which was found to be negatively associated with company performance. Dah and Frye (2017) show that when a board receives excessive compensation, they compound agency problems by not firing incompetent executives, and paying them excessive compensation not linked to performance. This piece of evidence exposes two problems: (i) it reflects an environment of ineffective monitoring, and (ii) it is indicative of the two agents (management and NEDs) colluding to further their self–interest ahead of shareholder interests. Singh (2006) connected the existence of secondary agency problems to the managerial power hypothesis, which posits that executive management has the power to influence their own pay (in collusion with a complicit board), and can extract rents through inefficient and excessive pay structures (Bebchuk, Fried & Walker, 2002). Singh (2006) concurred with this assertion, arguing that executives can be more powerful and influential if they have a good relationship with board members, which allows them to exploit the second layer of agency (the board of directors) for personal gain (such as extracting excessive compensation and perks, and misusing company resources).

Secondary agency problems have been reported as a key contributory factor to several corporate failures and scandals. In South Africa, the collapse of Regal Bank was partly attributed to secondary agency problems. An inquiry into the failure of the bank uncovered that the board of directors, specifically the NEDs, had failed to act diligently or to exercise the care and skill reasonably expected of persons of their expertise. Furthermore, the enquiry showed that the directors had failed to ensure that the audit committee operated in accordance with the Banks Act, and that they had failed to challenge decisions made by the CEO (Sarra, 2004). Sarra (2004) attributed the collapse of this entity and others to a weak and ineffective board who failed to act independently

to monitor the activities of management and mitigate self-dealing. Similar cases in which secondary agency problems were singled out include Enron and WorldCom (Tosi, Shen & Gentry, 2003; Abdullah & Nasir, 2004), Polly Peck, Barings Bank and the Maxwell Group in the United Kingdom, Pasminco and Parmalat in Italy, HIH, Ansett Airline and One Tel in Australia, and Société Générale in France (Marx, 2008; Magang, 2012).

Several reasons have been cited as the causes of secondary agency problems. These include the following: (i) Mutual "backscratching" (Crutchley & Minnick, 2012), whereby NEDs comply with management in return or with the expectation of receiving favours through further re-appointments. This is possible, given that management can have an influence on the appointment and re-appointment of NEDs (Bebchuk, Fried & Walker, 2002). However, the extent to which mutual backscratching occurs depends on the number of inside directors, and how much power they wield; it is more prevalent when the board comprises a significant proportion of inside directors who wield a lot of power. (ii) In addition, directors may not have enough motivation and time to devote to monitoring activities, especially if they hold other time-consuming jobs elsewhere, and other directorship positions (Deutsch & Valente, 2013). To be effective, NEDs must invest time and effort to improve their knowledge of the firm and its challenges. (iii) According to the managerial power hypothesis, explained in the preceding paragraph, executives can wield more power to influence the board's decisions for their personal benefit (Singh, 2006).

### 3.1.4 Mechanism of mitigating agency problems: Summary and conclusion

Of all the internal and external mechanisms for resolving agency problems, the board, and specifically the NEDs, are viewed as the best agents to mitigate agency problems. They are expected to be independent of management and should have no ties with the firm, apart from their service as board members. Hence the impression that they are objective and impartial, which are the key ingredients for effective monitoring of management. However, empirical studies show that NEDs can be self-serving agents, and may act in their own personal interests at the expense of those of the shareholders, giving rise to secondary agency problems. Secondary agency problems reflect the divergence of interests between NEDs and shareholders. This makes them ineffective monitors, and results in them pursuing their own agendas at the expense of shareholder interests. Even though the subject of secondary agency problems has not been investigated empirically in South Africa, their existence can be inferred from the few available cases of corporate failure (discussed in Chapter Two) and scandals, in which NEDs are suspected to have shown ineffective monitoring and to have colluded with management.

## 3.2 Mitigating secondary agency problems

### 3.2.1 Introduction

Secondary agency problems relate to the conduct of NEDs. Suggested ways of mitigating secondary agency problems relate to their level of independence and how they are remunerated. Regarding board independence, the emphasis has been on introducing strict criteria for board membership, and having a majority of the independent NEDs on the board and in key committees. On the remuneration side, the use of incentives such as equity-based compensation (share options and share grants) has been promoted in some jurisdictions. This section discusses various economic incentives for NEDs (cash and equity compensation), and how they affect secondary agency problems. Given the prominence of and controversy surrounding some aspects of equity-based compensation, this section presents two contrasting arguments, and empirical evidence for the effectiveness of equity-based compensation in mitigating secondary problems. This evidence is drawn from various settings including firm performance and value, market reaction to equity-based plan announcements for NEDs, acquisitions and hostile takeovers, CEO turnover, corporate risk-taking, backdating stock options, earnings management, and fraud and lawsuits. Though board independence is the other important aspect to mitigating secondary problems, it will not be discussed in this thesis; the reason being that the King III requirements make board independence a manifestation of share option compensation. Overall, the objective of this section of the literature review is (i) to present the existing contradictory views on how equity-based compensation affects secondary agency problems, and (ii) to show what has been and what has not been covered by prior studies on equity–based compensation for NEDs.

### 3.2.2 Overview of economic incentives for NEDs

The key precursors to effective monitoring by NEDs include; their level of independence, the need for financial incentives, good reputation, the desire to retain the board seat and to be well positioned for future career opportunities and avoiding litigation (Fama & Jensen, 1983; Yermack, 2004; Adams & Ferreira, 2008). Of these, the economic incentives and level of independence are within the control of the company. The other factors are more to do with a NED's integrity, professionalism and career goals. Supporting the use of economic incentives, Kumar and Sivaramakrishnan (2008) argue that the monitoring effectiveness of NEDs is not only a function of the amount of effort exerted, but also driven by the extent to which their contracts align their interests with those of the shareholders, or the extent to which they are incentivised to protect the interests of the shareholders. The economic incentives are mainly cash and equity-based compensation (which is made up of share options and share-based compensation). Each

economic incentive has a different profile, which induces different risk appetite in recipients. This implies that the different economic incentives have different effects in mitigating or causing or compounding secondary agency problems.

#### 3.2.2.1 Cash compensation for NEDs

Cash compensation does not exhibit a strong relationship with company performance, which means recipients do not reap the benefits of a strong share-price performance (Rickling & Sharma, 2017). Rickling and Sharma (2017) discussed the consequences of cash as a form of compensation. They argued that taking an extra level of risk and being remunerated with cash increases uncertainty, but without a corresponding upside if the project is successful. On the other hand, the failure of a risky project can result in reputation damage. This asymmetric pay–off structure of cash compensation encourages risk aversion. Hence, NEDs who receive cash compensation are likely to be more objective, since they do not have any vested interest other than their reputation. They prefer to be risk–averse, and would discourage management from investing in risky projects to avoid the potential risk of reputational damage if the project fails (King et al., 2004).

Prior studies have noted the effectiveness of cash compensation in improving monitoring by NEDs. Rickling and Sharma (2017) examined the relationship between cash compensation for audit committee members and quality of financial reporting in the US. They show a positive relationship between cash compensation and improved monitoring; meaning cash compensation is effective in mitigating secondary agency problems. This corroborates the results of Crutchley and Minnick (2012), who find reduced likelihood of lawsuits when board members are paid by cash compensation. However, some studies (e.g Persons, 2012; Ye, 2014) report contradictory results using US and Chinese data. Persons (2012) find the impact of cash compensation on the monitoring of fraudulent financial reporting by NEDs to be insignificant. Ye (2014) find cash compensation for NEDs to be associated with high levels of earnings management.

Going by these findings, cash compensation is ineffective in mitigating secondary agency problems, and it weakens monitoring. Ye (2014) presented two arguments in support of this: first, cash compensation is not tied to the performance of the company; hence, it does not align the interests of the board members with the interests of the shareholders. Second, high cash compensation compromises NEDs. It makes them less independent and less objective, as they 'return the favour' to management for the excessive compensation. However, this argument only applies in a setting where the executive directors are responsible for deciding the compensation

awarded to NEDs. It does not apply to a setting such as South Africa, where compensation for board members is set by the remuneration committee and approved by the shareholders.

#### 3.2.2.2 Equity-based compensation for NEDs

Unlike cash compensation, equity-based compensation ties the wealth of NEDs to the share price of the company (Fich & Shivdasani, 2005; Deutsch, Keil & Laamanen, 2007). Equity-based compensation comes in two forms; share grants (including restricted shares) and share option incentives. The effectiveness of these two in improving monitoring may be different. Campbell et al. (2014) report evidence in support of this view; they find the use of share option compensation for NEDs to have a different effect on the quality of financial reporting, compared to non-option incentives such as share grants. The two incentives exhibit different pay–off structures, and their values are driven by non–common factors. Even though the value of both incentives increases with an increase in share price, the value of share options is also affected by share price volatility. This volatility is driven by the riskiness of the business operations and cash flow volatility (King et al., 2004; Dorff, 2004). Another unique aspect of share options is that they exhibit a convex and asymmetric pay-off structure; which has the effect of limiting downside risk, but with unlimited upside potential. When the pay-off of the share option is zero, NEDs who own share options have the choice not to exercise them. This limits their downside risk. But when the value of the share options is higher, the upside potential of the holder is unlimited. With share options, NEDs will benefit if risky projects are successful; but the failure of a risky project does not result in personal negative financial consequences (Coles, Daniel & Naveen, 2006; Armstrong & Vashishtha, 2012; Chen, Ho & Zhu, 2013; Gormley, Matsa & Milbourn, 2013). The nature of share options, therefore, induces the holder to take on greater risk, and to be focused on short-term performance (Burns & Kedia, 2006), relative to the risk induced by share grants and other forms of compensation (King et al., 2004).

On the other hand – and unlike stock options – share grant compensation exhibits a linear and symmetrical pay-off structure, which implies the presence of both upside and downside risks. Any decline in the share price because of the failure of the firm's projects will negatively affect a director's wealth. On the flip side, any share price appreciation due to the success of the company's projects will affect the director's wealth positively (King et al., 2004). This linear relationship induces risk aversion and gives the holder a long-term focus. This is consistent with Mishra and Nielsen's (1999) model, which predicted high risk aversion for directors with greater share ownership. This view is consistent with research that shows a negative relationship between large shareholdings for executives and risk acquisitions that are meant to diversify the risk of personal portfolios (Murphy & Sandino, 2010). It should be noted that these studies by Mishra

and Nielsen (1999) and Murphy and Sandino (2010) examined share incentive compensation for executives, not for NEDs. A study of how share–based compensation for NEDs affects risk had different results: King et al. (2004) report a statistically significant positive relationship between share compensation for NEDs and firm risk.

The differences between the three forms of compensation (cash, share grants and share options), which have a different effect on risk, call for their effects to be investigated separately. But despite their differences, the two forms of equity-based compensation are tied to the share price of the company; their value depends on the share-price performance of the company. This connection with the share price has a double-sided effect on the behaviour of the recipients; hence, there are two contradictory views on whether equity-based compensation is effective in improving monitoring and mitigating secondary agency problems. On the one hand, it can result in an alignment of interests between NEDs and shareholders, which consequently mitigates secondary agency problems through effective and objective monitoring (the incentive-alignment hypothesis); or, it can lead to a divergence of interests, weakening the monitoring function and compounding secondary agency problems (the rent-extraction view).

### 3.2.3 NEDs equity-based compensation is effective in mitigating secondary agency problems– the incentive alignment hypothesis

The incentive-alignment hypothesis (also called the efficient contracting view) views equity-based compensation as an effective mechanism for aligning the interests of NEDs with those of shareholders, which will mitigate secondary agency problems (Core, Guay & Larcker, 2003; Chen, Guan & Ke, 2013). The hypothesis is rooted in the view that equity-based compensation gives NEDs a financial interest in the performance of the firm, which incentivise them to "think and act like shareholders" (Perry, 2000). Their financial stake places them in a much better position to understand, from the shareholder perspective, the consequences of their decisions (Jensen, 1993; Fich & Shivdasani, 2005). Furthermore, it motivates them to focus on creating value for the company, because the benefits of creating value will flow into their pockets as well. Hermalin and Weisbach (1998) showed that directors are more motivated to monitor the CEO if the financial benefits of the company's profitability accrue directly to them. They concluded that equity-based compensation incentivises directors to be more diligent. Empirical evidence drawn from various settings, which fall under the duties and responsibilities of the NEDs, exists to support this view (discussed in detail in the next paragraph). The various settings include: firm performance (measured using financial indicators and market measures of performance); executive management turnover and executive pay; the quality of financial reporting (measured using accruals, real earnings manipulation, restatement of financial statements, meeting or beating

analyst expectations); hostile takeovers; acquisitions, investment opportunities; dividend pay-outs; and risk-taking. The following paragraphs present empirical evidence, drawn from different settings, that supports the incentive-alignment hypothesis. Each setting is presented in its own paragraph.

Several authors (e.g. Morck, Shleifer & Vishny, 1988; Bhagat, Carey & Elson, 1999; Cordeiro, Veliyath & Neubaum, 2005; Fich & Shivdasani, 2005; Adithipyangkul & Leung, 2017) have focused on the impact of share option compensation for NEDs and firm performance, and they find evidence in support of the incentive-alignment hypothesis. They reported a positive association between the use of share option plans for NEDs and firm performance. However, the studies measured firm performance differently: Fich and Shivdasani (2005) used the market-to-book ratio. Morck, Shleifer and Vishny (1988), Bhagat, Carey and Elson (1999) and Adithipyangkul and Leung (2017) used Tobin's Q; while Cordeiro, Veliyath and Neubaum (2005) used share-price performance, and Morck, Shleifer and Vishny (1988), Bhagat, Carey and Elson (1999) and Adithipyangkul and Leung (2017) used return on assets. Adithipyangkul and Leung (2017) also used two additional measures – turnover ratio, and sales per employee. Closely related to firm performance, Fich and Shivdasani (2005) investigated the market reaction to announcements about the adoption of share option plans. They report a positive response from the market to the announcement of share-option plans for NEDs. In addition, they found that analysts incorporate such information to revise their forecasts of earnings per share upwards. This suggests that market players perceive the adoption of share-option plans for NEDs as value-increasing. It should also be noted that the studies discussed in this paragraph analysed different measures of equity-based compensation for NEDs. Bhagat, Carey and Elson (1999) focused on shareholdings, while Fich and Shivdasani (2005) focused on share options. The other studies examined the combined effect of both share grants and share options, without analysing them separately.

Empirical evidence on different corporate actions such as mergers and acquisitions (M&As), hostile take-overs and initial public offerings also supports the incentive-alignment hypothesis. The evidence from these settings shows the following about companies in which NEDs own shares or are paid with a higher proportion of equity-based compensation: (i) They have a low probability of being subjected to a hostile takeover attempt (Shivdasani, 1993). (ii) They experience better short-run and post-acquisition performance (Mkrtchyan, 2012; Lahlou & Navatte, 2017). (iii) The board is likely to respond to market sentiment by withdrawing unsuccessful acquisition bids (Mkrtchyan, 2012). (iv) They experience higher share-price gains and improved financial performance a few years after the post-acquisition period (Lahlou & Navatte, 2017). (v) They pay lower premiums for their acquisition targets (Lahlou & Navatte, 2017).

Mkrtchyan (2012) and Lahlou and Navatte (2017) analysed the combined effect of share options and share grants to NEDs, while Shivdasani (1993) focused on share ownership only.

Kren and Kerr (1997), Bhagat, Carey and Elson (1999) and Perry (2000) investigated the impact of equity-based compensation for NEDs on CEO compensation and CEO turnover after poor performance. Bhagat, Carey and Elson (1999) and Perry (2000) report a high likelihood of CEO turnover following poor performance when NEDs are remunerated with equity-based compensation. Kren and Kerr (1997) focused on remuneration of CEOs; they reported a strong link between performance and executive pay for firms with a high proportion of shareholdings for NEDs. Perry (2000) combined share grants and share options, while the rest of the studies focused their analysis on NEDs' shareholdings in the company.

Podder, Skully and Kym (2013) examined the effect of equity-based compensation (share options and share grants combined) on risk-taking for listed insurance companies in the US. Risk was measured using total risk (calculated as the standard deviation of the daily stock returns for each fiscal year), systematic and underwriting risk (calculated as the percentage change in loss reserve). The study reports a positive relationship between equity-based compensation and the level of risk-taking by insurance companies. Their results and conclusions support the incentive-alignment hypothesis. Similar results were reported by Deutsch, Keil and Laamanen (2011) and Chen, Ho and Zhu (2013). These two studies were based on a sample of US companies, but drawn from different industrial sectors. They report a positive relationship between share-option compensation to NEDs and level of risk. Both Deutsch, Keil and Laamanen (2011) and Chen, Ho and Zhu (2013) report similar results using share grants. However, they found the effect of share options to be more powerful than that of share grants in influencing NEDs to take more risk. In addition, they find the effect of share options to be stronger for NEDs relative to CEOs. The hypothesis for these studies rested on the view that NEDs are self-centred, and would rather take less risk, to avoid the potential reputational damage that may be a consequence of the high level of risk taken by the firm. Hence, they would need to be incentivised with equity-based compensation, to align their interests with those of the shareholders and increase their risk appetite. It is on this basis that the results of Deutsch, Keil and Laamanen (2011) and Chen, Ho and Zhu (2013) are considered to support the incentive-alignment hypothesis. However, these results are subject to criticism, because shareholders have different views of risk profiles (Giammarino & Neave, 1982; Myers & Majluf, 1984). In building their hypothesis, Deutsch, Keil and Laamanen (2011) and Chen, Ho and Zhu (2013) assumed that the interests of shareholders and NEDs are aligned when the latter steer the company towards high levels of risk. Their view assumes that all shareholders are risk-neutral because of their ability to diversify their investment,

and hence would prefer the company to take more risk. Given that shareholders have different risk profiles (Giammarino & Neave, 1982; Myers & Majluf, 1984), this assumption is prone to criticism. It's possible to find investors or shareholders who prefer low levels of risk from a company; in such a case, higher levels of risk may reflect a misalignment of interests between NEDs and shareholders.

Gong and Li (2007) and Bierstaker et al. (2012) find the quality of financial reporting to be better when NEDs receive share option compensation, a reflection of better monitoring. However, they focused on different aspects of financial reporting. Bierstaker et al. (2012) examined how audit committee members handle accounting disagreements. They showed that in an accounting disagreement, NEDs who receive share options are more likely to support the auditor who is acting in the best interests of the shareholder. Gong and Li (2007) reported a negative relationship between share-option incentives for NEDs and both discretionary accruals and the likelihood of meeting or beating analyst estimates. Du and Lin (2015) find a negative relationship between equity-based compensation (combined share grants and share options) for NEDs and discretionary accruals.

Closely related to the quality of financial reporting, some studies (see Boumosleh, Cline & Yore, 2012; Hwang, Kim & Pae, 2013; Jeong & Kim, 2013; Sengupta & Zhang, 2015; Kim et al., 2018) report reduced information asymmetry when NEDs are paid with equity-based compensation. They report more and accurate disclosure for companies that pay NEDs equity-based compensation. Hwang, Kim and Pae (2013) find this result to be persistent for both share options and share grants, but analysed them separately. Boumosleh, Cline and Yore (2012) focused on share options only, while Jeong and Kim (2013), Sengupta and Zhang (2015) and Kim et al. (2018) examined share grants and share options combined. The study by Hwang, Kim and Pae (2013) reported a negative relationship between cost of capital and proportion of equity–based compensation for NEDs. They discovered low costs of capital to be a direct result of better financial disclosure (which reduces information asymmetry). The other studies came to their conclusions through directly observing different concepts such as management accounting forecasts (Kim et al., 2018), the use of conservative accounting (Jeong & Kim, 2013), and the amount and accuracy of information dissemination to the analyst (Boumosleh, Cline & Yore, 2012).

Dividend pay-outs are an external mechanism that mitigates cash-flow agency problems. Dividend pay-outs not only have a signalling effect; they also reduce the amount of cash flow accessible to management (Jensen, 1986). If dividend policy is an effective corporate governance mechanism, then it may have a substitution effect or complementary effect with other corporate governance

mechanisms, such as share-option compensation for non-executives. Boumosleh and Cline (2013) find evidence in support of the substitution effect between dividend pay-out and share-option compensation for NEDs. They find that dividend pay-outs decrease as share-option compensation increases, suggesting that share options are an effective mechanism that may substitute for dividend pay-outs.

Other settings examined by prior studies in which the effectiveness of NEDs' equity-based compensation was unpacked include the amount of investment opportunity (Linn & Park, 2005), and the intensity of research and development programmes (Deutsch, 2007). Linn and Park (2005) investigated the combined effect of share grants and share options, while Deutsch (2007) focused on share options.

### 3.2.4 Equity-based compensation is not effective in mitigating secondary agency problems – rent extraction view or private benefits hypothesis

On the flip side, some scholars criticise the use of equity-based compensation for NEDs (see Bebchuk, Grinstein & Peyer, 2010; Cullinan, Du & Wright, 2008; Byard & Li, 2004). These scholars support what Sengupta and Zhang (2015) defined as the private benefits hypothesis. This view is similar to what Bebchuk, Lucian and Fried (2004) called the rent-extraction view, under executive compensation. These scholars presented the following arguments in support of the rent-extraction view. First, equity-based compensation has the effect of impairing the independence of NEDs, which makes them ineffective monitors. Depending on its form, equity-based compensation ties a NED's wealth and economic benefits to share-price performance and/or share-price volatility. For share options, the holder benefits from both higher share prices and increased volatility. But for share grants, a higher share price is more desirable and more beneficial. The possible consequence of this kind of connection is excessive focus on share price. It also creates a disincentive for NEDs to discourage management from indulging in unethical activities that inflate the share price and increase their wealth and pocket their gains in the short term but not in the long run. For example, NEDs may support high-risk projects that will increase share-price volatility and increase the value of their share options.

Second, equity-based compensation has the potential to create a convergence of interests between NEDs and management, rather than between NEDs and shareholders (Chen, Ho & Zhu, 2013; Cullinan, Du & Wright, 2008). This convergence stems from the fact that management is also paid with equity-based compensation. Using the same type of compensation for NEDs may have the effect of creating common interest between the two agents, who possess superior information to that of the shareholders themselves. With converged interests, NEDs may behave *like* management – to the detriment of the shareholders. This makes them ineffective and

complicit monitors who can connive with management to enrich themselves at the expense of the shareholders (Cullinan, Du and Wright, 2008). The convergence of interests is more likely to happen with share-option compensation because of the convex payoffs that it presents to the holder. Empirical evidence, drawn from various settings which fall under the functions and responsibilities of the NEDs, exists to support this view. The various settings include: firm performance; quality of financial reporting (measured using accruals, real earnings manipulation, misstatement of financial statements, and meeting or beating analyst expectations); backdating of options; fraud; lawsuits; and research and development. The following paragraphs present empirical evidence that supports the private benefits hypothesis. The evidence is drawn from different settings that fall under the ambit of NEDs.

Most of the studies that found evidence in support of the rent-extraction view examined quality of financial reporting (e.g. Ronen, Tzur & Yaari, 2006; Denis, Hanouna & Sarin, 2006; Archambeault, DeZoort & Hermanson, 2008; Cullinan, Du & Wright, 2008; Magilke, Mayhew & Pike, 2009; Boumosleh, 2009; Cullinan, Du & Jiang, 2010; Persons, 2012; Kim, Roden & Cox, 2013; Rose et al., 2013; Campbell et al., 2014; Keune & Johnstone, 2015; Liao & Ferris, 2018). All the studies found quality of financial reporting to be negatively affected by level of equity-based compensation paid to NEDs. Even though many of the studies (with the exception of Liao and Ferris (2018), whose sample covered 29 different countries) focused on the US market, they used different measures of equity-based compensation (either share grants or share options, or both combined) and different proxies for financial reporting quality. The main metrics used included: (i) misstatement of financial statements because of fraud or errors (Archambeault, DeZoort & Hermanson, 2008; Cullinan, Du & Wright, 2008; Persons, 2012); (ii) consistency in beating or meeting analysts forecasts (Campbell et al., 2014); (iii) managing earnings through aggressive or conservative or biased reporting (Magilke, Mayhew & Pike, 2009; Liao & Ferris, 2018); (iv) managing earnings using discretionary accruals (Ronen, Tzur & Yaari, 2006; Boumosleh, 2009); (v) inflating or deflating revenues and expenses, and not disclosing material transactions and information that reflects the riskiness of the company and corruption (Kim, Roden & Cox, 2013); and (vi) how the NEDs handled detected financial misstatements (Keune & Johnstone, 2015). In terms of type of equity–based compensation examined, all the studies focused on share options except for Rose et al. (2013), who focused on the shareholdings of directors, and Ronen, Tzur and Yaari (2006) and Magilke, Mayhew and Pike (2009), who examined the combination of share grants and share options. The studies by Archambeault, DeZoort and Hermanson (2008), Campbell et al. (2014) and Keune and Johnstone (2015) were limited to audit committee members and not the whole board of directors, while the rest of the studies expanded their sample to cover equity-based compensation to all NEDs (see Denis, Hanouna & Sarin, 2006; Archambeault,

DeZoort & Hermanson, 2008; Cullinan, Du & Wright, 2008; Magilke, Mayhew & Pike, 2009; Boumosleh, 2009; Cullinan, Du & Jiang, 2010; Persons, 2012; Kim, Roden & Cox, 2013; Rose et al., 2013; Campbell et al., 2014; Keune & Johnstone, 2015; Liao & Ferris, 2018).

Other studies investigated the relationship between equity-based compensation and lawsuits against boards of directors for transgressions relating to manipulating the share price, misstatement of the prospectus, and breach of fiduciary duty (Denis, Hanouna & Sarin, 2006; Crutchley & Minnick, 2012). They report a high likelihood of lawsuits for companies that pay equity-based compensation to NEDs. Crutchley and Minnick (2012) found the results to be consistent for both the combined effect of share grants and share options, and separately for share options.

Sengupta and Zhang (2015) examined the impact of equity-based compensation (share grants and share options) for NEDs on quality of financial disclosure. The study focused on two dimensions of disclosure: the frequency and accuracy of earnings forecasts. They find a positive relationship between the proportion of equity-based compensation and the likelihood of issuing earnings forecasts. In addition, they report a positive association between director equity pay and forecast accuracy, and better-quality disclosure.

Bebchuk, Grinstein and Peyer (2010) reported a high likelihood of directors receiving "lucky" share-option grants[15] whenever executives receive "lucky" share grants. "Lucky" grants are defined as those options that are strategically issued when the share price is lower than usual, to benefit the recipients. Byard and Li (2004) find the timing of executive stock options to be more beneficial for executives in circumstances in which directors receive a greater proportion of their compensation in share options. In a similar vein, Minnick and Zhao (2009) find directors who receive share options to be more amenable to share option backdating, since they benefit from it. Both pieces of evidence reflect an environment of collusion (between management and NEDs), and ineffective monitoring by NEDs. The results imply that share options compromise the independence of NEDs, and thus exacerbate secondary agency problems.

Gerety, Hoi and Robin (2001) reported a negative market reaction in response to the adoption of equity-based compensation for NEDs. They concluded that equity compensation for directors is ineffective in improving monitoring by NEDs, and shareholders do not benefit from the implementation of such plans. Using a sample of 178 Australian companies, Adithipyangkul and Leung (2017) find higher financial performance for companies that paid less equity-based

[15] Lucky share option grants are options granted at the lowest share price of the grant month, which reflects opportunistic timing through backdating the issue (Bebchuk, Grinstein and Peyer (2010).

compensation, compared to companies that paid more. They analysed the combined effect of share options and share grants.

### 3.2.5 Analysis of prior studies focusing on the impact of equity-based compensation for NEDs on monitoring – The endogeneity problem

Of all the empirical studies cited in Sections 3.2.3 and 3.2.4 above regarding equity-based compensation for NEDs, very few addressed the endogeneity problem. The few papers that did used techniques that are ineffective (a detailed discussion is presented in the paragraphs to come). In general, studies on corporate governance mechanisms and organisational outcomes are marred by endogeneity problems (Wintoki, Linck & Netter, 2012), because both corporate governance mechanisms and organisational outcomes are determined by firm and industry characteristics. Hence, it is likely that share-option compensation for NEDs and secondary agency proxies are endogenously determined. One form of endogeneity is the omitted variable bias, where omitted and unobservable variables could be driving both dependent and independent variables. The second form is the simultaneity bias, where the independent and dependent variables are jointly determined such that they may affect each other simultaneously (Schultz, Tan & Walsh, 2010), which results in a situation in which causality runs in both directions (Verbeek, 2008). Without addressing endogeneity problems, it is impossible to draw any conclusions or make inferences about causality (Roberts & Whited, 2013), and there is a risk of drawing incorrect conclusions about the relationships between variables. For example, one might observe a positive/negative relationship which does not exist (Denis, 2001); hence the view of Antonakis et al. (2014) that empirical results that do not address the endogeneity problem are misleading.

Regarding studies that support the incentive-alignment hypothesis, very few controlled for endogeneity. The few that did address it applied ineffective techniques. Kim et al (2018) used propensity score-matching to control for the omitted variable bias. Podder, Skully and Kym (2013), Sengupta and Zhang (2015) and Lahlou and Navatte (2017) controlled for both the omitted variable bias and reverse causality, using the two-stage instrumental variables approach. Lahlou and Navatte (2017) went further, using robust standard errors to control for industry and year fixed effects. To further control for reverse causality, they used lagged independent variables, and examined changes in equity-based compensation as an alternative to using the levels or the raw numbers. Gong and Li (2007) ignored the reverse causality, and only controlled for the omitted variable bias by including more control variables. Fich and Shivdasani (2005) and Linn and Park (2005) used lagged variables to control for simultaneity bias. The rest of the studies that found support for the incentive-alignment hypothesis did not address the endogeneity problem (see Kren & Kerr, 1997; Bhagat, Carey & Elson, 1999; Cordeiro, Veliyath & Neubaum, 2005; Cordeiro,

Veliyath & Romal, 2007; Deutsch, Keil & Laamanen, 2011; Bierstaker et al., 2012; MacGregor, 2012; Lynch & Williams, 2012; Boumosleh, Cline & Yore, 2012; Hwang, Kim & Pae, 2013; Jeong & Kim, 2013; Boumosleh & Cline, 2013).

Looking at studies that reported evidence in support of the private benefits hypothesis, only a few of them addressed the endogeneity problem. Adithipyangkul and Leung (2017) controlled it by using future firm performance rather than current performance. They also included firm-specific control variables. Ronen, Tzur and Yaari (2006), Minnick and Zhao (2009), Deutsch and Valente (2013) and Chen, Ho and Zhu (2013) used the two-stage instrumental variable technique. The study by Magilke, Mayhew and Pike (2009) was based on an experimental design. The rest of the studies that found support for the private benefits alignment hypothesis did not address the endogeneity problem (e.g. Denis, Hanouna & Sarin, 2006; Archambeault, DeZoort & Hermanson, 2008; Cullinan, Du & Wright, 2008; Boumosleh, 2009; Bebchuk, Grinstein & Peyer, 2010; Cullinan, Du & Jiang, 2010; Crutchley & Minnick, 2012; Rose et al., 2013; Kim, Roden & Cox, 2013; Campbell et al., 2014; Keune & Johnstone, 2015).

Overall, the most popular approach applied by prior studies that focused on the effectiveness of equity-based compensation in mitigating secondary agency problems was the two–stage instrumental variable technique. The other techniques used include the fixed effects model, propensity score matching, lagged variables, randomised experimental design and using control variables. Only one study – by Magilke, Mayhew and Pike (2009) – used the experimental design. The next paragraphs discuss each of the techniques used by prior studies to control for endogeneity: the two-stage instrumental variable technique, the fixed effects model, and the randomised experimental design, the propensity-score matching and control variables.

Despite its popularity and technical effectiveness in addressing endogeneity problems (Antonakis et al., 2014), the two-stage instrumental variable technique relies on finding valid, relevant and appropriate instruments. This is very difficult; good instruments are rare in the corporate governance literature (Love, 2010; Wintoki, Linck & Netter, 2012; Coles, Lemmon & Meschke, 2012). This explains the view by Love (2010) that so far, instrumental variables have failed to establish a causal relationship between corporate governance and performance. Coles, Lemmon and Meschke (2012) concur with this view; they argue that the instrumental variable technique is not effective in addressing simultaneity bias. However, with the appropriate and valid instrument the two-stage model is an effective technique for addressing several endogeneity issues (omitted variable bias, simultaneity, and measurement error). It achieves this by removing the variation in the regressors that relate to the error terms (Antonakis et al., 2014).

The fixed effects model is more effective in addressing omitted variable bias if the unobservable omitted variables are fixed over time for an individual firm or industry (Petersen, 2009). However, it does not effectively address endogeneity due to reverse causality (Love, 2010).

Propensity score matching mirrors an experiment. However, the treatment effect induced by propensity score matching is not random (unlike in a natural experiment), which makes it ineffective in controlling for omitted, unobservable factors and simultaneity bias (Shipman, Swanquist & Whited, 2016).

Regarding lagged control variables, the key assumption is that all observable and unobservable factors that jointly affect the dependent and independent variables are included in the model. This is highly unlikely; thus, it may not be effective in addressing simultaneity bias and omitted variable bias.

Antonakis et al. (2014) considered randomised experimental designs such as the one used by Magilke, Mayhew and Pike (2009) to be the "gold standard" technique for addressing endogeneity problems. But they admit that it suffers from one key shortcoming: it is not easy to implement on a larger scale. Furthermore, its applicability is limited to small and specific sample groups, which makes it impossible to generalise the results (Antonakis et al., 2014). On the other hand, Wintoki, Linck and Netter (2012) view natural experiments as the "gold standard" technique for addressing endogeneity problems. The two (natural experiments, and randomised experimental designs) differ slightly. A natural experiment is determined by external factors, which could be regulatory changes, or a force of nature. Hence, it provides a "strictly exogenous instrument" (Wintoki, Linck and Netter, 2012, p.584), which makes it effective in addressing endogeneity problems. A randomised experiment, however, involves assigning participants to treatment and control groups and then making observations. Both techniques allow the researcher to establish causality by analysing the treatment effect in relation to the counterfactual observation in the control group, and vice versa (Antonakis et al., 2014). The treatment group acts as a counterfactual condition to the control group, while the control group acts as a counterfactual condition to the treatment group, which allows the researcher to infer causality. Given the analysis above, a natural experiment, if available, would be the best technique for addressing an endogeneity problem while also getting a result that can be generalised in different contexts. Despite a natural experiment being considered the best technique for addressing endogeneity by Wintoki, Linck and Netter (2012), none of the prior studies used it.

### 3.2.6 Summary and conclusion on the discussion on the impact of equity-based compensation on monitoring by NEDs

Equity-based compensation comes mainly in two forms: share grants and share options. These have different profiles which induce different levels of risk appetite in recipients. They also have a different effect on the independence and objectivity of NEDs. From a theoretical point of view (as discussed earlier), the effect of share options is more ambiguous; they induce relatively higher risk, and they can drive holders to focus on short-term share-price movement. The controversy surrounding share options could be one of the reasons why the King Committee targeted them specifically in King III. Out of the two forms of equity-based compensation, King III recommended companies stop using share options to remunerate NEDs.

Overall, the prior studies referenced above reported contrasting empirical evidence as to whether equity-based compensation is effective in mitigating secondary agency problems; some found it to be effective, while others found it ineffective. The conflicting empirical evidence may be attributed to two reasons. The first is failure to address the endogeneity problem, a failure that is prevalent in corporate governance studies of this nature. "*The endogeneity problems leads to biased and inconsistent parameter estimates that make reliable inference virtually impossible*" (Roberts & Whited, 2013, p. 494); hence it produces inconsistent coefficients and unreliable results. Therefore, it could be the source of the conflicting results, as few studies addressed it, and the few that did used different techniques (fixed effects, lagged variables, control variables, two-stage instrumental variables; and one study used randomised experimental design). All these approaches except for experimental design are viewed as ineffective in addressing the endogeneity problem. And even though experimental design is an effective technique, it is not easy to implement on a larger scale; its applicability is limited to small and specific sample groups, which makes it impossible to generalise the results (Antonakis et al., 2014). The second reason is that the prior studies were thinly spread over different areas and settings, for example few studies focused on mergers and acquisitions, performance, options backdating, fraud and lawsuits, and corporate risk-taking, which makes it difficult to come to a solid conclusion on any of the areas covered. Quality of financial reporting attracted more attention (about 12 studies), but they analysed different aspects of financial reporting: accruals earnings management, misstatement of financial statements, fraudulent financial reporting, consistency in meeting or beating analyst forecasts. Even though CEO compensation presents a perfect setting for investigating secondary problems, none of the prior studies on this topic used the sensitivity of equity/total pay to firm performance as a proxy. This is despite the fact that the design of executive compensation is one of the key responsibilities of NEDs. The structure of executive compensation gives an indication of the effectiveness of NEDs in monitoring and furthering the interests of shareholders.

Furthermore, none of the studies investigated the impact of share option compensation on real-activities manipulation – yet it is a prevalent source of earnings management (Graham, Harvey & Rajgopal, 2005), and executives substitute it with discretionary accruals (Cohen & Zarowin, 2010; Zang, 2008). The analysis shows the need for researchers to examine how real earnings manipulation and CEO incentives are affected by share option compensation for NEDs.

## 3.3 Institutional ownership and monitoring

Just like equity-based compensation, institutional ownership is also an important mechanism that influences agency problems. Based on the substitution-monitoring hypothesis, two corporate governance mechanisms can either complement or substitute for each other (Mishra & Nielsen, 2000). It follows that equity-based compensation can either complement or substitute for institutional ownership. Therefore, this section discusses the impact of institutional ownership and monitoring. It focuses on the theory behind the effect of institutional ownership on monitoring, the categories of institutional ownership, and their effect on monitoring. It also discusses the empirical evidence for the effectiveness of institutional ownership and its various categories on monitoring.

### 3.3.1 Overview of institutional ownership

Institutional shareholders hold shares on behalf of their clients. They are generally large and sophisticated; examples include banks, research firms, hedge funds, mutual funds, pension funds and insurance companies (Bushee, 1998; Velury & Jenkins, 2006). According to the active monitoring hypothesis, institutional owners provide more effective monitoring than other categories of owner. According to this hypothesis, the presence of institutional shareholders is effective in mitigating agency problems (Ramalingegowda & Yu, 2012). Institutional shareholders' motivation and ability to monitor effectively are driven by the following: (i) Their large size and financial stake means they have more to lose and more to benefit from intense monitoring (Callen & Fang, 2013). Their size makes it less costly for them to engage in research and information-gathering activities, and makes it possible for them to access privileged information; all of which helps them to provide effective and direct monitoring (Ramalingegowda & Yu, 2012). (ii) The fact that they hold significant shares on behalf of their clients motivates to monitor management, which is beneficial to all shareholders (Velury & Jenkins, 2006). The returns on their holdings will influence their asset-selection reputation, which is important for their survival. The larger their investment, the greater the incentive to monitor (Shleifer & Vishny, 1986; Ramalingegowda & Yu, 2012). Large stakes of shares make it difficult for them to sell their shares in poorly governed firms, because the disposal of large stakes may have a negative effect on the share price (Velury & Jenkins, 2006). This makes it difficult for them to dispose of their investment without incurring

losses, leaving them with only one option: to monitor management intensively. (iii) They are more sophisticated than individual investors; thus they have the skills to interpret financial statements and spot any incidents of earnings manipulation (Velury & Jenkins, 2006; Edmans, 2009). This attribute, coupled with their size and influence, allows them to demand more transparency and better financial reporting. (iv) They also provide monitoring through setting the share price by incorporating managerial actions into their trading (Bushee, 1998). Therefore, in theory, institutional investors have the capability, power and incentives to monitor management and to discipline managers.

### 3.3.2 Categories of Institutional Ownership

Wang (2014) reported mixed empirical evidence on the effectiveness of institutional ownership in improving monitoring. The author attributed this to the error of treating institutional investors as a homogenous group. This is despite the fact that they come in different categories, which determines their effectiveness in monitoring. The different categories of institutional ownership have different abilities and motives to monitor, which affects organisational outcomes (Almazan, Hartzell & Starks, 2005). Their willingness to provide effective monitoring depends on several factors, including their investment period, size of financial stake, trading and governance behaviour (which is reflected in portfolio turnover), diversification levels, and momentum trading (Bushee, 1998). Researchers used these characteristics to classify institutional owners into categories; for example, Bushee (1998) classified them into three categories: transient institutional owners, dedicated institutional owners, and quasi-indexer institutional owners.

Transient institutional investors are characterised by low levels of shareholdings per company. They are short-term in nature and they invest in numerous firms; hence they are characterised by more frequent trading, which is sometimes driven by earnings announcements. Given their small shareholdings and short-term nature, they are less likely to put a lot of effort into monitoring executives (Chen, Harford & Li, 2007). On the other hand, dedicated institutional investors have a greater incentive to monitor executives, because they hold large stakes in a few companies and they are long-term in nature (Bushee, 1998). Quasi-indexers are well-diversified investors characterised by less frequent trading. There are two views on the extent to which quasi-indexers monitor managers. On one hand, their fragmented nature makes them passive; on the other, they can be effective monitors because they are unable to dispose of their holdings (Bushee, 1998) for fear of losing diversification. Out of these two views, Elyasiani and Jia (2010) argue in support of the former. They used an example of investors who are willing to dispose of shares of companies that are removed from an index, which indicates that they may not have a strong incentive to monitor management.

Brickley, Lease and Smith Jr (1988) and Chen, Harford and Li (2007) classified institutional investors based on their potential business connections with the investee firms. In one group, which Chen, Harford and Li (2007) defined as the 'grey area' group, they included banks and insurance companies. They defined these as institutions whose monitoring abilities might be compromised, due to business ties with the investee firms. They have short-term interests; hence they do not have a strong motivation to monitor managers. In the second group, which they defined as the 'independent institutional' group, they included investment companies. They defined these as investors with a long-term perspective; that is, an investment period of at least one year. Due to their long-term focus, they are expected to monitor managers in the best interests of all shareholders. Ramalingegowda and Yu (2012) summed up the classifications put forward by Brickley, Lease and Smith Jr (1988), Bushee (1998) and Chen, Harford and Li (2007) in two broad categories: the monitoring institutions, and the non-monitoring institutions.

#### 3.3.2.1 Monitoring Institutions

In the monitoring institutions category, Ramalingegowda and Yu (2012) included dedicated institutions, as defined by Bushee (1998), and independent institutions (such as investment companies), as defined by Brickley, Lease and Smith Jr (1988) and Chen, Harford and Li (2007). The monitoring institutions are equivalent to what Almazan, Hartzell and Starks (2005) defined as active monitors. They are more likely to monitor management and mitigate agency problems. Their motivation comes from the fact that they are independent of management, and hold large stakes in few companies, meaning they have more to lose and more to benefit. They also take a long-term view, meaning they stay long enough to reap the benefits of their investment in monitoring (Ramalingegowda & Yu, 2012). Empirical research (see Bushee, 1998; Chung, Firth & Kim, 2002; Hartzell & Starks, 2003; Hsu & Koh, 2005; Velury & Jenkins, 2006; Koh, 2007; Borochin & Yang, 2017; Alvarez, Jara & Pombo, 2018) confirms this theoretical perspective. These scholars report evidence showing that monitoring institutions provide effective monitoring to mitigate agency problems.

#### 3.3.2.2 Non-monitoring institutions

In the second broad category, non-monitoring institutions, Ramalingegowda and Yu (2012) included transient and quasi-indexers, as defined by Bushee (1998). In addition, they included the institutions that Chen, Harford and Li (2007) categorised as 'grey' institutions (banks and insurance companies). The non-monitoring institutions are equivalent to what Almazan, Hartzell and Starks (2005) defined as 'passive monitors'. They trade for short-term gain, their portfolio turnover is relatively high compared to monitoring institutions, and they have less incentive to

monitor. The existence of non-monitoring institutions and institutions that have less incentive to monitor management is explained by two hypotheses: the passive monitoring hypothesis and the private benefits hypothesis (Bhojraj & Sengupta, 2003).

According to the passive monitoring hypothesis, institutional owners will not monitor management or interfere in corporate governance affairs. Instead of taking corrective action, they dispose of their shareholdings (Bhojraj & Sengupta, 2003). There are several reasons for this behaviour. First, it is expensive and time-consuming to monitor management; consequently, institutional investors may respond to negative events or poor performance by simply selling their shares (Bhojraj & Sengupta, 2003). Second, they have a short-term focus, which causes them to trade their shares more frequently; therefore, they may not be dedicated to a company to the point of expending their resources to monitor it effectively. Bushee (1998) further argues that the frequent trading and short-term focus of institutional investors encourages managers to engage in financial shenanigans to meet short-term goals and to avoid negative sentiment, which may result in a massive sell-off by institutional investors.

Just like the passive monitoring hypothesis, the private benefits hypothesis does not view institutional owners as effective monitors who can mitigate agency problems. Their ineffectiveness stems from their fear of losing business from the investee firm. Hence, they may choose to side with management as a strategy for securing and maintaining business from the investee firms (Cornett et al., 2007). This hypothesis is more applicable to institutions that have potential business ties with investee firms, for example insurance companies and banks. According to Cornett et al. (2007), institutional owners such as insurance companies may side with management as a way of securing investment banking business. They may choose not to challenge management, even to the extent of colluding with management to expropriate the dispersed small shareholders (Elyasiani & Jia, 2010). Therefore, the presence of institutional investors may exacerbate agency problems, especially in situations where they have existing and potential business relations with the firm which they need to protect (Cornett et al. 2007).

#### 3.3.2.3 Empirical evidence on the impact of different types of institutional ownership.

Empirical evidence confirms the impact of different types of institutional ownership on monitoring. Ruiz-Mallorquí and Santana-Martín (2011) found the effect of institutional ownership on firm value differed depending on whether the dominant institutional investor was a banking institution (non-monitoring) or an investment fund (a monitoring institution). Consistent with the private benefits hypothesis, they find a decrease in firm value for companies with non-monitoring institutions as dominant owners. However, they report a positive relationship between firm value

and dominant ownership by monitoring institutions. Chen, Harford and Li (2007) reported higher post-merger performance and a higher likelihood of withdrawing bad bids for firms with a higher concentration of shares held by monitoring institutions. Almazan, Hartzell and Starks (2005) reported higher pay–performance sensitivity for firms with higher levels of shares held by monitoring institutions, relative to those held by non-monitoring institutions. However, they find both categories of institutional ownership to be negatively related to the level of executive compensation, meaning both are effective in monitoring executive compensation. Ramalingegowda and Yu (2012) show that monitoring institutions demand more conservative financial reporting. Several studies (see Chung, Firth & Kim, 2002; Velury & Jenkins, 2006; Koh, 2007; Sakaki, Jackson & Jory, 2017) find monitoring institutions to have a positive effect on the quality of financial reporting. They are associated with a reduction in earnings management, unlike non-monitoring institutions. Callen and Fang (2013) focused on share-price crash risk to show that monitoring institutions have a positive impact on companies and non-monitoring institutions have a negative effect. More recent studies (see Borochin & Yang, 2017; Alvarez, Jara & Pombo, 2018) confirm the positive and active role played by monitoring institutions compared to non-monitoring institutions. Hsu and Koh (2005) examined the impact of transient institutional ownership (non-monitoring institutions), finding them to be associated with upward accruals management, confirming that non-monitoring institutions can exacerbate agency problems.

#### 3.3.2.4 Impact of institutional ownership and monitoring – summary and conclusion

Institutional ownership is an important external mechanism for mitigating agency problems. However, studies have shown that institutional investors are not a homogenous group. Not all institutional owners are better monitors than other owners; some are active monitors, some have a long-term view while others have a short-term view, some are passive while others may connive with management to enrich themselves at the expense of other shareholders. Monitoring institutions (investment firms, or those with a long-term view) have a greater incentive to monitor compared to non-monitoring institutions (banks and insurance companies). These different categories highlight the importance of treating institutional investors as heterogenous groups with different monitoring incentives. A literature search finds only one study, by Scholtz and Engelbrecht (2015), that has investigated the impact of institutional ownership on executive compensation in South Africa. The impact of institutional ownership on earnings management has not yet been explored. The key shortcomings of the study by Scholtz and Engelbrecht (2015) are that they treated institutional owners as a homogenous group, and they did not analyse the effect of the different categories of institutional ownership. Given the overwhelming evidence of the different effects of different categories of institutional ownership, a study that investigates

the impact of the different categories of institutional ownership may well produce different results. In addition, they analysed the level of executive compensation without relating it to performance. Drawing from the discussion in Section 4.2.2 below, the level of executive compensation only becomes a concern if it is not tied to performance.

## 3.4 Blockholder ownership

Just like equity–based compensation, blockholder ownership is an important mechanism that influences agency problems. According to the substitution-monitoring hypothesis, two corporate governance mechanisms can either complement or substitute for one another (Mishra & Nielsen, 2000). It follows that equity-based compensation can either complement or substitute for blockholder ownership. This section therefore discusses the impact of blockholder ownership and monitoring. It focuses on the theory behind the effect of blockholder ownership on monitoring, the categories of blockholder ownership, and their effects on monitoring. In addition, this section discusses the empirical evidence found regarding the effectiveness of blockholder ownership on monitoring.

### 3.4.1 Blockholder ownership and monitoring

Blockholder ownership refers to shareholders with a significant stake in a company. The minimum threshold for identifying a blockholder applied in prior studies and according to corporate governance codes ranges from 3% to 10% (Wang, 2014). In their review article, Edmans and Holderness (2017) identified a threshold of 5% ownership as the most widely used.

Zhong, Gribbin and Zheng (2007) identified two competing views that explain the role played by blockholders in corporate governance: the alleviating view and the exacerbating view. The alleviating view is consistent with the active monitoring hypothesis of institutional ownership. It views blockholders as active monitors who can alleviate agency problems through their intervention (the "voice") and through disposing of their stake (the "exit strategy") (Edmans & Holderness, 2017). Blockholders exercise their power and influence (voice strategy) in various ways including voting for certain decisions, such as mergers, acquisitions, removing a non–performing CEO, engaging the board and executives to make their demands or to solicit information, and providing advice to management (Shleifer & Vishny, 1997; Edmans & Holderness, 2017). Their motivation to monitor stems from the significant size of their investment, which implies that (i) they have more to gain (or lose) if the company performs well (or badly); (ii) the option of disposing is a last resort, because their exiting will depress the share price, which may result in them selling at a loss. The exit strategy involves blockholders disposing of their stake if

management continues to destroy shareholder value. The threat of the exit strategy incentivises managers to create shareholder value, and to respond to the voice of the blockholder (Edmans, 2014). In support of the alleviating view, prior studies (see Core, Holthausen & Larcker, 1999; Bertrand & Mullainathan, 2001; Kim, 2010) present evidence of positive outcomes for companies with block shareholders, compared to companies with fragmented ownership. Core, Holthausen and Larcker (1999) find blockholders to be associated with lower CEO pay, which implies that they monitor executive contracts to mitigate agency problems. Kim (2010) find CEO pay to be more sensitive to skilled performance and less sensitive to luck for companies with larger blockholder ownership. Over and above finding that CEOs are paid for luck, Bertrand and Mullainathan (2001) also found that the sensitivity of CEO pay to luck decreases in companies with blockholders.

The exacerbating view considers blockholders as a factor that may exacerbate agency problems. The size of their holdings, which comes with greater influence, poses a threat that may pressurise management to engage in earnings management to boost the numbers (Zhong, Gribbin & Zheng, 2007). Their size and influence can facilitate hostile takeovers, opposition to management, and calling for the dismissal of management (Zhong, Gribbin & Zheng, 2007). In addition, they can worsen agency problems in two more ways. First, through excessive monitoring, which may hinder the functions of management (Edmans & Holderness, 2017) or even pressure management to focus on short-term performance (Guthrie & Sokolowsky, 2010). Second, through pursuing their own private benefit; for example, they can pressurise the company to buy overpriced products from a company that they own (Edmans, 2014; Edmans & Holderness, 2017). In support of the exacerbating view, prior studies show evidence of earnings manipulation for companies with high blockholders compared to companies with fragmented ownership (see Zhong, Gribbin & Zheng, 2007; Guthrie & Sokolowsky, 2010; Yasser, Mamun & Hook, (2017). Zhong, Gribbin and Zheng, (2007) and Yasser, Mamun and Hook (2017) find a positive association between blockholder ownership and earnings management. Guthrie & Sokolowsky (2010) find higher earnings management around seasoned equity offerings for companies with blockholder ownership. Mehran (1995) find no significant relation between blockholder ownership and firm value.

Blockholder owners are not a homogenous group; they are diverse (in terms of skills and investment and governance styles), and they engage in different forms of activism which produce different organisational outcomes (Cronqvist & Fahlenbrach, 2008). Different types of blockholders include institutional investors (hedge funds, mutual funds, pension funds, banks, investment funds), governments, companies, and individuals (Edmans, 2014). Therefore, they

should be analysed separately, to avoid missing the finer details of how each blockholder affects organisational outcomes (Edmans, 2014).

#### 3.4.1.1 Family ownership

Andres (2008) presented two reasons that family blockholders are associated with better monitoring. First, they have more incentive to monitor intensely, because a significant portion of the family's wealth will be invested in the firm. Most families invest for longer periods; that gives them much-needed knowledge and experience for monitoring the firm. Empirical evidence exists to support this view (see Anderson & Reeb, 2003; Ali, Chen & Radhakrishnan, 2007; Andres, 2008; Ghosh & Tang, 2015). These studies reported better monitoring for companies with large family blockholder ownership relative to companies with no family blockholder ownership. Proxies used include firm performance and the quality of financial reporting. Just like any blockholder, family owners may also exacerbate agency problems, as hypothesised by the exacerbating view (Section 3.4). A probable reason is the limited talent available for selection to executive positions. This is mainly driven by the desire to pass the baton of leadership to a family member; the heir apparent may not necessarily have enough skill, which can destroy shareholder value (Anderson & Reeb, 2003). Empirical evidence exists to show negative outcomes for companies with family blockholders. Prior studies show that they are less transparent (Chen, Chen & Cheng, 2008), they are marred by managerial entrenchment problems (Oswald, Muse & Rutherford, 2009), and more likely to engage in opportunistic activities to derive private benefit at the expense of minority shareholders, through engaging in related party transactions (Kohlbeck et al., 2018).

#### 3.4.1.2 Government blockholder ownership

In line with the exacerbating view of blockholders, government ownership can be associated with increased agency problems. There is a strong possibility that political agendas will trump business decisions (Borisova et al., 2012). Consistent with this, prior studies (e.g Bushman, Piotroski & Smith, 2004; Piotroski, Wong & Zhang, 2015) show that government ownership is associated with increased information asymmetry. There is lower transparency in such companies, because ruling governments are more likely to suppress information dissemination to avoid criticism and embarrassment, which could jeopardise their political fortunes. Borisova and Yadav (2015) show evidence of better-informed trading when the government is part of the ownership, suggesting that politicians get insider information from executives which they use to trade and enrich themselves. Other studies that find the effect of government ownership to be harmful include Berger et al. (2005), who reported poor performance for companies with government blockholders relative to companies without, and Borisova et al. (2015), who found government

ownership to be associated with higher costs of debt. However, Borisova et al. (2012) reported conflicting results on the impact of government blockholders on monitoring. The results show that government blockholders exacerbate agency problem in civil law countries, but alleviate them in common-law countries. The alleviating view is based on the view that the government's immense power and influence allow it to *"wield bigger sticks and carrots"* to improve monitoring and firm performance (Borisova et al., 2012). Yu (2013) also found support for the alleviating view, reporting high government ownership to be associated with superior firm performance.

#### 3.4.1.3 Foreign blockholder ownership

Foreign investors are expected to play an important role in improving monitoring in emerging markets such as South Africa. Foreign investors are viewed as better monitors. They subject management to more scrutiny, and they demand results and transparency (Li et al., 2011). They are foreign, and thus unlikely to have any business ties with the company or management. This makes them more objective. Empirical evidence exists to support this view. Li et al. (2011) find the presence of foreign blockholders to be associated with reduced share-price risk, concluding that their presence stabilises emerging markets. Using a sample of 28 countries and 1 100 companies, Mitton (2006) reported better performance, higher growth and more efficiency in companies that are accessible to foreign investors. Several authors confirmed the benefits of improved monitoring by foreign shareholders; these results were based on different organisational outcomes. Ferreira and Matos (2008) find foreign ownership to be associated with higher company valuations and better operating performance. Bena et al. (2017) showed a positive relationship between foreign ownership and increases in innovation and long-term investment (long-term assets and human resources), and Chen et al. (2006) find fewer fraudulent activities in companies with foreign ownership.

#### 3.4.1.4 Pension funds blockholders

Pension funds fall under the monitoring institutional ownership category (discussed in subsection 3.3.2.1 above); they are more likely to provide effective monitoring and mitigate agency problems. Their motivation comes from the fact that they are independent of management and hold large stakes in few companies, meaning they have more to lose and more to benefit. They also take a long-term view, meaning they stay long enough to reap the benefits of their investment in monitoring (Ramalingegowda & Yu, 2012). Kim (2010) found a positive relationship between pension blockholder ownership and sensitivity of CEO pay to skill, suggesting that pension fund owners provide better monitoring.

#### 3.4.1.5 Blockholder ownership and monitoring – conclusion

Given the conflicting theories and empirical evidence the question of whether blockholders alleviate or exacerbate agency problems remain unanswered. Most of the research on the effect of blockholders focused on the United States. In their review paper Edmans and Holderness (2017) called for researchers to investigated settings beyond the US. They highlighted several reasons to justify this call, which include differences in; disclosure requirements, share market liquidity, ability of blockholders to act in unison. Blockholder owners, come in different categories with different characteristics; hence they have different effects on monitoring. This observation calls for researchers to avoid treating blockholder owners as a homogeneous group. For a better analysis the different categories of blockholder owners (family, government, family and pension funds) should be analysed separately.

## 3.5 Conclusion and summary of the literature review

The first part of the literature review section provided an overview of corporate governance issues. It discussed primary agency problems, and the key mechanisms for mitigating them. This section showed boards of directors and specifically NEDs to be the preferred mechanism for mitigating agency problems. In addition, it unpacked the circumstances that give rise to secondary agency problems. Economic incentives (cash, share grants, share options) have an influence on secondary agency problems; this Chapter discussed the impact of economic incentives on monitoring by NEDs. Out of the three forms of economic incentive, share options deserve research attention, for these reasons: (i) they have an ambiguous effect on recipients, and (ii) they were targeted by the King Committee, which recommended that they should not be used to compensate NEDs. Thus this thesis focuses on share option compensation for NEDs. It should be noted, however, that most studies on this topic combined the effect of share grants and share options.

The discussion on the impact of equity–based compensation on monitoring unpacked several important points. (i) There is a lack of consensus on how equity-based compensation affects monitoring; prior studies reported conflicting evidence. (ii) Related to the conflicting evidence, and probably one of the causes of the conflicting evidence, is the endogeneity problem. Very few studies addressed it. The few studies that did address endogeneity used different techniques. None of the prior studies applied a natural experiment, which is considered a "gold standard" for addressing endogeneity problems (Wintoki, Linck & Netter, 2012). One study used randomised experimental design, which is also an effective technique, but suffers from two shortcomings,

which were discussed in detail. (iii) Other settings that reveal the existence of secondary agency problems were not examined; for example, real-activities manipulation, and CEO pay–performance sensitivity and CEO equity incentives.

Just like equity-based compensation, institutional and blockholder ownership are also important mechanisms that influence agency problems; thus these variables can be either substitutes or complements. Therefore, the last part of this Chapter discusses the impact of institutional and blockholder ownership on monitoring. The discussion on institutional and blockholder ownership unpacks two issues: (i) the need to avoid treating either type of shareholder as a homogenous group – they have different characteristics, which affect their incentives for monitoring; and (ii) the call for researchers to investigate how these two interact with other corporate governance mechanisms (Edmans & Holderness, 2017).

# 4. CHAPTER FOUR: THE CONCEPTUAL FRAMEWORK AND HYPOTHESES DEVELOPMENT

## 4.0 Introduction

This section delves into the theoretical framework of the research questions, and develops the hypotheses to be tested. The focus of the Chapter is on three areas: (i) the trends in NED share-option compensation in South Africa; (ii) the impact of share-option compensation for NEDs on CEO incentives and on earnings management; and (iii) how institutional/blockholder ownership affects the relationship between share-option compensation and monitoring of CEO compensation and the quality of financial reporting.

## 4.1 Trends in the use of share option compensation for NEDs in US and South Africa

Most studies that have investigated trends in the use of equity-based compensation have combined share grants and share options; they did not conduct a subsample analysis of each. In the US, where most corporate governance research has been focused, academic researchers have observed an upward trajectory in the use of equity to compensate NEDs. A study of S&P 500 firms over the 14-year period from 1997 to 2010 by Lahlou and Navatte (2017) reported a 642% growth in equity-based compensation for NEDs, compared to a 198% growth in total compensation. A similar trend from a sample of S&P 500 firms was observed by Mkrtchyan (2012) over the period from 1992 to 2010; the author reported a median equity compensation increase of more than eight million percent, while total compensation increased by only 277% over the same period. Farrell, Friesen and Hersch (2008) analysed a sample of 237 Fortune 500 firms over the period from 1998 to 2004, and documented a trend towards fixed-value equity-based compensation and a move away from cash-only compensation. This upward trajectory was partly driven by professional and influential bodies which encouraged and supported the use of such compensation; examples include the National Association of Corporate Directors (NACD), Blue Ribbon Commission Report on Director Compensation, and the California Public Employees Retirement System (CalPERS).

In South Africa, no study has documented the trends in either equity-based compensation for NEDs as a whole or share-option compensation as a subset. However, the requirements of the King III code are likely to cause a downward and opposite trend compared to what has been observed in the US. The King III report, introduced in 2010, disallows the chairman and other NEDs from receiving share-option compensation. This requirement of King III follows similar moves in countries such as Australia, the United Kingdom and Malaysia, which recommended remunerating NEDs based on their time and effort, and not through compensation whose value

is derived from the performance of the firm (Chen, Ho and Zhu, 2013). Despite the focus on share-option compensation for NEDs in the King III code, no empirical research has examined how it has trended over the years. The King III code was introduced in 2010 to supersede the King II code, which had been in existence since 2002. The King III requirement to disallow the use of share-option compensation for NEDs represented a shift from the King II regime, which did allow the remuneration of NEDs using such forms of compensation. Given that King II allowed the use of share options to remunerate NEDs, the researcher expected to observe a significant upward trajectory in their use during the pre-King III period. The researcher believes it is the explosion in their use which attracted the attention of the King Committee. In the post-King III period, the researcher expects to observe a significant declining trend in their use, as companies comply with the King III requirements. Taking both pre- and post-King III periods into account, the researcher would expect to observe an overall decline in the use of share-option compensation for NEDs over the full sample period. Hence, the researcher makes the following hypothesis:

*H1a: Share-option compensation for NEDs will show an increasing trend during the pre-King III period.*
*H1b: Share option compensation for NEDs will show a decreasing trend over the full sample period (2002-2016).*

## 4.2 NEDs equity compensation and CEO compensation

### 4.2.1 Role of NEDs in designing CEO compensation

Among other monitoring responsibilities, the board of directors is responsible for setting executive compensation (Mangel & Singh, 1993). Within a board, this responsibility is reserved for and best performed by NEDs. They are expected to be independent of the firm and its management (Platt & Platt, 2012). This characteristic of independence places them in a better position to be objective, to resist the influence of the CEO during the executive pay-setting process (Fama, 1980), to objectively evaluate the performance and the quality of the CEO, and to design appropriate compensation (Chhaochharia & Grinstein, 2009). Executive directors are viewed as not best suited to undertake this responsibility because they are not independent of the CEO. Their current employment is with the company, and their future careers in the company are dependent on the CEO, given that s/he will be their superior. Hence, their decision is more likely to be influenced by the CEO (Mizruchi, 1983)

The impact of the board in designing executive compensation has been questioned by several scholars. Anderson and Bizjak (2003), Wan (2003) and Guthrie, Sokolowsky and Wan (2012) have shown that the board has no influence in setting CEO pay. This evidence is consistent with the

managerial power hypothesis, which posits that executives have the power to influence their own pay (in collusion with a complicit board), and can extract rents through inefficient and excessive pay structures (Bebchuk, Fried & Walker, 2002). According to Bebchuk, Fried and Walker (2002), inefficient pay structures are characterised by: granting of share options that are not linked to individual performance of executives; granting at-the-money share options, and allowing executives the freedom to determine the timing for exercising share options; weak pay incentives; and CEO pay that is not linked to the performance of the firm. Empirical evidence drawn from several settings supports the managerial power hypothesis. For example: the backdating or opportunistic timing of share options, or managing the release of information around share-option awards (Yermack, 1997; Aboody & Kasznik, 2000); excessive separation packages for CEOs (Yermack, 2006); and CEOs being paid for luck, rather than skill (Bertrand & Mullainathan, 2001). The managerial power hypothesis reflects an environment of weak corporate governance structures and ineffective monitoring, which is consistent with the occurrence of secondary agency problems. The consequence of the managerial power hypothesis is value destruction for shareholders.

In contrast, Jensen (1993) and Fama (1980) note the positive role that the board mechanism plays in affecting executive compensation decisions. Under the optimal contracting theory, the board plays a role in setting executive compensation design; and they design such compensation with the objective of mitigating agency problems and maximising shareholder value (Dorff, 2004; Core and Guay, 1999). To achieve that, the board designs CEO pay to minimise costs, to align the interests of executives with those of shareholders, and to retain talented CEOs (Tang, 2014). Chhaochharia and Grinstein (2009)[16] found the change in board structure to be associated with a change in CEO compensation, which proves that it is the board, not the CEO, who is involved in setting CEO compensation. Further empirical evidence in support of the optimal contracting theory showed higher compensation for highly skilled and performing CEOs (Graham, Li & Qiu, 2012), and positive stock market reaction to the announcement plans that link CEO pay to performance (Morgan & Poulsen, 2001).

This section 4.2.1 unpacked the two views on the design of CEO compensation: the optimal contracting theory, which acknowledges the role played by the board in the design of executive compensation, and the managerial power hypothesis, which undermines the role of the board. Empirical evidence exists to support both views. The question of which theory prevails in South

[16] Guthrie, Sokolowsky and Wan (2012) re-examined and criticised this finding, arguing that the result was driven by a few outliers. When they replicated the study without the outliers, they produced a different result.

Africa is also not settled. Bussin (2015) show that both theories prevail in South Africa, but under different conditions. The optimal contracting theory prevails during periods of good economic performance, while the managerial hypothesis comes to the fore during periods of poor economic performance. Bussin and Modau (2015) find evidence to support the managerial power hypothesis. They reported a weakening relationship between executive compensation and performance, and a shift away from performance-aligned contacts for CEOs.

### 4.2.2 Optimal CEO compensation

An effective board should design efficient or optimal compensation for executives. There are different arguments regarding the specifications of optimal or efficient executive compensation. Guay, Core and Larcker (2002) do not believe there is a standard measure for optimal CEO compensation. They argue that the specifications of an efficient contract vary across time, firms and industries; hence there is no consensus on a standard measure for an optimal or efficient contract that fits all companies, all of the time. A contract that is designed to maximise shareholder value in a particular situation is not necessarily a perfect contract all the time. Frydman and Jenter (2010) concur with this view, arguing that it is difficult to observe optimal contracts that mitigate agency problems.

Despite the lack of a standard measure for optimal compensation contracts, there is a widely shared view that CEO compensation should be tied to the performance of the company. This can be achieved by (i) offering total pay that is linked to the performance of the company; and/or (ii) offering shares and share options that are sensitive to the performance of the company, i.e. equity incentives (Guay, Core & Larcker, 2002). In addition to being connected to performance, executive pay under an optimal contract should be less costly and should retain effective CEOs (Tang, 2014). Jensen and Murphy (1990) concur with this view, arguing that high pay-performance sensitivity for CEOs is an important incentive for mitigating primary agency problems, motivating executives to act in the best interests of the shareholders, and increasing the share price. Several studies (e.g. Jensen & Murphy, 1990; Core, John & Guay, 1999; Conyon & Murphy, 2000; Guay, Core & Larcker, 2002; Core, Guay & Thomas, 2004; Conyon & He, 2011) support the use of equity incentives; they view them as another way of measuring the link between pay and performance for CEOs, because they align the interests of CEOs with those of the shareholders. All these views on optimal CEO contracts are consistent with the optimal contracting theory, which posits that executive compensation is designed with the objective of maximising shareholder value while mitigating agency problems (Dorff, 2004; Core & Guay, 1999). Murphy (2012) attributed the increase in equity-based compensation and pay-performance sensitivities in the US to the optimal

contracting theory, arguing that compensation contracts were suboptimal before the 1990s, but got better with time afterwards.

Even though there is no standard measure for optimal executive compensation, there is a widely-shared view that CEO compensation should be tied to the performance of the company. Such a contract motivates the executives to act in the best interests of the shareholders, and increase the share price. Therefore, the possible proxies for optimal compensation are the sensitivity of total pay to performance, CEO equity incentives and their sensitivity to the share price. It should be noted, however, that the use of equity compensation for executives results in other negative consequences; for example, too much of it can result in excessive compensation if it is not tied to company performance. It also increases the incentive to manipulate earnings (Laux & Laux, 2009; Armstrong et al., 2013). Studies that support the incentive-alignment hypothesis[17] view equity incentives for NEDs and CEOs as substitutes (Perry, 2000; Bryan, Hwang & Lilien, 2000; Brick, Palmon & Wald, 2006). Considering these countervailing effects, investigating the impact of share-option compensation for NEDs on CEO equity incentives does not lead to a satisfactory conclusion on whether share option compensation for NEDs mitigates or exacerbates secondary agency problems. A decrease or increase in equity compensation for CEOs can be an indication of either poor monitoring or effective monitoring by NEDs. Therefore, equity incentives are not a good proxy for measuring the effect of share-option compensation for NEDs on secondary agency problems.

### 4.2.3 Secondary agency problems during executive compensation design

Secondary agency theorists have posited that NEDs may not have enough motivation to carry out their duties, and may be ineffective. In addition, they may engage in collusive behaviour with management, to take actions that are unjustifiably beneficial to them but detrimental to shareholders (Lin & Lin, 2014; Xie, 2013; Brick, Palmon & Wald, 2006; Cordeiro, Veliyath & Neubaum, 2005). Three arguments drawn from prior studies explain why the board may be ineffective in designing appropriate structures for and levels of executive compensation: (i) When setting executive compensation, the board usually relies on consultants, who may be pressured to design contracts biased in favour of the CEO in order to enhance their chances of securing business deals from the CEO (Crystal, 1991). However, this remains unsettled, as Murphy and Sandino (2010) found that consultants appointed by boards recommend higher CEO compensation, while consultants appointed by management recommend low CEO compensation. (ii) According to the managerial power hypothesis, CEOs may have influential power over the board, which they can wield to extract rents through inefficient compensation

[17] The incentive-alignment hypothesis is discussed in section 3.2.3

structures. (iii) NEDs may lack sufficient time and motivation, especially if they hold other directorships (Deutsch & Valente, 2013). (iv) NEDs may not have a sufficient stake in the firm to motivate them to perform their duties effectively (Jensen, 1993). Therefore, the collusive behaviour, the lack of motivation and the ineffectiveness of the NEDs may be reflected in the inefficient pay structure for CEOs. Based on the optimal contracting theory, inefficient pay structures are characterised by a lack of enough incentives to motivate management to act in the best interests of shareholders and low pay-performance sensitivity for executives.

Given the existence of secondary agency problems, equity-based compensation has been proposed as a way of incentivising NEDs to act in the best interests of shareholders, including during the design of executive compensation. However, as discussed in Sections 3.23 and 3.2.4 of Chapter Three, the effectiveness of equity-based compensation is not settled; this is reflected by the different recommendations of corporate governance codes from different countries – the SOX (US), King III (South Africa) and Cadbury report (UK).

### 4.2.4 The impact of NEDs equity-based compensation on executive compensation design

Sections 3.2.3 and 3.2.4 of Chapter Three present two opposing views (the incentive alignment hypothesis and the rent-extraction view) on the effectiveness of equity-based compensation in mitigating secondary problems. The incentive-alignment hypothesis (discussed in Section 3.2.3) views share-option compensation as an effective mechanism for aligning the interests of NEDs with those of shareholders, thereby mitigating secondary agency problems (see Ahmed & Duellman, 2007; Fich & Shivdasani, 2005; Perry, 2000; Bhagat, Carey & Elson, 1999). This argument predicts optimal compensation for CEOs when NEDs are remunerated using share options. On the flip side (discussed in Section 3.2.4), the rent-extraction hypothesis views share options as a mechanism that may compromise the independence and objectivity of NEDs, which limits their effectiveness in designing efficient compensation for CEOs (see Sengupta & Zhang, 2015; Bebchuk, Grinstein & Peyer, 2010; Cullinan, Du & Wright, 2008; Byard & Li, 2004). According to this hypothesis, share options create a convergence of common interests between two agents with an information advantage over shareholders; this creates a conducive environment for them to collude in expropriating wealth from shareholders (Archambeault, Dezoort & Hermanson, 2008; Chen, Ho & Zhu, 2013). This results in inefficient CEO pay structures. Thus, this argument predicts a negative relationship between NEDs' equity-based compensation and efficient compensation for CEOs.

Empirical evidence shows how executive compensation (or some components of it) is influenced by the structure and level of compensation for NEDs. Brick, Palmon and Wald (2006) find evidence

of collusion between NEDs and executives when NEDs were paid excessive compensation (compensation not related to the determinants). They report a significant positive relationship between excessive compensation for executives and excessive compensation for NEDs. This excessive compensation was found to be negatively related to firm performance. Bebchuk, Grinstein and Peyer (2010) found a high likelihood of directors receiving "lucky" share-option grants whenever executives receive "lucky" share option grants[18]. Byard and Li (2004) showed that when directors receive a greater proportion of their compensation in share options, the timing of executive stock options appears to be more beneficial for the executives. These results were supported by Minnick and Zhao (2009), who studied past backdating scandals and concluded that directors with higher incentive pay, in the form of share options, are more amenable to backdating, since they benefit from it. This evidence reflects an environment of collusion between the two agents, and ineffective monitoring by NEDs[19].

### 4.2.5 Conclusion and hypothesis on the impact of NEDs equity-based compensation on executive compensation design

The managerial power hypothesis questions the relevance and effectiveness of the board in compensation design process. Contradictory arguments and empirical evidence on the role played by the board are a clear indication that this is an unsettled matter which requires further investigation. Prior literature on the effect of share-option compensation for NEDs on the design of executive compensation is scarce. A large body of literature that examined board structure and CEO pay focused largely on other board features (such as board size and board independence), and on the levels of CEO pay. The few studies (e.g. Byard & Li, 2004; Brick, Palmon & Wald, 2006; Minnick & Zhao, 2009; Bebchuk, Grinstein & Peyer, 2010) that focused on equity-based compensation for the board showed that it weakens monitoring and exacerbates secondary agency problems. It should be noted that none of the studies examined the impact on CEO pay structure and pay for performance sensitivity.

The profiles of the two forms of equity-based compensation (share grants and share options) induce different levels of risk aversion to NEDs. They also have a different effect on the independence and objectivity of NEDs. From a theoretical point of view, the effect of share options is more ambiguous; they induce relatively high risk, and can drive holders to focus on the short-term share-price movement. The controversy surrounding share options possibly

[18] Lucky grants are options that are strategically issued to benefit the recipients, and these are issued when the share price is lower than usual (Bebchuk, Grinstein and Peyer, 2010).
[19] After a thorough search on Google Scholar (last search on 31 May 2019), the studies discussed in this paragraph are the only ones that were found to be closely related to the topic of impact of share-option compensation for NEDs on CEO compensation.

explains why the King Committee targeted them specifically in King III (2010). Out of the three forms of compensation, King III recommended firms to stop the payment of share options to NEDs. That change in requirements brings an exogenous shock that mitigates endogeneity problems, which is why this study focuses on share-option compensation.

In designing the hypothesis to investigate the effectiveness of share-option compensation in mitigating secondary problems, this study considers conflicting theoretical arguments and existing empirical evidence. Despite the conflicting theoretical arguments on the impact of equity-based compensation on various aspects of monitoring, empirical evidence on their effect on CEO incentives (e.g. Byard & Li, 2004; Brick, Palmon & Wald, 2006; Minnick & Zhao, 2009; Bebchuk, Grinstein & Peyer, 2010) supports the rent-extraction view (i.e. that equity-based compensation weakens monitoring of CEO incentives). The results from prior studies show that the use of share options for NEDs exacerbates secondary agency problems (low CEO pay–performance sensitivity). Therefore, the stopping or removal of share-option compensation by King III is expected to result in a significant improvement in the monitoring of CEO compensation. If share options for NEDs exacerbate secondary agency problems, then their removal removes a barrier to effective monitoring. Therefore, the study makes the following hypothesis:

*H2a: The removal of share option compensation for NEDs in the post-King III period will significantly increase the sensitivity of total CEO pay to share price performance.*
*H2b: The removal of share option compensation for NEDs in the post-King III period will significantly increase the sensitivity of total CEO pay to financial performance.*

## 4.3 The impact of equity-based compensation for NEDs on the quality of financial reporting.

### 4.3.1 Financial misreporting (a measure of the quality of financial reporting)

Indicators of misreporting include earnings management measured using discretionary accruals and real-activities manipulation (also referred as real-activities-based earnings management, or real earnings transaction management, or discretionary expenditure); restatement of financial statements; and qualified opinions of the company's financials. The incidence of earnings management has been found to be more frequent and widespread relative to the occurrence of the other indicators of financial reporting quality (Rickling, 2011). Earnings management involves the manipulation of accounting earnings. The overall effect is to misrepresent underlying economic performance, obscure poor performance (Healy & Wahlen, 1999), and smooth out earnings that could have been volatile. Through earnings manipulation, executives can influence decisions that are tied to accounting earnings, such as their compensation, and avoid violating

debt covenants (Leuz, Nanda & Wysocki, 2003; Fudenberg & Tirole, 1995). Through earnings management, executives can mask the true volatility of a company's earnings, and present an otherwise unstable company as a stable one (Fudenberg & Tirole, 1995).

Armstrong et al. (2013) presented two circumstances which provide greater incentives for executives to misreport earnings: first, when there is high sensitivity of a manager's wealth to changes in share price and changes in firm risk. This is more prevalent when executives hold shares and/or share options. The share price increase or decrease will result in a corresponding increase or decrease in the value of the manager's portfolio. Second, when the executive's compensation is tied to the financial or share-price performance of the company. Armstrong et al. (2013) also found evidence in support of this view; they reported a positive relationship between equity incentives for executives and earnings manipulation.

#### 4.3.1.1 Earnings management

There are two ways in which executives can manipulate earnings; discretionary accruals management and real-activities manipulation. Accruals management involves the use of various accounting options to manipulate earnings. Managing accruals affects neither the underlying operations of the business nor the cash flows of the firm. On the other hand, real-activities manipulation involves masking accounting profit by manipulating the timing of a transaction, operation or investment. Unlike accruals management, real-activities manipulation affects both the firm's underlying operations and its cash flows. Examples of real-activities manipulation transactions include delaying payment or eliminating expenses such as hiring, research and development (R&D), advertising, travel, maintenance and capital expenditure; selling bonds to book gains; and cutting prices during certain periods (Graham, Harvey & Rajgopal, 2005).

Most prior studies have used discretionary accruals as a proxy for earnings management. However, recent research shows the increased use of real-activities manipulation, compared to the use of discretionary accruals. In addition, executives view the two as substitutes. In a survey of top executives, Graham, Harvey and Rajgopal (2005) reported high usage of real-activities manipulation as an earnings management tool, followed by discretionary accrual management; 80% of the executives surveyed confirmed the use of real-activities manipulation, while 40% reported using discretionary accruals. Gunny (2010) and Graham, Harvey and Rajgopal (2005) presented two reasons to explain why management prefer using real-activities manipulation over discretionary accruals. Accruals depend on the nature of the business operations; and it may not be possible to use accruals over successive years, given that at some point, they must be reversed. Operating decisions, where real-activities manipulation take place, are controlled by the manager,

whereas accounting choices require external auditor approval. Zang (2008) found real-activities manipulation and discretionary accruals to be negatively related; this is an indication that executives view them as substitutes. This finding is consistent with Cohen and Zarowin (2010), who showed that firms switch from accruals to real-activities manipulation to massage company earnings. Scholars have started to show increased appreciation for both techniques, by combining them in their analyses (Cohen & Zarowin, 2010; Badertscher, 2011; Chan et al., 2014).

### 4.3.2 The role of the board of directors in financial reporting

One of the key functions of the board of directors is to oversee the process of financial reporting, including both the internal and external auditing(Boumosleh, 2009). The board has a fiduciary duty to serve the interests of shareholders by monitoring management's reporting of the firm's financial results (Cullinan, Du & Wright, 2008). The board oversees financial reporting, but this function is normally delegated to the audit committee. The board verifies and approves the financial results produced by management. Therefore, it is incumbent upon them to ensure that the financial results are credible and of high quality (Sengupta & Zhang, 2015). A rigorous analysis of financial statements should allow board members to detect incidents of accrual management.

As far as the role of the board in mitigating real-activities manipulation is concerned, Osma (2008) provided a detailed description of their role in detecting and mitigating such manipulation. The author argues that the board should be able to detect and mitigate it through the annual budget review process. It is the role of the board to review the business plan for the next financial year, and to agree on a formal budget with management. The budget includes items such as research and development (R&D) spending, which is one item that can be manipulated. A rigorous analysis of budget statements, including variances in items such as capital expenditure and research and development, allows board members to detect and question management on decisions to cut such expenditure (Osma, 2008).

### 4.3.3 The effectiveness of the board in mitigating earnings management

The board's ability to monitor, detect and question incidences of earnings management depends on three conditions: (i) whether they have sufficient motivation and incentive to do so; (ii) whether they are truly independent of management; and (iii) whether they have sufficient expertise to understand the motives and implications of management actions on earnings (Beekes, Pope & Young, 2004). Beasley (1996), Dechow, Sloan and Sweeney (1996) and Peasnell, Pope and Young (2005) reported evidence showing the effectiveness of NEDs in preventing the manipulation of earnings; this evidence was based on discretionary accruals. Osma (2008) reported similar findings using real-activities manipulation transactions.

On the other hand, proponents of secondary agency theory present a different view, arguing that NEDs may not exercise enough vigilance in monitoring the financial reporting process. NEDs may not have enough time to devote to monitoring activities, especially if they hold other time-consuming jobs elsewhere and other directorship positions (Deutsch & Valente, 2013). In addition, they may lack the motivation and incentive to protect the interests of shareholders. NEDs may also neglect their fiduciary duty, and engage in collusive behaviour with management to take actions that are unjustifiably beneficial to them, but detrimental to shareholders (Cordeiro, Veliyath & Neubaum, 2005). Williamson (1988) echoed this view, pointing out that NEDs have greater incentives to go along with management. Reasons for this include mutual "backscratching" (Crutchley & Minnick, 2012).

### 4.3.4 The impact of equity-based compensation for NEDs on earnings management.

Sections 3.2.3 and 3.2.4 of Chapter Three above present two arguments (the incentive alignment and rent-extraction views) on the effectiveness of equity-based compensation in mitigating secondary problems. The incentive alignment hypothesis views share-option compensation as an incentive that improves monitoring of the financial reporting process by NEDs to produce credible financial statements. It predicts a negative relationship between share-option compensation and the level of earnings management.

On the flip side, the rent-extraction hypothesis views share options as a mechanism that compromises the independence and objectivity of NEDs, limiting their effectiveness in monitoring financial reporting (see Byard & Li, 2004; Cullinan, Du & Wright, 2008; Bebchuk, Grinstein & Peyer, 2010; Sengupta & Zhang, 2015). With a share-option portfolio, NEDs may end up colluding with management to manage earnings, to stoke up the share price and give them a conducive environment for exercising their share options profitably. As detailed in Section 3.2.4 above, this arises from the view that share options create a convergence of interests between NEDs and management, rather than between NEDs and shareholders (Chen, Ho & Zhu, 2013; Cullinan, Du & Wright, 2008). A good example given by Sengupta and Zhang (2015) is when NEDs allow or fail to discourage managers from withholding certain information, or from giving a false picture of the true financial status of the company with the intention of avoiding a share-price reaction that may be detrimental to their equity portfolios, or with the intention of triggering a share-price reaction that increases shareholder wealth.

Ronen, Tzur and Yaari (2006) and Boumosleh (2009) find a positive relationship between equity-based compensation and discretionary accruals. Both studies were based on a sample of US companies. The study by Boumosleh (2009) was based on a sample of 4 489 companies over the

period 1994 to 1998. They measured equity-based compensation using two methods: share options as a proportion of total compensation, and the change in the value of shares and share options over a four-year period. The study by Ronen, Tzur and Yaari (2006) examined the combination of share grants and share options, while their measure for earnings management was discretionary accruals. The results of these two studies show that equity-based compensation impairs the effectiveness of NEDs in monitoring management. NB: this section discusses only the studies that examined discretionary accruals and real-activities manipulation, which are the focus of this thesis. More details about studies that examined the affects of equity-based compensation on other aspects of financial reporting quality are detailed in Sections 3.2.3 and 3.2.4. None of the studies examined share options separately; they combined share grants and share options. In addition, none of the studies examined real-activities manipulation).

### 4.3.5 Conclusion and hypothesis on the impact of equity-based compensation on earnings management.

Very few studies have investigated the impact of equity-based compensation for NEDs on the two proxies of earnings management. The study by Boumosleh (2009) and Ronen, Tzur and Yaari (2006) are exceptions. However, these studies were limited to the use of accruals as a proxy of earnings management. This is despite empirical evidence showing that real transactions are the most preferred, and that the two are substitutes for each other. In addition, the sample of the studies was restricted to US companies, and the sample period ended in 1998. Besides the need to update this area of research for a more recent period, there is also a need to focus on South Africa. As discussed in Chapter Two, South Africa's institutional settings differ from those of the US.

Despite the conflicting theoretical arguments on the impact of equity-based compensation on various aspects of monitoring, empirical evidence regarding earnings management – specifically on discretionary accruals (see Boumosleh, 2009; Ronen, Tzur & Yaari, 2006) – supports the rent-extraction view (that is, equity-based compensation weakens monitoring of earnings management). Therefore, the stopping of share-option compensation by King III is expected to significantly improve monitoring of financial reporting, which reduces earnings management. Therefore, the study makes the following hypothesis:

*H3a: The removal of share-option compensation for NEDs in the post-King III period will result in a significant decrease in the amount of discretionary accruals.*

*H3b: The removal of share-option compensation for NEDs in the post-King III period will result in a significant decrease in real-activities manipulation.*

### 4.4 How institutional ownership and blockholder ownership affect the impact of option of option-based compensation on monitoring earnings management and CEO compensation

Sections 3.3 and 3.4 provided a discussion of the impact of institutional ownership and blockholder ownership, respectively, on monitoring. Theoretical arguments and empirical evidence regarding their impact on monitoring are contradictory; the same applies to share-option compensation for NEDs. Assuming these three corporate governance mechanisms (share option compensation for NEDs, institutional ownership and blockholder ownership) are effective, then they can be substitutes for each other or complement each other. This view is consistent with the substitution-monitoring hypothesis, which argues that two corporate governance mechanisms can either complement each other or they can be used as substitutes (Mishra & Nielsen, 2000). Blockholders and institutional ownership are external corporate governance mechanisms, while share-option compensation is an internal mechanism. Based on the substitution-monitoring hypothesis, if share-option compensation is an effective corporate governance mechanism, then it can be a substitute or complement to blockholder/institutional ownership. Consistent with the substitution-monitoring hypothesis, Edmans and Holderness (2017) called for researchers to investigate how blockholder ownership interacts with other corporate governance mechanisms (such as board characteristics) in the monitoring process.

The few studies that have investigated the interaction effects of institutional/blockholder ownership and other corporate governance mechanisms find support for both the complementary and the substitution effect. Hartzell and Starks (2003) and Almazan, Hartzell and Starks (2005) show that institutional ownership complements CEO pay incentives in mitigating agency problems. Hartzell and Starks (2003) find a positive relationship between CEO pay-for-performance sensitivity and concentration of institutional ownership, which they interpreted as evidence of a complementary relationship between the two mechanisms. However, they reported certain cases where companies employed one of the mechanisms as a way of cutting down the huge costs associated with having both mechanisms at the same time. For example, they found that larger firms with lower risk and lower performance rely more on institutional monitoring than incentive compensation. A subsequent study by Almazan, Hartzell and Starks (2005) confirmed the complementary relationship between the two mechanisms. Adithipyangkul and Leung (2017) find evidence in support of the substitution effect. They investigated the impact of blockholder ownership on the relationship between incentive pay for NEDs, and firm performance. The incentive pay included long-term incentive plans, share grants and share options. They reported a negative relationship, which shows better performance for companies that pay incentives to NEDs, but with low blockholder ownership.

In summary, prior studies that investigated the interaction effect of blockholder/institutional ownership on other corporate governance mechanisms presented conflicting results. Hartzell and Starks (2003) and Almazan, Hartzell and Starks (2005) find evidence of a complementary effect, while Adithipyangkul and Leung (2017) find evidence in support of the substitution effect. The conflicting evidence on whether institutional ownership and blockholder ownership are substitutes for or complements to other corporate governance mechanisms is consistent with conflicting theoretical arguments and empirical evidence on their impact on monitoring (discussed in Sections 3.3 and 3.4 above). This implies that the moderating effect of these two external mechanisms on share-option compensation could go in any direction. The study by Adithipyangkul and Leung (2017), which find evidence in favour of the substitution effect, is closer to the research questions of this thesis, since it investigated incentives compensation for NEDs. Hence, it will inform the direction of the hypothesis of this study. The hypothesis for the interaction of share-option compensation for NEDs and institutional/blockholder ownership will be based on the substitution effect[20]. Given that King III sought to stop the use of share-option compensation for NEDs, the substitution effect will be confirmed if monitoring of earnings management and CEO compensation significantly improves after the removal of share-option compensation for NEDs for companies owned by institutional/blockholders. Based on empirical results from Adithipyangkul and Leung (2017), the study makes the following hypothesis.

*Hypothesis 4a: Institutional ownership substitutes the effect of share-option compensation for NEDs on CEO pay-performance sensitivity.*

*Hypothesis 4b: Institutional ownership substitutes the effect of share-option compensation for NEDs on discretionary accruals.*

*Hypothesis 4c: Institutional ownership substitutes the effect of share-option compensation for NEDs on real-activities manipulation.*

*Hypothesis 5a: Blockholder ownership substitutes the effect of share-option compensation for NEDs on pay-performance sensitivity.*

*Hypothesis 5b: Blockholder ownership substitutes the effect of share-option compensation for NEDs on discretionary accruals.*

*Hypothesis 5c: Blockholder ownership substitutes the effect of share-option compensation for NEDs on real-activities manipulation.*

[20] It should be noted that the context of this study means the substitution effect (not the complementary effect) can be confirmed or not confirmed, as after the implementation of King III, share-option compensation would have been stopped; hence it is not possible to have both mechanisms at the same time.

# 5. CHAPTER FIVE: RESEARCH DESIGN AND METHODS

## 5.0 Introduction

This thesis investigates how share option compensation for NEDs affects monitoring of CEO compensation and earnings management. In addition, it investigates whether institutional and blockholder ownership are a substitute monitoring mechanism for share option compensation for NEDs. Chapter Four discussed the conceptual framework for the research questions, and developed the Hypotheses to be tested. This chapter provides a description of and justification for the sample selection process, the data and variables used, and the empirical models applied to test the hypotheses. In addition, it discusses the descriptive statistics, the correlation of independent variables and the parallel trends assumptions which must be satisfied for the difference-in-difference regression. The chapter is divided into three sections: the first describes the sample selection process and the data used, the second discusses the empirical models used, and the last section presents and discusses the descriptive statistics, correlations matrix and the parallel trends assumption.

## 5.1 Overview of the sample population and sample period.

### 5.1.1 Sample period

The sample period is from 2002 to 2016. The year 2002 coincides with the implementation of the King II Corporate Governance Code, or 'King II'. King II is of special interest, because it allowed companies to use share options as a form of compensation for NEDs. It was superseded by the King III code, which was introduced in 2010. Unlike King II, which allowed the use of share options compensation for NEDs, King III sought to stop the use of such compensation methods. This means that companies could issue share option compensation to NEDs from 2002 up until the implementation of King III[21]. However, after the King III implementation, companies had to comply (or explain why they could not) with King III requirements by stopping the use of share options as a form of compensation for NEDs. The sample period ends in 2016, to avoid overlap with the King IV Corporate Governance Code ('King IV'). King IV succeeded King III on 1 April 2017; therefore 2016 was the last full year in which King III was in effect. Thus, the sample period ends in 2016, to avoid contaminating the data with the effects of the King IV guidelines.

[21] Details of the implementation date for the King III code are discussed in the next paragraph

#### 5.1.1.1 The cut-off year for the pre- and post-King III period

King III sought to stop the payment of share option compensation to NEDs. This requirement was a significant shift from its predecessor code, King II, which allowed NEDs to receive this type of compensation. The requirement to stop the use of share option compensation is an exogenous shock which presents a natural experiment[22] to test the effect of share option compensation while controlling for the endogeneity problem. This setting makes it possible to observe how the dependent variable changes before and after the removal of share option compensation, thus before and after the treatment effect. To be able to observe this, the cut-off date or year for the pre- and post-treatment period should be determined. The cut-off year is the effective year of the removal of share option compensation for NEDs, or the effective year of implementation of King III or some sections of it. It is the cut-off year that allows the researcher to examine how the dependent variable is affected by the removal of share option compensation. There are three possible options for determining the cut-off date.

The first option is to use the year 2010 as the cut-off point. This means the pre-King III period (pre-treatment) is from 2002 to 2009, the post-King III period is from 2011 to 2016 (post-treatment), and 2010 will be the year of adjustment (the year of implementation). This cut-off period is based on the official implementation date of the King III code, which was 1 March 2010 (King Committee on Corporate Governance, 2009).

The second option is to use 2012 as the cut-off year. Based on this cut-off year, the pre-King period is from 2002 to 2012, while the post-King III period is from 2013 to 2016. The determination of this cut-off point is based on the following: first, it provides a more reasonable adjustment period, allowing firms to stop issuing options and to clear any outstanding balances of unexercised options. Second, the JSE – which enforces the King code requirements, through its listing requirements – extended the implementation of that specific provision (on share option compensation) to 1 April 2011 (GoldFields, 2010). This makes 2012 the first full year in which all companies intending to comply would have cleared their share option balances. The year 2011 cannot be used, because by 1 April 2011, some companies would already have published their 2011 annual reports, in February and March. Hence, the decision to use 2012 as the cut-off year. From the sample analysis, it appears some companies responded to King III immediately, by not issuing new share options to NEDs; but they still had balances of unexercised and outstanding

[22] Further details on the natural experiment are presented from Section 5.2.3.1.3 to Section 5.2.3.1.4

share options issued in previous years. Such companies allowed their NEDs time to exercise their share options, or for the share options to expire.

The third option is a slight variation to both the first and the second options. In this option, the years of adjustment (2010-2012) are removed from the analysis. The idea is to provide a longer adjustment window period to account for the noise and uncertainty that prevailed during the first three-year period of changing from King II to King III. This option follows the work of prior studies that investigated similar settings and left a three-year adjustment gap. For example, Chen, Cheng and Wang (2015) investigated a setting in which the criteria for board independence changed. They included an adjustment window period of three years, from 2002 to 2004. Applying that formula to this study will be equivalent to removing the period from 2010-2012 from the analysis, and using it as a period of adjustment.

This study will consider the second and third options. Tests were run using both options, to see if the results were sensitive to the different cut-off periods. The first option will not be considered, because it is based on the King III implementation date of 1 March 2010, which was overridden by the extension granted by the JSE (discussed with the second option of determining the cut-off, above).

### 5.1.2 Sample population

The sample population includes all non-financial companies listed on the Johannesburg Stock Exchange (JSE). The initial sample had 258 companies; this number was based on the list of companies available on the Iress database during the pre-King III period. The sample includes companies from different industries (except the financial sector), to reduce the problem of potential industry bias (Deutsch, Keil & Laamanen, 2011). However, financial sector companies (financial institutions and insurance companies) were excluded from the sample. The regulatory and governance structure of the financial sector is different from those of other, non-regulated industries. They are subjected to external monitoring and scrutiny from institutions such as the Reserve Bank of South Africa. The scrutiny of such regulatory bodies renders corporate governance mechanisms less important, and it has the potential to interfere with corporate governance variables, dependent variables, and the relationship between the two (Ryan Jr & Wiggins III, 2004; Fich & Shivdasani, 2005; Farrell, Friesen & Hersch, 2008).

From the non-financial companies, the researcher selected companies that paid share option compensation to NEDs over the sample period, and/or companies whose NEDs had balances of outstanding (unexercised, unexpired) share options over the sample period (a discussion on why

the study sample was based on companies that paid share options is presented in Section 5.1.4 below. Section 5.1.5 below is a discussion on why the study focused on all NEDs rather than members of the audit and remuneration committee). A total of 98 companies were identified as companies that paid or had balances of share options for NEDs. After removing financial companies, 80 companies remained in the sample. Since the study uses the difference-in-difference methodology, the researcher went on to identify companies that stopped issuing share options after the implementation of King III. This exercise left a final sample of 55 companies suitable for the difference-in-difference method (which is described in detail in subsection 5.2.3.1.5). These companies will be referred to as 'treatment companies'. To be included in the sample, a company had to have data from both the pre- and post-King III periods. Table 5.1 below summarises the number of companies at each stage of the sample construction process

**Table 5. 1: Summary of companies at each stage of the sample selection process**

| Detail | Number |
|---|---|
| Initial sample of companies | 258 |
| Companies that issued share options and had balances of share options for NEDs over the period 2002-2016 | 98 |
| Companies that issued share options and had balances of share options for NEDs over the period 2002-2016, excluding financial companies | 80 |
| Companies that stopped issuing share options by 2012, excluding financial companies (treatment companies) | 55 |

#### 5.1.2.1 The process of constructing the sample population

The most important part of the sample population construction process was to identify companies that remunerated NEDs with share options over the sample period. The first part of the process was to hand-collect data on compensation for NEDs from annual reports. Most of the annual reports were available on company websites; for the few that were not available, the researcher requested hard copies from the companies. In addition, some of the unavailable annual reports were sourced from a colleague in the Department of Finance and Tax at the University of Cape Town. The colleague had a collection of annual reports dating from 1999. The researcher perused the annual reports for all companies listed over the sample period. The objective (as indicated earlier) was to identify companies that paid share option compensation to NEDs or companies whose NEDs had outstanding balances of unexercised share options. For each company, the researcher perused all the annual reports from 2002 to 2016. The researcher recorded the name of each NED, the amount of cash compensation paid, details of share incentives granted, and details of the share options, including number of share options allocated per year, number of share options outstanding, exercise price, and time to maturity of the share options. If the

exercise price was not given, the researcher used the share price on the date of issue of the share options. This is a reasonable assumption, as in general the exercise price is based on the share price at issue. If both the exercise price and issue date of the share options were unavailable, the exercise price was calculated as the average share price between the share price at beginning and the end of the year, following the work of Guay (1999). For the outstanding options, weighted time to maturity and weighted exercise price were also calculated. In some instances, the annual reports did not provide sufficient data to calculate the weighted time to maturity and exercise price for outstanding share options issued in previous years. To solve this problem the researcher implemented two methods. (i) Perusing annual reports before the sample period (for example going as far back as 1997, 1998, 2000 or 2001) to see when the options appeared for the first time. This made it possible to observe the time to maturity at issue and the exercise price. Normally, share option details are presented in the annual report of the year of issue them. (ii) Reading the remuneration policy to get an idea of company policy in terms of length of share options. With this and the date of issue, one can calculate the time left to maturity. The amount of information missing before 2009 affected several companies. From 2010 going forward, most if not all of the companies provided details of their share options.

#### 5.1.2.2 Verifying data accuracy

One of the challenges associated with hand-collected data is capturing errors. To minimise this, the researcher employed three research assistants[23] to collect the same data set in parallel (the sample population was divided between the three of them). This exercise created two samples: the researcher's sample, and the sample from the research assistants. The two samples were compared to one another, and any differences were investigated against the annual reports and adjusted accordingly.

### 5.1.3 Control firms

The difference-in-difference method requires a sample that includes both treatment and control companies. To identify the control companies, the researcher grouped the 55 companies in the final sample by industry, using the Bloomberg industry classification. Each company in the final sample was matched with a company from the same industry and of the same size based on the market capitalisation. 55 control companies were identified, which left 110 companies in the final sample.

[23] The names of the three research assistants are listed in the acknowledgements section.

### 5.1.4 Why focus on share option compensation only (rather than including share grants and cash)?

In South Africa, over the sample period, compensation for NEDs came in three forms; cash, share grants and share options. Section 3.2.2 (entitled "Overview of economic incentives for NEDs") shows that these three forms of compensation induce different levels of risk aversion to NEDs. They also have a different effect on the independence and objectivity of NEDs. From a theoretical point of view, the effect of share options is relatively more ambiguous, they induce relatively higher risk, they can drive the holders to focus on the short-term share price movement. The controversy surrounding share options explain why the King Committee specifically targeted them in the King III. Out of the three forms of compensation, the King III recommended companies to stop using them to remunerate NEDs. Therefore, this study focuses on share option compensation for NEDs for two reasons (i) as alluded to earlier, their effect on NEDs is more ambiguous (ii) the King III code recommended that companies stop issuing share options to NEDs. This stoppage provides a natural experiment that allows the study to address the endogeneity problem. A natural experiment is considered as a "gold standard" technique of addressing endogeneity problems (Wintoki, Linck & Netter, 2012). Research that does not address the endogeneity problem produces misleading results (Antonakis et al., 2014). None of the prior studies that investigated the impact of equity-based compensation applied the natural experiment to address the endogeneity (see Section 3.2.5 of the Literature Review).

### 5.1.5 Why focus on the impact of share option compensation for all NEDs rather than the audit committee and remuneration committee members only?

This study focuses on the impact of share option compensation for NEDs on monitoring of CEO compensation and earnings management. The focus is on all NEDs, even though the two functions – design of CEO compensation, and monitoring of earnings management– are handled by the remuneration committee and the audit committee respectively. Hence, it is ideal to focus on share option compensation for the audit committee when analysing earnings management, and on share option compensation for remuneration committee members when examining the impact on CEO compensation. This approach is in line with several studies (see Archambeault, DeZoort & Hermanson, 2008; Laux & Laux, 2009; Cullinan, Du & Jiang, 2010; Bierstaker et al., 2012; MacGregor, 2012; Campbell et al., 2014; Keune & Johnstone, 2015; Rickling & Sharma, 2017) that focused on a specific and relevant committee for the variable under research (for example the audit committee, when investigating a variable that falls under their control). Laux and Laux (2009) justified focusing on a relevant committee by quoting a director who stated that it is the

committees who do the work of the board. Despite these arguments, this study focuses on share option compensation for all NEDs (rather than members of the audit and remuneration committees only), for a number of reasons.

The first reason is that it was not possible to focus only on the members of the audit and remuneration committees. Prior to King III, between 2002 to 2009, the level of disclosure in annual reports was so limited that several companies did not identify the membership of the different committees served on by their NEDs. A few examples of such companies are Allied Electronics, Isa Holdings, Jubilee Platinum, and Labat Africa; none of these specified the members of their committees, in one or more years of the sample period. Isa Holdings did not have committees for the first few years of the sample period. Consistency in identifying the members of the various committees started only after 2010. Thus, focusing only on members of audit and remuneration committees would have depleted the final sample for this study to fewer than 20 companies. This was the main reason for not focusing on the audit and remuneration committees. The other three reasons (detailed below and summarised in the next three lines) are presented to show that (i) this is not the first study to commit this 'offence'; (ii) it is possible to produce similar results using both options; and (iii) committing the 'offence' is understandable because overall, it is a company's full board that approves key decisions.

The second reason is that overall, it is a company's full board or all NEDs – not just the audit or remuneration committee members – who oversee and approve the key decisions of the board. Even though the remuneration committee and the audit committee are responsible for CEO compensation and financial reporting respectively, these committees report to the full board, which supervises and approves all important decisions (Chen, Cheng & Wang, 2015).

The third reason is that there is precedent; several studies have used a similar approach (see Beasley, 1996; Brick, Palmon & Wald, 2006; Ronen, Tzur & Yaari, 2006; Cullinan, Du & Wright, 2008; Boumosleh, 2009; Bebchuk, Grinstein & Peyer, 2010; John, Mehran & Qian, 2010; Rose et al., 2013; Jeong & Kim, 2013; Ye, 2014; Chen, Cheng & Wang, 2015; Sengupta & Zhang, 2015; Kim et al., 2018). All focused on all NEDs, though investigating functions that fell under only the remuneration committee and/or the audit committee.

The fourth reason is that prior studies that examined both options (that is, focusing on specific committee members and on all NEDs) have reported similar findings. Jeong and Kim (2013) and Chen, Cheng and Wang (2015) studied all NEDs and then did another analysis focusing on members of the relevant committees. They reported similar findings on the two subsamples. This

confirms the view that even though the work is done by the committees, it is the full board that approves the important decisions.

### 5.1.6 Sources of data

Data on compensation for NEDs and CEOs was hand-collected from the annual reports. The same verification process described in Section 5.1.2.2 above was applied to ensure the accuracy of the data. The data includes shares options, share grants, share appreciation schemes, total and cash compensation, long-term incentives, bonuses, CEO shareholding, CEO age, and CEO duality. The same applies to data relating to the board; for example, board size, proportion of NEDs, and proportion of independent board members. The independent directors were identified based on the criteria prescribed by King III. These criteria define an independent NED as one who does not receive share option compensation or compensation contingent on the performance of the company; does not represent a shareholder with significant influence (shareholding above 5%) on the company, the board or management; is not employed and has not been employed by the company in the preceding three years; and is not providing any other service to the company.

Data on institutional ownership was downloaded from the Thomson Reuters Eikon database, while data on blockholder ownership was collected from Datastream.

The following dataset was collected from Bloomberg; share prices, market capitalisation, all financial data, company size. Where the Bloomberg data was not available for certain years, other data sources were used, such as annual reports, Iress and Thomson Reuters.

## 5.2 Variables, measures and research methods

This sub-section covers two areas. (i) It discusses the variables used, focusing on how they are measured and the justification for choosing them. The discussion is structured according to the hypothesis. Some of the variables overlap across the hypothesis; these will not be repeated. (ii) It also presents the empirical models applied to answer the research questions. After the presentation of each model, the section discusses how the dependent and independent variables are defined and measured; it also provides justification for the inclusion of each control variable. Appendix 1 is a list of all the variables used in this thesis, showing how they are measured and their short names.

### 5.2.1 Trend analysis of share option compensation during the pre-King III period

Hypothesis 1a is an examination of the trends in NED share option compensation before the implementation of the King III code. The idea behind this hypothesis is to understand whether the requirement to disallow the use of share option compensation was a reaction to an explosion in their usage, or whether it was motivated by other factors. It is reasonable to assume that there was a huge growth in the use of share options for NEDs which then attracted the attention of the King Committee, to the point of deciding to recommend halting their use.

The next hypothesis, Hypothesis 1b, examines how the use of share option compensation has changed during the full sample period, and compares usage for the pre- and post-King III periods. This analysis shows the level of compliance with King III's requirement to stop the use of share option compensation for NEDs.

These two hypotheses were tested using both univariate and multivariate methods. For the multivariate methods, the ordinary least squares method (OLS) was employed; this is consistent with several prior studies in this area (e.g. Boumosleh, 2009; Ye, 2014). For each hypothesis the regression equation is presented, followed by a discussion of the control variables; the short name for each variable is also specified.

#### 5.2.1.1 Univariate analysis

This involves analysing the average annual values for the three measures of share option compensation for NEDs (proportion of share option compensation to total compensation, number of share options issued, and outstanding balances of share options at the end of each year).

#### 5.2.1.2 Regression analysis

The following OLS regression model was applied to determine trends in the use of share option compensation for NEDs during the pre-King III period. The regression model makes it possible to control for other factors that may affect the change in share option compensation for NEDs compensation, other than the time factor.

$$\text{OpsComp} = \beta_0 + \beta_1 \text{Time} + \beta_3 \text{Control variables} + \mu_i + \varepsilon_{it} \qquad (1)$$

##### 5.2.1.2.1 Dependent variable

The dependent variable is OpsComp, which is the short name for 'share option compensation for NEDs'; it represents the three measures of share option compensation for NEDs:

- The proportion of the value of share option compensation scaled by total compensation granted to each NED each year (OpsTC). The value of share option compensation is

measured as the number of share options granted to NEDs, multiplied by the value of each option. The value of each option is calculated using the Black-Scholes model, adjusted for dividend pay-outs. The Black-Scholes formula and the details of its inputs are presented in Appendix 1. Several authors have used the Black-Scholes model to value options (see Chhaochharia & Grinstein, 2009; Hayes, Lemmon & Qiu, 2012; Chang et al., 2015). Total compensation includes cash compensation, share option compensation and share grants. The value of share grants is calculated as number of grants multiplied by share price on the day of award, if it is provided in the annual report; if not, the average share price (based on share price at the beginning and end of the year) in the year awarded is used.

- Share option ownership by NEDs (NEDOwn), which is the number of outstanding cumulative balances of share options at the end of each year (Cheng & Warfield, 2005).
- The number of share options issued to NEDs each year (OpsIssued). This measure accounts only for options that were granted during that year; it excludes unexpired options issued in previous years.

#### 5.2.1.2.2 Independent variable

Time is the main variable of interest. It represents the change in time. It is measured as the calendar year minus 2002. This variable captures the change in the share option compensation for NEDs over time.

#### 5.2.1.2.3 Control Variables

The control variables included are explanatory factors that prior studies found to be key determinants of equity-based compensation for NEDs. These variables include a firm's growth opportunities; institutional ownership; board size; firm size; leverage; and number of NEDs on the board. The justification for most of the variables is based on the traditional principal-agent theory, which predicts high usage of equity-based incentives for companies with greater monitoring needs or costs (Jensen & Meckling, 1976; Demsetz & Lehn, 1985; Liljeblom, Pasternack & Rosenberg, 2011). This view is rooted in the incentive-alignment hypothesis of equity compensation – it considers equity incentives, which include share options, as an effective mechanism for aligning the interests of NEDs with those of shareholders. However, it ignores the rent extraction view, which considers share option compensation to be ineffective in aligning the interests of NEDs with those of shareholders; it argues that they exacerbate agency problems.

Proportion of NEDs on the board (NEDs) and the proportion of independent directors (Indp)

Two views explain the relationship between share option compensation for NEDs and the proportion of independent NEDs. One view predicts a positive relationship between the two, while the other predicts a negative relationship. The first view is based on the agency theory; it argues that the compensation structure for NEDs is designed to improve the alignment of their interests with those of shareholders, and to incentivise them to monitor management effectively (Bryan, Hwang & Lilien, 2000). Therefore, the design for NEDs compensation considers monitoring needs of the firm, and the difficulty of the directors' tasks (Brick, Palmon & Wald, 2006). More equity incentives for NEDs are expected in companies that need a higher level of monitoring: examples include companies with entrenched CEOs or fewer independent NEDs, fewer proportion of NEDs, bigger firms, and firms with growth opportunities. This view predicts a negative association between the use of share option compensation and the proportion of independent directors or NEDs. However, Vafeas (1999), Perry (2000) and Fich and Shivdasani (2005) find empirical support for the contrary view that equity-based compensation for NEDs is preferred by companies that rely on the board to monitor the executives, because they would need to incentivise them. These authors report a positive relationship between the proportion of NEDs and the adoption of equity-based schemes (both shares and share options). Feng, Ghosh and Sirmans (2007) did not find a significant relationship between the proportion of NEDs and equity compensation for NEDs. Considering the discussion above, the relationship between the use of share option compensation and independent and NEDs could be either positive or negative.

The variables were measured at the end of the year. The proportion of NEDs was measured as the number of NEDs scaled by the board size. The independent directors were identified based on the criteria prescribed by King III. These criteria define an independent NED as one who: does not receive share option compensation, or compensation contingent on the performance of the company; does not represent a shareholder with significant influence (shareholding above 5%) on the company, the board or management; is not employed and has not been employed by the company in the preceding three years; and is not providing any other service to the company. The total number of independent directors was scaled by the board size.

Firm's growth opportunities (Tobin's Q)

NEDs of firms with higher growth opportunities are likely to receive a larger proportion of share option compensation than cash compensation. Bryan, Hwang and Lilien (2000) and Linn and Park (2005) put forward several reasons to support this. High-growth firms require more intense monitoring; hence the need to incentivise NEDs to perform that role effectively. They are characterised by high levels of "information asymmetry", which can be used by managers to

exploit shareholders. A significant proportion of the firm's value is tied to realising its growth potential; hence the need for intense monitoring by NEDs. They are also characterised by low levels of liquidity; their cash is tied to investment projects, and thus they rely more on equity-based compensation. In support of this view, several authors (see Himmelberg, Hubbard & Palia, 1999; Bryan, Hwang & Lilien, 2000; Palia, 2001; Fich & Shivdasani, 2005; André, Khalil & Magnan, 2012) have reported a positive relationship between share option awards and firms' growth opportunities. One limitation of the study by Bryan, Hwang and Lilien (2000) is that it excluded the effect of share options that were granted in prior years, which on average will be in-the-money. Growth opportunities will be measured by the Tobin's Q ratio, which is calculated as the market value of equity and the book value of total debt, divided by the book value of assets (Fich & Shivdasani, 2005).

Institutional ownership (InstOwn)

According to the active monitoring hypothesis, the presence of institutional owners (monitoring institutional owners) is associated with effective monitoring, which – according to the substitution-monitoring hypothesis – may act as a substitute to share option compensation for NEDs (Burns, Kedia & Lipson, 2010). Institutional owners wield a lot of power by controlling a large block of votes. They have an informational advantage compared to individual investors, and they have a strong incentive to monitor the firm, because they have a long-term perspective (especially those in pension funds and insurance companies). Andreas, Rapp and Wolff (2012) report evidence in support of a negative relationship between institutional ownership and equity-based compensation for NEDs. A different view, by Magnan, St-Onge and Gélinas (2010), suggests a positive relationship. The reasoning is that institutional shareholders are effective monitors, and are more likely to push for the adoption of equity-based compensation to incentivise the NEDs to improve their monitoring. This reasoning assumes that the incentive-alignment hypothesis holds. In support of this view, Perry (2000), Bryan, Hwang and Lilien (2000), and Fich and Shivdasani (2005) report a positive relationship between the adoption of share option plans for NEDs and high institutional ownership. However, it should be noted that not all institutional owners are active monitors (Wang, 2014), some are passive and ineffective, some may exacerbate agency problems, and some seek to extract private benefits (Cornett et al., 2007). Based on Magnan, St-Onge and Gélinas's (2010) argument, such institutional owners will be associated with lower use of share option compensation plans. However, based on the substitution-monitoring hypothesis, this type of institutional owner would be associated with the use of share option plans. Institutional ownership is measured as the proportion of shares held by institutions, scaled by total number of outstanding shares. Institutions include banks, investment companies, pension funds, insurance companies, hedge funds, mutual funds and research firms.

CEO equity ownership (CEOOwn)

The relationship between CEO equity ownership and NED share option compensation can be either positive or negative. A positive relationship emanates from view that high levels of ownership by the CEO can result in entrenchment, which calls for more incentive compensation for NEDs to improve the level of monitoring (Williamson, 1988; Magnan, St-Onge & Gélinas, 2010). On the other hand, a negative relationship is the result of the view that the interests of a CEO with a larger equity ownership are more likely to be aligned with the interests of shareholders, which reduces the need for monitoring. This means lower forms of incentive compensation (such as share options) for NEDs (Perry, 2000; Bryan, Hwang & Lilien, 2000; Brick, Palmon & Wald, 2006). Feng, Ghosh and Sirmans (2007) did not find a significant relationship between CEO ownership and equity-based compensation for NEDs. CEO ownership is measured as the number of shares held by a CEO scaled by the number of outstanding shares for the company.

Board size (Boardsize)

The direction of the relationship between board size and equity-based compensation for NEDs compensation depends on how board size affects board monitoring. The impact of board size on monitoring is not a settled matter; therefore, the direction of its relationship with equity-based compensation for NEDs could go either way. Jensen (1993), Yermack (1996), Chen (2002) and Cheng (2008) find large boards to be characterised by poor monitoring. In their view, large boards have a high probability of coordination problems, which may result in poor monitoring. This implies that smaller boards are more efficient and less affected by bureaucratic problems, which makes them better at monitoring (Xie, Davidson III & DaDalt, 2003). This means a negative relationship between board size and effective monitoring. The contrary view is that larger boards are associated with better monitoring; because of their size, they can draw from a larger pool of knowledge and experience. A larger board is more likely to have independent experts from different fields who can contribute to monitoring (Xie, Davidson III & DaDalt, 2003). This argument points to a positive relationship between board size and share option compensation for NEDs. Coles, Daniel and Naveen (2008) reported a U-shaped relationship between board size and firm value, concluding that both smaller and larger boards are optimal. Feng, Ghosh and Sirmans (2007) did not find a significant relationship between board size and equity compensation for NEDs. (Board size means total number of board members, including both executive directors and NEDs.)

Firm size (Firmsize)

The impact of firm size on the use of share option compensation for NEDs can be positive or negative. The traditional principal agent theory predicts a positive relationship between firm size

and the use of share option compensation. Bigger firms are more complex to run, so they require more monitoring (Jensen & Meckling, 1976; Andreas, Rapp & Wolff, 2012). Therefore, larger firms are expected to be associated with more equity-based incentives (Bryan, Hwang & Lilien, 2000). Empirical evidence exists to support this view (see Baker & Hall, 2004; Liljeblom, Pasternack & Rosenberg, 2011). However, Oyer and Schaefer (2005) reported a negative relationship between firm size and the use of equity incentives. This evidence is supported by the view that large firms are characterised by relatively lower information asymmetry, which implies reduced need for and costs of monitoring. The perceived low information asymmetry comes from more publicity and higher analyst coverage that larger firms are more exposed to compared to smaller firms. Firm size will be measured as the natural log of total assets (Liljeblom, Pasternack & Rosenberg, 2011; Kim, Jaehyeon, Kim & Zhou, 2017).

Leverage (Leverage)

Higher leverage mitigates agency problems by inducing monitoring by lenders and by requiring firms to make specific payments on specific dates (Jensen, 1986; Agrawal & Knoeber, 1996; Denis, 2001). Therefore, high leverage reduces the need for a high level of monitoring, which consequently reduces the need for equity-based compensation. Consistent with this, Bryan, Hwang and Lilien (2000) reported a negative relationship between equity-based compensation for NEDs and leverage. Leverage is measured by debt ratio, which is total debt scaled by total assets (Andreas, Rapp & Wolff, 2012).

### 5.2.2 Trend analysis of share option compensation over the full sample period

Hypothesis 1b is an extension of Hypothesis 1a; it examines how the use of share option compensation has changed over the full sample period and the transition from pre- to post-King III. This analysis shows the level of compliance with King III's requirement to stop the use of share option compensation for NEDs. The hypothesis is tested using both univariate and multivariate methods. For the multivariate methods, the ordinary least squares method (OLS) is employed; this is consistent with most prior studies in this area (e.g. Boumosleh, 2009; Ye, 2014). For each hypothesis, the regression equation is presented, followed by a discussion of the control variables; the short name for each variable is also specified.

#### 5.2.2.1 Univariate analysis

This involves three approaches: (i) analysing the average annual values for the three measures of share option compensation for NEDs (proportion of share option compensation to total compensation, number of share options issued, and outstanding balances for share options at

the end of each year) over the full sample period; (ii) a graphical analysis of the three forms of share option compensation, to observe the trends over time; and (iii) a comparison of the means and medians during the pre-King III period versus the post-King III period. A t-test and a Wilcoxon test are conducted to check if the pre-and post-King III means and medians, respectively, are statistically different.

#### 5.2.2.2 Multivariate regression analysis

The following OLS regression model was applied to determine the trends in the use of share option compensation for NEDs over the sample period. The regression model makes it possible to control for other factors that may affect the change in share option compensation for NEDs, other than the time factor.

$$\text{OpsComp} = \beta_0 + \beta_1 \text{K3} + \beta_2 \text{Time} + \beta_3 \text{Control variables} + \mu_i + \varepsilon_{it} \qquad (2)$$

##### 5.2.2.2.1 Dependent variable

The dependent variable is OpsComp. OpsComp is the short name for 'share option compensation for NEDs'; it represents the three measures of share option compensation for NEDs, that is, OpsTC, NEDOwn and OpsIssued (more details are given in Section 5.2.1.2).

##### 5.2.2.2.2 Independent variable

The variables of interest are K3 and time:

- The K3 variable is a dummy variable representing either the pre-King III or the post-King III period. The value is one if the observation was recorded during the post-King III period, otherwise it is zero. This variable is expected to capture the change in share option compensation for NEDs in the post-King III period.
- Time represents the change in time. It is measured as calendar year minus 2002. This variable captures the change in the share option compensation variable over time.

##### 5.2.2.2.3 Control variables

The control variables are the same as those of equation 1, as discussed under bullet point 5.2.1.2.3 above; the nature of the discussion is the same, since the dependent variable – share option compensation for NEDs – is the same.

### 5.2.3 Examining how a change in share option compensation for NEDs affect monitoring of CEO compensation and earnings management.

#### 5.2.3.1 Main methodology used

This thesis examines the impact of share option compensation for NEDs on monitoring of CEO compensation and earnings management. In addition, it investigates how institutional ownership and blockholder ownership affect this relationship (six of the seven research questions emanate from this broad research objective). The context of this study presents a natural experiment; hence, the main method used to answer the six research questions is the difference-in-difference method. This sub-section has three objectives. (i) It explains why and how the context is viewed as a natural experiment. (ii) It justifies the use of the difference-in-difference method. The section starts by detailing the type of context suitable for adopting the difference-in-difference method, and explaining why this is the best method in this context. (iii) The last part of this section provides a justification for the two proxies for measuring the effectiveness of monitoring: CEO compensation and earnings management.

##### 5.2.3.1.1 Board characteristics under focus

The board of directors is one internal mechanism for mitigating agency problems between owners and management. Within the board of directors, responsibility for monitoring management and mitigating primary agency problems rests on the NEDs (Roberts, McNulty & Stiles, 2005; Sengupta & Zhang, 2015), because they have (or should have) no ties to the firm other than their service on the board (Platt & Platt, 2012); therefore, they are expected, under the agency theory, to be impartial, independent and objective in monitoring management. The level of board independence and the presence of economic incentives are two key antecedents to NEDs' effectiveness in monitoring that are under the control of the company or its shareholders. The other factors - like their reputation - are more to do with NEDs' integrity, professionalism and career goals. This thesis focuses on economic incentives, specifically share option compensation; which is of special interest to this study, because the King Committee made significant changes to it in King III from what was required under King II. Subsection 5.2.3.1.2 below provides more details about the changes brought about by King III, and their significance to this study.

##### 5.2.3.1.2 Changes to the compensation structure for NEDs in King III

The King II code allowed the use of share option compensation for NEDs. Section 2.5.6 of King II (2002) states: "*Share options may be granted to NEDs but must be the subject of prior approval of shareowners (usually at the annual general meeting).*" King III replaced King II in 2010, and sought to stop the use of share option compensation to NEDs. Section 154 of King III (2010)

states: *"...the chairman and other NEDs should not receive share options or other incentive awards geared to the share price or corporate performance, as such incentives align their interests too closely with executives and may be seen to impair their objectivity."*

The requirement of the King III[24] code to stop the use of share option compensation for NEDs provides an exogenous shock to share option compensation for NEDs, which provides a natural experiment setting for this study to examine how this change in share option compensation affects the effectiveness of the board in monitoring management. Analysis of the effects of the King II and III codes shows that the new requirements had a direct effect on share option compensation for NEDs; this allowed the researcher to establish a causal relationship between share option compensation and CEO compensation or earnings management. A natural experiment helps to mitigate the endogeneity problem, because the change in share option compensation is driven by the changes to King III as opposed to some unobservable factor that could also be driving both the independent and the dependent variable (Chhaochharia & Grinstein, 2009). The existence of control companies (that had never used share option compensation for NEDs) allows the use of the difference-in-difference method.

#### 5.2.3.1.3 Using a natural experiment to address the endogeneity problem

The requirement to stop the use of share option compensation presents a natural experiment setting that makes it possible to employ the difference-in-difference method. Wintoki, Linck and Netter (2012) view a natural experiment as a 'gold standard' technique for addressing endogeneity problems. Duncan, Magnuson and Ludwig (2004), Chhaochharia and Grinstein (2009) and Guo and Masulis (2015) recommend the use of a natural experiment to tackle the endogeneity problem. Natural experiments provide an exogenous shock to the independent variable that allows researchers to observe its impact on the dependent variables, using control firms to provide counterfactual evidence.

As discussed in Section 3.2.5 of Chapter Three above, Wintoki, Linck and Netter (2012) point out that studies on corporate governance mechanisms and organisational outcomes are marred by endogeneity problems[25]. It is likely that share option compensation for NEDs and secondary agency proxies are endogenously determined (both are determined by firm and industry characteristics); thus they may affect each other simultaneously (a simultaneity bias),

[24] Both the SOX and King III are corporate governance codes. They differ slightly, in that SOX is a regulation; compliance is mandatory. King III is not a regulation, but the JSE enforces compliance: it is mandatory for listed companies, though they may choose not to comply if they explain their reason for not complying.

[25] More details about the endogeneity problem are discussed in Chapter 3, Section 3.2.5

resulting in a situation in which causality will run in both directions (from the independent to the dependent variable, and vice versa) (Schultz, Tan & Walsh, 2010). The other source of endogeneity problems is omitted variable bias, where omitted or unobservable variables could be driving both the dependent and the independent variables (Schultz, Tan & Walsh, 2010). The possibility of an omitted, unobservable bias or a simultaneity bias is minimised because the change in share option compensation is driven by an exogenous factor – the changes to the King III requirements – as opposed to some unobservable endogenous factor that could also be driving the dependent variable (Chhaochharia & Grinstein, 2009). Without addressing the endogeneity problem, it is impossible to draw conclusions and make inferences on causality (Roberts & Whited, 2013). In addition, there is the risk of coming to an incorrect conclusion about the relationship between variables; for example, observing a relationship between two variables which in fact does not exist (Denis, 2001). Hence, the view of Antonakis et al. (2014): empirical results that do not address the endogeneity problem are misleading.

Several authors (see Low, 2009; Black & Kim, 2012; Dah, Frye & Hurst, 2014) have used a natural experiment coupled with the difference-in-difference method to mitigate the endogeneity problem. Dah, Frye and Hurst (2014) exploited changes to the Sarbanes Oxley Act of 2002 (SOX) to investigate the impact of board independence on CEO turnover. SOX is a US law introduced in 2002; its introduction coincided with changes to the criteria for defining board independence. Low (2009) exploited changes to the takeover rules for companies in Delaware to investigate the impact of equity incentives for executives on risk taking. Other studies that exploited exogenous shocks brought on by the SOX law include Iliev (2010) and Chang, Choy and Wan (2012). Black and Kim (2012) investigated the effect of board structure on firm value in Korea; they took advantage of a new regulatory change that required companies to have at least 50% NEDs to establish an audit committee.

Paragraphs three and four of Section 3.2.5 of Chapter Three above justify the use of the natural experiment and difference-in-difference method over the other techniques that have been used to address the endogeneity problem, for example the instrumental variable technique and the fixed effects model. Considering the discussion above, this study concurs with the view that the natural experiment is a superior technique (relative to the instrumental variable technique and the Generalised Methods of Moments method) for addressing endogeneity problems, especially simultaneity bias.

However, the natural experiment and the difference-in-difference methods are not above criticism. For one thing, there is a possibility that the treatment experiment (change in share

option compensation for NEDs) for this study is not random. This suspicion emanates from the general understanding that before the formulation and implementation of regulations and corporate governance codes, a lot of lobbying happens to motivate for and against these changes. Some of the lobbying comes from the executives and the NEDs, as well as academics and other individuals, all of whom may be involved in running the same companies that will be affected by the changes. Prior knowledge and potential changes of attitude can remove or weaken the exogenous shock that should come with a natural experiment. The fact that the lobbyists may be the same people who are running the companies brings back the endogenous problem. Second, given the longer window period from 2002 to 2016, there is also a possibility that confounding influences may interfere with the results (subsection 5.2.3.1.4 below details the measures taken in this study to mitigate confounding influences). Third, the difference-in-difference method assumes parallel trends between the control and treatment groups during the pre- and post-event periods (Love, 2010). This may be difficult to achieve, given that firm characteristics and outcomes rarely move in similar patterns; they are affected by other, hugely diverse factors, such as human capital.

#### 5.2.3.1.4 Dealing with confounding influences and a justification for using the difference-in-difference method

Confounding influences: Over and above the changes to share option compensation, King III contained other reforms that could enhance corporate governance mechanisms, and would consequently affect dependent variables and generate alternative explanations for the researcher's hypothesis. Some notable examples include: specifying two as the minimum number of executive directors on the board; requiring that the remuneration policy be approved by shareholders; requiring that the remuneration of the directors be disclosed; recommending two as the minimum number of audit committee meetings; requiring the audit committee to be constituted by at least three members who are all independent; and tightening the board independence requirement to exclude NEDs who receive share option compensation. In addition to these, some concurrent macro- and micro-events around the enforcement of King III may also confound the results. To get around these challenges, this study employs the difference-in-difference research design.

#### 5.2.3.1.5 How the difference-in-difference method works

For the difference-in-difference method, the researcher creates two sample groups: the treatment group and the control group. The treatment group contains 55 companies (see Section 5.1.2 of this Chapter above), and is made up of companies that were affected by the King III regulatory reforms. These are companies that at some point during the pre-King III period paid share option compensation to NEDs, or had outstanding balances of share option holdings for NEDs. In addition, these companies should have complied with the King III requirement to stop the use of share option compensation, and should also have cleared the balances of outstanding share option holdings for NEDs by the end of the cut-off year. Companies that continued paying option compensation to NEDs in the post-King III period or after the cut-off year were excluded from the list of treatment companies. The control group (see Section 5.1.3 above for more details) is made up of companies that were not affected by the King III reforms. These are companies that had never paid share option compensation to NEDs over the sample period. The group was created by matching the treatment companies according to industry and size. A dummy indicator variable was created to represent the sample groups; the dummy was given a value of one for treatment companies, and zero for control firms. Another dummy indicator variable was created to represent observations in the pre- and post-King III periods, with a value of one for post-King III observations and zero for pre-King III observations. These variables would then interact in the difference-in-difference regression, as described below.

The difference-in-difference method compares the effect of a treatment on the affected companies (treatment firms) to results from the unaffected companies (control firms); in this case, comparing the difference between pre- and post-King III observations for the treatment group to the pre-and post-King III observations for the control group. Mathematically, the first step is to calculate the difference between the pre-and post-King III observations for the treatment group. The second step is to calculate the difference between the pre-and post-King III observations for the control companies (the difference is the effect without the treatment, that is, the change that would have been recorded if there was no treatment). The third step is to compare the two differences, i.e. to get the difference between the differences between the treatment and control companies. The difference between the differences shows the impact of the treatment only after removing the effect of what would have happened without the treatment (counterfactual evidence). This makes it possible to observe the impact of the treatment, while the control firms provide the counterfactual evidence.

#### 5.2.3.2 Main method used to answer the research questions on the impact of share option compensation for NEDs on monitoring

To answer this research question (how the change in option compensation for NEDs affects monitoring of CEO compensation and earnings management), two methodologies were applied, the first being the univariate analysis. Given that the setting presents a natural experiment, the main analysis is based on the difference-in-difference regression analysis. As discussed in Section 5.3.5 below, the validity of the difference-in-difference tests in a natural experiment rest on the parallel trends assumption. The trends are parallel for CEO compensation, but they are not parallel for real-activities manipulation and discretionary accruals. According to Lechner, Rodriguez-Planas and Fernández Kranz (2016), difference-in-difference fixed effects estimators and OLS estimators produce similar results when the parallel trends assumption holds. However, if does not hold they produce different results, but the results of the fixed effects model will be more consistent. This study therefore applies the fixed effects estimators for the difference-in-difference. They produce more consistent results than the OLS estimators, given that the parallel trends assumption does not hold for real-activities manipulation and discretionary accruals.

#### 5.2.3.3 Proxies used to examine the impact of share option compensation for NEDs.

Justification for focusing on CEO compensation and earnings management, and the measurement of proxies

This thesis uses two proxies to measure the effectiveness of monitoring by the board: pay-performance sensitivity, and the levels of earnings management. As indicated in Chapter 2, Section 2.3.3 above, these two are the biggest agency problems found in South African companies. Furthermore, the other forms of agency problem (such as empire building, theft and self-dealing) seem to be reflected or to result in the manipulation of earnings, as the executives try to cover up for losses, or money lost or stolen, or poor performance. This conclusion is drawn from investigations into South African-based companies that have destroyed shareholder value (either through being declared insolvent, or facing serious financial challenges resulting in a huge decline in share price. Examples include MacMed, Beige Holdings, Leisurenet, Johannesburg Consolidated Investments (JCI), Saambou Holdings Limited, Regal Treasury Bank, and the most recent case, Steinhoff International. In almost of all these corporate scandals the executives were manipulating earnings by inflating revenues and profits, raising fictitious invoices, concealing the financial status of the company, overstating the assets of the company, manipulating financial systems, or falsifying financial results. All these shenanigans would be reflected by measuring the levels of earnings management. In the cases of Regal Treasury and Macmed, management falsified financial statements, while the Chairman and CEO were securing excessive cash bonuses,

equity grants, equity options and other benefits. The financial statement fraud boosted the share price, which allowed the executives to cash in on share options and share grants. The evidence from these corporate scandals[26], coupled with the results of a survey by Viviers (2015), show that CEO compensation and earnings management are a cause for concern in South Africa. The survey by Viviers (2015) showed 'high executive remuneration not linked to performance' and 'little disclosure on remuneration for executives' as the two key concerns raised by shareholders. Empirical evidence exists to support their concerns. Bussin and Modau (2015) reported a weakening relationship between executive compensation and performance, and a shift away from performance-aligned contracts for CEOs of South African companies. Bradley (2013) did not find a link between pay and performance for CEOs of South African companies. Lessambo (2016) partly concurs with this view, specifying corporate greed and excessive compensation as possible causes of the corporate scandals.

For these reasons, the potential proxies that can be used to measure the effectiveness of monitoring by the board (or the measures of secondary agency problems) for this thesis will be earnings management and CEO pay-performance sensitivity and CEO equity incentives. Gregory-Smith (2012) raised a concern about the use of CEO compensation as a dependent variable. He argued that it does not change immediately in response to corporate governance changes, and that the amount of pay is largely a function of an existing package – it is not renegotiated every year. In response to Gregory-Smith's (2012) view, this study makes the following points. Gregory-Smith's argument may not apply in South Africa, because shareholders vote at the Annual General Meeting to approve executive compensation, which means CEO compensation *is* renegotiated every year. In addition, several studies have shown that CEO compensation changes in response to corporate governance changes – for example, Chhaochharia and Grinstein (2009) examined changes in CEO compensation in response to new board requirements (changes to board structure and its operations) brought about by the SOX. They showed that the new requirements for board structure resulted in lower compensation for CEOs. Cohen, Dey and Lys (2009) and Chang, Luo and Sun (2011) also investigated the effect of SOX on CEO compensation. The results of these studies show that CEO pay can adjust to corporate governance changes.

**Conclusion:** This section justified the focus on CEO compensation and earnings management. The subsections below provide further details and measurements of and justifications for the specific proxies for CEO compensation and earnings management.

[26] It should be acknowledged that these few cases are not a large enough sample to come to a conclusion regarding the biggest agency problems in South Africa; however, they are considered just the tip of the iceberg, and give us a rough indication of the agency problems in South Africa and how they manifest.

#### 5.2.3.3.1 CEO Compensation

The preceding section, Section 5.2.3.3, justified focusing on CEO compensation and earnings management. This subsection focuses on CEO compensation, and the next (5.2.3.3.2) on earnings management. Given that CEO compensation covers several arears, this section provides justification for focusing on one specific subsection of CEO compensation, which is CEO pay-performance sensitivity.

**Optimal compensation**

The best proxy for measuring whether a board is monitoring CEO compensation effectively is optimal CEO compensation, because in theory, it is the most efficient pay for z CEO. This kind of measure would allow researchers to determine the effectiveness of monitoring by simply comparing the actual compensation for a CEO to the optimal compensation[27]. Section 4.2.2 of Chapter 4 (above), under the subheading 'Optimal compensation', provides a detailed discussion about the proxy for optimal CEO compensation that will be used in this thesis (please refer to that section for more details). The discussion lists the challenges of determining optimal compensation for CEOs, and concludes by specifying suitable proxies for CEO compensation. In summary, the discussion describes three features of an optimal contract: (i) it ties the wealth of the executives to the performance of the company; (ii) it is less costly; and (iii) it retains effective CEOs (Tang, 2014). An optimal contract motivates executives to increases shareholder wealth[28], and minimises agency costs (Morck, Shleifer & Vishny, 1989; Guay, Core & Larcker, 2002). Section 4.2.2 above concludes by specifying two proxies for CEO compensation that will be used in this thesis, the first being CEO pay-performance sensitivity and equity incentives.

CEO pay-performance sensitivity is a good measure for testing the hypothesis of this study, as it does not have many countervailing effects. However, equity incentives have a countervailing effect on agency problems. They may have a positive or a negative effect on the CEO. They could motivate the CEO to increase shareholder wealth (incentive-alignment hypothesis), or they could increase the incentive for fraud and manipulation of earnings (rent extraction view) (Laux & Laux, 2009; Armstrong et al., 2013; Hass, Tarsalewska & Zhan, 2016). Given the context of this thesis, using equity incentives as a proxy will not lead to a satisfactory conclusion as to whether share option compensation for NEDs mitigates or exacerbates secondary agency problems. Here is a

[27] Section 4.2.2 provides a detailed discussion of the proxy of optimal compensation that will be used in this thesis. Some of the points will be repeated here, for clarity.
[28] Meaning long–term shareholder wealth, not short–term.

detailed example of this ambivalence. (i) A decrease in equity compensation for CEOs could be an indication of poor monitoring by NEDs, because the incentive-alignment hypothesis says they align the interests of CEOs and shareholders. So, a decrease signals a weakening of the alignment of interests between shareholders and managers. On the other hand, the same decrease could be an indication of effective monitoring, because the rent extraction hypothesis says equity-based compensation increases the incentive for fraud and manipulation of earnings. So, reducing equity incentives indicates a reduction in incentives for manipulating earnings and fraud. (ii) The same argument applies to an increase in CEO equity incentives; it can be viewed as poor monitoring, or as effective monitoring. This conundrum makes it difficult to use CEO equity incentives as a proxy and be able to conclude on whether share option compensation exacerbates or mitigates secondary agency problems. Therefore, CEO equity incentives will not be a good choice for a proxy in this study.

##### 5.2.3.3.1.1 CEO total pay performance sensitivity

Jensen and Murphy (1990) defined pay-performance sensitivity as a measure of the extent to which CEO compensation is associated with change in shareholder wealth. It is determined by regressing CEO compensation on various measures of change in shareholder wealth or measures of financial performance, such as return on assets or return on equity (Chang et al., 2012). This is a measure of incentive-alignment; a higher number indicates closer alignment between executive and shareholder interests (Jensen & Murphy, 1990). High pay-performance sensitivity for CEOs is a better incentive for mitigating agency problems and creating shareholder value (Jensen & Murphy, 1990). Murphy (2012) attributed the increase in equity-based compensation and pay-performance sensitivities in the US to the optimal contracting theory, arguing that compensation contracts were suboptimal before the 1990s, but improved with time after that. In line with Murphy (1985), Aggarwal and Samwick (1999), John, Mehran and Qian (2010) and Gao and Li (2015), CEO pay-performance sensitivity for this study is determined using Equation 4, presented below. Details of the variables are shown below the equation.

#### 5.2.3.3.2 Earnings management

A review of the literature shows that real-activities manipulation and discretionary accruals are the two most prevalent sources of earnings management; executives use these as substitute forms of manipulating earnings (Zang, 2008; Cohen & Zarowin, 2010). A research survey of 400 executives by Graham, Harvey and Rajgopal (2005) showed that these two are the most widely used forms of manipulating earnings. Recent studies have started to show increased appreciation of these two earnings management forms by combining them in their analysis (e.g Cohen &

Zarowin, 2010; Badertscher, 2011; Chan et al., 2014). In that respect, this study will use both discretionary accruals and real-activities manipulation as measures for earning management. The section below describes how to determine the two forms of earnings management (the discretionary accruals and real-activities manipulation).

#### 5.2.3.3.2.1 Discretionary accruals

Following Dechow, Kothari and Watts (1998), Roychowdhury (2006), Cohen and Zarowin (2010), and Badolato, Donelson and Ege (2014), this thesis employs the modified Jones (1991) model to estimate discretionary accruals. This model is presented in equation 3 below. It's a cross-sectional regression, and is run per industry and per year. The residual from this model is discretionary accruals (DA).

$$\frac{TotalAccruals_{it}}{TA_{it-1}} = \beta_0 + \beta_1\left(\frac{1}{TA_{it-1}}\right) + \beta_2\left(\frac{\Delta Rev_{it} - \Delta \mathrm{AR_{it}}}{TA_{it-1}}\right) + \beta_3\left(\frac{PPE_{it}}{TA_{it-1}}\right) + \beta_4\left(\frac{NI_{it}}{TA_{it-1}}\right) + \varepsilon_{it} \qquad (3)$$

- Total Accruals= EBXI-CFO: Earnings before extraordinary items and discontinued operations, minus cash flow from operations. This is a lagged variable.
- $\mathrm{TA_{it-1}}$ = Lagged Total Assets
- $\Delta \mathrm{Rev_{it}}$ = Change in revenues from the preceding year
- $PPE_{it}$ = Gross value of property plant and equipment
- $NI_{it}$=Net income, which is scaled by total assets. The inclusion of this variable is in line with Kothari, Mizik and Roychowdhury (2015), and Kim, Jaehyeon, Kim and Zhou (2017). This is another way of adjusting the discretionary accruals for performance.

#### 5.2.3.3.2.2 Real-activities manipulation

The three proxies for real-activities manipulation are abnormal levels of cash flow from operations (CFO), discretionary expenses, and production costs. According to Roychowdhury (2006) and Cohen and Zarowin (2010), manipulation of real-activities happens in many ways; for example, (i) firms may offer huge discounts and generous credit terms. This has the impact of accelerating sales and earnings in the current period, but will result in lower cash flows in the current period. However, this temporary effect will be corrected when the company reverts to old prices. (ii) Firms may also manipulate the cost-of-goods-sold figure, by increasing production to levels that are higher than necessary. This will reduce the cost per unit, and consequently, boost earnings. However, this has the effect of reducing cash flow, because the company will incur higher production and holdings costs relative to sales, due to the increased production. (iii) Executives

may boost current period earnings by intentionally reducing discretionary expenditure such as advertising, research and development and selling, and general and administrative expenses. Reducing these will not only boost current earnings; it will increase the amount of cash flow, if those expenses would have been paid in cash. Prior papers have used these three proxies, abnormal levels of cash flow from operations (CFO), discretionary expenses, and production costs. However, this thesis only uses abnormal levels of cash flow from operations (CFO), for the following reasons: first, this is the only proxy that can be used without depleting the sample size to below 30 companies. Several companies in South Africa do not report figures for production costs or for discretionary expenditure such as advertising, research and development and selling, and general and administrative expenses; hence, using these will deplete the sample to fewer than 30 companies. Second, the abnormal cash-flow proxy is inclusive, it absorbs the effects of all three forms of real-activities manipulation: accelerating sales, increasing production, and reducing discretionary expenses. Third, the use of the abnormal levels of cash flow from operations (CFO), is consistent with several authors (see Roychowdhury, 2006; Cohen, Dey & Lys, 2008; Cohen & Zarowin, 2010; Kim, Jaehyeon, Kim & Zhou, 2017).

Abnormal cashflows

Following Kim, Kim and Zhou (2017) the operating cash flows are decomposed into normal and abnormal portions by estimating the following equation for each industry and year:

$$\frac{CFO_{it}}{TA_{it-1}} = \beta_0 + \beta_1\left(\frac{1}{TA_{it-1}}\right) + \beta_2\left(\frac{Sales_{it}}{TA_{it-1}}\right) + \beta_3\left(\frac{\Delta Sales_{it}}{TA_{it-1}}\right) + \varepsilon_{it} \qquad (4)$$

*Where,*

- $CFO_{it}$ = cash flows from operations.
- $TA_{it\_1}$= total assets,
- $\Delta Sales_{it}$ = change in sales
- The cross-sectional regression is run per industry and per year.
- The residual from this regression is abnormal cash flows from operations.

### 5.2.4 How a change in share option compensation for NEDs affects CEO pay-performance sensitivity

Hypothesis 2a and 2b examines how the removal of share option compensation for NEDs affects the sensitivity of CEO pay to performance. The hypothesis is tested using the difference-in-difference regression analysis.

#### 5.2.4.1 Univariate analysis

There is no univariate analysis for this hypothesis, because the key variable of interest is measured from the regression for the main analysis.

#### 5.2.4.2 Difference-in-difference analysis

The following difference-in-difference regression Equation 5 is used to test Hypothesis 2a and 2b. It examines how the removal of share option compensation for NEDs affected CEO pay-performance sensitivity in the post-King III period. The equation follows the work of Murphy, (1985), Aggarwal and Samwick (1999), John, Mehran and Qian (2010), Gao and Li (2015).

$$\text{CEO Pay}_{it} = \alpha_t + \beta_1 \text{NEDOpsDummy}_i + \beta_2 \text{K3} + \beta_3 \text{Perf} + \beta_4 \text{NEDOpsDummy}_i * \text{K3}_t + \beta_5 \text{NEDOpsDummy}_i * \text{Perf} + \beta_6 \text{NEDOpsDummy}_i * \text{K3}_t * \text{Perf} + \text{Control Variables} + \gamma + \varepsilon_{it} \quad (5)$$

- Where $\gamma$ is year and industry fixed effects. The rest of the variables are discussed below. Firm fixed effects are not used, because the regression includes the non-interacted variables for K3 and NEDOpsDummy (Low, 2009)

##### 5.2.4.2.1 Dependent variable

**Total CEO compensation (CEOPay)**

The dependent variable is the logarithm of total CEO compensation, which is measured per year. The total amount includes cash salary, performance bonus, share grants (including long-term incentives), share appreciation schemes, and share option awards. The value of share grants is calculated as the product of the number of shares granted multiplied by the share price on the grant date, or the average share price for each year (if share price on grant date is not available). This average price is calculated as the simple average of the share price at the beginning of the year and the closing share price at the end of the year, in line with Guay (1999). The value of the share options is the product of the number of share options granted and the value of each share option. Each option is valued using the Black-Scholes formula, which is presented in Appendix 1 part a. (More detail about the valuation of share options, including a justification for using the Black-Scholes model, is presented in Section 5.2.1.2.1 of this Chapter above. The share appreciation schemes are similar to share options; the only difference is that they are cash-settled at the time they are exercised. Hence, they are also valued using the Black-Scholes model.

#### 5.2.4.2.2 Independent variables

**Share option compensation for NEDs (NEDOpsDummy)**

This is a dummy variable with a value of one for treatment companies (the companies paying share option compensation to NEDs prior to King III) and zero for control companies (companies that never paid share options to NEDs over the sample period).

**K3**

K3 is a dummy variable with a value of one if the observation is in the post-King III period; the value is zero if the observation belongs to the pre-King III period. It enables a comparison of CEO compensation in the post-King III period compared to the pre-King III period.

**Performance (perf)**

Company performance is measured using both stock market measures and accounting measures. Bertrand and Mullainathan (2001) also used both the stock market and accounting returns. For the stock market measures, annual share price returns are used as a proxy for performance; this is consistent with Firth and Rui (2007). Firth, Fung and Rui (2007) and John, Mehran and Qian (2010) measured performance by multiplying annual share return by market capitalisation at the beginning of the year, which they called the dollar share return. Dai, Jin and Zhang (2014) measured firm performance using annual change in market capitalisation. These two additional market measures are applied in this thesis as a robustness check. For the accounting measures, return on assets (ROA) is used (Gao & Li, 2015). The coefficient of the Perf variable shows the sensitivity of CEO pay to performance over the full sample period.

**NEDOpsDummy*K3*Perf**

This is the variable of interest in this equation. It is the interaction term between the measure of share option compensation and the change in performance or change in shareholder wealth. The variable shows how CEO pay-performance sensitivity changed in the post-King III period for treatment companies compared to control companies.

**NEDOpsDummy *K3**

The interaction term NEDOpsDummy*K3 shows how the dependent variable (CEO compensation, in this case) changed in the post-King III period for treatment companies compared to control companies.

**NEDOpsDummy*Perf**

The interaction term NEDOpsDummy*Perf measures the sensitivity of CEO pay to performance for treatment companies compared to control companies.

#### 5.2.4.2.3 Control variables

**Firm size (Firmsize)**

Theory predicts both a positive and a negative relationship between firm size and level of CEO pay. This is based on the view that talented executives who deserve higher salaries find jobs in larger companies (Rosen, 1992). As alluded to in Section 5.2.1.2.3 above, bigger firms are more complex to run, and require higher levels of monitoring (Jensen & Meckling, 1976); hence, the executives need to be incentivised to perform with more pay. On the other hand, larger firms also get more scrutiny and publicity, both of which are disincentives to pay excessive compensation (Watts & Zimmerman, 1986). Jensen and Murphy (1990) used the same argument as Watts and Zimmerman (1986) to hypothesise a negative relationship between the two variables. Empirical evidence points towards a positive relationship. Several authors (e.g. Firth, Fung & Rui, 2006; Conyon & He, 2011; Bereskin & Cicero, 2013; Gao & Li, 2015; Conyon & He, 2016) find a positive relationship between firm size and CEO compensation.

**CEO Ownership (CEOOwn)**

High CEO share ownership can result in entrenchment, especially if the CEO holds a significant stake in the company. Entrenched CEOs can influence their compensation, as predicted by the managerial power hypothesis (Bertrand & Mullainathan, 2001). This view predicts a positive relationship between CEO ownership and pay level, and a negative relationship with pay-performance sensitivity. On the flip side, high CEO ownership implies high alignment with shareholder interest, which reduces the need to pay higher compensation and to link pay with performance (Guay, 1999). Chen, Jeter and Yang (2015) reported a positive relationship between CEO ownership and pay level, supporting the managerial power hypothesis. Gao and Li (2015) hold a contrary view, finding a negative relationship between CEO ownership and CEO compensation

**CEO Age (CEOAge)**

CEO age is expected to have a positive association with CEO compensation. This comes from the view that with age comes more experience and knowledge, which will be rewarded by the labour market though higher compensation. Empirical evidence exists to support this view (see Fung & Pecha, 2015; Conyon & He, 2016). On the other hand, Deckop (1988) find a negative relationship between age and CEO compensation, concluding that CEO age may be a liability.

**CEO-Chair Duality (CEODuality)**

The impact of CEO duality on monitoring is explained by the entrenchment theory and the efficiency theory. The entrenchment theory states that combining the role of chairman and CEO

can lead to CEO entrenchment, which increases agency problems (Fama & Jensen, 1983; Lipton & Lorsch, 1992). Splitting the roles reduces the influence of the CEO, and consequently reduces agency problems. Firth, Fung and Rui (2006), Cao, Pan and Tian (2011), Conyon and He (2011), Bereskin and Cicero (2013), Gao and Li (2015) and Conyon and He (2016) report higher CEO pay at firms that combine the two roles in one person, consistent with the entrenchment theory. The efficiency theory advocates for duality of roles on the basis that this is more efficient. The results presented by Conyon (1997) dispute the relevance of these two theories, showing no evidence that CEO-chair duality is associated with CEO pay. CEO duality is a dummy variable, with a value of one if the CEO is also the chairman of the board, and a value of zero otherwise.

Firm risk (Firmrisk)

CEO compensation is expected to increase with an increase in firm risk. CEOs who bear more risk will demand more pay. Brick, Palmon and Wald (2006) and Gao and Li (2015) report a positive relationship between compensation and risk, while Conyon and He (2011) report a negative relationship. Firm risk is represented by the volatility of the share price, measured as the standard deviation of monthly returns over a period of five years (Chen, 2002).

Leverage (leverage)

Higher leverage is viewed as an external monitoring mechanism that mitigates agency problems. Therefore, higher leverage reduces the need for high levels of CEO compensation. In support of this view, several studies have reported a negative relationship between leverage and CEO pay levels (see Cao, Pan & Tian, 2011; Gao & Li, 2015). Bereskin and Cicero (2013) find a negative relationship that is not statistically significant. Brick, Palmon and Wald (2006) reported a positive but insignificant relationship between leverage and CEO compensation.

Board independence (Indp)

During pay negotiations, an independent board is better positioned to design incentive-efficient contracts, or compensation which is more aligned with shareholder objectives (Ryan Jr & Wiggins III, 2004; Laux & Mittendorf, 2011). When the board is less independent, entrenched executives will have more bargaining power, which results in high CEO compensation that is less sensitive to share price changes. Therefore, board independence is beneficial in mitigating agency problems, because it limits a CEO's leverage over the board, and thus the level of executive compensation (Bebchuk & Fried, 2004; 2003). Empirical evidence exists to support this view. Chhaochharia and Grinstein (2009) showed that an increase in board independence results in a reduction in CEO compensation. On the flip side, Cao, Pan and Tian (2011) and de Andrés, Arranz-Aperte and Rodriguez-Sanz (2017) challenged this view, finding that independent boards pay CEOs more while non-independent boards pay less. Cao, Pan and Tian (2011) and Conyon and He (2016) also found evidence contradicting the view that board independence is of benefit in

monitoring CEO compensation; they find independent boards to be associated with higher CEO pay.

Institutional ownership (InstOwn)

Given the two conflicting theories on institutional ownership and monitoring (the active monitoring hypothesis, and the passive and private benefits hypothesis), the impact of institutional ownership on CEO pay depends on the dominant category of institutional investors. If the company is dominated by active monitoring institutions, then the relationship between institutional ownership and performance sensitivity will be positive; the relationship with compensation levels will be negative if the non-monitoring institutions are the dominant shareholders. Hartzell and Starks (2003) and Bereskin and Cicero (2013) find a negative relationship between institutional ownership and level of compensation.

Firm performance (ROA)

Higher-performing companies are likely to pay more to their CEOs. In line with this view, Firth, Fung and Rui (2006), Gao and Li (2015), Conyon and He (2016) reported a positive relationship between firm performance and CEO compensation. However, Brick, Palmon and Wald (2006) reported a negative though insignificant relationship using return on assets (ROA) as a measure of performance; when they used share price return, they reported a significant and positive relationship.

Blockholder ownership, (Block)

Given the two conflicting theories on the impact of blockholder ownership and monitoring (the alleviating theory and the exacerbating view), the impact of blockholder ownership on CEO compensation could be positive or negative. Conyon and He (2016) reported a negative relationship between CEO compensation and blockholder ownership, while Firth, Fung and Rui (2006) reported a positive relationship. Blockholders are defined as 'shareholders with a stake of more than 5% in the company' (Brick, Palmon & Wald, 2006), measured as the proportion of shares held by blockholders scaled by total outstanding shares. This definition of blockholder ownership is consistent with the one used by Mangena and Chamisa (2008), who used it as a control variable. The 5% minimum was found to be the most popular benchmark for defining blockholder ownership (Edmans & Holderness, 2017). Under the Companies Act (2008), the threshold of 5% shareholding is considered to be significant; hence it is a requirement that any disposal or acquisition of such an amount of stake should be reported to the company. Blockholder ownership is coded as a dummy variable which equals one if a company has blockholder ownership in their ownership structure, and zero if the company has no blockholder ownership.

Board size (Boardsize)

As discussed in Section 5.2.1.2.3 above, the question of whether board size improves or reduces the effectiveness of monitoring is not yet settled; therefore, the relationship between board size and equity incentives could be positive or negative. Large boards have a high probability of being characterised by coordination problems, which may result in poor monitoring (Jensen, 1993; Yermack, 1996; Chen, 2002; Cheng, 2008); consistently with this view, smaller boards are more efficient and less affected by bureaucratic problems, which makes them better at monitoring (Xie, Davidson III & DaDalt, 2003), resulting in a positive relationship between board size and CEO compensation. Cheng (2008), Chen (2002), Yermack (1996) and Jensen (1993) show that larger boards are less effective at monitoring. A contrary view states that larger boards are associated with better monitoring; because of their size, they can draw from a larger pool of knowledge and experience. A larger board is more likely to include independent experts from different fields who can contribute to monitoring (Xie, Davidson III & DaDalt, 2003). This argument points to a negative relationship between board size and CEO equity incentives. Conyon and He (2011 & 2016) reported a positive relationship between CEO compensation and board size.

Firm's growth opportunities (Tobin's Q)

Firms with more growth opportunities will hire talented CEOs who demand and are paid higher compensation (Core, Holthausen & Larcker, 1999). This view predicts a positive relationship between CEO compensation and a firm's growth opportunities. Empirical evidence exists to support this view (see Conyon & He, 2011; 2016). However, a number of studies have reported low CEO compensation for companies with higher growth opportunities (see Smith Jr & Watts, 1992; Harvey & Shrieves, 2001; Almazan, Hartzell & Starks, 2005).

Companies' Act (COAct)

In 2008, South Africa promulgated a new Companies' Act. After perusing the Companies Act(2008), the researcher did not find any changes that would influence pay-performance sensitivity. To be cautious, the study includes a dummy variable to indicate the year in which the Companies Act changed. Given the results of perusing the Companies Act this variable is expected to be insignificant. It is measured as a dummy variable of one if the observation is post-2008 and zero if it is pre-2008.

### 5.2.5 How the change in option compensation NEDs affected earnings management

Hypothesis 3a and 3b examine how the removal of share option compensation for NEDs affects earnings management, measured using discretionary accruals and real-activities manipulation. The hypothesis is tested using univariate and difference-in-difference regression analysis.

#### 5.2.5.1 Univariate tests

This involves calculating the mean and median for the levels of earnings management. These are calculated for both the treatment and the control group, for both the pre-King III and the post-King III period. For each of these two groups, the mean and median post-King III is compared to or subtracted from the pre-King III mean and median, to see if there has been a change. In line with the difference-in-difference method, the mean/median difference of the treatment companies is subtracted from the mean/median of the control companies to give the difference of the differences. T-tests and Wilcoxon tests are utilised to compare the difference between the means and medians for each group for the post-King III period and the pre-King III period, to see if the difference is statistically significant.

#### 5.2.5.2 Difference-in-difference analysis

Difference-in-difference regression equation 6 below is used to test Hypotheses 3a and 3b. It examines how the change in option compensation for NEDs affected the level of earnings management in the post-King III period.

$$EM_{it} = \alpha_t + \beta_1 NEDOpsDummy + \beta_2 K3 + \beta_3 NEDOpsDummy * K3_t + Control\ Variables + \gamma + \varepsilon_{it} \quad (6)$$

where $\gamma$ is the year and industry fixed effects. The rest of the variables are discussed below. The firm fixed effects are not used, because the regression includes the non-interacted variables for K3 and NEDOpsDummy (Low, 2009).

##### 5.2.5.2.1 Dependent variables

The dependent variable is earnings management, which is represented by discretionary accruals and real-activities manipulation (measured using abnormal cashflows).

##### 5.2.5.2.2 Independent variables

**Share option compensation for NEDs (NEDOpsDummy)**

This is a dummy variable, with a value of one for treatment companies (the companies paying share option compensation to NEDs (NEDOpsDummy) prior to King III) and zero for control companies (companies that never paid share options to NEDs over the sample period).

**K3**

K3 is a dummy variable, with a value of one if the observation is post-King III, and zero if the observation belongs to the pre-King III period. It shows how CEO equity incentives changed post-King III compared to the pre-King III period.

NEDOpsDummy *K3

This is the variable of interest in this equation. It is the interaction term between the measure of share option compensation and the time of the treatment effect. It shows how the dependent variable (earnings management, in this case) changed in the post-King III period for treatment companies relative to control companies.

#### 5.2.5.2.3 Controls variables

Firm size (Firmsize),

Bigger companies are associated with lower earnings management (and vice versa), because they attract more scrutiny. Analysts and investors follow these companies closely (Lobo & Zhou, 2001), and they are subject to higher political risk (Ali & Zhang, 2015). This points to a negative relationship between firm size and earnings management. Badolato, Donelson and Ege (2014), Ali and Zhang, (2015), and Kim, Kim and Zhou (2017) have confirmed a significant and negative relationship between firm size and earnings management. However, Frankel, Johnson and Nelson (2002) reported a significant and positive relationship. Cheng and Warfield (2005) also reported a positive relationship, but it was not statistically significant. Firm size is measured using the natural logarithm of total assets (Kim, Kim & Zhou, 2017).

Leverage (Leverage)

High-leveraged companies are more likely to manipulate or overstate earnings, with the objective of meeting or avoiding violating debt covenants. In line with this view, Badolato, Donelson and Ege (2014) and Kim, Kim and Zhou (2017) reported a significant and positive relationship between leverage and earnings management. On the other hand, leverage can also incentivise management to engage in income-decreasing earnings management. This is because leverage can also be associated with financial distress; hence, management may want to understate their earnings with the intention of getting debt covenants relaxed, or to get favourable terms when renegotiating their covenants (Becker et al., 1998). In line with this theoretical argument, Frankel, Johnson and Nelson (2002), Cheng and Warfield (2005) and Ali and Zhang (2015) report a significant and negative relationship between leverage and earnings management. Chen, Cheng and Wang (2015) did not find any evidence to show that leverage is associated with earnings management. Leverage is measured as the proportion of long-term debt to total assets (Chen, Cheng & Wang, 2015; Kim, Kim & Zhou, 2017).

Firm Performance (ROA)

Company performance may drive executives to engage in earnings management to smooth out earnings. Companies performing poorly are more likely to engage in earnings management compared to companies with good performance (Chung, Firth & Kim, 2002; Chen, Cheng & Wang,

2015). This points to a negative relationship between ROA and earnings management. Chen, Cheng and Wang (2015) and Kim, Kim and Zhou (2017) have confirm this relationship. But several studies have report results that contradict this theoretical prediction. Badolato, Donelson and Ege (2014), Braam et al. (2015) and Kim, Kim and Zhou (2017) report a significant relationship, but it was positive. Firm performance is measured using return on assets (ROA).

Growth opportunities (Tobin'sQ)

Collins and Kothari (1989) proved that companies with higher growth opportunities are more sensitive to earnings announcements. They react more, to both positive and negative earnings surprises. Based on this finding, Matsumoto (2002) argues that firms with growth opportunities are more likely to engage in earnings management to avoid earnings surprises. Ashbaugh, LaFond and Mayhew, (2003), Badolato, Donelson and Ege, (2014) and Ali and Zhang (2015) all find empirical evidence consistent with this argument – a positive and significant relationship between the market to book ratio and earnings management. Frankel, Johnson and Nelson (2002) and Chen, Cheng and Wang (2015) also reported a positive relationship, but it was not significant. Tobin's Q is used as a proxy for growth opportunities (Fich & Shivdasani, 2005).

Institutional (InstOwn) and blockholder ownership (Block)

Two contrasting views explain the relationship between institutional/blockholder ownership and earnings management, so the relationship can either be positive or negative. The active monitoring hypothesis predicts a negative relationship, on the basis that institutional/blockholder ownership provides effective monitoring of financial reporting, which mitigates the risk of earnings manipulation by executives. Several authors (see Frankel, Johnson & Nelson, 2002; Ashbaugh, LaFond & Mayhew, 2003; Badolato, Donelson & Ege, 2014; Ali & Zhang, 2015; Chen, Cheng & Wang, 2015) confirm the positive role played by institutional/blockholder ownership in improving monitoring of financial reporting. On the other hand, the private benefits hypothesis predicts higher levels of earnings management for companies with institutional/blockholder ownership; they can side with management to secure their business interests (Cornett et al., 2007). Hsu and Koh (2005) show evidence of a positive association between transient institutional ownership and upward accruals management. Institutional ownership is measured as the proportion of shares held by institutions, according to the Thompson Reuters Eikon database. Details of how blockholder ownership is measured are presented in subsection 5.2.4.2.3 above.

CEO Ownership (CEOOwn)

Share ownership by CEOs creates an incentive to manipulate earnings, with the objective of increasing their wealth. The entrenchment hypothesis is consistent with this, arguing that high levels of CEO ownership may lead to entrenchment, which weakens monitoring and consequently

increases earnings manipulation (Cornett, Marcus & Tehranian, 2008). Cheng and Warfield (2005) and Ali and Zhang (2015) report evidence consistent with this view. They report a significant and positive relationship between CEO ownership and earnings management. Share ownership can also align the interests of managers with those of shareholders, which incentivises the managers to create value and mitigate the risk of earnings manipulation.

NEDs (NEDs)

NEDs fall into two categories: grey, and independent. Grey NEDs are those directors who meet one of the following criteria: has a consulting contract with the firm, is a former employee, represents a specific shareholder, or is related to a senior manager in the firm. Independent NEDs have no ties to the firm other than their service on the board (Platt & Platt, 2012). The focus here is on both types of NEDs, the grey and the independent; whereas board independence (the next variable discussed) focuses only on independent NEDs. Companies with a high proportion of NEDs were found to be associated with a lower likelihood of engaging in earnings management (Klein, 2002; Xie, Davidson & DaDalt, 2003; Peasnell, Pope & Young, 2005).

Board independence (Indp)

The focus here is on independent NEDs whereas the previous variable (NEDs) focused on both grey and independent NEDs. Independent NEDs have no ties with management, and in some jurisdictions they may not have any financial ties with shareholders (Ryan Jr & Wiggins III, 2004; Laux & Mittendorf, 2011). The lack of connection with management means they are less vulnerable to the influence of management, which allows them to provide objective, independent and objective assessments of the company's decisions. High board independence signifies strong corporate governance, and so is associated with improved monitoring by the board. Most of the studies that have investigated the association between board independence and quality of financial reporting confirmed the importance of board independence in enhancing monitoring. Ebrahim (2007), Epps and Ismail (2009) and Chen, Cheng and Wang (2015) report a negative relationship between board independence and level of discretionary accruals. However, some studies reported contradictory evidence on the effectiveness of board independence; for example, Ianniello (2013) found board independence to have an insignificant effect on earnings management. Bradbury, Mak and Tan (2006) found no connection between earnings management and board independence.

Board size (Boardsize)

As discussed in Subsection 5.2.1.2.3 above, the question of whether board size improves or reduces the effectiveness of monitoring is not settled; therefore, the relationship between board size and earnings management may be positive or negative. Large boards have a high probability

of coordination problems, which may result in poor monitoring (Jensen, 1993; Yermack, 1996; Chen, 2002; Cheng, 2008); consistent with this, smaller boards are more efficient and less affected by bureaucratic problems, which makes them better at monitoring (Xie, B., Davidson III & DaDalt, 2003). This shows a positive relationship between board size and earnings management. Jensen (1993), Yermack (1996), Chen (2002) and Cheng (2008) show that larger boards are less effective in terms of monitoring. Consistent with this, Xie, Davidson III and DaDalt (2003) report a positive relationship between board size and earnings management. On the other hand, larger boards are also associated with better monitoring; because of their size, they can draw from a larger pool of knowledge and experience. A larger board is more likely to have independent experts from different fields who can contribute to monitoring (Xie, Davidson III & DaDalt, 2003) – this argument points to a negative relationship between board size and earnings management. Badolato, Donelson and Ege (2014) did not find a significant relationship between board size and earnings management.

Company risk (firmrisk)

Prior studies report contradictory results on the impact of company risk and earnings management. Chen, Cheng and Wang (2015) report a positive relationship between company risk and discretionary accruals. Badolato, Donelson and Ege (2014) reported a positive but not significant relationship; Cheng and Warfield (2005) found a negative but not significant relationship, and indicated that the relationship between firm risk and earnings management could either be positive or negative. Company risk is measured as the volatility share price, measured as the standard deviation of monthly returns over a 5-year period (Chen, 2002).

### 5.2.6 How the impact of NEDs share option compensation is affected by institutional ownership and blockholder ownership.

Institutional ownership is an important external mechanism for mitigating agency problems. However, studies have shown that institutional investors are not a homogenous group. Not all institutional owners are good monitors; some are active monitors, some are passive, while others may connive with management to enrich themselves at the expense of other shareholders. The different categories of institutional ownership have different abilities and motives for monitoring, which will affect organisational outcomes (Almazan, Hartzell & Starks, 2005). Empirical evidence supports the existence and different effects of different categories of institutional ownership on organisational outcomes (and is presented in Section 3.3 of Chapter Three above).

Regarding blockholder ownership, Zhong, Gribbin and Zheng (2007) identified two competing views that explain the role played by blockholders in corporate governance: the alleviating view,

which posits that blockholders alleviate agency problems, and the exacerbating view, which posits that blockholders compound agency problems. Empirical evidence exists to support both theories (and is presented in Section 3.4 of Chapter Three above). Given the conflicting theories supported by empirical evidence, the question of whether blockholders and institutional ownership alleviate or exacerbate agency problems remains unanswered.

Edmans and Holderness (2017) called for an investigation of the interaction between blockholders and other corporate governance monitoring mechanisms. They noted this as an area that is under-researched. Their suggestions are based on the substitution-monitoring hypothesis, which argues that two corporate governance mechanisms can either complement each other or be substitutes for each other (Mishra & Nielsen, 2000). This study has heeded the call, and has examined how blockholders interact with share option compensation for NEDs, and how institutional ownership interacts with share option compensation for NEDs.

To examine how the impact of share option compensation for NEDs is affected by the level of institutional ownership, the main variable of interest $\mathrm{NEDOpsDummy_i} * \mathrm{K3_t}$ is interacted with institutional ownership (InsOwn) and then blockholder ownership (Block). Institutional ownership is a dummy variable which equals one if a company has institutional ownership in their ownership structure, and zero if the company has no institutional ownership. Blockholder ownership is a dummy variable which equals one if a company has blockholder ownership in their ownership structure, and zero if the company has no blockholder ownership.

Difference-in-difference analysis

The following difference-in-difference regression equations are used to examine how the effect of share option compensation for NEDs on CEO pay incentives and earnings management is affected by level of institutional ownership.

#### 5.2.6.1 How the impact of NEDs share option compensation on CEO pay-performance sensitivity is affected by institutional ownership.

Regression equation 7 below tests Hypothesis 4a, which examines how institutional ownership affect the relationship between share option compensation and CEO pay-performance sensitivity.

$$\begin{aligned}\text{CEO Pay}_{it} = \alpha_t + \beta_1 \mathrm{NEDOpsDummy_i} + \beta_2 \mathrm{K3} + \beta_3 \mathrm{Perf} + \beta_4 \mathrm{NEDOpsDummy_i} * \mathrm{K3_t} \\ + \beta_5 \mathrm{NEDOpsDummy} * \mathrm{Perf} + \beta_6 \mathrm{NEDOpsDummy_i} * \mathrm{K3_t} * \mathrm{Perf} \\ + \beta_7 \mathrm{NEDOpsDummy_i} * \mathrm{K3_t} * \mathrm{Perf} * \mathrm{InstOwn} + \text{Control Variables} + \gamma + \varepsilon_{it} \quad (7)\end{aligned}$$

Equation 7 is an extension of Equation 5. The only new variable is $\mathrm{NEDOps_i} * \mathrm{K3_t} * \mathrm{Perf}_t * \mathrm{InsOwn}$. It shows how the dependent variable is affected by the removal of share option compensation for NEDs on companies with institutional ownership compared to those without. The other variables are as defined in Equation 5.

#### 5.2.6.2 How the impact of NEDs share option compensation on earnings management is affected by institutional ownership.

Regression equation 8 below tests Hypothesis 4c, which examines how institutional ownership affects the relationship between share option compensation for NEDs and discretionary accruals.

$$\mathrm{EM_{it}} = \alpha_t + \beta_1 \mathrm{NEDOpsDummy} + \beta_2 \mathrm{K3} + \beta_3 \mathrm{NEDOpsDummy_i} * \mathrm{K3_t} + \beta_4 \mathrm{NEDOpsDummy_i} * \mathrm{K3_t} * \mathrm{InstOwn} + \mathrm{Control\ Variables} + \gamma + \varepsilon_{it} \quad (8)$$

Equation 8 is an extension of Equation 6. The only new variable is $\mathrm{NEDOps_i} * \mathrm{K3_t} * \mathrm{InsOwn}$, which shows how the dependent variable (discretionary accruals, in this case) is affected by the removal of share option compensation for NEDs in companies with institutional ownership, compared to those without. The other variables are as defined in Equation 6.

Regression equation 9 below tests Hypothesis 4d, which examines how institutional ownership affects the relationship between share option compensation and real-activities manipulation.

$$\mathrm{EM_{it}} = \alpha_t + \beta_1 \mathrm{NEDOpsDummy} + \beta_2 \mathrm{K3} + \beta_3 \mathrm{NEDOpsDummy_i} * \mathrm{K3_t} + \beta_4 \mathrm{NEDOpsDummy_i} * \mathrm{K3_t} * \mathrm{InstOwn} + \mathrm{Control\ Variables} + \gamma + \varepsilon_{it} \quad (9)$$

Equation 9 is an extension of Equation 6. The only new variable is $\mathrm{NEDOps_i} * \mathrm{K3_t} * \mathrm{InsOwn}$, which shows how the dependent variable (real-activities manipulation, in this case) is affected by the removal of share option compensation for NEDs on companies with institutional ownership, compared to those without. The rest of the variables are as defined in Equation 6.

### 5.2.7 How the impact of NEDs share option compensation on CEO equity incentives is affected by blockholder ownership.

To examine how the impact of share option-based compensation for NEDs is affected by blockholder ownership, the variable of interest $\mathrm{NEDOpsDummy_i} * \mathrm{K3_t}$ is interacted with blockholder ownership (Block). Blockholder ownership is a dummy variable, with a value of one if a company has blockholder ownership in their ownership structure, and zero if the company has no blockholder ownership.

**Difference-in-difference analysis**

The following difference-in-difference regression equations are used to test how the effect of share option compensation for NEDs on CEO pay-performance sensitivity is affected by the presence of blockholder ownership.

#### 5.2.7.1 How the impact of NEDs share option compensation on CEO pay-performance sensitivity is affected by blockholder ownership

Regression equation 10 below tests Hypothesis 5a, which examines how blockholder ownership affects the relationship between share option compensation and CEO pay-performance sensitivity.

$$\text{CEO Pay}_{it} = \alpha_t + \beta_1 \text{NEDOpsDummy}_i + \beta_2 K3 + \beta_3 \text{Perf} + \beta_4 \text{NEDOpsDummy}_i * K3_t + \beta_5 \text{NEDOpsDummy} * \text{Perf} + \beta_6 \text{NEDOpsDummy}_i * K3_t * \text{Perf} + \beta_7 \text{NEDOpsDummy}_i * K3_t * \text{Perf} * \text{Block} + \text{Control Variables} + \gamma + \varepsilon_{it} \quad (10)$$

Equation 10 is an extension of Equation 5. The only new variable is $\text{NEDOps}_i * K3_t * \text{Perf}_t * \text{Block}$, which shows how the dependent variable is affected by the removal of share option compensation for NEDs in companies with blockholder ownership, compared to those without. The other variables are as defined in Equation 5.

#### 5.2.7.2 How the impact of NEDs share option compensation on earnings management is affected by blockholder ownership

Regression equation 11 below tests Hypothesis 5b, which examines how blockholder ownership affects the relationship between share option compensation and discretionary accruals.

$$EM_{it} = \alpha_t + \beta_1 \text{NEDOpsDummy} + \beta_2 K3 + \beta_3 \text{NEDOpsDummy}_i * K3_t + \beta_4 \text{NEDOpsDummy}_i * K3_t * \text{Block} + \text{Control Variables} + \gamma + \varepsilon_{it} \quad (11)$$

Equation 11 is an extension of Equation 6. The only new variable is $\text{NEDOps}_i * K3_t * \text{Block}$, which shows how the dependent variable (discretionary accruals, in this case) is affected by the removal of share option compensation for NEDs for companies with blockholder ownership, compared to those without. The other variables are as defined in Equation 6.

Regression equation 12 below tests Hypothesis 5c, which examines how blockholder ownership affects the relationship between share option compensation and real-activities manipulation.

$$EM_{it} = \alpha_t + \beta_1 \text{NEDOpsDummy} + \beta_2 K3 + \beta_3 \text{NEDOpsDummy}_i * K3_t + \beta_4 \text{NEDOpsDummy}_i * K3_t * \text{Block} + \text{Control Variables} + \gamma + \varepsilon_{it} \quad (12)$$

Equation 12 is an extension of Equation 6. The only new variable is $\text{NEDOps}_i * K3_t * \text{Block}$, which shows how the dependent variable (discretionary accruals, in this case) is affected by the removal

of share option compensation for NEDs on companies with blockholder ownership, compared to those without. The other variables are as defined in Equation 6.

### 5.3 Data Analysis

Table 5.2 below provides a comparison between the descriptive statistics (of the dependent variables, corporate governance factors and company characteristics) of the control and treatment companies over the full sample period. The analysis in Sections 5.3.1 to 5.3.3 below is based on the contents of this table.

**Table 5. 2: Descriptive statistics of the dependent variables, corporate governance factors, company characteristics of the treatment and control companies over the full sample period.**
For each sample group the mean and median is presented. The last column presents the difference in mean and median, the t-tests and Wilcoxon tests were run to show the significance in the mean and median differences. *,**,*** denote the significance at 10%,5% and 1% level, respectively.

| Full Sample period: 2002-2016 | Treatment companies | | Control companies | | Difference | |
|---|---|---|---|---|---|---|
| | Mean | Median | Mean | Median | Mean | Median |
| **Dependent variables** | | | | | | |
| Discretionary Accruals | 3.01% | 0.55% | 2.81% | 0.63% | 0.20%** | -0.08%* |
| Abnormal Cash from operations | 1.43% | 1.24% | 0.19% | 0.75% | 1.24% | 0.49%* |
| CEO Pay(R,million) | 16.11 | 8.24 | 8.04 | 3.68 | 8.07*** | 4.56** |
| **Corporate Governance Variables** | | | | | | |
| CEO Age | 51 | 52 | 51 | 52 | - | - |
| CEO Ownership(CEOOwn) | 2.53% | 0.05% | 5.93% | 0.11% | -3.40% | -0.06% |
| Board Size | 12 | 11 | 10 | 9 | 2*** | 2*** |
| NEDs | 64% | 67% | 62% | 67% | 2%*** | 0.% |
| Indp | 39% | 39% | 40% | 40% | -1% | -1% |
| Block | 28% | 24% | 33% | 29% | -5% | -5% |
| InstOwn | 31% | 29% | 16% | 7% | 15%*** | 22%*** |
| **Firm Characteristics** | | | | | | |
| Firmsize (R, billions) | 23.1 | 5.3 | 18.4 | 2.5 | 4.70 | 2.80 |
| Leverage | 28% | 23% | 27% | 19% | 1.00% | 4.00% |
| Tobin'sQ | 1.46 | 0.83 | 2.02 | 0.82 | -0.56 | 0.01 |
| CFOSls | 15% | 2% | 8% | 8% | 7% | -6% |
| Firmrisk | 43% | 31% | 45% | 34% | -2%* | -3% |
| **Firm Performance** | | | | | | |
| Share Return | 24% | 9% | 25% | 7% | -1% | 2.00% |
| ROA | 9% | 10% | 5% | 10% | 4% | 0.% |
| Rand Share Return,(R, billion) | 2.35 | 0.06 | 0.55 | 0.04 | 1.80 | 0.02 |

### 5.3.1 Earnings management variables:

From Table 5.2 above, the mean for discretionary accruals and real-activities manipulation (proxied by the abnormal cash flows) are higher for treatment companies compared to control companies. For discretionary accruals, the mean for treatment companies is 3.01% of total assets; for control companies, 2.81% of total assets. The difference between the two is statistically significant at the 5% level. However, the median numbers show conflicting results: the control firms have a higher median, of 0.63%, compared to a median of 0.55% for treatment firms. The difference between the two is statistically significant at the 10% level. For real-activities manipulation, both the mean and the median are higher in treatment companies compared to control companies. The mean for treatment companies is 1.43% of total assets, and for control companies, 0.19% of total assets; however, the difference between the two is not statistically significant. The median is consistent with those results; the treatment firms have a higher median, of 1.24%, compared to a median of 0.75% for control firms. The difference between the two is statistically significant at the 10% level. Except for the median for discretionary accruals, the other statistics for discretionary accruals and real-activities manipulation show that the level of earnings management is higher in treatment companies. This suggests that monitoring is weaker in treatment companies (companies that were paying share options to NEDs), which means share option compensation might have a negative effect on monitoring. In South Africa, the magnitude of the means and medians – for both discretionary accruals and abnormal cash flows – shows evidence of earnings management; the numbers are comparable to those of prior studies that reported significant evidence on earnings management. For example, for discretionary accruals, Ali and Zhang (2015) reported a mean and median of 0.54% and 0.36%, respectively, while Mao and Renneboog (2015) and Qi et al. (2017) reported mean discretionary accruals of 3% and 0.3% respectively. For real-activities manipulation, Ali and Zhang (2015) reported a mean and median of -1.9% and -1.86%, while Cohen, Dey and Lys (2008) reported a mean and median of -2% and 1%, for abnormal cash flows. Based on these levels of earnings management, all the studies mentioned above reported significant evidence of earnings management

### 5.3.2 CEO Compensation variables

Total CEO compensation is higher in treatment companies; the mean and median are R16.11 million and R8.24 million per annum respectively. For control companies, the mean is R8.04 million, while the median is R3.68 million. Both the means and the median difference between the two samples are statistically significant, at 1% and 5% respectively.

### 5.3.3 Corporate Governance Variables

Regarding the corporate governance variables, the mean and median CEO ages are the same for both the treatment and control companies. In both sample groups, the mean is 51 years and the median is 52 years. Both mean and median figures show that CEO ownership is higher in control companies, but the difference in mean and median between the two samples is not statistically significant. The mean for control companies is 5.93%, compared to a mean of 2.53% for treatment companies; the median is 0.05% and 0.11% for treatment and control companies respectively. Both the mean and the median show that board size is higher in treatment companies compared to control companies and the differences in means and medians are statistically different at 1%. The mean board size is 12 in treatment companies and 10 in control companies, while the median is 11 for treatment and 9 for control companies. In terms of the means, the proportion of NEDs is higher in control companies, and the difference in means is statistically different at 1%. The mean for the proportion of NEDs is 64% in treatment companies and 62% in control companies. The median for proportion of NEDs is 67% for both control and treatment companies; hence, the difference is not statistically different between the two samples. The mean and median for proportion of board independence are slightly higher in control companies, but the difference is not statistically significant. The mean for proportion of board independence is 39% and 40% for treatment and control companies respectively, and the medians are the same as the means for both groups of samples. The level of institutional ownership is higher for treatment companies, and the difference in means and medians between the two sample groups is statistically significant at 1%;, the mean is 31% for the treatment group and 16% for the control group, while the median is 29% for the treatment group and 7% for the control group. The means and medians show that the level of blockholder ownership is higher in control companies, but the differences between the means and the medians for the two samples is not statistically significant. The mean blockholder ownership is 28% for the treatment group and 33% for the control group, while the median is 29% for the treatment group and 7% for the control group.

### 5.3.4 Firm Characteristics

Regarding the firm characteristics, the treatment companies are slightly bigger, with a mean size of R23.1 billion compared to R18.4 billion for the control firms. The median firm size is R5.3 billion for treatment companies and R4.7 billion for control companies. However, the differences between the means and medians for the two samples is not statistically significant. The leverage is also slightly higher in treatment firms, with a mean of 28% for treatment companies compared to 27% for control firms, while the medians are 23% and 19% for treatment and control firms respectively. However, the differences for both the means and the medians are not statistically significant. Control firms have more growth opportunities, with a mean Tobin's Q of 2.02,

compared to 1.46 for treatment firms. Control firms are also riskier than treatment firms; the mean firm risk is 45% for control companies and 43% for treatment companies, where the difference between the means for the two sample groups is statistically significant at 10% but the difference in medians is not.

The market measures of performance, share price return and rand share return show better performance for treatment companies, but the differences between means and between medians for the two samples is not statistically significant. The mean share price returns are 24% and 25% for treatment and control companies respectively, while the rand return is R2.35 billion per annum and R0.55 billion per annum for treatment and control firms respectively. The financial performance measure (ROA) shows the same trend; it is higher for treatment companies than for control companies. Average ROA is 9% and 5% for treatment and control companies respectively.

### 5.3.5 Parallel trends assumption

According to Billett, Garfinkel and Yu (2017), the validity of the difference-in-difference tests from a natural experiment rest on the parallel trends assumption. The dependent variables for control firms and treatment firms should exhibit similar trends before the treatment effects. The existence of parallel trends before the treatment effect mitigates the possibility that the dependent variables were already diverging even before the treatment came into effect. As far as this study is concerned, the parallel trends should exist after the treatment effect and not before. The basis for this is that the treatment removes share option compensation, which differentiates the control and the treatment firms. After the removal of share options, the control and treatment firms became similar, therefore the parallel trends should hold after the removal of share option compensation for NEDs in the post-King III period. Consistent with Duchin, Matsusaka and Ozbas (2010) and Billett, Garfinkel and Yu (2017), this study uses line graphs of the dependent variables to test the parallel trends assumption (see Figures 5.1-5.3). In Figure 5.1, the trends are similar for the treatment and the control companies during the post-King III period. In the pre-King III period the trends for the two groups are different; but from 2012 to 2016, the line graphs move in the same fashion; however, the trends are not parallel for real-activities manipulation and discretionary accruals in Figures 5.2 and 5.3 respectively. The line graphs for the treatment and control companies diverge; thus, the parallel trends assumption does not hold. According to Lechner, Rodriguez-Planas and Fernández Kranz (2016), for the difference-in-difference method, the fixed effects and OLS estimators produce similar results when the parallel trends assumption holds. If the parallel trends assumption fails to hold, they produce different results, but the results of the fixed effects model will be more consistent. This study therefore applies the fixed effects

estimators for the difference-in-difference, which produces more consistent results relative to the OLS estimators. After running all the tests, a comparison of the results of the OLS and fixed effects models support this; the results of the OLS were not consistent, while those of the fixed effects model were more consistent.

#### 5.3.5.1 Graphs testing the parallel trends assumption

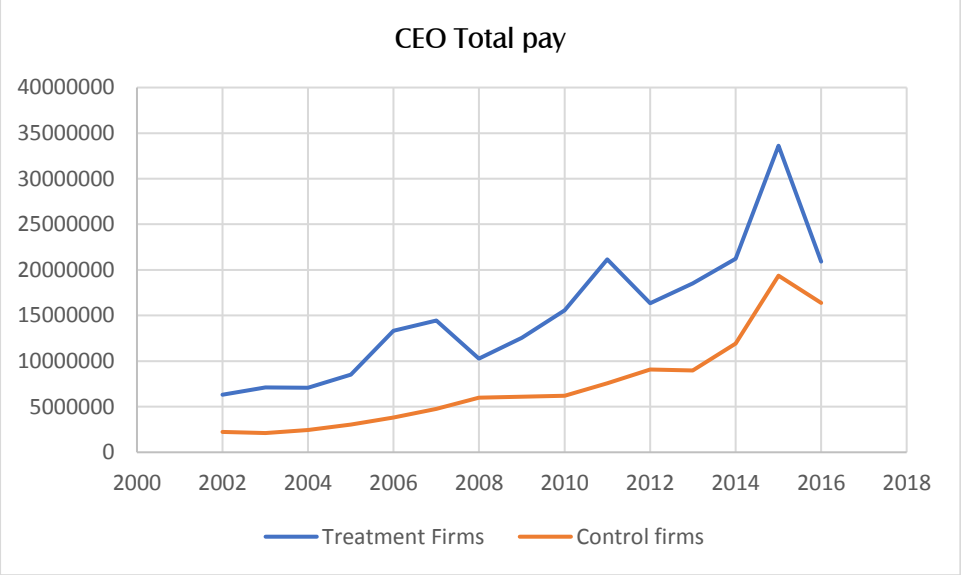


**Figure 5. 1: Trend analysis for CEO total pay**

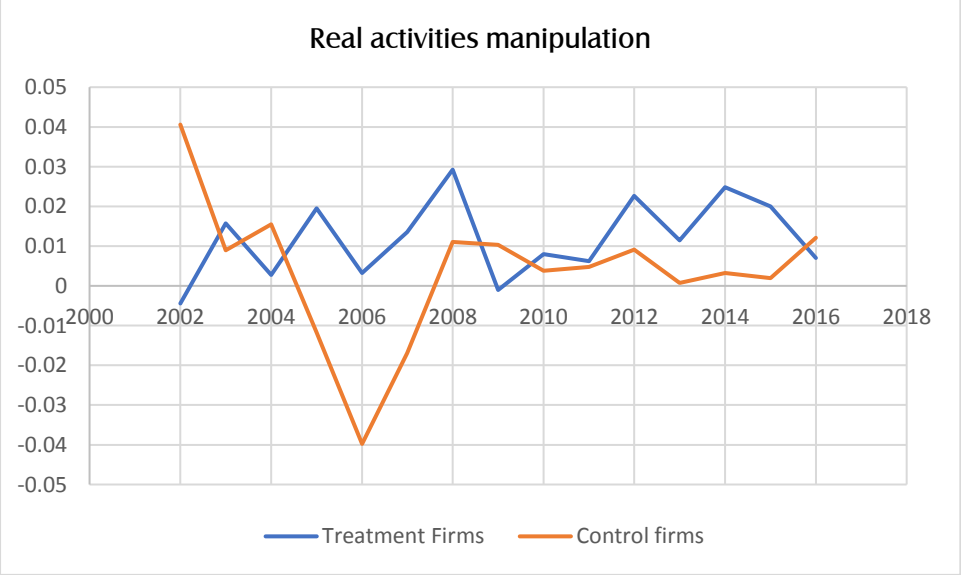

Figure 5. 2: Trend analysis for the proportion of real-activities manipulation

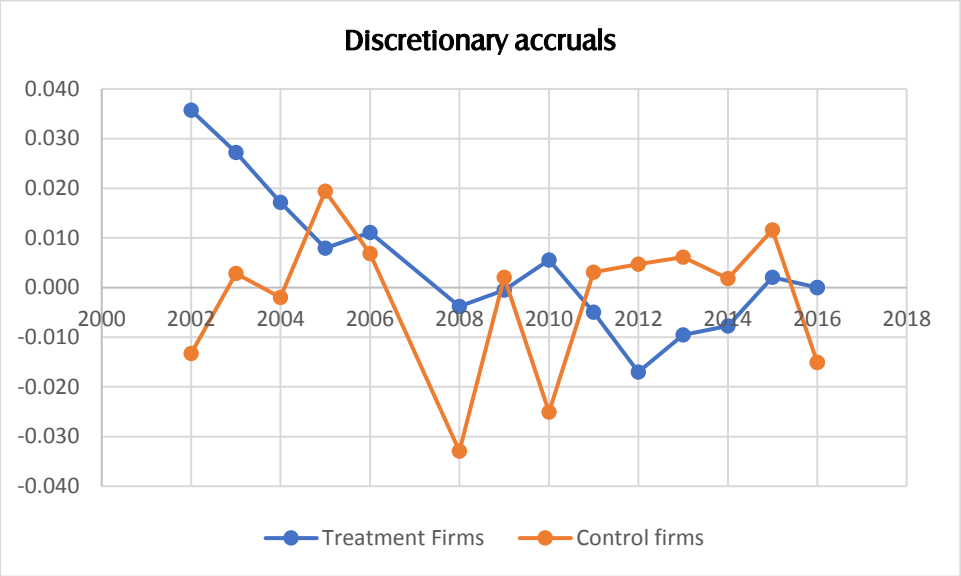


Figure 5. 3: Trend analysis for the proportion of discretionary accruals

### 5.3.6 Correlations

Table 1 below presents a correlation matrix of the independent variables. None of the independent variables are highly correlated above 54%, suggesting that multicollinearity is not a concern. Multicollinearity becomes a concern when correlations are above 70% (Gujarati & Porter, 1999).

Table 5. 3: Pearson correlation matrix of the independent variables

| | *Boardsize* | *NEDelta* | *NEDOwn* | *InstOwn* | *Tobin'sQ* | *Leverage* | *Firmrisk* | *Indp* | *CEOOwn* | *CEOAge* | *Share return* | *ROA* | *Duality* | *Block* | *Firmsize* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Boardsize | 1 | | | | | | | | | | | | | | |
| NEDelta | 0.03 | 1.00 | | | | | | | | | | | | | |
| NEDOwn | -0.01 | 0.03 | 1.00 | | | | | | | | | | | | |
| InstOwn | 0.33 | 0.00 | -0.05 | 1.00 | | | | | | | | | | | |
| Tobin'sQ | -0.07 | 0.22 | -0.01 | -0.06 | 1.00 | | | | | | | | | | |
| Leverage | -0.04 | -0.04 | -0.01 | 0.07 | 0.06 | 1.00 | | | | | | | | | |
| Firmrisk | -0.35 | 0.01 | 0.04 | -0.35 | 0.32 | 0.24 | 1.00 | | | | | | | | |
| Indp | 0.21 | -0.06 | -0.06 | 0.43 | -0.03 | 0.01 | -0.27 | 1.00 | | | | | | | |
| CEOOwn | -0.22 | -0.03 | -0.02 | -0.22 | 0.03 | 0.17 | 0.23 | -0.17 | 1.00 | | | | | | |
| CEOAge | 0.12 | -0.02 | -0.02 | 0.14 | -0.03 | -0.01 | -0.19 | 0.14 | 0.14 | 1.00 | | | | | |
| StkRtrn | -0.05 | -0.01 | -0.01 | -0.05 | 0.02 | 0.01 | 0.27 | -0.04 | 0.03 | -0.06 | 1.00 | | | | |
| ROA | 0.10 | -0.03 | -0.02 | 0.09 | -0.47 | -0.15 | -0.20 | 0.02 | -0.06 | 0.01 | 0.02 | 1.00 | | | |
| Duality | -0.19 | 0.00 | -0.01 | -0.15 | 0.04 | 0.15 | 0.25 | -0.25 | 0.45 | 0.08 | 0.07 | 0.01 | 1.00 | | |
| Block | 0.03 | -0.05 | -0.06 | -0.14 | -0.06 | -0.02 | 0.01 | 0.00 | 0.25 | 0.09 | 0.04 | 0.02 | 0.14 | 1.00 | |
| Firmsize | 0.30 | 0.02 | -0.01 | 0.29 | -0.09 | -0.01 | -0.54 | 0.37 | -0.20 | 0.18 | -0.11 | 0.21 | -0.26 | -0.07 | 1.00 |

## 5.4 Summary and Conclusion

This Chapter provided a description of and justification for the sample selection process, the data and variables used, and the empirical models applied to test the hypotheses. The final sample totalled 110 companies (being 55 treatment and 55 control companies). The sample population was drawn from non-financial companies listed on the JSE. The main method used is the difference-in-difference method, and the study is based on a natural experiment setting, which is useful for addressing the endogeneity problem. If not addressed, endogeneity can produce misleading results. The descriptive statistics compare the treatment and control companies in terms of the dependent and independent variables. A comparison of the descriptive statistics for dependent variables shows signs of weaker monitoring by treatment companies. The last part of the Chapter discusses the correlation matrix of the independent variables and the parallel trends assumption, which should be satisfied for the difference-in-difference method. The correlation matrix shows that none of the independent variables were highly correlated above 54%, suggesting that multicollinearity is not a concern. The two proxies for CEO pay incentives satisfy the parallel trends assumption while the two earnings management proxies do not; consequently, the study applied the fixed effects model for the difference-in-difference model, which produces consistent estimates under this circumstance.

# 6. CHAPTER SIX: RESULTS ANALYSIS

## 6.0 Introduction.

This chapter discusses the results of the research questions and hypotheses tested. The first section presents the trends in share option compensation during the pre-King III period and over the full sample period from 2002-2016. The second section presents the impact of removing share option compensation for NEDs, on CEO compensation and then earnings management. The third section discusses how institutional ownership and blockholder ownership (and their various categories) moderate the relationship between share option compensation for NEDs and monitoring of CEO compensation and earnings management. For each research question there is a univariate analysis followed by a regression analysis. The last section of the chapter discusses the results from the sensitivity analysis; that is, after controlling for autocorrelation and heteroscedasticity, for the alternative cut-off period for the implementation of King III and for the normal OLS and the fixed effects regression.

## 6.1 Trends in share option compensation for NEDs during the pre-King III and over the full sample period?

One of the requirements of the King III was to stop the use of share options to compensate NEDs. This represented a shifting of the goal posts from the King II code, which allowed the use of this form of compensation for NEDs. Hence, Hypothesis 1a analyses trends in the use of share option compensation for NEDs during the pre-King III period. The intention of this hypothesis is to gain an understanding of what triggered the King Committee to focus on share option compensation for NEDs; was it because there was an extreme increase in their issuance, or was it just a concern that they could compromise the independence and objectivity of NEDs? Hypothesis 1a predicts an increasing trend in the use of share option compensation during the pre-King III period. The assumption behind this prediction, is that there was a tremendous increase in the use of share option compensation which attracted the attention of the King Committee; the explosion in their use could have left the Committee concerned about their possible negative effect on board independence.

Hypothesis 1b extends the trend analysis beyond the pre-King III period to cover the full sample period. The intention of this hypothesis is to examine how the use of share option compensation changed over time and in the post-King III period. This analysis determines compliance with King III's requirement to stop the use of share option compensation for NEDs. Hypothesis 1b predicts

a decreasing trend in the use of share option compensation for NEDs in the post-King III period. The basis for this prediction is the view that the majority of companies complied with the requirement to stop using share options; hence, over time, the amounts paid during the pre-King III period should be lower than those paid in the post-King III period.

### 6.1.1 Trend analysis of share option compensation during the pre-King III period

#### 6.1.1.1 Univariate analysis results

The findings based on the summary statistics presented in Table 6.2 below support Hypothesis 1a, which predicted an increasing trend in the issuance of share options for NEDs during the pre-King III period. The total number of share options issued by companies and the number of share option balances held by NEDs show a largely increasing trend. The number of share options issued per year increased from 063 173 to a peak of 154 682 406 in 2010, before declining to 15 585 000 in 2012; while the number of share option balances held by NEDs increased from 16 413 083 in 2002 to a peak of 305 209 493 in 2010, before declining to 181 099 361 in 2012. Despite the increase in share options issued, the proportion of share option compensation does not show a persistent and increasing trend; it increases and drops in different years. It constituted 11% of total compensation in 2002, dropped to 9% the following year and then increased to 13% the year after, settled at 8% in 2009 and then increased to 11% in 2010. By 2012 it had dropped to 2%. This inconsistent trend in the proportion of share option compensation reflects the inconsistency in issuing of share options for NEDs. Over the pre-King III period, the issuing of share options was not consistent. Some of the companies were not issuing the share options consistently on a yearly basis, and there were some years in which companies would only pay cash compensation without issuing share options grants; hence the bumps in the values and proportions of option compensation. These inconsistencies were seen in most companies in the sample.

#### 6.1.1.2 Regression analysis results

In addition to the year-on-year trend analysis for average share option compensation for NEDs, a regression was run to analyse the trend for share option compensation during the pre-King III period. The regression is based on two measures of share option compensation (proportion of share option compensation, and number of share options issued) for NEDs as dependent variables. The results are presented in Table 6.1 below, from Model 1 to Model 3. Model 1 shows the results when the dependent variable is the proportion of share option compensation (OpsTC), and Models 2 and 3 show the results when share options issued (OptionIssued) and total

compensation (TotalComp) respectively are the dependent variables. The focus of the analysis will be on OpsTC and OpsIssued, not TotalComp. TotalComp is only included because it is the denominator for OpsTC so it is only necessary to complete the analysis. The variable of interest in this regression is Time; its coefficient shows how share option compensation has changed over the sample period. The regression model includes a list of control variables that drive the use of share option compensation for NEDs.

The coefficient of the time variable in both Model 1 and Model 2 is negative, which indicates a decreasing trend in both measures of share option compensation. Both the proportion of share option compensation (OpsTC) and the number of options issued (OptionIssued) declined over the sample period. However, the coefficients are not significant, which means there was no significant change in number of share options issued and proportion of share options during the pre-King III period. Based on these results, Hypothesis 1a - which predicts an increasing trend in share option compensation during the pre-King III period – is rejected. The results are inconsistent with the univariate analysis results presented in Section 6.1.1.1. The results rule out the possibility that the King Committee targeted share options because of an explosion in their use by companies.

Regarding the control variables, the coefficient for CEO equity ownership (CEOOwn) is negative for both OpsTC and OpsIssued. However, the coefficient is only significant for OpsTC, suggesting that the proportion of share option compensation for NEDs decreases with an increase in CEO equity ownership. The results are consistent with the view that CEO equity ownership aligns CEOs' interests with those of shareholders, which reduces the need for monitoring, which means reduced incentive compensation (such as options) for NEDs (Perry, 2000; Bryan, Hwang & Lilien, 2000; Brick, Palmon & Wald, 2006).

For both OpsTC and OpsIssued, the institutional ownership variable is not significant. This means there is no association between institutional ownership and share option compensation for NEDs. This result contradicts the findings of Andreas, Rapp and Wolff (2012) and Fich and Shivdasani (2005), who reported a statistically significant association between institutional ownership and equity-based compensation for NEDs.

The coefficient of the Tobin's Q (a proxy for the firm's growth opportunities) is positive and significant at 1% level for both OpsTC and OpsIssued, suggesting a positive association between share option compensation for NEDs and growth opportunities of the firm; this result is consistent with the findings of Bryan, Hwang and Lilien (2000) and Linn and Park (2005), who found support

for the view that high-growth firms require more intense monitoring – hence the need to incentivise NEDs to perform that role effectively.

Board size exhibits a negative and significant relationship with both OpsTC and OptionIssued, meaning the larger the board, the lower the number of share options issued and the proportion of share option compensation. Even though the impact of board size on monitoring is not settled, as prior studies have reported conflicting results, this study shows that larger board size is associated with lower share option compensation for NEDs. These results contradict the findings of Feng, Ghosh and Sirmans (2007), who did not find a significant relationship between board size and equity compensation for NEDs.

Consistent with the findings of Bugeja, Fohn and Matolcsy (2016), the study finds a positive relationship between firm size and the two variables for share option compensation for NEDs. However, the coefficient is not statistically significant for both OpsTC and OpsIssued, suggesting that the size of the company has no relationship with share-option compensation for NEDs. The results contradict the findings of Baker and Hall (2004) and Liljeblom, Pasternack and Rosenberg (2011), who find a significant relationship between firm size and equity incentives for NEDs. Oyer and Schaefer (2005) reported a negative relationship, while Baker and Hall (2004) and Liljeblom, Pasternack and Rosenberg (2011) reported a positive relationship.

Leverage has a negative and insignificant association with the two measures of share option compensation for NEDs. The negative effect of leverage on forms of equity-based compensation for NEDs (OpsTC, OptionsIssued) is consistent with the view that high leverage reduces the need for a high level of monitoring, which consequently reduces the need for equity-based compensation (Bryan, Hwang & Lilien, 2000). These results contradict the findings of Bryan, Hwang and Lilien (2000), who reported a significant and negative relationship between the two variables.

The proportion of NEDs (NEDs) on the board has no effect on either variable representing share compensation for NEDs. The coefficient is negative and not statistically significant for both. This finding contradicts those of Perry (2000) and Fich and Shivdasani (2005), who reported a positive and significant relationship between proportion of NEDs and adoption of share option plans.

Overall, the adjusted R-squared for the regression models, ranging from 17.1% to 32%, is in line with prior studies that investigated the determinants of compensation for NEDs (see Cordeiro, Veliyath & Eramus, 2000).

**Table 6. 1: Regression analysis of how share option compensation changed during the pre-king III period.**

This table presents the regression analysis results (from Equation 1) for how share option compensation for NEDs changed during the pre-King III period. The dependent variable is share option compensation for NEDs, measured as the proportion of share option of share option compensation to total compensation (OpsTC) and number of share options issued (OpsIssued). Model 1 shows the results for OpsTC, while Model 2 shows the results for OpsIssued. Model 3 shows the results when total compensation paid to NEDs (TotalComp) is the dependent variable. The variable of interest in this regression is Time, which shows how the compensation variables for NEDs changed over time. The other independent variables are control variables found by prior studies to be determinants of equity-based compensation for NEDs; they are defined in Appendix 1. Standard error is shown in parentheses. '*', '**' and '***' denote the significance at 10%, 5% and 1% level respectively.

| | (1) | (2) | (3) |
|---|---|---|---|
| Variables | OpsTC | OpsIssued | TotalComp |
| | | | |
| Time | -0.00862 | -0.164 | 0.213** |
| | (0.0103) | (0.184) | (0.0895) |
| InstOwn | -0.0248 | 1.301 | 0.951 |
| | (0.0889) | (1.850) | (0.651) |
| CEOOwn | -0.378** | -2.966 | -0.727 |
| | (0.183) | (3.690) | (1.749) |
| Tobin's Q | 0.0154*** | 0.213*** | 0.118*** |
| | (0.00235) | (0.0437) | (0.0116) |
| Boardsize | -0.0127** | -0.174* | 0.0587** |
| | (0.00591) | (0.0916) | (0.0247) |
| Firmsize | 0.0158 | 0.162 | 0.312** |
| | (0.0174) | (0.302) | (0.138) |
| Leverage | -0.0244 | -0.216 | -0.652 |
| | (0.0893) | (1.667) | (1.365) |
| NEDs | -0.123 | -2.358 | 0.105 |
| | (0.178) | (2.881) | (1.355) |
| Constant | 0.169 | 11.84* | 6.320*** |
| | (0.361) | (6.188) | (2.356) |
| Observations | 320 | 320 | 320 |
| Adjusted R-squared | 0.171 | 0.224 | 0.320 |

### 6.1.2 Analysis of compensation for NEDs over the full sample period (2002-2016).

#### 6.1.2.1 Univariate analysis

Table 6.2, Table 6.3 and Figure 6.1 show the trend analysis for share option compensation over the full sample period. In Table 6.2 (similar to the results of the pre-King III period), the proportion of share option compensation to total compensation (OpsTC) does not show a clear pattern. In some years it increases, but in others it decreases, with no consistent pattern. Despite the annual inconsistency, there is an overall drop from 2002 to 2016, from 11% to 1%. The trend for number of options issued (OpsIssued) per year shows a hump-shaped pattern over the sample period,

increasing from 2002 to 2009 and then dropping from 2010 to 2016. The overall decline from 2010 to 2016 versus the overall increase from 2002 to 2009 reflects compliance with the requirement of King III to stop the use of share option compensation for NEDs. However, this compliance is not 100% (21 million options were issued in 2016), because the King III code is based on the 'apply or explain' approach.

**Table 6. 2: Trend analysis of share option compensation for NEDs.**
This table shows the year on year analysis of the average share option compensation variables. It shows the average numbers for the proportion of share option compensation to the total compensation (OpsTC), the number of options issued per year (OpsIssued) and the number of outstanding balances of share options held by NEDs at the end of each year, unexpired and unexercised (NEDOwn).

| Year | Average OpsTC | OpsIssued | NEDOwn |
|---|---|---|---|
| 2002 | 11% | 1 063 173.00 | 16 413 083.00 |
| 2003 | 9% | 1 899 750.00 | 22 459 932.00 |
| 2004 | 9% | 3 219 830.00 | 24 205 053.00 |
| 2005 | 13% | 3 821 390.00 | 16 973 670.00 |
| 2006 | 7% | 4 331 360.00 | 18 471 227.00 |
| 2007 | 11% | 11 027 850.00 | 29 472 620.00 |
| 2008 | 7% | 9 180 167.00 | 38 060 097.00 |
| 2009 | 8% | 156 866 809.00 | 155 255 955.00 |
| 2010 | 11% | 154 682 406.00 | 305 209 493.00 |
| 2011 | 6% | 11 246 970.00 | 200 561 969.00 |
| 2012 | 2% | 15 585 000.00 | 181 099 361.00 |
| 2013 | 3% | 18 802 737.00 | 75 623 978.00 |
| 2014 | 3% | 33 479 320.00 | 53 906 513.00 |
| 2015 | 3% | 5 115 166.00 | 45 109 799.00 |
| 2016 | 1% | 21 000 000.00 | 32 229 352.00 |

Figure 6.1 below shows a trend analysis of the various forms of compensation for NEDs (cash, share grants and share options) over the sample period. It confirms the trend presented in Table 6.2. The graph clearly shows the inconsistent but upward trajectory growth in share option compensation from 2002 to 2010, and the reversal of the trend from 2011 to 2016. On the other hand, cash and total compensation show an increasing trend; this is consistent with the assumption that growth in cash compensation was meant to replace share option compensation as it was phased out. The use of other forms of share-based compensation (such as share grants, restricted shares and equity incentives) for NEDs is less prevalent in South Africa; over the period from 2002 to 2016 these other forms of equity compensation averaged 11% of total compensation, which is a relatively small proportion. Even though the growth in share grants compensation does not show a consistent trend, its use increased over the sample period. This

is an indication that share grants were also used to replace share option compensation as it was phased out.

Figure 6.1 below shows the yearly average figures for total compensation for NEDs and its components: cash compensation, share option compensation and share grants compensation. The numbers are in millions of rands.

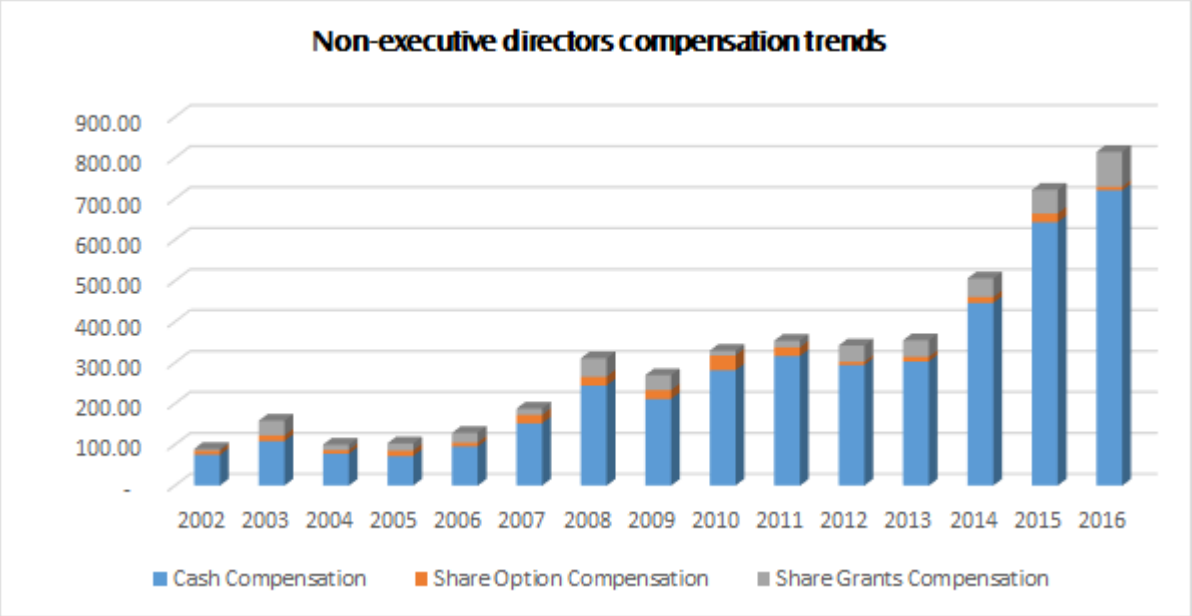


**Figure 6. 1: Trend analysis of cash compensation, share option compensation and other forms of equity compensation for NEDs**

## A comparison of share option compensation for NEDs in the pre- and post-King III period

**Table 6. 3: Comparison of the means for share option compensation variables during the pre and post King III period**

Table 6.3 below compares the differences between the means and median for OpsTC, number of OpsIssued and NEDOwn for the pre-King III period and post-King III period. OpsTC represents the proportion of share option compensation for NEDs, OpsIssued represents the options issued to NEDs, and NEDOwn represents the number of share option balances held by NEDs at the end of each year. '*', '**' and '***' denote the significance at 10%, 5% and 1% level respectively. The statistical significance is based on the p-values of the t-test for the mean and the Wilcoxon test for the median. The t-test shows whether the mean for each group pre- and post-King III is statistically different, while the Wilcoxon test shows whether the median for each group pre- and post-King III is statistically different.

| | Pre-King III | | Post-King III | |
|---|---|---|---|---|
| | Mean | Median | Mean | Median |
| OpsTC | 9% | 9% | 3%*** | 3%** |
| OpsIssued | 33 902 245.91 | 9,180,167 | 19 599 305.75 | 19,901,369 |
| NEDOwn | 91 652 950.91 | 29,472,620 | 51 717 410.50 | 49,508,156 |

A comparison of the activity on share option compensation during the pre and post-King III era, presented in Table 6.3 above, shows a significant decline in all three measures of option

compensation for NEDs. The average numbers for both OpsTC and OpsIssued are all lower post-King III compared to pre-King III. The t-test results show that the drop in OpsTC is statistically significant at 1% (however, the drop in OpsIssued and NEDOwn is not statistically significant). This is an indication that the companies complied with King III by not issuing share option compensation for NEDs. In the pre-King III period, the mean and median for OpsTC were both 9%; after the introduction of King III, both dropped to a mean and median of 3%. In 2016, share option compensation constituted only 1% of the total compensation for NEDs. The number of share options issued to NEDs shows a similar trend. On average, they declined by 42% pre-King III to post-King III. An average of 33 902 245.91 were issued in the pre-King III period, compared to 19 599 305.75 issued in the post-King III period. The same applies to the balances of share option holdings; on average, they declined by 44% pre-King III to post-King III. The mean declined from 91 652 950.91 to 51 717 410.50 in the post-King III period. The results give an indication of the level of compliance to the King III requirement to stop the use of share option compensation for NEDs.

#### 6.1.2.2 Regression analysis results

In addition to the year-on-year trend analysis of the average option compensation presented in Table 6.2, Table 6.3 and Figure 6.1, the researcher ran a regression of share option compensation variables against the time variable, while controlling for other factors that drive share option compensation for NEDs. The regression analysis results are presented in Table 6.4 below. Model 1 shows the results when the dependent variable is proportion of share option compensation (OpsTC), and Models 2 and 3 show the results when share options issued (OptionIssued) and total compensation (TotalComp) respectively are the dependent variables. The results show a negative and statistically significant coefficient for the time variable in Model 1 and Model 2. This shows that both proportion of share option compensation (OpsTC) and number of options issued to NEDs (OpsIssued) declined over the sample period. The statistically significant decline is an indication that companies largely complied with the King III requirement to stop issuing share option compensation to NEDs. The results are consistent with the univariate tests presented in Section 6.1.2.1 and Hypothesis 1b, which predicted a decline in the use of share option compensation for NEDs as companies complied with the King III requirement.

The declining trend contradicts the trend observed in the US by Farrell, Friesen and Hersch (2008), Mkrtchyan (2012), and Lahlou and Navatte (2017); they observed an increasing trend in the use of equity-based compensation. The results of this study show that in general, most of the companies complied with the requirement to stop the use of share options for NEDs. This is

consistent with the findings of previous studies (see Magang, 2012) that noted an improvement by South African companies in compliance with corporate governance requirements.

In the regression analysis, the K3 variable was included to observe the change in share option compensation pre-King III to post-King III. K3 is a dummy variable, with a value of one if share options were paid in the post-King III period, and zero if paid before; however, the variable was dropped by Stata because of multi-collinearity. K3 was intended to show clearly whether the change in share option compensation pre- to post-King III was statistically significant.

It should be noted that the decline in the use of share option compensation did not result in a decline in the total compensation paid to NEDs. The regression results in Model 3 show that total compensation (TotalComp) increased over time; the coefficient for time is positive and significant at the 10% level. The fact that total compensation for NEDs continued to increase (895% increase over the sample period), while share option compensation was declining (by 70% over the sample period) shows that share option compensation was replaced by cash compensation (as illustrated in Figure 1 above). Cash compensation grew by 1 594% over the sample period, versus a 70% decline in share option compensation (these percentages are based on actual numbers from 2002 to 2016).

The figures for most of the control variables are similar to the regression results for the pre-King III period presented under Section 6.1.1; therefore, the discussion will not be repeated here.

Overall, the adjusted R-squared for regression models ranges from 17.6% to 27%, and is in line with prior studies investigating the determinants of compensation for NEDs (see Cordeiro, Veliyath & Eramus, 2000).

**Table 6. 4: Regression analysis on how share option compensation changed over time during the sample period 2002-2016**

Table 6.4 below presents the OLS regression analysis results (from Equation 2) for how share option compensation for NEDs changed over the full sample period. The dependent variable is share option compensation variables for NEDs, measured as the proportion of share option compensation to total compensation (OpsTC) and the number of share options issued (OpsIssued). Model 1 shows the results for the proportion of share option compensation to total compensation (OpsTC), while Model 2 shows the results for the number of options issued (OpsIssued). Model 3 shows the total compensation paid to NEDs (TotalComp). The variable of interest in this regression is Time, which shows how the compensation variables for NEDs changed over time. The other independent variables are control variables that were found by prior studies to be determinants of equity-based compensation NEDs; they are defined in Appendix 1. Standard errors are shown in parentheses. '*', '**' and '***' denote the significance at 10%, 5% and 1% level respectively. The initial regression model included the variable K3, to measure how the share option compensation variable changed pre-King III to post-King III. K3 was a dummy variable with a value of 1 if the share options were paid in the post-King III period, and zero if paid before; however, the variable was dropped by Stata.

| | (1) | (2) | (3) |
|---|---|---|---|
| Variables | OpsTC | OpsIssued | TotalComp |
| | | | |
| Time | -0.00856* | -0.189** | 0.101* |
| | (0.00459) | (0.0802) | (0.0552) |
| InstOwn | -0.0231 | 0.745 | 0.570 |
| | (0.0544) | (1.046) | (0.531) |
| CEOOwn | -0.289** | -2.793 | -1.572 |
| | (0.125) | (2.811) | (1.721) |
| Tobin's Q | 0.0160*** | 0.224*** | 0.114*** |
| | (0.00223) | (0.0402) | (0.0103) |
| Boardsize | -0.00885** | -0.111* | 0.0268 |
| | (0.00406) | (0.0651) | (0.0273) |
| Firmsize | 0.0114 | 0.124 | 0.307*** |
| | (0.0101) | (0.175) | (0.104) |
| Leverage | -0.0198 | -0.119 | -0.455 |
| | (0.0475) | (0.906) | (0.870) |
| NEDs | -0.0772 | -1.483 | 0.655 |
| | (0.112) | (1.862) | (1.327) |
| Constant | -0.00194 | 1.048 | 4.267** |
| | (0.183) | (3.550) | (1.994) |
| Observations | 524 | 524 | 524 |
| Adjusted R-squared | 0.176 | 0.192 | 0.272 |

#### 6.1.2.3 Overall analysis for Hypothesis 1a and Hypothesis 1b

Firstly, prior to the introduction of King III there was no significant change in number of share options issued or the proportion of share option compensation. This finding rejects Hypothesis 1a, which predicted an increase in share option compensation for NEDs in the pre-King III period (both the univariate and the regression analysis confirm these results). Therefore, the King III Committee did not target the share options because of an explosion in their issuance. Secondly,

the regression results show a significant declining trend for the use of share option compensation over the full sample period. This finding is consistent with the univariate results, and a comparison of the mean share option compensation paid during the pre- and post-King III periods confirms a statistically significant decline in the use of share option compensation over the two sub-sample periods. The finding supports Hypothesis 1b, which predicts a decreasing trend in the use of share option compensation for NEDs; the basis for this prediction is the view that the majority of companies would comply with the requirement to stop using share options. The results show evidence of compliance with the King III requirement to stop using share option compensation. However, the compliance is not 100%; even after the cut-off date specified by the JSE, some companies continued using it. This is not surprising, as King III operated according to the 'apply or explain' principle.

## 6.2 Results for the impact of the change in NEDs' share option compensation on CEO pay-performance sensitivity

Pay-performance sensitivity is a key component of efficient pay structures for CEOs (Murphy, 2012), and is considered an important mechanism for motivating executives. It provides a good incentive to mitigate primacy agency problems and create shareholder value (Jensen & Murphy, 1990). This section tests Hypothesis 2a and 2b which examines the effect of removing share option compensation for NEDs on CEO pay incentives (the sensitivity of total CEO pay to both share price performance and financial performance). The results, which are based on the difference-in-difference regression method are presented in Table 6.5 below. Panel A presents the results when company performance is measured using share price returns while in Panel B it is measured using the return on assets (ROA). The results of the other measures of performance are presented in Appendix 4. Such measures include change in total shareholder wealth (share returns multiplied by market capitalisation at the beginning of the year (Firth, Fung & Rui, 2007) and the change in market capitalisation (Dai, Jin and Zhang, 2014).

The coefficient of interest is NEDopsDummy*K3*Perf, it shows how the sensitivity of CEO pay to performance changed after the removal of share option compensation for NEDs for the treatment companies compared to the control firms. 'Perf' is the short name for 'performance', which is share price return in Panel A and ROA in Panel B.

### 6.2.1 Sensitivity of CEO pay to market measures of performance

In Panel A of Table 6.5, the coefficient for NEDopsDummy*K3*Perf is negative but not significant, suggesting that sensitivity of CEO pay to share price returns did not change significantly in the post-King III period for treatment companies compared to control companies. The results suggest that the removal of share option compensation for NEDs does not have a significant effect on pay-performance sensitivity, it neither strengthens nor weakens monitoring by NEDs. If share option compensation for NEDs had the effect of weakening monitoring by NEDs (by compromising their independence and objectivity) then its removal would signify the removal of a stumbling block to effective monitoring and that would result in a significant increase in pay-performance sensitivity for the treatment companies in relation to the control companies. On the flip side, if share option for NEDs had the effect of improving monitoring then their removal would weaken monitoring, which would be reflected by a significant decrease in CEO pay-performance sensitivity. The results presented in Table 6.5 do not show a significant change in pay-performance sensitivity suggesting that the removal of share option compensation for NEDs has no effect on monitoring. The results do not support Hypothesis 2a. They are also not consistent with either the incentive-alignment hypothesis or the rent extraction view.

The coefficient of the lower order interaction term, NEDopsDummy*Perf, is positive and significant at the 10% level, which means that, over the full sample period CEO compensation is more sensitive to share price performance for treatment companies compared to control companies.

### 6.2.2 Sensitivity of CEO pay to accounting measures of performance

In Panel B of Table 6.5, the coefficient for NEDOpsDummy*K3*Perf is positive and statistically significant at the 1% level, which means the sensitivity of CEO pay to financial performance (ROA) increased more in the post-King III period for treatment companies compared to control companies. This result suggests that the removal of share option compensation for NEDs improved monitoring of CEO compensation; hence the increase in CEO pay-performance sensitivity.

To put these results into context and to make them more meaningful, the study conducts two additional analysis: (i) In the first analysis, it analyses the coefficient of the lower order interaction term, NEDopsDummy*Perf, and (ii) The second analysis, is a regression analysis of the same model presented in Table 6.5 but for a different period, the pre-King III period. The idea is to determine sensitivity of CEO pay to performance during the pre-King III period, before share

option compensation for NEDs was removed. The coefficient for NEDopsDummy*Perf is negative but not significant, which means that over the full sample period CEO compensation is not sensitive to performance (based on ROA) for treatment companies compared to control companies. A regression analysis (presented in Appendix 5) of the same model during the pre-King III period shows that the use of share options weakens monitoring of CEO pay incentives. The coefficient for NEDopsDummy*Perf is negative and significant at the 5% level. This implies higher pay for poor performance during the pre-King III period for companies that were paying share options to NEDs, suggesting that the use of share options compensation weaken monitoring by NEDs.

As indicated earlier (in the first paragraph of this section), the coefficient for NEDopsDummy*K3*Perf in Table 6.5 shows that CEO pay-performance sensitivity increased more after the removal of share option compensation (in the post-King III period) for treatment companies relative to control companies. Given that CEO pay-performance sensitivity was negative during the pre-King III period for companies that were using share options for NEDs relative to those that were not using them, these findings show that the use of share option compensation weakens monitoring by NEDs; therefore, CEO pay-performance sensitivity only increases when they are removed, signalling the removal of a barrier to effective monitoring. Before they were removed the sensitivity of CEO pay to performance was negative, meaning more pay for poor performance. This finding supports Hypothesis 2b which predicted a significant increase in CEO pay performance sensitivity after the removal of share option compensation for NEDs. The results are in line with the rent extraction view, which argues that share options weaken monitoring by NEDs which then makes it possible for executives to manipulate the process and reap excessive compensation that is not tied to the performance of the company.

Given that none of the prior studies examined the impact of share options for NEDs on CEO pay-performance sensitivity, the closest study that investigated this hypothesis in an almost similar setting is by Kren and Kerr (1997). They investigated the impact of NEDs shareholdings and pay-performance sensitivity (as opposed to this study which examined share options) and they find evidence in support of the incentive-alignment hypothesis, which contradicts the findings of this thesis. Closely related to the subject of CEO pay-performance sensitivity, Minnick and Zhao (2009) found support for the rent extraction view, they find NEDs to be more amenable to option backdating if they receive share options, because they benefit from it. Byard and Li (2004) and Bebchuk, Grinstein and Peyer (2010) find similar evidence regarding the opportunistic timing and backdating of share options when directors are also receiving share options. Several studies also found support for the rent extraction view, but their analysis focused on settings other than CEO

pay-performance sensitivity, some focused on financial reporting (see Kim, Roden & Cox, 2013; Rose et al., 2013; Campbell et al., 2014; Keune & Johnstone, 2015; Liao & Ferris, 2018) and on lawsuits (Crutchley & Minnick, 2012). This result contradicts the incentive-alignment hypothesis and empirical evidence that show share option compensation as a mechanism that incentivises NEDs to improve their monitoring (e.g Bhagat, Carey & Elson, 1999; Perry, 2000; Cordeiro, Veliyath & Neubaum, 2005; Fich & Shivdasani, 2005; Gong & Li, 2007; Bierstaker et al., 2012; Adithipyangkul & Leung, 2017)

**Discussion of control variables;**

The variable K3 is positive and significant at the 1% level in both Panel A and Panel B, which shows that total compensation for CEOs increased significantly in the post-King III period for the full sample population. Cash compensation was the biggest driver of this significant increase in total compensation; it grew by 117% from pre-King III to post-King III, while equity-based compensation grew by 75% over the same period.

The variable COAct is not significant in either Panel, suggesting that there was nothing in the most recent Companies' Act of 2008, that had a significant effect on CEO compensation.

In both Panel A and B the coefficient for NEDOpsDummy*K3 is negative and significant implying that CEO compensation declined in the post-King III period for treatment companies compared to control companies. The removal of share option compensation for NEDs is associated with a fall in the value of total CEO compensation. Given that CEO pay-performance sensitivity increased after the removal of share option compensation in the post-King III period, this decline in CEO compensation can be viewed as the alignment of CEO pay with performance, given that in the pre-King III period, CEO compensation was not aligned for performance.

NEDOpsDummy*Perf is not significant in either Panel but its coefficient is positive in Panel A, and negative in Panel B, suggesting that CEO pay is not sensitive to performance for treatment companies relative to control companies.

Total CEO compensation has a negative relationship with share price returns, but has a positive relationship with financial performance (ROA). However, the relationship is not significant in both cases. Brick, Palmon and Wald (2006) also reported contradictory results for share price returns and financial performance: a negative and insignificant relationship using ROA as a measure of performance, but a significant and positive relationship when using share price return.

The coefficient for firm size (firmsize) is positive and significant at the 1% level, suggesting that larger companies pay higher compensation for CEOs. These results are consistent with the findings of Firth, Fung and Rui (2006), Conyon and He (2011), Bereskin and Cicero (2013), Gao and Li, (2015) and Conyon and He (2016), confirming the view that talented executives who deserve higher salaries find jobs in larger companies (Rosen, 1992).

The coefficient for firm risk (firmrisk) is negative but not significant, which means the level of risk is not associated with CEO compensation. The negative coefficient is consistent with the findings of Conyon and He (2011). However, the results of the study by Conyon and He (2011) were statistically significant. The sign of the coefficient and the level of significance contradict the findings of Brick, Palmon and Wald (2006) and Gao and Li (2015) who reported a positive and significant relationship.

Leverage has a positive relationship with CEO compensation. However, the relationship is not statistically significant, suggesting that leverage is not associated with CEO compensation. This results is consistent with Bereskin and Cicero (2013) but contradicts Cao, Pan and Tian (2011) and Gao and Li (2015) who reported a negative relationship between the two variables.

Consistent with the findings of Deckop (1988), this study finds a negative relationship between CEO Age (CEOAge) and CEO compensation. The relationship is significant at the 10% level, suggesting that older CEOs earn less compensation. These results support the findings of Deckop (1988) and the view that old age can be a liability. However, they contradict the findings of Fung and Pecha (2015) and Conyon and He (2016) who report a positive and significant relationship between the two variables.

The coefficient for CEO ownership (CEOOwn) is negative but not significant, suggesting that it does not influence CEO compensation. This contradicts the findings of Chen, Cheng and Wang (2015), who reported a positive and significant relationship, and Gao and Li (2015) who find a negative and significant relationship. These results contradict both the incentive-alignment hypothesis and the entrenchment theory (high CEO share ownership can result in entrenchment, resulting in higher compensation).

The coefficients for CEO duality (duality) are negative but not significant, suggesting that it has no effect on CEO compensation. This finding is consistent with Conyon (1997) who find no evidence of a relationship between CEO duality and CEO compensation. However, some prior studies find higher CEO compensation for companies with CEOs who play a dual role of CEO and

chairman (see Firth, Fung & Rui, 2006; Conyon & He, 2011; Bereskin & Cicero, 2013; Gao & Li, 2015).

The relationship between institutional ownership (InstOwn) and CEO compensation is negative but not statistically significant. The negative coefficient is in line with Hartzell and Starks (2003) and Bereskin and Cicero (2013); however, they found the relationship to be statistically significant.

The coefficient for board size (Boardsize) is not statistically significant, suggesting it has no relationship with CEO compensation. This contradicts the finding of Conyon and He (2011 & 2016) who reported a positive relationship between CEO compensation and board size.

The coefficient for blockholder ownership (block) is not significant, suggesting it has no relationship with CEO compensation. This contradicts the finding of Conyon and He (2016), who report a significant and negative relationship and of Firth, Fung and Rui (2006), who reported a positive relationship.

Board independence show a positive relationship with CEO compensation, but it is not statistically significant. The positive coefficient is in line with the findings of Cao, Pan and Tian (2011), Conyon and He (2016) and de Andrés, Arranz-Aperte and Rodriguez-Sanz (2017); however, their results were statistically significant. Conversely, Chhaochharia and Grinstein (2009) reported a significant and negative relationship, showing that an increase in board independence is associated with a drop in CEO compensation.

Consistent with the theoretical argument that companies with more growth opportunities will hire talented CEOs who demand and are paid higher compensation, the study finds a positive relationship between a firm's growth opportunities and CEO compensation. Conyon and He, (2011& 2016) find similar evidence. However, Smith Jr and Watts (1992), Harvey and Shrieves (2001) and Almazan, Hartzell and Starks (2005) reported low CEO compensation in companies with higher growth opportunities. Surprisingly, the coefficient is not significant in Panel B.

**Table 6. 5: Difference-in-difference results: the impact of share option compensation for NEDs on CEO pay-performance sensitivity.**

Table 6.5 below shows the results of the difference-in-difference method (based on the fixed effects model) for the impact of share option compensation for NEDs on sensitivity of total CEO pay, for the two measures of performance. Panel A shows the results when company performance is measured using share price return; in Panel B, it is measured using return on assets (ROA). The coefficient of interest is NEDopsDummy*K3*Perf. The variable shows how pay-performance sensitivity changed after the implementation of the King III code for the treatment companies compared to the control firms. 'Perf' is short for 'performance', being share price return in Panel A and ROA in Panel B. The other variables are as defined in Appendix 1. Robust standard errors appear in parentheses. '*', '**' and '***' denote the significance at 10%, 5% and 1% level respectively.

| | Panel A | Panel B |
|---|---|---|
| Variables | Share price returns | Return on assets (ROA) |
| Perf | -0.0275 | 0.316 |
| | (0.0460) | (0.241) |
| K3*Perf | 0.187 | -0.206 |
| | (0.132) | (0.275) |
| K3 | 0.205* | 0.276** |
| | (0.120) | (0.122) |
| Firmsize | 0.319*** | 0.301*** |
| | (0.0526) | (0.0536) |
| Firmrisk | -0.0806 | -0.0695 |
| | (0.100) | (0.0997) |
| Leverage | 0.108 | 0.118 |
| | (0.0987) | (0.0984) |
| CEOAge | -0.00836* | -0.00927* |
| | (0.00485) | (0.00485) |
| CEOOwn | -0.468 | -0.412 |
| | (0.373) | (0.372) |
| Duality | -0.0458 | -0.0112 |
| | (0.154) | (0.153) |
| CoAct | 0.172 | 0.188 |
| | (0.106) | (0.105) |
| Block | -0.0231 | -0.000243 |
| | (0.107) | (0.107) |
| InstOwn | 0.0130 | 0.0321 |
| | (0.114) | (0.114) |
| Boardsize | -0.000387 | 0.00113 |
| | (0.0101) | (0.0101) |
| Tobin'sQ | 0.0242* | 0.0197 |
| | (0.0143) | (0.0152) |
| Indp | 0.134 | 0.139 |
| | (0.155) | (0.155) |
| NEDOpsDummy*K3 | -0.216** | -0.373*** |
| | (0.0923) | (0.103) |
| NEDOpsDummy*Perf | 0.0863 | -0.436 |
| | (0.0583) | (0.346) |
| NEDOpsDummy*K3* Perf | -0.0685 | 1.428*** |
| | (0.180) | (0.530) |
| Constant | 8.787*** | 9.159*** |
| | (1.162) | (1.182) |
| Observations | 1,146 | 1,146 |
| R-squared | 0.304 | 0.306 |

### 6.2.3 Sensitivity of CEO pay to other market measures of performance

The section above presents the results for the impact for share option compensation for NEDs on the sensitivity of CEO compensation to changes in firm performance(perf). Firm performance is measured using changes in share price and ROA. Firth, Fung and Rui (2007) and John, Mehran and Qian (2010) measured performance by taking the product of annual share return multiplied by market capitalisation at the beginning of the year, which they called the dollar share return. Dai, Jin and Zhang (2014) measured firm performance using annual change in market capitalisation. This study applies both measures of firm performance and the results - specifically the variables of interest NEDOpsDummy*K3*Perf – are largely similar to the results when performance is measured using share price returns. The results are presented the Appendix 4.

## 6.3 Results for impact of a change in share option compensation for NEDs on level of earnings management.

This section presents the results of the effect of removing share option compensation for NEDs on levels of earnings management, measured using discretionary accruals and real-activities manipulation (proxied by abnormal cashflows). Level of earnings management reflects the quality of financial reporting. This section presents the results of the univariate tests first, followed by the results of the difference-in-difference regression.

### 6.3.1 Univariate analysis: Change in earnings management

Table 6.6 below presents the difference of the differences in means and medians for the two proxies for earnings management for both the treatment and the control companies. Panel A presents the results of the discretionary accruals while Panel B presents the results of real-activities manipulation (measured by abnormal cash flows). Both Panels show the mean and median for treatment and control companies for pre-King III period compared to post-King III period. The column with the heading "change" shows the difference or the change in the earnings management proxies from pre-King III to post-King III, this change is calculated for both the treatment and the control sample. The difference between the difference of the "change" for the treatment group and the change for the control group is the difference of the differences (it is labelled as such in Table 6.6). This value is the change attributed to the treatment effect in comparison to the control companies.

#### 6.3.1.1 The level of earnings management in South Africa

For the treatment companies, the mean and median discretionary accruals during pre-King III amount to 4.46% and 0.68%, respectively, of total assets. For post-King III the mean and median amount to -0.55% and -0.65%, respectively, of total assets. For real-activities manipulation, the mean and median in the pre-King III period amount to 1.26% and 1.44%, respectively, of total assets. For the post-King III period, the mean and median for real-activities manipulation amount to 1.84% and -0.50%, respectively, of total assets. For control companies, the mean and median discretionary accruals during pre-King III amount to 3.99% and -0.64%, respectively, of total assets. For the post-King III the mean and median amount to 0.22% and 0.67%, respectively, of total assets. For real-activities manipulation, the mean and median in the pre-King III period amount to 0.09% and 0.56%, respectively, of total assets. For post-King III the mean and median amount to 0.42% and 1.14%, respectively, of total assets. From these statistics, the magnitude of the discretionary accruals and abnormal cashflows based on the mean and median are in line with the magnitude of prior studies that reported significant evidence of earnings manipulation (see Cohen, Dey & Lys, 2008; Mao & Renneboog, 2015; Ali & Zhang, 2015; Qi et al., 2017)- the last paragraph of Section 5.3.1 of Chapter Five presents the actual statistics reported by these prior studies. This together with the case studies discussed in Chapter 2, South African institutional context) is an indication that earnings manipulation is a problem in South Africa.

#### 6.3.1.2 Change in discretionary accruals in from pre to post-King II

Both the treatment and the control companies experienced a decline in discretionary accruals in post-King III; however, treatment companies experienced a higher decline, of -5.02%, compared to a decline of -3.77% for control firms (this is the change or the difference without the treatment, this is the change that would have existed if there was no treatment, this is the evidence for the counterfactual). These changes give a difference of the differences of -1.25%, which means the treatment companies experienced a greater decline (in relation to control companies) in discretionary accruals, by 1.25% relative to control companies (the change attributed to the treatment effect in comparison to the control companies). However, based on t-tests and Wilcoxon tests, the difference in means and medians are not statistically significant, which means there was no significant change in discretionary accruals in the post-King III period. The removal of share option compensation for NEDs had little effect on discretionary accruals. The results suggest that removing share option compensation for NEDs does not have a significant effect on monitoring of financial reporting. Despite the statistical insignificance of the differences, the greater decline in discretionary accruals for treatment companies show that removing share options for NEDs had a positive effect on monitoring.

#### 6.3.1.3 Change in real-activities manipulation from pre to post-King III period

Both the treatment and the control firms experienced an increase in real-activities manipulation. However, the treatment firms experienced a greater increase of 0.58%, compared to an increase of 0.33% for control firms. The difference of the differences amounts to 0.25%, which means treatment companies experienced a greater increase in real-activities manipulation of 0.25%, compared to the control companies. However, based on t-tests and Wilcoxon tests, the difference in means and medians are not statistically significant, which means there was no significant change in real-activities manipulation in the post-King III period for treatment companies. Therefore, the removal of share option compensation for NEDs had no significant effect on the real-activities manipulation. Despite the statistical insignificance of the differences, the greater increase in real-activities manipulation for treatment companies show that removing share options for NEDs had a negative effect on monitoring. The contradictory results between discretionary accruals (which show an increase, post-King III, for both groups) and real-activities manipulation (which show a decrease post-King III for both groups) could be an indication of executives substituting discretionary accruals with real-activities manipulation in the post-King III period. To some extent, this supports the view of Zang (2008) and Cohen and Zarowin (2010) that companies use these two forms of earnings management as substitutes for each other. The decrease in discretionary accruals might mean that they were simply replaced by real-activities manipulation, since real-activities manipulation showed an increase.

**Table 6. 6: Change in discretionary accruals and real-activities manipulation from pre-King III to post-King III period.**

Table 6.6 below presents a univariate analysis of the changes in discretionary accruals and abnormal cash flows for treatment and control firms. Panel A shows the results of discretionary accruals, while Panel B shows the results of real-activities manipulation. Both Panels show the mean and median for both treatment and control companies for the pre-King III vs the post-King III periods. The column with the heading 'Change' shows the change/difference in earnings management proxies from pre-King III to post-King III; this change is calculated for both treatment and control samples. The difference between the difference for the treatment and control companies is the difference of the differences. '*', '**' and '***' denote the significance at 10%, 5% and 1% level respectively. Statistical significance is based on the p-values of the t-test for the mean and Wilcoxon tests for the median; the t-test shows whether the mean for each group in pre- and post-King III is statistically different, while the Wilcoxon test shows whether the median for each group in pre- and post-King III is statistically different.

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| **Panel A** | | | | | | |
|---|---|---|---|---|---|---|
| **Discretionary Accruals** | **Pre-King III** | | **Post-King III** | | **Change** | |
| | Mean | Median | Mean | Median | Mean | Median |
| Treatment Companies | 4.46% | 0.68% | -0.55% | -0.65% | -5.02%[29] | -1.33% |
| Control companies | 3.99% | -0.64% | 0.22% | 0.67% | -3.77% | 1.31% |
| Difference of the differences | | | | | **-1.25%**[30] | **-2.64%** |
| | | | | | | |
| **Panel B** | | | | | | |
| **Abnormal Cashflows** | **Pre-King III** | | **Post-King III** | | **Change** | |
| | Mean | Median | Mean | Median | Mean | Median |
| Treatment Companies | 1.26% | 1.44% | 1.84% | 0.50% | 0.58% | -0.94% |
| Control companies | 0.09% | 0.56% | 0.42% | 1.14% | 0.33% | 0.58% |
| Difference of the differences | | | | | **0.25%** | **-1.52%** |

### 6.3.2 Difference-in-difference regression analysis: Change in discretionary accruals

Table 6.7 below presents the results of a difference-in-difference regression on the impact of removing share option compensation for NEDs on earnings management. Panel A presents the results when earnings management is measured using discretionary accruals while Panel B presents the results for real-activities manipulation, which are measured by the level of abnormal cash flows.

The coefficient of interest is NEDOpsDummy*K3, which shows how earnings management changed in the post-King III period, after the removal of share option compensation for NEDs.

[29] This number, –5.02%, is calculated as –0.55%–4.46%, to show the change from pre–King III to post–King III.–5.02%means discretionary accruals declined in the post–King III period for treatment companies.
[30] This number,–1.25%, is the difference of the differences calculated as –5.02%–(–3.77%).

The coefficient for NEDOpsDummy*K3 is negative but not significant in both Panel A and Panel B, which means – relative to control companies – treatment companies did not experience a significant change in the two forms of earnings management in the post-King III period. As discussed in the univariate analysis, the magnitude of the discretionary accruals and abnormal cashflows based on the mean and median are in line with prior studies (see Cohen, Dey & Lys, 2008; Ali & Zhang, 2015; Lahlou & Navatte, 2017) that reported significant evidence of earnings manipulation. Given the levels of earnings management noted in the pre-King III period, if the use of share option compensation for NEDs had the effect of weakening monitoring of financial reporting or compromising the independence and objectivity of NEDs (rent extraction view), then its removal would result in a significant decrease in the two forms of earnings management for the treatment companies in relation to the control companies. The opposite is also true; if the incentive-alignment hypothesis holds then the removal of share option compensation would weaken monitoring, resulting in a significant increase in earnings management. The results show that, for treatment companies compared to control companies, the level of the two forms of earnings management declined in the post-King III period but the decline is not statistically significant. This shows that removing option compensation for NEDs did not strengthen monitoring significantly, and neither did it weaken it. Based on these results, both Hypothesis 3a and Hypothesis 3b are rejected; the hypothesis predicted a significant decrease in the two forms of earnings management in the post-King III period. The results do not support either the incentive-alignment hypothesis or the rent extraction view, but they are consistent with the results of the univariate analysis. The results contradict the findings of Gong and Li (2007) who report a significant and negative relationship between share option compensation for NEDs and discretionary accruals in line with the incentive-alignment hypothesis. They also contradict the findings of Ronen, Tzur and Yaari (2006) and Boumosleh (2009) who report a significant and positive relationship between share option for NEDs and discretionary accruals, suggesting that share option compensation weaken monitoring, which is consistent with the rent extraction view.

Discussion of the control variables for earnings management.

The variable K3 is positive but not statistically significant in either Panel, suggesting that the level of the two forms of earnings management did not increase much in the post-King III period for all companies. This positive coefficient for both measures of earnings management show that they all increased in the post-King III period, this is inconsistent with the view by Zang (2008) and Cohen and Zarowin (2010) that companies use the two forms of earnings management to be substitutes for each other.

The variable COAct is not significant in either Panel, suggesting that there was nothing in the most recent Companies' Act of 2008, that had a significant effect on the two forms of earnings management.

Board size variable (boardsize) shows a positive coefficient. Given that its effect on monitoring is an unsettled matter, the direction of the relationship was expected to go either way. However, the coefficient is not significant in either Panel, suggesting that there is no association between board size and the two forms of earnings management. The results are consistent with Badolato, Donelson and Ege (2014) but contradict the findings of Chen (2002), Xie, Davidson III and DaDalt (2003), Coles, Daniel and Naveen (2008) and Cheng (2008) who find the board size to have a significant effect on monitoring.

Proportion of NEDs (NEDs) has a negative association with earnings management but the relationship is not statistically significant. The coefficient is of the expected sign, so a higher proportion of NEDs enhances monitoring. The results differ from those reported by Klein (2002), Xie, Davidson and DaDalt (2003) and Peasnell, Pope and Young (2005), who find the proportion of NEDs to be associated with a low likelihood of engaging in earnings management

The firm size variable (firmsize) is not significant in either Panel and it shows a negative coefficient, suggesting that there is no association between board size and the two forms of earnings management. The negative coefficient is consistent with Badolato, Donelson and Ege (2014), Ali and Zhang (2015) and Kim, Kim and Zhou (2017); however, the results of those studies were statistically significant whereas the results of this study are not. The results of this study are consistent with Cheng and Warfield (2005), who did not find a statistically significant relationship between firm size and earnings management. However, Frankel, Johnson and Nelson (2002) reported conflicting results, showing a positive and significant relationship.

The coefficient for the CEO age variable (CEOAge) is not significant in either Panel, suggesting that there is no association between the age of the CEO and the two forms of earnings management. However, the sign of the coefficient is different in each panel, the age of the CEO is negatively related to discretionary accruals, but shows a positive relationship with real-activities manipulation

The coefficient for leverage is not significant, suggesting there is no association between leverage and the two forms of earnings management. However, the sign of the coefficient is different in each Panel; leverage is negatively related to discretionary accruals, but shows a positive relationship with real-activities manipulation. The inconsistent sign of the coefficient is

supported by both theoretical and empirical evidence. Leverage can be associated with both decreases (Frankel, Johnson & Nelson, 2002; Cheng & Warfield, 2005; Ali & Zhang, 2015) and increases in earnings management (Badolato, Donelson & Ege, 2014; Kim, Kim & Zhou, 2017).

CEO ownership variable (CEOOwn) is not significant in either Panel and shows a positive coefficient, suggesting that there is no association between CEO ownership and the two forms of earnings management. Cheng and Warfield (2005) and Ali and Zhang (2015) also reported a positive relationship, but their results were statistically significant.

The coefficient for a company's growth opportunities, measured by the Tobin's Q, is not significant; suggesting that there is no association between growth opportunities and the two forms of earnings management. However, the sign of the coefficient is different in each Panel; growth opportunities are positively related to discretionary accruals, but there is a negative relationship with real-activities manipulation. The results for discretionary accruals are similar to those of Frankel, Johnson and Nelson (2002) and Chen, Cheng and Wang (2015), who also reported a positive and statistically insignificant relationship. Ashbaugh, LaFond and Mayhew (2003), Badolato, Donelson and Ege (2014) and Ali and Zhang (2015) also reported a positive relationship, but it was statistically significant.

Block ownership (block) has a positive relationship with the two forms of earnings management. The coefficient is statistically significant at 1%, for both discretionary accruals and real-activities manipulation. The result for real-activities manipulation is consistent with those of Zhong, Gribbin and Zheng (2007) and Guthrie and Sokolowsky (2010), both report a significant positive relationship between block ownership and earnings management.

The coefficient for cashflow to sales (CFOSls) is negatively related to discretionary accruals, but is not significant; the results contradict the findings of Frankel, Johnson and Nelson (2002), Ashbaugh, LaFond and Mayhew (2003) and Kim, Kim and Zhou (2017), who all find a relationship that is statistically significant. However, it is positively related to real-activities manipulation and is statistically significant at 1%. The results are consistent with those of Ashbaugh, LaFond and Mayhew (2003) and Kim, Kim and Zhou (2017) but contradict the findings of Frankel, Johnson and Nelson (2002).

The coefficient for institutional ownership (InstOwn) is negative but not significant in Panel A, suggesting there is no association between institutional ownership and discretionary accruals. This result is consistent with Ali and Zhang (2015) but contradicts the findings of Hsu and Koh

(2005), who show evidence of a positive association between transient institutional ownership and upward accruals management. However, in Panel B the coefficient is positive and significant at the 10% level, suggesting that higher institutional ownership is associated with higher real-activities manipulation – consistent with the private benefits hypothesis, which posits that institutional ownership can exacerbate agency problems (Elyasiani & Jia, 2010). This is consistent with the findings of Hsu and Koh (2005), who show evidence of a positive association between transient institutional ownership and upward discretionary accruals management. However, the results contradict the findings of Ali and Zhang (2015), who reported a negative and insignificant relationship with real-activities manipulation.

Board independence (Indp) is negatively related to the two forms of earnings management, but the coefficient is not statistically significant, suggesting that in fact it has no association with the two forms of earnings management. These results confirm the findings of Bradbury, Mak and Tan (2006). Klein (2002), Ebrahim (2007), Epps and Ismail (2009) and Chen, Cheng and Wang (2015) also reported a negative relationship but their findings were statistically significant.

The coefficient for return on assets (ROA) is negatively related to discretionary accruals, but is not significant; which contradicts the findings of Badolato, Donelson and Ege (2014) and Braam et al., (2015). However, it is positively related to real-activities manipulation and is significant at the 1% level. This is consistent with the findings of Badolato, Donelson and Ege (2014) and Braam et al., (2015).

The R-squared is very low for Panel A, at 1.6%. For Panel B it is 9.3%. This is relatively low, and indicates that much of the variation in earnings management is not explained by the independent variables included in the model. However, the level of the R-squared is in line with Fahlenbrach, Low and Stulz (2010), who reported a pseudo R-squared of around 3%. Chen, Cheng and Wang (2015) reported an R-squared of around 11%. On the other hand, some prior studies that reported relatively higher adjusted R-squared – for example Low (2009), who reported an adjusted R-squared of above 70%.

**Table 6. 7: Difference-in-different results: the impact of share option compensation for NEDs on earnings management.**

Table 6.7 below shows the results of the difference-in-difference method (based on fixed effects) on impact of share option compensation for NEDs on earnings management (measured using discretionary accruals and abnormal cash flows). The dependent variable is the proportion of discretionary accruals deflated by the total assets (shown in Panel A) and the abnormal cash flows representing real earnings activities manipulation, shown in Panel B. The coefficient of interest is NEDOpsDummy*K3, which shows how earnings management changed in the post-King III period, after the removal of share option compensation for NEDs. Robust standard errors are shown in parentheses. '*', '**' and '***' denote the significance at 10%, 5% and 1% level respectively.

| | Panel A | Panel B |
|---|---|---|
| Variables | Discretionary Accruals | Abnormal Cash flows |
| Boardsize | 0.00436 | 0.000807 |
| | (0.00705) | (0.00161) |
| NEDs | -0.121 | -0.00225 |
| | (0.172) | (0.0393) |
| Firmsize | -0.00741 | -0.0112 |
| | (0.0382) | (0.00844) |
| Firmrisk | -0.0138 | -0.0204 |
| | (0.0697) | (0.0159) |
| CEOAge | -0.00458 | -6.11e-05 |
| | (0.00343) | (0.000781) |
| Leverage | -0.0436 | 0.0185 |
| | (0.0717) | (0.0161) |
| CEOOwn | 0.0298 | 0.0422 |
| | (0.262) | (0.0597) |
| Tobin'sQ | 0.0159 | -0.00150 |
| | (0.0159) | (0.00248) |
| Block | 0.206*** | 0.0518*** |
| | (0.0763) | (0.0171) |
| CFOSls | -0.000236 | 0.000236*** |
| | (0.000234) | (5.32e-05) |
| InstOwn | -0.0586 | 0.0354* |
| | (0.0804) | (0.0182) |
| Indp | -0.00714 | -0.0188 |
| | (0.116) | (0.0262) |
| CoAct | 0.0106 | -0.00318 |
| | (0.0749) | (0.0169) |
| ROA | -0.0384 | 0.131*** |
| | (0.122) | (0.0192) |
| K3 | 0.0591 | 0.00481 |
| | (0.0875) | (0.0199) |
| NEDOpsDummy*K3 | -0.0448 | -0.0172 |
| | (0.0639) | (0.0145) |
| Constant | 0.291 | 0.197 |
| | (0.843) | (0.187) |
| Observations | 1,096 | 1,105 |
| R-squared | 0.021 | 0.099 |

## 6.4 Results for how institutional ownership affect the impact of share option compensation on monitoring?

This section tests Hypotheses 4a, 4b and 4c. It examines how institutional ownership moderate the relationship between share option compensation for NEDs and proxies for secondary agency problems? (pay-performance sensitivity for CEOs and earnings management)? This is achieved by interacting institutional ownership (InstOwn) with the main variables of interest, NEDOpsDummy*K3 and NEDOpsDummy*K3*Perf, from Equation 5 and Equation 6 to produce new variables of interest NEDOpsDummy*K3*InstOwn and NEDOpsDummy*K3*Perf*InstOwn. The focus is on understanding whether the impact of removing share option compensation for NEDs is affected by institutional ownership. The results of this research objective will show whether institutional ownership has a substitution effect with the impact of share option compensation for NEDs. If monitoring of earnings management and CEO compensation improves significantly after the removal of share option compensation for NEDs for companies owned by institutional investors, then these two mechanisms are substitutes. It should be noted that the context of this study means the substitution effect (not the complimentary effect) can be confirmed/not confirmed because after the implementation of the King III, share option compensation would have been removed; hence it is not possible to have both mechanisms at the same time. Since this section is an extension of Section 6.3, the commentary will focus on the variable of interest only, without commenting on the control variables, which were dealt with in the previous section.

### 6.4.1 How the impact of NEDs share option compensation on CEO pay-performance sensitivity is affected by the level of institutional ownership.

This subsection tests Hypothesis 4a which focuses on the impact of institutional ownership on the relationship between share option compensation for NEDs and CEO pay-performance sensitivity (sensitivity to share price returns and financial performance, ROA). The results are presented in Panel A and Panel B of Table 6.8 below. Panel A presents the results when firm performance is measured using share price returns while in Panel B firm performance is measured using the return on assets (ROA). The variable of interest, NEDOpsDummy*K3*Perf*InstOwn, shows how CEO pay-performance sensitivity changed after the implementation of the King III for the treatment companies with institutional ownership relative to control companies without institutional ownership. 'Perf' is the short name for 'performance', which is the share price return in Panel A and ROA in Panel B.

#### 6.4.1.1 Sensitivity of CEO pay to market measures of performance

In Panel A the coefficient for NEDOpsDummy*K3*Perf*InstOwn is negative but not significant, which means the sensitivity of CEO pay to share price returns did not change significantly in the post-King III period for treatment companies with institutional ownership relative to those without. This means institutional ownership has no effect on the sensitivity of CEO pay to share price returns after the removal of share option compensation for NEDs. To give some context, before adding the interaction term for institutional ownership (results presented in Section 6.2, Table 6.5, in Panel A on the coefficient for NEDopsDummy*K3*Perf), the removal of share option compensation for NEDs had no effect on the sensitivity of CEO pay to share price performance - introducing the interaction term for institutional ownership does not have a significant effect as well. Therefore, institutional ownership has no effect on the relationship between share option compensation for NEDs and CEO pay-performance sensitivity. Based on this result Hypothesis 4a is rejected; meaning institutional ownership is not a substitute for share option compensation for NEDs in monitoring CEO pay-performance sensitivity to share price returns.

The coefficients of the lower order interaction terms are not statistically significant. For example, the coefficient for NEDOpsDummy*K3 is not significant and is negative. This shows that, post-King III, there was no significant change in CEO pay for treatment companies relative to control companies. NEDOpsDummy*K3*InstOwn is negative but not statistically significant. Suggesting that, post-King III there was no significant change in CEO total pay for treatment companies with institutional ownership. NEDOpsDummy*Perf*InstOwn is positive and not significant, showing that over the full sample period, CEO pay-performance sensitivity is not significant (weaker) for treatment companies with institutional ownership relative to those without. This coefficient confirms the insignificant relationship between using share option compensation for NEDs and institutional ownership.

#### 6.4.1.2 Sensitivity of CEO pay to accounting measures of performance

In Panel B, the coefficient for NEDopsDummy*K3*Perf*InstOwn is positive but not significant. This means there is no significant change in the sensitivity of CEO pay to financial performance, in the post-King III period, for treatment companies with institutional ownership. This means institutional ownership has no effect on the sensitivity of CEO pay to financial performance after the removal of share option compensation for NEDs. The conclusion changes slightly if these results are compared to the findings before adding the interaction term for institutional ownership. The results referred to are presented in Section 6.2, Table 6.5 in Panel B, on the coefficient for NEDopsDummy*K3*Perf. Those results show that – before adding the interaction

term for institutional ownership – the removal of share option compensation for NEDs significantly increases the sensitivity of CEO pay to financial performance in post-King III period for treatment companies compared to control companies – which shows that the removal of share option compensation strengthened monitoring incentives of NEDs. After adding the interaction term for institutional ownership there is no significant change in CEO pay-performance sensitivity. Even though removing share option compensation increases sensitivity of CEO pay to performance for treatment companies, it has no significant effect in the presence of institutional ownership (as shown by the coefficient for NEDopsDummy*K3*Perf*InstOwn in Table 6.8, Panel B). On a comparative basis and with the above context in mind, it can be concluded that institutional ownership weakens the positive impact of removing share options for NEDs on monitoring of CEO compensation. The presence of institutional ownership makes the relationship between share option compensation for NEDs and CEO pay-performance sensitivity insignificant. Based on this result, Hypothesis 4a is rejected, meaning institutional ownership is not a substitute for share option compensation for NEDs in monitoring CEO pay-performance sensitivity to changes in ROA.

Some of the lower order interaction terms are significant while others are not. K3*Perf*InstOwn is significant at the 10% level, suggesting that in the post-King III period, CEO pay-performance sensitivity increased more for treatment companies with institutional ownership compared to those without. NEDOpsDummy*K3 is not significant, showing that that there was no significant change in CEO compensation in the post-King III period for the treatment companies. NEDOpsDummy*K3*Perf shows that in the post-King III period there was no significant change in CEO pay-performance sensitivity for treatment companies relative to control companies. NEDOpsDummy*K3*InstOwn, shows a negative coefficient significant at the 5% level; suggesting a decline in total CEO compensation in the post-King III period for treatment firms with institutional ownership. NEDOpsDummy*Perf*InstOwn is also negative and significant at the 5% level; which shows that over the full sample period, CEO pay increased while performance is declined for treatment companies with institutional ownership. CEO pay-performance sensitivity is negative when NEDs are paid with share options for companies with institutional ownership.

**Table 6. 8: The difference-in-difference results: the impact of institutional ownership on the relationship between share option compensation and CEO pay-performance sensitivity.**

Table 6.8 below shows the results of the difference-in-difference regression (based on the fixed effects model) on the impact of institutional ownership on the relationship between share option compensation for NEDs and CEO pay-performance sensitivity. Panel A shows the results when company performance is measured using share price return, while in Panel B, it is measured using return on assets (ROA). The variable of interest is NEDopsDummy*K3*Perf*InstOwn, which shows how the sensitivity of CEO pay changed in the post-King III for treatment companies with institutional ownership relative to control companies. 'Perf' is the short name for 'performance', which is share price return in Panel A, and ROA in Panel B. The other variables are as defined in Appendix 1. Robust standard errors are shown in parentheses. '*', '**' and '***' denote significance at the 10%, 5% and 1% level respectively.

| | Panel A | Panel B |
|---|---|---|
| Variables | Share price returns | Return on Assets (ROA) |
| Perf | 0.0168 | 0.136 |
| | (0.0310) | (0.127) |
| InstOwn | -0.0201 | 0.0298 |
| | (0.0793) | (0.0817) |
| K3*Perf*InstOwn | 0.345 | 1.213* |
| | (0.238) | (0.646) |
| Firmsize | 0.338*** | 0.298*** |
| | (0.0530) | (0.0527) |
| Firmrisk | -0.0763 | -0.0852 |
| | (0.101) | (0.100) |
| Leverage | 0.101 | 0.0999 |
| | (0.0983) | (0.0978) |
| CEOAge | -0.00795 | -0.00886* |
| | (0.00485) | (0.00482) |
| CEOOwn | -0.426 | -0.421 |
| | (0.372) | (0.369) |
| Dualtiy | -0.0360 | 0.0250 |
| | (0.155) | (0.153) |
| CoAct | 0.154 | 0.189* |
| | (0.107) | (0.105) |
| K3 | 0.211* | 0.208* |
| | (0.120) | (0.122) |
| Block | -0.000873 | 0.0102 |
| | (0.0584) | (0.0580) |
| Boardsize | -9.76e-05 | 0.00445 |
| | (0.0101) | (0.0101) |
| Tobin's Q | 0.0221 | 0.0218 |
| | (0.0143) | (0.0151) |
| Indp | 0.104 | 0.112 |
| | (0.156) | (0.155) |
| NEDOpsDummy*K3 | -0.111 | -0.0851 |
| | (0.157) | (0.159) |
| NEDOpsDummy*K3*Perf *InstOwn | -0.563 | 1.269 |
| | (0.386) | (1.093) |
| NEDOpsDummy*K3*Perf | 0.211 | 0.0614 |
| | (0.257) | (0.611) |
| NEDOpsDummy*K3*InstOwn | -0.134 | -0.379** |
| | (0.159) | (0.168) |
| NEDOpsDummy*Perf*InstOwn | 0.156 | -0.869** |
| | (0.102) | (0.426) |
| Constant | 8.369*** | 9.226*** |
| | (1.175) | (1.169) |
| Observations | 1,146 | 1,146 |
| R-squared | 0.305 | 0.316 |

### 6.4.2 How the impact of NEDs share option compensation on earnings management is affected by institutional ownership.

This sub-section tests Hypotheses 4b and 4c which examines the impact of institutional ownership on the relationship between share option compensation for NEDs and earnings management (represented by discretionary accruals and real-activities manipulation, proxied by abnormal cashflows). The results are presented in Panel A and Panel B of Table 6.9 below. Panel A presents the results for discretionary accruals and Panel B presents the results for real-activities manipulation. The variable of interest, NEDOpsDummy*K3*InstOwn, shows how earnings management measures changed in the post-King III period after the removal of share option compensation for NEDs for treatment companies with institutional ownership relative to companies without.

#### 6.4.2.1 Discretionary accruals

In Panel A, the coefficient for NEDOpsDummy*K3*InstOwn, is negative but not significant, suggesting that discretionary accruals did not change significantly in the post-King III period for treatment companies with institutional ownership relative to those without. This means institutional ownership has no effect on discretionary accruals after the removal of share option compensation for NEDs. To give some context, before adding the interaction term for institutional ownership (results presented in Section 6.3.2, Table 6.7, in Panel A on the coefficient for NEDOpsDummy*K3), the impact of removing share option compensation for NEDs was found to be statistically insignificant, suggesting that the removal of share option compensation for NEDs did not affect monitoring of discretionary accruals. After introducing the interaction term of institutional ownership, the results remain insignificant. This implies that institutional ownership has no effect on discretionary accruals after removing share options for NEDs. In other words, the removal of share option compensation had a similar effect on discretionary accruals for treatment companies with or without institutional ownership. Based on these results, Hypothesis 4b is rejected, meaning institutional ownership is not a substitute for share option compensation for NEDs in monitoring discretionary accruals.

On the lower order interaction terms, the variable K3*InstOwn is not significant which means that post-King III there was no significant change in discretionary accruals for companies with institutional ownership, relative to those without. The coefficient for the variable NEDOpsDummy*InstOwn is also not significant, which means over the full sample period there is

no significant relationship between share option compensation for NEDs and discretionary accruals for companies with institutional ownership.

#### 6.4.2.2 Real-activities manipulation

In Panel B, the triple interaction term for NEDOpsDummy*K3*InstOwn, is positive and significant at the 10% level. This means that in the post-King III period, there was a significant increase in real-activities manipulation for the treatment companies with institutional ownership. Therefore, the removal of share option compensation for NEDs increases real-activities manipulation for treatment companies with institutional ownership relative to those without. Put differently, institutional ownership weakens monitoring of real-activities manipulation after the removal of share option compensation for NEDs. This finding is confirmed when these results are compared to the findings before adding the interaction term for institutional ownership. The results referred to are presented in Section 6.3.2, Table 6.7, in Panel A, on the coefficient for NEDOpsDummy*K3. Those results show that – before adding the interaction term for institutional ownership – the impact of removing share option compensation for NEDs was found to be statistically insignificant, showing that the removal of share option compensation for NEDs did not affect monitoring of real-activities manipulation. After adding the interaction term of institutional ownership, the results become statistically significant. This implies that institutional ownership has a negative effect on monitoring of real-activities manipulation after removing share option for NEDs. The monitoring of earnings management weakened when share option compensation for NEDs was removed for treatment companies with institutional ownership. In the presence of institutional ownership, removing share option compensation for NEDs weakens monitoring of financial reporting. The results suggest that, removing or not using share option compensation is not beneficial to shareholders when the firm is owned by institutional investors. To some extent the results also show that institutional ownership exacerbates agency problems. The impact of institutional ownership found in this case is consistent with the private benefits hypothesis and the passive monitoring hypothesis. The passive monitoring hypothesis views institutional owners as ineffective monitors while the private benefits hypothesis not only views them as ineffective monitors but as monitors who may end up siding with management as a strategy of securing and maintaining business from the investee companies (Bhojraj & Sengupta, 2003). Based on this result, Hypothesis 4c is rejected, which means institutional ownership is not a substitute for share option compensation for NEDs when it comes to monitoring of real-activities manipulation.

On the lower order interaction terms, the variable K3*InstOwn is not significant which means post-King III there was no significant change in real-activities manipulation for companies with institutional ownership. The coefficient for NEDOpsDummy*InstOwn, is positive and significant at

5%, suggesting that over the full sample period, treatment companies with higher institutional ownership experienced higher levels of real-activities manipulation than the control companies with lower institutional ownership. None of the prior studies investigated the effect of institutional ownership on the relationship between share options compensation and earnings management.

**Table 6. 9: The difference-in-difference results: the impact of institutional ownership on the relationship between share option compensation and earnings management.**

Table 6.9 below shows the results of the difference-in-difference regression on the impact of institutional ownership on the relationship between share option compensation for NEDs and earnings management (measured using discretionary accruals and abnormal cash flows). The dependent variable is the proportion of discretionary accruals deflated by the total assets (shown in Panel A), and the abnormal cash flows representing real earnings activities manipulation, shown in Panel B. The coefficient of interest is NEDOpsDummy*K3*InstOwn, which shows how earnings management changed in the post-King III period after the removal of share option compensation for NEDs for companies with institutional ownership, compared to companies without. Robust standard errors are shown in parentheses. '*', '**' and '***' denote the significance at 10%, 5% and 1% level respectively.

| | Panel A | Panel B |
|---|---|---|
| Variable | Discretionary Accruals | Abnormal Cashflows |
| InstOwn | -0.163** | -0.0164 |
| | (0.0809) | (0.0178) |
| K3*InstOwn | 0.0689 | -0.0111 |
| | (0.0994) | (0.0226) |
| Boardsize | 0.00422 | 0.000936 |
| | (0.00709) | (0.00161) |
| NEDs | -0.123 | 0.00666 |
| | (0.174) | (0.0395) |
| Firmsize | -0.00585 | -0.0134 |
| | (0.0388) | (0.00856) |
| Firmrisk | -0.0145 | -0.0231 |
| | (0.0705) | (0.0160) |
| CEOAge | -0.00428 | 0.000101 |
| | (0.00345) | (0.000784) |
| Leverage | -0.0536 | 0.0183 |
| | (0.0721) | (0.0162) |
| CEOOwn | 0.0936 | 0.0392 |
| | (0.263) | (0.0596) |
| Tobin's Q | 0.00982 | -0.00191 |
| | (0.0159) | (0.00248) |
| Block | 0.000581 | 0.0209** |
| | (0.0412) | (0.00930) |
| CFOSls | -0.000218 | 0.000229*** |
| | (0.000235) | (5.33e-05) |
| CoAct | 0.0256 | -0.00663 |
| | (0.0756) | (0.0171) |
| K3 | 0.0375 | 0.0186 |
| | (0.0991) | (0.0225) |

| | | |
|---|---|---|
| Indp | -0.0216 | -0.00965 |
| | (0.117) | (0.0265) |
| ROA | -0.0193 | 0.133*** |
| | (0.123) | (0.0194) |
| NEDOpsDummy*K3 | 0.0275 | -0.0719*** |
| | (0.122) | (0.0275) |
| NEDOpsDummy*InstOwn | 0.150 | 0.0539** |
| | (0.114) | (0.0256) |
| NEDOpsDummy*K3*InstOwn | -0.131 | 0.0613* |
| | (0.153) | (0.0347) |
| Constant | 0.402 | 0.272 |
| | (0.859) | (0.190) |
| Observations | 1,096 | 1,105 |
| R-squared | 0.018 | 0.101 |

### 6.4.3 Overall comment on the effect of institutional ownership on the relationship between share option compensation and earnings management/CEO pay incentives.

The findings of this study do not support Hypotheses 4a, 4b and 4c. The results show that institutional ownership is not a substitute monitoring mechanism for share option compensation for NEDs, this applies to monitoring of both CEO compensation and financial reporting. For one of the forms of earnings management, real-activities manipulation, the study finds institutional ownership had the negative effect of exacerbating the level of earnings management after share option compensation was removed. In the other models (totalling three out of four) the impact of institutional ownership did not have a significant effect on the relationship between share option compensation for NEDs and monitoring.

## 6.5 Is blockholder ownership a substitute for share option compensation for NEDs?

### How does blockholder ownership affect the impact of share option compensation for NEDs on monitoring?

In their review paper on blockholder ownership, Edmans and Holderness (2017) called for researchers to investigate how blockholder ownership interacts with other corporate governance mechanism (such as board characteristics) in the monitoring process. This study heeds to that call by testing Hypothesis 5a, 5b and 5c. It examines how blockholder ownership moderate the relationship between share option compensation for NEDs and the proxies of secondary agency problems? (pay-performance sensitivity for CEOs and earnings management). This is achieved by interacting blockholder (Block) with the main variables of interest, NEDOpsDummy*K3 and NEDOpsDummy*K3*Perf, for Equation 5 and Equation 6 to produce a new variable of interest NEDOpsDummy*K3*Block and NEDOpsDummy*K3*Perf*Block. The focus is on understanding how the impact of removing share option compensation for NEDs is affected by blockholder

ownership. The results of this analysis will show whether blockholder ownership has a substitution effect with the impact of share option compensation for NEDs. If monitoring of earnings management and CEO compensation improves significantly after the removal of share option compensation for NEDs for companies with blockholder ownership, then these two mechanisms are substitutes. It should be noted that the context of this study means the substitution effect (not the complimentary effect) can be confirmed/not confirmed because after the implementation of the King III, share option compensation would have been removed; hence it is not possible to have both mechanisms at the same time. Since this section is an extension of Section 6.3, the commentary will focus on the variable of interest only, without commenting on the control variables, which were dealt with in the previous section.

### 6.5.1 How the impact of NED share option compensation on CEO pay-performance sensitivity is affected by blockholder ownership.

This subsection tests Hypothesis 5a which focuses on the impact of blockholder ownership on the relationship between share option compensation for NEDs and CEO pay-performance sensitivity (sensitivity to share price returns and financial performance, ROA). The results are presented in Panel A and Panel B of Table 6.10 below. Panel A presents the results when firm performance is measured using share price returns while in Panel B, firm performance is measured using the return on assets (ROA). The variable of interest, NEDOpsDummy*K3*Perf*Block, shows how CEO pay-performance sensitivity changed in the post-King III period after the removal of share option compensation for NEDs for treatment companies with blockholder ownership relative to control companies without blockholder ownership. 'Perf' is the short name for 'performance', which is the share price return in Panel A and ROA in Panel B.

#### 6.5.1.1 Sensitivity of CEO pay to market measures of performance

In Panel A the coefficient for NEDopsDummy*K3*Perf*Block is positive but not significant, which means the sensitivity of CEO pay to share price returns did not change significantly in the post-King III period for treatment companies with blockholder ownership relative to those without. This means blockholder ownership has no effect on the sensitivity of CEO pay to share price returns after the removal of share option compensation for NEDs. To give some context, before adding the interaction term for blockholder ownership (results presented in Section 6.2, Table 6.5, Panel A, on coefficient NEDopsDummy*K3*Perf), the study finds the removal of share option compensation to have no effect on the sensitivity of CEO pay to share price performance. Adding the interaction term for blockholder ownership does not change the relationship. Therefore, blockholder ownership has no effect on the relationship between share option compensation for

NEDs and CEO pay-performance sensitivity. Based on this result, Hypothesis 5a is rejected, meaning blockholder ownership is not a substitute for share option compensation for NEDs in monitoring CEO pay-performance sensitivity to share price returns.

The lower order interaction terms related to block ownership are not statistically significant. The coefficient for K3*Perf*Block is negative and not significant, suggesting that in the post-King III period, there was no significant change in CEO pay-performance sensitivity for companies with higher blockholder ownership relative to those with lower blockholder ownership. NEDOpsDummy*K3*Block shows a positive coefficient which is not significant, suggesting that there was no significant change in total CEO compensation in the post-King III period for treatment firms with blockholder ownership. The coefficient for NEDOpsDummy*Perf*Block is negative and not significant, meaning that over the full sample period, CEO pay-performance sensitivity is weak for treatment companies with blockholder ownership relative to control companies with no blockholder ownership.

#### 6.5.1.2 Sensitivity of CEO pay to accounting measures of performance

In Panel B, the coefficient for NEDopsDummy*K3*Perf*Block is negative but not significant. This means there is no significant change in the sensitivity of CEO pay to financial performance post-King III for treatment companies with blockholder ownership relative to control companies with no blockholder ownership. Therefore, blockholder ownership has no effect on the sensitivity of CEO pay to financial performance after the removal of share option compensation for NEDs. A clear picture is presented when these results are compared to the findings before adding the interaction term for blockholder ownership. The results referred to are presented in Section 6.2, Table 6.5 in Panel B, on the coefficient for NEDopsDummy*K3*Perf. Those results show that, before adding the interaction term for blockholder ownership, the removal of share option compensation for NEDs resulted in a significant increase in the sensitivity of CEO pay to financial performance for treatment companies compared to control companies, suggesting that the removal of option compensation strengthened monitoring incentives for NEDs. After adding the interaction term blockholder ownership, there is no significant change in CEO pay sensitivity to financial performance. Even though removing share option compensation increases the sensitivity of CEO pay to performance for treatment companies but it has no significant effect in the presence of blockholder ownership (as shown by the coefficient for NEDopsDummy*K3*Perf*Block in Table 6.10, Panel B). On a comparative basis and with the above context in mind, it can be concluded that blockholder ownership weakens the positive impact of removing share options for NEDs on monitoring of CEO compensation. The presence of

blockholder ownership makes the relationship between share option compensation for NEDs and CEO pay-performance sensitivity insignificant. Based on this result Hypothesis 5a is rejected, meaning blockholder ownership is not a substitute to share option compensation for NEDs in monitoring CEO pay-performance sensitivity to changes in ROA.

The lower order interaction terms related to block ownership are also not statistically insignificant. K3*Perf*Block is negative and not significant, suggesting that in the post-King III period, there was no significant change in CEO pay-performance sensitivity for companies with blockholder ownership relative to those with no blockholder ownership. NEDOpsDummy*K3*Block, shows a positive coefficient that is not significant, suggesting that there was no significant change in total CEO compensation in the post-King III period for treatment firms with blockholder ownership. NEDOpsDummy*Perf*Block is also not significant, meaning that over the full sample period, CEO pay-performance sensitivity is weak for treatment companies with higher blockholder ownership.

**Table 6. 10: The difference-in-difference results, the impact of blockholder ownership on the relationship between share option compensation and CEO pay-performance sensitivity.**

Table 6.10 below shows the results of the difference-in-difference regression on the impact of blockholder ownership on the relationship between share option compensation for NEDs and CEO pay-performance sensitivity. Panel A shows the results when company performance is measured using share price return, while in Panel B it is measured using return on assets (ROA). The variable of interest is NEDopsDummy*K3*Perf*InstOwn, which shows how the sensitivity of CEO pay changed post-King III for treatment companies with blockholder ownership, relative to control companies. 'Perf' is the short name for 'performance', which is share price return in Panel A and ROA in Panel B. The other variables are as defined in Appendix 1. Robust standard errors are shown in parentheses. '*', '**' and '***' denote significance at 10%, 5% and 1% level respectively.

| | Panel A | Panel B |
|---|---|---|
| Variables | Share price returns | Return on Assets (ROA) |
| Perf | 0.0388 | 0.280 |
| | (0.0401) | (0.189) |
| Block | 0.00248 | 0.0293 |
| | (0.0626) | (0.0670) |
| K3*Perf*Block | -0.0389 | -0.250 |
| | (0.171) | (0.240) |
| Firmsize | 0.330*** | 0.305*** |
| | (0.0521) | (0.0528) |
| Firmrisk | -0.0908 | -0.0460 |
| | (0.101) | (0.101) |
| Leverage | 0.0856 | 0.119 |
| | (0.0983) | (0.0987) |
| CEOAge | -0.00814* | -0.00896* |
| | (0.00487) | (0.00486) |
| CEOOwn | -0.423 | -0.439 |
| | (0.373) | (0.371) |

| | | |
|---|---|---|
| Duality | -0.0464 | -0.00116 |
| | (0.154) | (0.153) |
| CoAct | 0.162 | 0.187* |
| | (0.107) | (0.106) |
| K3 | 0.226* | 0.272** |
| | (0.120) | (0.120) |
| InstOwn | -0.0117 | -0.00423 |
| | (0.0787) | (0.0789) |
| Boardsize | -9.73e-06 | 0.00189 |
| | (0.0101) | (0.0101) |
| Tobin'sQ | 0.0227 | 0.0137 |
| | (0.0143) | (0.0155) |
| Indp | 0.124 | 0.136 |
| | (0.156) | (0.156) |
| NEDOpsDummy*K3 | -0.263** | -0.430*** |
| | (0.118) | (0.132) |
| NEDOpsDummy*K3*Perf*Block | 0.0233 | -0.565 |
| | (0.303) | (0.921) |
| NEDOpsDummy*K3*Perf | 0.156 | 1.748*** |
| | (0.185) | (0.669) |
| NEDOpsDummy*K3*Block | 0.0207 | 0.113 |
| | (0.126) | (0.145) |
| NEDOpsDummy*Perf*Block | -0.0145 | -0.429 |
| | (0.0584) | (0.387) |
| Constant | 8.559*** | 9.040*** |
| | (1.155) | (1.168) |
| Observations | 1,146 | 1,146 |
| R-squared | 0.301 | 0.308 |

### 6.5.2 How the impact of NED share option compensation on earnings management is affected by t blockholder ownership.

This sub-section tests Hypotheses 5b and Hypothesis 5c which examines the impact of blockholder ownership on the relationship between share option compensation for NEDs and earnings management (represented by discretionary accruals and real-activities manipulation, proxied by abnormal cashflows). The results are presented in Panel A and Panel B of Table 6.11 below. Panel A presents the results for discretionary accruals and Panel B presents the results for real-activities manipulation. The variable of interest, NEDOpsDummy*K3*Block, shows how earnings management measures changed in the post-King III period after the removal of share option compensation for NEDs for treatment companies with blockholder ownership relative to control companies without blockholder ownership.

#### 6.5.2.1 Discretionary accruals and real-activities manipulation

The coefficient for NEDOpsDummy*K3*Block is not statistically significant in both Panel A and

Panel B. This means the two forms of earnings management did not change significantly in post-King III period for treatment companies with blockholder ownership relative to those without. This means blockholder ownership has no effect on the two forms of earnings management after the removal of share option compensation for NEDs. To give some context, before adding the interaction term for blockholder ownership (results presented in Section 6.3.2, Table 6.7, Panel A and Panel B, on the coefficient for NEDOpsDummy*K3), the impact of removing share option compensation for NEDs on earnings management was found to be statistically insignificant, suggesting that the removal of share option compensation for NEDs did not affect monitoring of earnings management. After adding the interaction term for blockholder ownership, the results remain insignificant, which means blockholder ownership has no effect on the two forms of earnings management after removing share option for NEDs. This implies that blockholder ownership has no effect on earnings management after removing share options for NEDs. In other words, the removal of share option compensation had a similar effect on discretionary accruals for treatment companies with or without blockholder ownership. Based on these results, Hypothesis 5b and 5c are rejected, meaning blockholder ownership is not a substitute to share option compensation for NEDs in monitoring the two forms of earnings management.

On the lower order interaction terms, NEDOpsDummy*Block is not significant both Panels, suggesting that, over the full sample period, there is no significant difference between earnings management of treatment companies with blockholder ownership and control companies without blockholder ownership. The variable NEDOpsDummy*K3 is also not significant, suggesting that, in the post-King III period, there is no significant change in earnings management for treatment companies relative to control companies.

**Table 6. 11: The difference-in-difference results, the impact of blockholder ownership on the relationship between share option compensation and earnings management.**

Table 6.11 below shows the results of the difference-in-difference regression on the impact of blockholder ownership on the relationship between share option compensation for NEDs and earnings management (measured using discretionary accruals and abnormal cash flows). The dependent variable is the proportion of discretionary accruals deflated by the total assets (shown in Panel A), and the abnormal cash flows representing real earnings activities manipulation, shown in Panel B. The coefficient of interest is NEDOpsDummy*K3*InstOwn, which shows how earnings management changed in the post-King III period after the removal of share option compensation for NEDs for companies with blockholder ownership, compared to companies without. Robust standard errors are shown in parentheses. '*', '**' and '***' denote significance at 10%, 5% and 1% level respectively.

| | Panel A | Panel B |
|---|---|---|
| Variable | Discretionary Accruals | Abnormal Cashflows |
| Block | 0.0777 | 0.0237 |
| | (0.0660) | (0.0148) |
| K3*Block | -0.0262 | -0.00435 |

| | | |
|---|---|---|
| | (0.103) | (0.0234) |
| Boardsize | 0.00419 | 0.00111 |
| | (0.00709) | (0.00162) |
| NEDs | -0.116 | -0.00329 |
| | (0.174) | (0.0396) |
| Firmsize | -0.0177 | -0.0107 |
| | (0.0383) | (0.00850) |
| Firmrisk | -0.0132 | -0.0168 |
| | (0.0701) | (0.0160) |
| CEOAge | -0.00372 | 0.000140 |
| | (0.00345) | (0.000787) |
| Leverage | -0.0490 | 0.0147 |
| | (0.0719) | (0.0162) |
| CEOOwn | 0.107 | 0.0360 |
| | (0.263) | (0.0598) |
| Tobin'sQ | 0.0110 | -0.00206 |
| | (0.0159) | (0.00250) |
| CFOSls | -0.000206 | 0.000241*** |
| | (0.000235) | (5.35e-05) |
| InstOwn | -0.0866 | 0.00679 |
| | (0.0568) | (0.0127) |
| CoAct | 0.0272 | -0.00529 |
| | (0.0755) | (0.0171) |
| K3 | 0.0678 | 0.00910 |
| | (0.113) | (0.0257) |
| Indp | -0.0149 | -0.0159 |
| | (0.116) | (0.0264) |
| ROA | -0.0307 | 0.128*** |
| | (0.122) | (0.0194) |
| NEDOpsDummy*K3 | -0.0409 | -0.00202 |
| | (0.105) | (0.0240) |
| NEDOpsDummy*Block | -0.138 | 0.00306 |
| | (0.0873) | (0.0198) |
| NEDOpsDummy*K3*Block | 0.0333 | -0.0316 |
| | (0.138) | (0.0314) |
| Constant | 0.635 | 0.222 |
| | (0.846) | (0.188) |
| Observations | 1,096 | 1,105 |
| R-squared | 0.019 | 0.094 |

### 6.5.3 Overall comment on the effect of blockholder ownership on the relationship between share option compensation and earnings management and CEO compensation.

The findings of the study do not support for Hypotheses 5a, 5b and 5c. They show that blockholder ownership is not a substitute monitoring mechanism for the removal of share option compensation for NEDs, this applies to monitoring of both CEO compensation and financial reporting. On the sensitivity of CEO pay to financial performance, the study finds that blockholder ownership has a negative effect of weakening monitoring of CEO pay-performance sensitivity,

which is consistent with the exacerbating view. In the rest of the models that cover the two forms of earnings management and the sensitivity of CEO pay to share price performance, the impact of blockholder ownership did not have a statistically significant effect on the relationship between share option compensation and monitoring. This shows that blockholder ownership does not have a substitution effect with share option compensation for NEDs. These findings contradict the findings of Adithipyangkul and Leung (2017) who report the evidence of the substitution effect between equity-based compensation for NEDs and blockholder ownership.

## 6.6 Further analysis

The results in Sections 6.4 and 6.5 above show that neither institutional nor blockholder ownership are substitute monitoring mechanism for share option compensation for NEDs; this applies to monitoring of both CEO compensation and financial reporting. A possible reason could be the treatment of both stakeholders as a homogenous group. Both stakeholders belong to different categories which have different abilities and motives for monitoring (Almazan, Hartzell & Starks, 2005). Not all institutional/blockholder owners are good monitors, some are active monitors while others are passive and while others may collude with management to plunder company resources for their own benefits at the expense of other shareholders. This heterogeneity calls for the need to analyse each of the different categories of each stakeholder separately. Section 3.3.2 and Section 3.4.1 of Chapter Three present a detailed discussion on the various categories of institutional ownership and blockholder categories, respectively. This section analyses the impact of different categories of institutional/blockholders on the relationship between share option compensation for NEDs and CEO pay incentives/earnings management. This section extends the analysis of Section 6.4 and 6.5 to re-examine Hypotheses 4a,4b,4c and 5a,5b,5c. The format of the discussion in this section follows from Section 6.4 and 6.5.

As discussed in Section 3.3.2 above, the different types of institutional ownership can be categorised as monitoring and non-monitoring institutional ownership. Monitoring institutional ownership includes investment companies. These are institutions with a long-term view and they have a strong incentive to monitor executives (Ramalingegowda & Yu, 2012). Monitoring institutional ownership is coded as a dummy variable with a value of one if a company has monitoring institutional owners and zero if the company has no monitoring institutional owners. The non-monitoring institutions include banks and insurance companies. These are institutions with a short-term view and their monitoring abilities might be compromised due to business ties with the investee firms (Ramalingegowda & Yu, 2012). Non-monitoring institutional ownership is

coded as a dummy variable with a value of one if a company has non-monitoring institutional owners and zero if the company has no non-monitoring institutional owners.

The same arguments apply to blockholders; they are a diverse group in terms of skills, investment and governance styles. Hence, they engage in different forms of activism which produce different organisational outcomes (Cronqvist & Fahlenbrach, 2008). Different types of blockholders include institutional investors (hedge funds, mutual funds, pension funds, banks, investment funds), companies and individuals (Edmans, 2014). The Thomson Reuters database classifies blockholder owners into four categories of blockholder ownership, government, pension, foreign and family blockholders. A dummy variable of value one is used to represent the presence of any of these blockholder categories; it has a value of zero if no blockholder category is present.

### 6.6.1 The effect of monitoring and non-monitoring institutional shareholders on the relationship between share option compensation for NEDs on CEO pay-performance sensitivity

Table 6.12 below presents the results for the impact of monitoring and non-monitoring institutional ownership on the relationship between share option compensation for NEDs and CEO pay-performance sensitivity. The results of monitoring institutions are shown in Panel A while the results of non-monitoring institutions are shown in Panel B. Each Panel has two models and each model shows the results of the two measures of performance. The results for CEO pay sensitivity to share price performance are shown in Model 1a. Model 2a shows the results of CEO pay sensitivity to financial performance.

#### 6.6.1.1 The effect of monitoring institutions

In Model 1a of Panel A the coefficient for NEDOpsDummy*K3*Perf*InstOwn is negative but not significant, suggesting that the sensitivity of CEO total pay to share price performance did not change significantly in the post-King III period for treatment companies with monitoring institutional owners compared to control companies with no institutional owners. This means that monitoring institutions have no effect on the sensitivity of CEO pay to share price returns after the removal of share option compensation for NEDs. However, in Model 1b, the coefficient for NEDOpsDummy*K3*Perf*InstOwn is negative and significant at the 5% level, suggesting that the sensitivity of CEO total pay to financial performance declined more in the post-King III period for treatment companies with monitoring institutional owners compared to control companies with no institutional owners. Overall the results of Panel A have two implications, (i) they show that monitoring institutions weaken monitoring of CEO compensation (focusing in pay sensitivity to

financial performance) after the removal of share option compensation, which is inconsistent with their description as active monitors who can mitigate agency problems (ii) monitoring institutions are not a substitute monitoring mechanism for share option compensation for NEDs.

#### 6.6.1.2 The effect of non-monitoring institutions

In both Models 2a and Model 2b of Panel B (based on non-monitoring institutions) the coefficient for NEDOpsDummy*K3*Perf*InstOwn is negative and significant at 5% and 10%, suggesting that the sensitivity of CEO total pay to share price and financial performance declined more in the post-King III period for treatment companies with non-monitoring institutional owners relative to control companies without non-monitoring institutional owners. Overall, the results of Panel B have two implications, (i) They show that non-monitoring institutions weaken monitoring of CEO pay incentives after the removal of share option compensation. This finding is consistent with their description as passive monitors and stakeholders, who can exacerbate agency problems by siding with management as a way of securing investment banking business (Cornett et al., 2007). Non-monitoring institutions may choose not to challenge management and can even go to the extent of colluding to the disadvantage of dispersed small shareholders (Elyasiani & Jia, 2010). (ii) Non-monitoring institutions are not a substitute monitoring mechanism for share option compensation for NEDs.

**Table 6. 12: The difference-in-difference results, the impact of institutional ownership types on the relationship between share option compensation and CEO pay-performance sensitivity.**

Table 6.12 below presents difference-in-difference regression results for the impact of monitoring and non-monitoring institutional ownership on the relationship between share option compensation for NEDs and CEO pay-performance sensitivity. The results of monitoring institutions are presented in Panel A, while the results of non-monitoring institutions are presented in Panel B. Each Panel shows two models, and each model shows the results of the two measures of performance: share price performance and financial performance, measured by ROA. 'Perf' is the short name for 'performance', which is share price return in Panels 1a and 2a, and ROA in Panels 1b and 2b. The other variables are as defined in Appendix 1. Robust standard errors are shown in parentheses. '*', '**' and '***' denote significance at 10%, 5% and 1% level respectively.

| | Panel A -Monitoring Institutions | | Panel A -Non-monitoring Institutions | |
|---|---|---|---|---|
| | 1a | 1b | 2a | 2b |
| Variables | Share price return | ROA | Share price return | ROA |
| Perf | 0.00917 | 0.147 | 0.0245 | 0.0874 |
| | (0.0402) | (0.133) | (0.0303) | (0.125) |
| K3*Perf*InstOwn | 0.231 | 1.575** | 0.683 | 2.071* |
| | (0.194) | (0.659) | (0.533) | (1.163) |
| Firm size | 0.313*** | 0.275*** | 0.327*** | 0.293*** |
| | (0.0523) | (0.0520) | (0.0514) | (0.0517) |
| Firmrisk | -0.101 | -0.0475 | -0.0911 | -0.0609 |
| | (0.101) | (0.102) | (0.0995) | (0.0993) |

| | | | | |
|---|---|---|---|---|
| Leverage | 0.0848 | 0.0899 | 0.0921 | 0.104 |
| | (0.0988) | (0.0988) | (0.0981) | (0.0984) |
| CEOAge | -0.00813* | -0.00923* | -0.00807* | -0.00906* |
| | (0.00484) | (0.00482) | (0.00481) | (0.00482) |
| CEOOwn | -0.426 | -0.405 | -0.461 | -0.442 |
| | (0.372) | (0.370) | (0.370) | (0.369) |
| Duality | -0.0371 | 0.000138 | -0.0126 | 0.0363 |
| | (0.153) | (0.152) | (0.153) | (0.153) |
| CoAct | 0.169 | 0.191* | 0.154 | 0.182* |
| | (0.106) | (0.105) | (0.105) | (0.105) |
| K3 | 0.211* | 0.193 | 0.226* | 0.242** |
| | (0.120) | (0.123) | (0.119) | (0.119) |
| Block | -0.0162 | -0.0326 | -0.00817 | -0.0226 |
| | (0.116) | (0.115) | (0.115) | (0.115) |
| Boardsize | 0.00134 | 0.00442 | -0.00445 | -0.000942 |
| | (0.0101) | (0.0101) | (0.0100) | (0.0101) |
| Tobin'sQ | 0.0217 | 0.0148 | 0.0229 | 0.0161 |
| | (0.0143) | (0.0152) | (0.0141) | (0.0150) |
| Indp | 0.136 | 0.140 | 0.182 | 0.168 |
| | (0.155) | (0.155) | (0.155) | (0.155) |
| NEDOpsDummy*K3 | -0.344** | -0.328** | -0.158* | -0.236** |
| | (0.145) | (0.148) | (0.0961) | (0.103) |
| NEDOpsDummy*K3*Perf*InstOwn | -0.536 | -2.341** | -1.601** | -3.121* |
| | (0.330) | (1.128) | (0.676) | (1.595) |
| NEDOpsDummy*K3*Perf | 0.355 | 1.846** | 0.212* | 1.247*** |
| | (0.220) | (0.723) | (0.127) | (0.472) |
| NEDOpsDummy*K3*InstOwn | 0.158 | 0.0730 | -0.435*** | -0.381** |
| | (0.148) | (0.157) | (0.147) | (0.167) |
| NEDOpsDummy*Perf*InstOwn | 0.0354 | -0.643* | 0.0960 | -0.200 |
| | (0.0574) | (0.341) | (0.122) | (0.514) |
| Constant | 8.913*** | 9.756*** | 8.649*** | 9.379*** |
| | (1.165) | (1.159) | (1.147) | (1.152) |
| Observations | 1,146 | 1,146 | 1,146 | 1,146 |
| R-squared | 0.304 | 0.313 | 0.312 | 0.314 |

### 6.6.2 The effect of monitoring and non-monitoring institutional shareholders on earnings management (discretionary accruals and real-activities manipulation)

Table 6.13 below presents regression results for the impact of monitoring and non-monitoring institutional ownership on the relationship between share option compensation for NEDs and earnings management (represented by discretionary accruals in Model 1a and Model 2a and real-activities manipulation, represented by abnormal cashflows in Model 1b and Model 2b). The results of monitoring institutions are shown in Panel A while the results of non-monitoring institutions are shown in Panel B.

#### 6.6.2.1 The effect of monitoring institutions

In both Model 1a and Model 1b of Panel A, the coefficient for NEDOpsDummy*K3*InstOwn is not statistically significant, suggesting that the removal of share options post-King III period had no effect on both discretionary accruals and real-activities manipulation for treatment companies owned by monitoring institutions. The insignificant coefficients in both Models shows that the presence of monitoring institutions have no effect in constraining earnings management after the removal of share option compensation for NEDs. Therefore, monitoring institutional ownership does not affect the relationship between share option compensation for NEDs and monitoring of earnings management.

#### 6.6.2.2 The effect of non-monitoring institutions

In Panel B, which shows the results of non-monitoring institutions, the coefficient for NEDOpsDummy*K3*InstOwn is positive but statistically insignificant in Model 2a. This suggests that the removal of share options compensation post-King III had no effect on discretionary accruals for treatment companies with monitoring institutions in their ownership structure. In Model 2b, the coefficient of NEDOpsDummy*K3*InstOwn is positive and statistically significant at 10%, suggesting that real-activities manipulation increased more in the post-King III period for treatment companies with non-monitoring institutional shareholders relative to control companies with no non-monitoring institutional ownership. Therefore, the removal of share option compensation for NEDs increases real-activities manipulation for companies with higher non-monitoring institutional ownership. This implies that monitoring of financial reporting weakened when share option compensation for NEDs was removed for treatment companies owned by non-monitoring institutions. The results suggest that removing or not using option compensation does not improve monitoring when the firm has non-monitoring institutional shareholders. With non-monitoring institutional ownership removing share option compensation for NEDs slightly weakens monitoring of real-activities manipulation.

#### 6.6.2.3 Conclusion on the impact of monitoring and non-monitoring institutional ownership

Overall, the results show that neither types of institutional owners is a substitute for share option compensation for NEDs when it comes to monitoring of financial reporting quality. An analysis of this result in conjunction with the results from Section 6.4.2 (where the study finds that institutional ownership exacerbates real-activities manipulation after the removal of share option compensation for NEDs) shows that it is the non-monitoring institutional owners (not all institutional owners) who exacerbates real-activities manipulation after the removal of share option compensation for NEDs. This result is consistent with the private benefits hypothesis and the passive monitoring hypothesis. The hypothesis views institutional owners as ineffective

monitors while the private benefits hypothesis not only views them as ineffective monitors, but as monitors who may end up siding with management as a strategy for securing and maintaining business from the investee companies (Hsu & Koh, 2005, Cornett et al., 2007; Elyasiani & Jia, 2010, Callen & Fang, 2013).

**Table 6. 13: The difference-in-difference results, the impact of institutional ownership types on the relationship between share option compensation and earnings management.**

Table 6.13 below presents regression results for the impact of monitoring and non-monitoring institutional ownership on the relationship between share option compensation for NEDs and earnings management (represented by discretionary accruals in Models 1a and 2a, and real-activities manipulation (represented by abnormal cash flows) in Models 1b and 2b). The results for monitoring institutions are shown in Panel A, while the results for non-monitoring institutions are shown in Panel B. The other variables are as defined in Appendix 1. Robust standard errors are shown in parentheses. '*', '**' and '***' denote significance at 10%, 5% and 1% level respectively.

| | Panel A Monitoring Institutions | | Panel A Non-monitoring Institutions | |
|---|---|---|---|---|
| | 1a | 1b | 2a | 2b |
| Variables | Discretionary Accruals | Abnormal Cash flows | Discretionary Accruals | Abnormal Cash flows |
| Boardsize | 0.00459 | 0.000911 | 0.00465 | 0.00101 |
| | (0.00713) | (0.00162) | (0.00713) | (0.00162) |
| NEDs | -0.114 | -0.00703 | -0.119 | -0.00753 |
| | (0.174) | (0.0394) | (0.174) | (0.0395) |
| Firmsize | -0.0166 | -0.00598 | -0.0155 | -0.00698 |
| | (0.0381) | (0.00841) | (0.0379) | (0.00835) |
| Firmrisk | -0.0153 | -0.0211 | -0.0148 | -0.0215 |
| | (0.0707) | (0.0160) | (0.0700) | (0.0159) |
| CEOAge | -0.00399 | 6.70e-05 | -0.00403 | 6.08e-05 |
| | (0.00344) | (0.000781) | (0.00344) | (0.000781) |
| Leverage | -0.0625 | 0.0220 | -0.0601 | 0.0222 |
| | (0.0724) | (0.0162) | (0.0723) | (0.0162) |
| CEOOwn | 0.0919 | 0.0296 | 0.0933 | 0.0268 |
| | (0.263) | (0.0596) | (0.263) | (0.0596) |
| Tobin'sQ | 0.0114 | -0.000986 | 0.0124 | -0.00122 |
| | (0.0161) | (0.00250) | (0.0159) | (0.00249) |
| Block | 0.0114 | 0.0616*** | 0.00979 | 0.0612*** |
| | (0.0830) | (0.0187) | (0.0827) | (0.0187) |
| CFOSls | -0.000228 | 0.000236*** | -0.000237 | 0.000233*** |
| | (0.000235) | (5.33e-05) | (0.000236) | (5.35e-05) |
| CoAct | 0.0218 | -0.00516 | 0.0225 | -0.00459 |
| | (0.0753) | (0.0170) | (0.0754) | (0.0170) |
| K3 | 0.0332 | 0.0239 | 0.0542 | 0.0113 |
| | (0.101) | (0.0228) | (0.0893) | (0.0202) |
| Indp | -0.0267 | -0.00828 | -0.0294 | -0.00908 |
| | (0.116) | (0.0264) | (0.117) | (0.0265) |
| ROA | -0.0294 | 0.132*** | -0.0277 | 0.130*** |
| | (0.122) | (0.0193) | (0.123) | (0.0193) |
| K3*InstOwn | 0.0421 | -0.0357* | 0.0129 | -0.0570 |

| | | | | |
|---|---|---|---|---|
| | (0.0954) | (0.0215) | (0.156) | (0.0354) |
| NEDOpsDummy*K3 | -0.0198 | -0.0431* | -0.0471 | -0.0315** |
| | (0.114) | (0.0257) | (0.0702) | (0.0159) |
| NEDOpsDummy*K3*InstOwn | -0.0390 | 0.0388 | 0.0258 | 0.0728* |
| | (0.140) | (0.0316) | (0.186) | (0.0422) |
| Constant | 0.583 | 0.115 | 0.563 | 0.137 |
| | (0.848) | (0.187) | (0.845) | (0.186) |
| Observations | 1,096 | 1,105 | 1,096 | 1,105 |
| R-squared | 0.014 | 0.099 | 0.014 | 0.099 |

### 6.6.3 The effect of different types of blockholders on the relationship between share option compensation for NEDs and CEO pay-performance sensitivity

Table 6.14 below presents the results for the impact of different types of blockholders on the relationship between share option compensation for NEDs and CEO pay-performance sensitivity. The results for family blockholders are presented in Panel A, foreign blockholders in Panel B, pension blockholders in Panel C and government blockholders in Panel D. Each Panel has two models, model a and model b, each of which shows the results for sensitivity of CEO pay to share price performance and financial performance, respectively.

In Panels A, B and D, the coefficients for NEDOpsDummy*K3*Perf*Block - in which block represents family blockholders, foreign blockholders and government blockholders, respectively – are all statistically insignificant. This suggests that none of these blockholder types influences the relationship between share option compensation for NEDs and CEO pay-performance sensitivity. Therefore, there is no evidence to show that any of them are substitutes for share option compensation for NEDs. In Panel C which shows the results for pension blockholders, the coefficient for NEDOpsDummy*K3*Perf*Block is negative and significant at 5% and 10% in Model 3a and Model 3b, suggesting that the sensitivity of CEO pay to both share price and financial performance decreased more in the post–King III period for treatment companies with the pensions funds blockholders relative to those without. The results imply that pensions blockholders are not a substitute for share option compensation for NEDs in monitoring CEO total pay; rather the results show that they weaken monitoring of CEO pay incentives. Pension funds are classified as dedicated institutional owners because they hold large stakes in a few companies and are long term in nature (Bushee, 1998), this classifies them as monitoring institutions. Therefore, the finding that they weaken institutional ownership after the removal of share option compensation is not consistent with their classification as dedicated investors who have an incentive to actively monitor management.

**Table 6. 14: Regression results on the effect of different types of blockholders on share option compensation and CEO pay-performance sensitivity**

Table 6.14 below presents difference-in-difference regression results for the impact of different types of blockholders on the relationship between share option compensation for NEDs and CEO pay-performance sensitivity. The results for family blockholders are shown in Panel A, foreign blockholders in Panel B, pension blockholders in Panel C and government blockholders in Panel D. Each panel has two models, a and b, which show the results for pay performance to share price performance and financial performance respectively. The other variables are as defined in Appendix 1. Robust standard errors are shown in parentheses. '*', '**' and '***' denote significance at 10%, 5% and 1% level respectively.

| | Pane A Family Blockholder | | Panel B Foreign Blockholder | | Panel C Pension Blockholder | | Panel D Govt Blockholder | |
|---|---|---|---|---|---|---|---|---|
| | 1a | 1b | 2a | 2b | 3b | 3a | 4a | 4b |
| Variables | Share price return | ROA | Share price return | ROA | Share price return | ROA | Share price return | ROA |
| Sharereturns | 0.0221 | 0.0911 | 0.0278 | 0.112 | 0.0307 | 0.124 | 0.0370 | 0.243 |
| | (0.0400) | (0.129) | (0.0305) | (0.125) | (0.0297) | (0.121) | (0.0405) | (0.180) |
| K3*StkRtrn*Block | -0.0483 | 0.466 | -0.256 | 2.355 | 4.453 | 1.068 | -0.111 | -0.560 |
| | (0.194) | (0.770) | (0.687) | (3.026) | (3.553) | (3.192) | (0.216) | (0.502) |
| Firmsize | 0.332*** | 0.290*** | 0.325*** | 0.299*** | 0.308*** | 0.278*** | 0.335*** | 0.308*** |
| | (0.0529) | (0.0535) | (0.0522) | (0.0525) | (0.0519) | (0.0521) | (0.0528) | (0.0534) |
| Firmrisk | -0.0830 | -0.0399 | -0.0911 | -0.0671 | -0.0993 | -0.0759 | -0.0990 | -0.0557 |
| | (0.101) | (0.101) | (0.100) | (0.0998) | (0.0992) | (0.0988) | (0.100) | (0.101) |
| Leverage | 0.0843 | 0.112 | 0.0928 | 0.120 | 0.0734 | 0.103 | 0.0824 | 0.110 |
| | (0.0979) | (0.0982) | (0.0977) | (0.0981) | (0.0968) | (0.0972) | (0.0990) | (0.0993) |
| CEOAge | -0.00812* | -0.00817* | -0.00893* | -0.00974** | -0.00973** | -0.00990** | -0.00820* | -0.00898* |
| | (0.00486) | (0.00486) | (0.00489) | (0.00489) | (0.00489) | (0.00489) | (0.00485) | (0.00486) |
| CEOOwn | -0.436 | -0.439 | -0.401 | -0.404 | -0.468 | -0.467 | -0.410 | -0.402 |
| | (0.372) | (0.371) | (0.372) | (0.372) | (0.371) | (0.371) | (0.374) | (0.372) |
| Duality | -0.0562 | -0.0261 | -0.0360 | 0.00169 | -0.0378 | 0.00296 | -0.0417 | -0.0153 |
| | (0.155) | (0.154) | (0.154) | (0.153) | (0.152) | (0.152) | (0.154) | (0.153) |
| CoAct | 0.166 | 0.194* | 0.170 | 0.194* | 0.186* | 0.221** | 0.161 | 0.195* |
| | (0.106) | (0.105) | (0.106) | (0.105) | (0.105) | (0.105) | (0.106) | (0.105) |
| K3 | 0.222* | 0.235* | 0.217* | 0.241** | 0.237** | 0.253** | 0.222* | 0.275** |
| | (0.120) | (0.124) | (0.120) | (0.120) | (0.120) | (0.119) | (0.120) | (0.121) |
| InstOwn | 0.0136 | 0.0360 | 0.0182 | 0.0444 | 0.0173 | 0.0434 | 0.0202 | 0.0336 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | (0.114) | (0.114) | (0.114) | (0.114) | (0.112) | (0.112) | (0.121) | (0.120) |
| Boardsize | -0.00117 | 0.00108 | 7.76e-05 | 0.000886 | 3.33e-05 | 0.000651 | -0.000455 | 0.00169 |
| | (0.0101) | (0.0101) | (0.0101) | (0.0101) | (0.00997) | (0.01000) | (0.0101) | (0.0101) |
| Tobin'sQ | 0.0242* | 0.0150 | 0.0227 | 0.0199 | 0.0214 | 0.0197 | 0.0227 | 0.0133 |
| | (0.0143) | (0.0153) | (0.0142) | (0.0150) | (0.0141) | (0.0148) | (0.0143) | (0.0153) |
| Indp | 0.117 | 0.108 | 0.113 | 0.113 | 0.121 | 0.132 | 0.118 | 0.102 |
| | (0.155) | (0.155) | (0.155) | (0.156) | (0.153) | (0.154) | (0.156) | (0.157) |
| Block | | | | | | | -0.0503 | -0.0566 |
| | | | | | | | (0.128) | (0.128) |
| NEDOpsDummy*K3 | -0.198* | -0.309*** | -0.204** | -0.287*** | -0.303*** | -0.370*** | -0.332*** | -0.507*** |
| | (0.107) | (0.119) | (0.0973) | (0.104) | (0.0907) | (0.0957) | (0.118) | (0.131) |
| NEDOpsDummy*K3* Perf*Block | 0.190 | -1.752 | 0.171 | -3.213 | -8.732** | -16.39* | 0.244 | -0.967 |
| | (0.326) | (1.182) | (0.765) | (3.483) | (4.086) | (9.228) | (0.415) | (1.366) |
| NEDOpsDummy*K3* Perf | 0.0993 | 1.772*** | 0.140 | 1.064** | 0.152 | 1.015** | 0.0975 | 1.923*** |
| | (0.147) | (0.622) | (0.133) | (0.441) | (0.120) | (0.420) | (0.172) | (0.726) |
| NEDOpsDummy*K3* Block | -0.111 | -0.0102 | -0.164 | -0.108 | 2.774*** | 4.469** | 0.229 | 0.366* |
| | (0.125) | (0.144) | (0.151) | (0.166) | (0.595) | (1.947) | (0.207) | (0.222) |
| NEDOpsDummy*Perf *Block | 0.0222 | 0.0630 | 0.123 | -0.109 | 2.483* | 5.761 | -0.00423 | -0.165 |
| | (0.0572) | (0.408) | (0.140) | (0.576) | (1.421) | (7.834) | (0.0646) | (0.518) |
| Constant | 8.489*** | 9.355*** | 8.676*** | 9.225*** | 9.083*** | 9.676*** | 8.447*** | 9.013*** |
| | (1.164) | (1.174) | (1.150) | (1.154) | (1.143) | (1.148) | (1.165) | (1.176) |
| | | | | | | | | |
| Observations | 1,146 | 1,146 | 1,146 | 1,146 | 1,138 | 1,138 | 1,146 | 1,146 |
| R-squared | 0.302 | 0.307 | 0.303 | 0.306 | 0.322 | 0.324 | 0.303 | 0.309 |

### 6.6.4 The effect of different types of blockholders on earnings management (discretionary accruals and real-activities manipulation)

Table 6.15 below presents difference-in-difference regression results for the impact of different types of blockholders on the relationship between share option compensation for NEDs and earnings management (represented by discretionary accruals in Models 1a, 2a, 3a, and 4a and real-activities based earnings management in Model 1b,2b,3b and 4b. The results for family blockholders are presented in Panel A, foreign blockholders in Panel B, pension blockholders in Panel C and government blockholders in Panel D.

In Panels A, B and C the coefficients for NEDOpsDummy*K3*Block (representing family blockholders, foreign blockholders and pension blockholders, respectively) are all statistically insignificant. This shows that none of these blockholder categories affect the relationship between share option compensation for NEDs and earnings management. There is no evidence to show that these three blockholders are substitutes for share option compensation for NEDs. In Panel D, the results of Model 4a are also not significant, showing that government blockholders have no effect on discretionary accruals after the removal of share option compensation for NEDs. However, the results differ in Model 4b; the coefficient of NEDOpsDummy*K3*Block, is negative and significant at the 10% level, suggesting that real-activities manipulation declined more in the post-King III period for treatment companies with government blockholder ownership relative to control companies with no blockholder ownership. The results imply that government blockholders are a substitute for share option compensation for NEDs in monitoring of real-activities manipulation. These results are surprising considering that the proportion of government blockholding is about 10% compared to the an average blockholder ownership that ranged from 43%-46% over the full sample period.

**Table 6. 15:The effect of different types of blockholders on the relationship between share option compensation and earnings management**

Table 6.15 below presents difference-in-difference regression results for the impact of different types of blockholder on the relationship between share option compensation for NEDs and earnings management (represented by discretionary accruals in Models 1a, 2a, 3a and 4a, and real-activities-based earnings management in Models 1b, 2b, 3b and 4b. The results for family blockholders are presented in Panel A, foreign blockholders in Panel B, pension blockholders in Panel C and government blockholders in Panel D. The other variables are as defined in Appendix 1. Robust standard errors are shown in parentheses. '*', '**' and '***' denote significance at 10%, 5% and 1% level respectively.

| | Pane A Family Blockholder | | Panel B Foreign Blockholder | | Panel C Pension Blockholder | | Panel D Govt Blockholder | |
|---|---|---|---|---|---|---|---|---|
| | (1a) | (1b) | (2a) | (2b) | (3a) | (3b) | (4a) | (4b) |
| VARIABLES | **Discretionary Accruals** | **Abnormal Cashflows** | **Discretionary Accruals** | **Abnormal Cashflows** | **Discretionary Accruals** | **Abnormal Cashflows** | **Discretionary Accruals** | **Abnormal Cashflows** |
| K3*Block | -0.0115 | -0.0410* | -0.00839 | -0.0178 | -0.0771 | -0.0290 | -0.0545 | -0.0175 |
| | (0.0953) | (0.0217) | (0.157) | (0.0359) | (0.301) | (0.0687) | (0.126) | (0.0282) |
| Boardsize | 0.00476 | 0.000734 | 0.00503 | 0.000795 | 0.00452 | 0.000760 | 0.00424 | 0.000653 |
| | (0.00709) | (0.00161) | (0.00708) | (0.00162) | (0.00712) | (0.00162) | (0.00713) | (0.00160) |
| NEDs | -0.116 | -0.000138 | -0.134 | -0.00126 | -0.118 | -0.00246 | -0.0972 | 0.0146 |
| | (0.174) | (0.0395) | (0.173) | (0.0395) | (0.174) | (0.0397) | (0.175) | (0.0392) |
| Firmsize | -0.0140 | -0.0105 | -0.0121 | -0.0123 | -0.0134 | -0.0115 | -0.0168 | -0.0162* |
| | (0.0385) | (0.00851) | (0.0383) | (0.00847) | (0.0386) | (0.00853) | (0.0387) | (0.00842) |
| Firmrisk | -0.0188 | -0.0210 | -0.0161 | -0.0208 | -0.0146 | -0.0206 | -0.0158 | -0.0193 |
| | (0.0702) | (0.0160) | (0.0699) | (0.0160) | (0.0702) | (0.0160) | (0.0701) | (0.0157) |
| CEOAge | -0.00415 | 0.000108 | -0.00466 | 0.000151 | -0.00427 | -2.03e-05 | -0.00385 | 0.000133 |
| | (0.00344) | (0.000784) | (0.00346) | (0.000790) | (0.00354) | (0.000807) | (0.00345) | (0.000773) |
| Leverage | -0.0591 | 0.0137 | -0.0596 | 0.0139 | -0.0622 | 0.0147 | -0.0488 | 0.0275* |
| | (0.0718) | (0.0162) | (0.0717) | (0.0162) | (0.0721) | (0.0162) | (0.0733) | (0.0162) |
| CEOOwn | 0.0935 | 0.0547 | 0.103 | 0.0526 | 0.0801 | 0.0561 | 0.122 | 0.0523 |
| | (0.263) | (0.0598) | (0.263) | (0.0599) | (0.266) | (0.0605) | (0.265) | (0.0594) |
| Tobin'sQ | 0.0115 | -0.00150 | 0.0101 | -0.00186 | 0.0113 | -0.00191 | 0.0129 | -0.000884 |
| | (0.0160) | (0.00250) | (0.0159) | (0.00250) | (0.0160) | (0.00250) | (0.0161) | (0.00247) |
| CFOSls | -0.000236 | 0.000241*** | -0.000235 | 0.000240*** | -0.000224 | 0.000239*** | -0.000219 | 0.000240*** |
| | (0.000235) | (5.35e-05) | (0.000235) | (5.35e-05) | (0.000236) | (5.36e-05) | (0.000235) | (5.26e-05) |
| InstOwn | -0.0418 | 0.0375** | -0.0413 | 0.0384** | -0.0449 | 0.0389** | -0.0422 | 0.0646*** |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | (0.0807) | (0.0183) | (0.0806) | (0.0183) | (0.0809) | (0.0183) | (0.0854) | (0.0190) |
| CoAct | 0.0214 | -0.00121 | 0.0262 | -0.00171 | 0.0251 | -0.00132 | 0.0224 | -0.00598 |
| | (0.0751) | (0.0170) | (0.0751) | (0.0170) | (0.0760) | (0.0172) | (0.0754) | (0.0168) |
| K3 | 0.0618 | 0.0217 | 0.0559 | 0.00635 | 0.0591 | 0.00479 | 0.0843 | 0.0156 |
| | (0.0967) | (0.0219) | (0.0890) | (0.0203) | (0.0889) | (0.0202) | (0.111) | (0.0249) |
| Indp | -0.0177 | -0.0214 | -0.0252 | -0.0214 | -0.0270 | -0.0229 | -0.0258 | -0.0122 |
| | (0.116) | (0.0264) | (0.116) | (0.0264) | (0.117) | (0.0266) | (0.116) | (0.0260) |
| ROA | -0.0303 | 0.133*** | -0.0256 | 0.130*** | -0.0309 | 0.130*** | -0.0228 | 0.134*** |
| | (0.122) | (0.0193) | (0.122) | (0.0193) | (0.123) | (0.0194) | (0.122) | (0.0190) |
| Block | | | | | | | 0.102 | 0.138*** |
| | | | | | | | (0.122) | (0.0270) |
| NEDOpsDummy*Block | | | | | | | -0.215 | -0.0801** |
| | | | | | | | (0.171) | (0.0381) |
| NEDOpsDummy*K3 | -0.0774 | -0.0305 | -0.00832 | -0.0216 | -0.0465 | -0.0151 | -0.0789 | 0.00970 |
| | (0.0861) | (0.0195) | (0.0700) | (0.0159) | (0.0656) | (0.0149) | (0.107) | (0.0239) |
| NEDOpsDummy*K3*Block | 0.0798 | 0.0321 | -0.145 | 0.0332 | 0.130 | -0.0390 | 0.105 | -0.0806* |
| | (0.128) | (0.0292) | (0.190) | (0.0433) | (0.407) | (0.0928) | (0.196) | (0.0441) |
| Constant | 0.565 | 0.211 | 0.560 | 0.250 | 0.567 | 0.241 | 0.596 | 0.256 |
| | (0.847) | (0.188) | (0.842) | (0.187) | (0.850) | (0.188) | (0.853) | (0.186) |
| Observations | 1,096 | 1,105 | 1,096 | 1,105 | 1,088 | 1,097 | 1,096 | 1,105 |
| R-squared | 0.014 | 0.094 | 0.016 | 0.091 | 0.014 | 0.092 | 0.016 | 0.122 |

### 6.6.5 Overall analysis on the effect of different types of blockholders on earnings management and CEO pay incentives

Overall, the results of the four proxies consistently show that foreign, pension and family blockholders are not substitutes monitoring mechanism for share option compensation for NEDs. For pension blockholders, one proxy shows that monitoring weakens after the removal of share options compensation, implying that they exacerbate agency problems. This finding contradicts Kim (2010) and is inconsistent with the view that pension funds have a strong incentive to improve monitoring because they take a long-term view, they are independent of management, and generally they hold large stakes (Ramalingegowda & Yu, 2012). For government blockholders, the results show contradictory evidence; three proxies show that they are not a substitute monitoring mechanism for share option compensation, while one proxy for earnings management shows that they are a substitute monitoring mechanism. The contradictory evidence is consistent with conflicting empirical evidence of their impact on monitoring, some studies (see Yu, 2013) show that government blockholder improve monitoring because they have power and influence to *"wield bigger sticks and carrots* (Borisova et al., 2012), while other studies (see Bushman, Piotroski & Smith, 2004; Piotroski, Wong & Zhang, 2015) show that government blockhoders increase agency problems because there is a strong possibility that political agendas will trump business decisions (Borisova et al., 2012).

## 6.7 Sensitivity analysis

### 6.7.1 Correcting for autocorrelation (serial correlation) and heteroscedasticity

#### 6.7.1.1 The presence of heteroscedasticity and autocorrelation in the sample data

The presence of heteroscedasticity in panel data results in biased standard errors which can lead to the incorrect interpretation of results (Li & Yao, 2019). The presence of heteroscedasticity in the fixed effects model is assessed using the Modified Wald test for groupwise heteroscedasticity. The result shows strong evidence of the existence of heteroscedasticity; the p value is below 5% for all the regressions against the null hypothesis at a 5% significance level.

Bertrand, Duflo and Mullainathan (2004) showed how auto correlation creates biased standard errors and overestimated levels of significant and t-statistics. To confirm the existence of autocorrelation, the study used the Wooldridge test for autocorrelation (Drukker, 2003). The test's null hypothesis is that no first-order autocorrelation does exist, and the alternative is that first-order autocorrelation exists. All the models, except for the results presented in Table 6.4 and Table 6.7 Panel A, show the presence of autocorrelation, the p-values of the Wooldridge test for autocorrelation are all significant at the 5% level.

#### 6.7.1.2 Addressing heteroscedasticity and autocorrelation in the sample data

The study follows the suggestions of Bertrand, Duflo and Mullainathan (2004) to cluster standard errors by industry. Several authors follow this approach (see Dell'Ariccia, Detragiache & Rajan, 2008; Duchin, Matsusaka & Ozbas, 2010); they clustered the standard errors by industry. This approach address both the serial correlation and heteroskedasticity problems.

#### 6.7.1.3 Results after addressing heteroscedasticity and autocorrelation in the sample data

After correcting for both autocorrelation and heteroskedasticity, the results still show that the removal of share options compensation for NEDs does not weaken monitoring by NEDs. The results show that the removal of share option compensation either improves monitoring or does not have a significant effect. Despite the conclusion remaining the same the results differ slightly in two ways. First, the coefficient of interest in Panel B of Table 6.7 (NEDOpsDummy*K3) is still negative, but becomes significant at the 5% level. This shows that real-activities manipulation decreased after the removal of share option compensation for NEDs in the post-King III period, suggesting that their removal improves monitoring by NEDs. Secondly the variable of interest in Panel B of Table 6.5 maintain the same coefficient and sign but the level of significance drops from 1% to 10%. This drop-in significance level confirms the view of Bertrand, Duflo and Mullainathan (2004) that the presence of serial correlation overestimates the significance of the coefficients. The results of the other models testing the impact of share option compensation remain the same. The results after correcting for heteroskedasticity and autocorrelation are presented in Appendix 9.

### 6.7.2 Sensitivity of the results to different cut-off period

As discussed in Section 5.1.1 above, the sample period for this study ranges from 2002 to 2016; the pre-King III period is from 2002 to 2012, while the post King III period is from 2013 to 2016. A study by Chen, Cheng and Wang (2015) investigated a similar setting where a corporate governance variable changed because of a regulatory change. In that study, the authors they left an adjustment window period of three years from 2002 to 2004. The adjustment window period is meant to account for the noise and uncertainty that prevailed during the first three-year period of change in the corporate governance variable. Applying that principle to this study, the equivalent would be removing the period 2010-2012 from the analysis as a period of adjustment. This means the pre-King III period would be from 2002 to 2009 and the post- King III period would be from 2013 to 2016. The study incorporates this view by Chen, Cheng and Wang (2015), by running all the tests after removing the three years, 2010-2012. The results of the variable of interest are largely similar to the first set of results when the sample period includes the year 2010-2012. The results are presented in Appendix 6.

### 6.7.1 The change in board independence requirement from King II to King III

The King III Code ushered in other significant changes that did not exist under the King II regime. The King III prescribed a stricter definition for board independence. The King II(2002) corporate governance code defined an independent director as a board member who; does not represent a shareholder with a significant interest to be able to control management, is not employed by the company and has not worked for the company or subsidiary or sister companies for the past three years; is not close family member to someone employed by the company or previously employed by the company over the previous three years; has not provided any service and is not a customer to the company or group of companies. The King III (2010) brought in a more strict requirement for independence. In addition to the above, NEDs are not classified as independent if they; receive share option compensation, represent a shareholder who can have significant control on the board and or management, or have direct or indirect ownership of 5% or more.

Board independence is an important corporate governance mechanism. Hence, there is a concern that this change in board independence requirements may interfere with results. However, this change should not be a cause for concern, for three reasons. First, the study is based on the difference-in-difference method which makes it possible to observe the impact of removing share option compensation for NEDs of the affected firms (treatment group), while the matched control firms provide counterfactual evidence. This helps to mitigate confounding influences around the implementation of the King III corporate governance code. Second, the study controlled for board independence using the King III criteria for the whole sample period (including both the pre and post-King III periods). Third, based on observations made during data collection, the change that had the biggest impact on the board independence requirement is the removal of share option compensation for NEDs. According to the King III Code, a NED who receives share option compensation is not classified as independent even though under the King II they would be classified as independent. Therefore, if one examines the impact of the change in board independence requirement on any organisational outcome, the treatment companies (that is, the companies affected by the change in board independence) will be largely similar to the treatment companies used in this thesis (those that were paying share options to NEDs and stopped post-King III). The companies that were paying options to NEDs prior to King III (the treatment companies used in the thesis) had most or all of their directors not classified as independent because of the King III requirement. These are the same companies that would be the treatment companies because they will also be affected by the King III requirement for board independence. On the other hand, the companies that never paid options would qualify to be

control companies in both cases (unless if they did not comply with other stated requirements, which was not prevalent).

### 6.7.2 Tests using the normal OLS regression and the fixed effects model (No difference-in-difference method)

For comparison purposes the study carries out two additional tests based on the normal OLS regression and without controlling for the endogeneity problem and the normal fixed effects model (without the difference-in-difference model). The results of the OLS model are presented Appendix 7 while the results of the fixed effects model are presented in Appendix 8.

#### 6.7.2.1 OLS regression results

The results are consistent with the difference-in-difference method on the two forms of earnings management and on the sensitivity of total CEO pay to share price performance. The results show that share options for NEDs do not have a significant effect on these three variables; however, the results differ on the sensitivity of CEO pay to financial performance; under the OLS model[31], there is no effect but under the difference-in-difference method the effect is significant, suggesting that removing share option for NEDs improve monitoring. Therefore, based on the OLS results share options for NEDs do not have a significant effect on monitoring the quality of financial reporting and CEO compensation. Hence, it is not beneficial for companies to use share options for NEDs.

#### 6.7.2.2 The results based on the fixed effects model

The results of the fixed effects model[32] (without the difference-in-difference model) are consistent with the difference-in-difference method on only one variable, the real-activities manipulation. For this variable, both models show that share options for NEDs do not have a significant effect; however, the results differ for the rest of variables, discretionary accruals, sensitivity of CEO pay to share price and financial performance. For the sensitivity of CEO pay to share price, the results show a positive and statistically significant (at 5%) relationship with share options for NEDs. For discretionary accruals, the results show a negative and statistically significant (at 10%) relationship with share options for NEDs, suggesting that the higher the share options for NEDs the lower the discretionary accruals. Both sets of results imply that share options for NEDs are associated with improved monitoring, in support of the incentive-alignment hypothesis. For the sensitivity of CEO pay to financial performance, the fixed effects model shows that share options for NEDs do not have a significant effect while the difference-in-difference model imply that the use of share

[31] The results are presented in Appendix 7
[32] The results are presented in Appendix 8

options weaken monitoring. Therefore, based on the fixed effects models share options for NEDs either improve monitoring or they do not have a significant effect. Hence, it is beneficial, in some cases, for companies to use share options for NEDs, in some cases it is not.

#### 6.7.2.3 Conclusion from comparing the results of the three different models

Despite slight differences in the significance of some of the coefficients, the OLS and difference-in-difference models produce a similar conclusion. In both models, the conclusion is that the use of share options for NEDs is not beneficial for shareholders. However, the results from the fixed effects model produce a different conclusion; that it is beneficial, in some cases, for companies to use share options for NEDs, in some cases it is not. The inconsistent results (as shown in Sub-section 6.7.2.1 and 6.7.2.2), in terms of the differences in the significance of the coefficients, from the three models mirror the contradictory results from prior studies and reveal the importance of controlling for endogeneity.

# 7. CHAPTER SEVEN: CONCLUSION, SUMMARY OF FINDINGS, IMPLICATIONS OF THE RESEARCH, LIMITATIONS AND AVENUES FOR FUTURE RESEARCH

## 7.0 Introduction.

This chapter concludes the thesis. It starts by recapping the research objectives, followed by a summary of the key findings for each research question and the implications of these findings. The second part of the chapter details the contribution of the research; this is followed by the limitations of the research, and some ideas on areas that can be pursued for further research. The last part is a conclusion for the Chapter.

## 7.1 Summary of research findings

### 7.1.1 Overview of the research objectives

Unlike the King II Corporate Governance Code which allowed the use of share options as a form of compensation for NEDs, the King III Corporate Governance Code took a different stance, it disapproved their use. This study exploits this shift, which creates a natural experiment, to investigate the impact of share option compensation on monitoring by NEDs. In particular, the study applies the difference-in-difference regression to examine how the removal of share option compensation for NEDs affect monitoring of the two biggest agency problems in South Africa, design of CEO compensation (CEO pay-performance sensitivity) and the quality of financial reporting, proxied by earnings management. In addition, the study investigates how the removal of share options compensation for NEDs affected companies with different levels of institutional and blockholder ownership (to see whether they are substitutes or not). Both institutional and blockholder owners consist of heterogeneous categories with different monitoring incentives; hence a further analysis examines how the different categories of these two stakeholders interact with share option compensation in mitigating secondary agency problems (improving monitoring). Given the changes brought in by the King III code, the thesis also analyses trends for the use of share option compensation for NEDs during the pre-King III period (before they were removed), the intention being to determine whether the decision to stop their use was triggered by a tremendous increase in their usage. The trend analysis was extended to observe the changes in the use of share options for NEDs over the full sample period, with the intention of measuring the extent of compliance with the King III requirement to stop their usage.

The study is based on a sample of 110 companies listed on the Johannesburg Stock Exchange in South Africa, and it covers the sample period 2002-2016. By using a natural experiment (dubbed the 'gold standard' for addressing endogeneity problems), the study addresses the endogeneity problem, which is key to satisfactorily settling the debate on the effectiveness of equity-based compensation in mitigating secondary agency problem. The difference-in-difference regression analysis was the main methodology used, but for comparison purposes the study also applied the normal Ordinary Least Squares (OLS) regression and normal fixed effects model. The key data set was hand-collected from annual reports, including data for share options, share grants and other forms of compensation for NEDs and CEOs, data on corporate governance variables such as board independence, and NEDs. The rest of the data was collected from Bloomberg, the Iress database and Thomson Reuters.

### 7.1.2 Summary of the findings and conclusions per research question

#### 7.1.2.1 Trend analysis of share option compensation for NEDs during the pre-King III period and over the sample period

The first part of the trend analysis does not show a significant change or growth in the use of share option compensation for NEDs during the pre-King III period; this rules out the possibility that the decision to stop them from being used as a form of compensation was partly driven by an explosion in their use by companies. However, over the full sample period the use of share option compensation for NEDs declined significantly, which suggests that companies largely complied with the King III requirement to stop their usage as a form of compensation. However, the compliance was not 100%; even after the cut-off date specified by the JSE, some companies continued using them. This is not surprising, because King III was based on the 'apply or explain' principle.

#### 7.1.2.2 The impact of share option compensation for NEDs on CEO pay incentives and earnings management

The removal of share option compensation for NEDs resulted in a significant increase in the sensitivity of CEO pay to financial performance for treatment companies. However, it had no significant effect on the other proxies: sensitivity of CEO pay to share price performance, and the two forms of earnings management (discretionary accruals and real-activities manipulation). These findings show that removing share option compensation for NEDs has two possible effects on monitoring: it either improves monitoring or it has no significant effect, but it does not weaken monitoring. These findings show that it is not worthwhile for shareholders to use share options as a form of compensation for NEDs. If you are using them, it is more beneficial to remove them,

because they come at a cost and they dilute the shareholding structure. Yet removing them does not weaken monitoring; it may improve monitoring, and at worst it will not have a significant effect. Thus, the results support the recommendation of the King III Corporate Governance Code to remove share options as a form of compensation for NEDs. However, the results are inconsistent with what is being encouraged by: US corporate governance codes, the SOX, influential bodies such as the National Association of Corporate Directors (NACD), the Blue Ribbon Commission Report on Director Compensation, and the California Public Employees Retirement System (CalPERS) (Mkrtchyan,2012; Lahlou & Navatte, 2017), which encourage the use of equity-based compensation, including share options for NEDs.

#### 7.1.2.1 The impact of institutional ownership on the relationship between share option compensation for NEDs and monitoring of CEO pay incentives and earnings management

The CEO pay incentives (sensitivity of total CEO pay to both financial and share price performance) and discretionary accruals did not change significantly in the post-King III period for treatment companies with institutional ownership. These results show that the presence of institutional ownership does not affect the relationship between share option compensation for NEDs and CEO pay incentives. These findings support the passive monitoring hypothesis, which views institutional owners as ineffective monitors (Bhojraj & Sengupta, 2003). However, the results for the second measure of earnings management, real-activities manipulation, show that the removal of share option compensation for NEDs increased the levels of real-activities manipulation for treatment companies with institutional ownership. This shows that monitoring of financial reporting weakened when share option compensation for NEDs was removed for treatment companies with higher institutional ownership. This implies that institutional ownership had a negative effect on (it weakened) monitoring after the removal of share option compensation for NEDs. This is consistent with the private benefits hypothesis, which not only views some institutional owners as ineffective monitors, but as monitors who may end up siding with management, with the hope of securing and maintaining business from the investee companies (Elyasiani & Jia, 2010). Overall, the results of all the proxies examined show that institutional ownership is not a substitute monitoring mechanism for share option compensation for NEDs. All proxies showed that monitoring of CEO pay incentives and earnings management did not improve significantly after the removal of share option compensation in the presence of institutional owners. The results of all the proxies are inconsistent with the active monitoring hypothesis, which views institutional investors as active monitors who mitigate agency problems.

The results are persistent, even after further analysis of the two categories of institutional ownership, monitoring and non-monitoring institutions. The results suggest that overall, neither monitoring nor non-monitoring institutional owners are a substitute monitoring mechanism for share option compensation for NEDs. The findings show that in some proxies, the two categories have no effect on monitoring, but in other proxies they weaken monitoring after the removal of share option compensation for NEDs. None of the proxies showed a significant improvement in monitoring after the removal of share options for treatment companies with monitoring and non-monitoring institutional owners. For monitoring institutions, these findings are not consistent with their description as active monitors who have a strong motivation to monitor management and mitigate agency problems (Bushee, 1998; Ramalingegowda & Yu, 2012; Velury & Jenkins, 2006; Koh, 2007; Borochin & Yang, 2017; Alvarez, Jara & Pombo, 2018). However, the finding on non-monitoring institutions is consistent with their categorisation; they don't take a long-term view, so they have fewer incentives to monitor management (passive monitoring hypothesis), and they can collude with management to benefit themselves at expense of other shareholders (private benefits hypothesis) (Bushee, 1998; Bhojraj & Sengupta, 2003; Almazan, Hartzell & Starks, 2005).

#### 7.1.2.2 How does blockholder ownership affect the relationship between share options for NEDs and monitoring of CEO compensation? Is blockholder ownership a substitute for share option compensation?

The results show that the impact of blockholder ownership on the relationship between share option compensation for NEDs and all the proxies (two forms of CEO pay incentive, and the two measures of earnings management) is not statistically significant. After the removal of share option compensation for NEDs, there was no significant change in CEO pay incentives and earnings management for treatment companies with blockholder ownership. This suggests that the presence of blockholder ownership does not affect the relationship between share option compensation for NEDs and CEO pay incentives and earnings management. The results therefore imply that blockholder ownership is not a substitute monitoring mechanism for share option compensation for NEDs. There is no evidence that monitoring improves after the removal of share option compensation for companies with blockholder ownership. Prior studies (e.g. Edmans and Holderness, 2017) could attribute this insignificant impact to treating blockholder owners as a homogenous group. However, a further analysis of the different categories of blockholder show consistent findings that family, pension and foreign blockholders are not substitute monitoring mechanisms for share option compensation for NEDs. The findings for family and foreign blockholders consistently show that they do not have a significant effect on monitoring, for all the proxies, after the removal of share option compensation. However, the findings for foreign blockholders show that they have no significant effect on the two proxies or earnings

management (discretionary accruals and real activities manipulation), but they have a significant effect of weakening CEO pay incentives (sensitivity of CEO pay to both share price and financial performance). However, the results show contradictory evidence for government blockholders. Three proxies (CEO pay performance sensitivity to share price and financial performance and discretionary accruals) show that they have no effect on monitoring after removal of share option compensation for NEDs. This suggests that government blockholder ownership is not a substitute monitoring mechanism for share option compensation for NEDs. One proxy, real-activities manipulation, show that they improve monitoring after the removal of share option compensation for NEDs. Real-activities manipulation decreases more – after the removal of share option compensation for NEDs – for treatment companies with government blockholder ownership. These results suggest that government blockholders strengthen monitoring after the removal of share option compensation for NEDs. Hence the conclusion that government blockholder ownership is a substitute monitoring mechanism for share option compensation; this is consistent with the substitute monitoring hypothesis. The contradictory evidence for government blockholder monitoring is consistent with conflicting views and empirical evidence on their impact on monitoring; some studies (see Yu, 2013) show that government blockholders improve monitoring because they have power and influence to *"wield bigger sticks and carrots"* (Borisova et al., 2012), while other studies (see Bushman, Piotroski & Smith, 2004; Piotroski, Wong & Zhang, 2015) show that government blockholders increase agency problems because there is a strong possibility that political agendas will trump business decisions (Borisova et al., 2012).

#### 7.1.2.3 Overall analysis of the impact of institutional/blockholders on the relationship between share option for NEDs and monitoring.

The findings on institutional/blockholders and their categories show the circumstances under which it is harmful or beneficial to remove share option compensation[33]. It is more beneficial to shareholders, from a monitoring perspective, if share option compensation is removed when the ownership profile is dominated by government blockholders (based on the results of one proxy – real acitivites manipulation). On the other hand, it is more harmful to shareholders to remove share option compensation for NEDs if the ownership profile is dominated by; monitoring institutional owners (based on the results of one proxy – sensitivity of CEO pay to ROA), non-monitoring institutional owners (based on the results of three proxies – real activities manipulation, sensitivity of CEO pay to ROA and share price returns), pension blockholder owners (based on two proxies – sensitivity of CEO pay to ROA and share price returns). Removing share

[33] This conclusion is based on the results that are statistically significant

option compensation for NEDs has no effect if the ownership profile is dominated by family and foreign blockholder owners – all the proxies are insignificant.

## 7.2 Research contribution

This thesis contributes to the literature and practice in the following ways: first, the study contributes to the literature by addressing the endogeneity problem using a natural experiment. According to Wintoki, Linck and Netter (2012), a natural experiment is a superior, 'gold standard' technique for addressing endogeneity problems and establishing causality between corporate governance mechanisms and firm outcomes. This is key to satisfactorily settling the debate on the effectiveness and causal impact of equity-based compensation in mitigating secondary agency problems, and is important because of the conflicting evidence and views from prior studies, as discussed in Section 1.3 of Chapter One. A natural experiment is determined by external factors, which can be regulatory changes or a force of nature; hence it provides an exogenous shock to the independent variable, which makes it effective in addressing endogeneity problems (Wintoki, Linck and Netter, 2012). Despite the advantages of the natural experiment approach, no prior studies on equity-based compensation for NEDs have used it, perhaps because it was not available at the time the studies were done. Most of the studies that have examined the impact of share option compensation for NEDs did not address the endogeneity problem[34]. The few that have, used techniques with several shortcomings, which are not effective in establishing causality; these include the two-stage instrumental variable, lagged variables, propensity score matching, and the fixed effects model. A study by Magilke, Mayhew & Pike (2009) is an exception; it used a randomised experimental design, which – like a natural experiment – is also viewed as a 'gold standard' for addressing the endogeneity problem (Antonakis et al., 2014). However, its results cannot be generalised for a different context or sample group (Antonakis et al., 2014).

Generally, corporate governance studies are marred by endogeneity problems (Wintoki, Linck and Netter, 2012). In this study, it is likely that share option compensation for NEDs and secondary agency proxies are endogenously determined (both are determined by firm and industry characteristics). The endogeneity problem produces misleading results (Wintoki, Linck & Netter, 2012; Antonakis et al., 2014) – "*it leads to biased and inconsistent parameter estimates that make reliable inference virtually impossible*" (Roberts & Whited, 2013, p. 494); thus it can be viewed as the possible root cause of the conflicting results reported by studies that investigated

[34] More detail is shown in Section 3.2.5 of the Literature Review, and a summarised version is presented in the motivation section of this Introduction (Section 1.3).

the impact of equity-based compensation for NEDs. Hence, the endogeneity concerns had to be addressed with a natural experiment.

Second, the study contributes to the growing literature on secondary agency problems (monitoring by NEDs) by focusing on the South African context, which has been overlooked by prior studies. Some studies have pointed to the dearth of research on secondary agency problems (see Perry, 2000; Linn & Park, 2005; Kor, 2006; Deutsch, Keil & Laamanen, 2007; Deutsch, Keil & Laamanen, 2011). The uniqueness of South Africa, in terms of factors that interfere with the effectiveness of corporate governance mechanisms in mitigating secondary agency problems, offers opportunities to investigate this topic. The South African context is unique in many ways; it has a unique definition of board independence that is more strict than most, and it is characterised by high institutional ownership, high blockholder ownership and weaker shareholder activism (Jallow et al., 2012; Viviers, 2015). According to the current literature, it appears this type of setting has not been analysed for secondary agency problems. The majority of the studies on corporate governance in South Africa have focused on the primary agency problems between shareholders and management (Hall, 1998; Mangena & Chamisa, 2008; Ntim, 2009; Steyn & Stainbank, 2013; Ntim, 2013; Ntim, 2015; Pamburai et al., 2015).

Third, the results of this study contribute to the crafting of future corporate governance principles in South Africa and the rest of world, specifically on incentives for NEDs. The results are also useful in the design of compensation for NEDs, as they show the impact of share option compensation for NEDs on secondary agency problems. This answers the question of whether the King III code improved or worsened the strength of corporate governance mechanisms in South Africa by stopping the use of share option compensation for NEDs. The findings of this study support the recommendations of the King III code that the use of share option compensation for NEDs should be stopped. They show that there is either an improvement or an insignificant change in monitoring after the removal of share option compensation for NEDs. This is a clear indication that it is not worthwhile for shareholders to use share options to compensate NEDs. It is more beneficial to remove them, because they come at a cost, and they dilute the shareholding structure. Yet removing them does not weaken monitoring; it may improve it, and at worst it will not have a significant effect.

Fourth, by investigating the interaction effects of institutional/blockholder ownership and their different categories, the study provides evidence for the substitution-monitoring hypothesis in South Africa. The intention of this is to show the institutional settings under which it is effective or ineffective to use or to avoid using share option compensation for NEDs. This is important to

several groups (regulators, corporate governance bodies and shareholders) interested in knowing the circumstances or the context under which the use of share option compensation is effective. The results imply that, in general, neither blockholder nor institutional ownership are a substitute monitoring mechanism for share option compensation for NEDs. In addition, part of the results show that it is more beneficial to shareholders, from a monitoring perspective, if share option compensation is avoided when the ownership profile is dominated by government blockholders; and it is more harmful to shareholders to remove share option compensation for NEDs if the ownership profile is dominated by monitoring institutions, non-monitoring institutions and pension blockholder. Removing share option compensation for NEDs has no effect if the ownership profile is dominated by family blockholders and foreign blockholders.

Fifth, on the use of share option compensation for NEDs, this study contributes to the literature by showing its impact on mitigating agency problems specifically related to the design of CEO pay incentives. Prior studies on the impact of share option compensation for NEDs ignored CEO pay-performance sensitivity as a dependent variable; yet it is a proxy for one of the biggest agency problems in South Africa. Section 2.3 of Chapter Two justifies the view that CEO compensation (specifically, its disconnect with performance) and earnings management are two of the biggest agency problems in South Africa, hence the need for researchers to examine them. In addition, very few studies have investigated the impact of share option compensation for NEDs on earnings management. The study by Boumosleh (2009) is an exception; however, it has three shortcomings: (i) it is now outdated – its sample period ended in 1998. This creates the need to update this area of research by focusing on a more recent period; (ii) it is limited to US data – an update could focus on South Africa; and (iii) it is limited to the use of discretionary accruals transactions as a proxy for earnings management – the author ignored real-activities manipulation as a measure of earnings management, despite empirical evidence showing that real-activities manipulation is the preferred choice for manipulating earnings, and that executives view the two as substitutes (Graham, Harvey and Rajgopal, 2005; Cohen & Zarowin, 2010; Zang, 2008).

After controlling for endogeneity using a natural experiment and the difference-in-difference regression (with fixed effects estimators), this study shows that the removal of share option compensation for NEDs has no effect on the sensitivity of CEO pay to share price performance and the two measures for earnings management, which means no effect on monitoring. However, the sensitivity of total CEO pay to financial performance increases after the removal of share options, suggesting that removal improves monitoring. The impact of institutional and blockholder ownership and their various categories are presented above, in the fourth point of this section, Section 1.7 of Chapter One. For comparison purposes, the study also analyses the

results without controlling for endogeneity, using the normal OLS regression. The results are consistent with the difference-in-difference method on the two forms of earnings management and the sensitivity of total CEO pay to share price performance. However, the results differ on the sensitivity of CEO pay to financial performance: under the OLS model, share option compensation does not have a significant relationship with the sensitivity of CEO pay to financial performance; but under the difference-in-difference method, sensitivity increases significantly after removing share options compensation. The results of the fixed effects model (without the difference-in-difference model) are inconsistent with the results of the normal OLS regression and the difference-in-difference regression – they show that share option compensation improves monitoring of discretionary accruals and CEO pay-performance sensitivity to share price returns, while there is no significant effect on CEO pay-performance to share price returns and real-activities manipulation. These inconsistent results between the fixed effects model and the difference-in-difference models mirror the contradictory results from prior studies, and reveal the importance of controlling for endogeneity.

## 7.3 Research limitations

The thesis focuses on CEO compensation and earnings management as dependent variables. These areas are delegated and handled by the remuneration committee and audit committee. Even though the decisions of the committees are approved by the full board, the members of the committees make a big difference to the outcomes of their activities, compared to the contribution of the whole board. Laux and Laux (2009) justified focusing on a relevant committee by quoting a director who stated that it is the committees who do the work of the board. These two areas, especially financial reporting, are so specialised that they are better understood by qualified and experienced people in that space. Hence, it is more appropriate to focus on share option compensation for NEDs who sit on the respective committees that oversee the areas under investigation. The attempt to do that in this research was hampered by lack of data on the members of the committees; this was more prevalent in several companies prior to the implementation of King III. Taking that into account would have depleted the sample, which was already small. Therefore, the limitation here is that the thesis investigated the impact of share option compensation for all NEDs instead of focusing on share option compensation for members of the audit and remuneration committees. This is because the dependent variables under consideration are handled by these two committees. More details about the justification for focusing on all NEDs are presented in Section 5.1.5, Chapter 5.

Even though a natural experiment is viewed as a 'gold standard' in addressing endogeneity problems (Wintoki, Linck & Netter, 2012), there is a possibility that the treatment experiment for this study is not random. This suspicion emanates from the general understanding that before the formulation and implementation of regulations and corporate governance codes, there is a lot of lobbying that happens to push for and against these changes. Some of the lobbying comes from the executives, the NEDs, and academics and individuals who may be involved in running the same companies that will be affected by the changes. This prior knowledge and these potential changes of attitude remove the exogenous shock that should come with a natural experiment

The study is anchored on the requirement by the King III corporate governance code to stop the use of share option compensation, which provided a setting for a natural experiment. The requirement came into effect in March 2010, but the JSE gave companies a grace period until April 2011 to eliminate the share option balances. Even though this study has shown that the results are not affected by including or removing the years of adjustment from 2010 to 2012, the fact that compliance dragged on for such a long period weakened the powerful effect of an exogenous shock.

The sample size of 110 companies is small relative to those of other, prior studies. Archambeault, DeZoort & Hermanson (2008) used a sample of 153 companies. Bierstaker et al. (2012), who used a randomised experimental design, had a sample of 757 members. Lahlou and Navatte (2014) used a sample size of 1 356 companies. A smaller sample size can give biased estimates and may not have enough statistical power; in addition, it may not be possible to split it for further analysis without weakening its statistical power (Maas & Hox, 2005; Lin, Lucas Jr & Shmueli, 2013; Radier et al., 2016).

The size of the Johannesburg Stock Exchange (with about 400 companies) makes the matching of treatment and control companies a challenge. In this study, the treatment companies were of slightly bigger size than the control companies.

### 7.4 Avenues for future research and improvements

Given the significant improvements in disclosure by companies since 2010, future research could examine the impact of share option compensation on members of the audit committee and remuneration committee when investigating settings that fall under their responsibilities.

This thesis uses two measures of financial reporting quality, discretionary accruals and one type of real-activities manipulation, which is abnormal cash flows. Future research could extend the proxies of financial reporting quality to include restatements of financial statements and the quality of financial disclosure. Regarding real-activities manipulation, this study focused on abnormal cash flows only; future studies could include discretionary expenses and production costs. Another avenue for future research would be to categorise earnings management into income-increasing and income-decreasing.

The study showed that both monitoring institutions and pension fund blockholders do not improve monitoring after the removal of share option compensation for NEDs. This is despite the widely-held view that both are stakeholders who have a strong incentive to monitor management and mitigate agency problems, because they take a long-term view and have no business interests with the company (Bushee, 1998; Ramalingegowda & Yu, 2012; Velury & Jenkins, 2006; Koh, 2007; Borochin & Yang, 2017; Alvarez, Jara & Pombo, 2018). Future studies could investigate possible reasons for this anomaly.

Effects on different categories of institutional ownership and blockholders need more attention. Future studies could investigate how each of the categories affects different areas of organisational outcomes.

### 7.5 Recommendations to policy makers

The results of the study show that the removal of share option compensation does not weaken monitoring; in some settings it improves it, and in other settings it has no effect. This is an indication that share options do not benefit shareholders; yet they come at a cost. These results support the decision taken by the King III Corporate Governance Code to remove share options as a form of compensation for NEDs. The findings validate their recommendations, which may be useful for future decisions in that area. The results are also useful to shareholders, as they vote on remuneration policies – including on the different forms of incentives relating to NEDs.

The findings of the analysis of institutional/blockholders and their categories show the circumstances under which it is harmful or beneficial to remove share option compensation. This finding is important for companies, boards, shareholders and policymakers. The findings show that it is more beneficial to shareholders, from a monitoring perspective, if share option compensation is avoided when the ownership profile is dominated by government blockholders; and it is more harmful to shareholders to remove share option compensation for NEDs if the ownership profile is dominated by non-monitoring institutions. Removing share option

compensation for NEDs has no effect if the ownership profile is dominated by monitoring institutions, family blockholders, foreign blockholders or pension blockholders.

## 7.6 Chapter summary

This chapter provided a conclusion to the thesis. It summarised the research findings and their contributions and limitations, recommendations for future research, and a recommendation for policymakers.

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APPENDICES

## Appendix 1: List of variables, their definitions and how they are measured

### List of variables, how they are measured and their short names

| | |
|---|---|
| **Dependent variables** | |
| OpsComp | Is the short cut for 'share option compensation for NEDs', it represents the three measures of share option compensation for NEDs which include OpsTC, NEDOwn, OpsIssued. |
| OpsTC, | The proportion of the value of share option compensation scaled by total compensation granted to each non-executive director each year. |
| NEDOwn, | It is the logarithm of share option ownership by NEDs. It is the number of outstanding cumulative balances of share options at the end of each year. |
| OpsIssued | number of share options issued to NEDs each year. |
| CEO Pay | is the logarithm of total CEO compensation which is measured per year. The total pay includes, cash salary, performance bonus, share grants (including long term incentives), share appreciation schemes, and share option awards. |
| CEODelta | It is the logarithm delta of the flow equity compensation for CEOs (deltas of equity incentives paid during the sample period). This variable measures the sensitivity of equity compensation to a 1% change in the share price. |
| CEO Compensation values | It is the logarithm of the value of equity compensation for CEOs. Calculated as number of share grants per year multiply by share grants and number of share options multiplied by share option values. |
| Proportion of equity compensation | It is the logarithm of the proportion of the value equity compensation scaled by total CEO compensation |
| EM | Stands for earnings management.<br>Measured using discretionary accruals, which is the value of absolute discretionary accruals scaled by total assets.<br>Real-activities manipulation is another measure of earnings management, it is measured by abnormal levels of cashflows scaled by total assets. |
| **Independent variables** | |
| Time | This variable captures the change in the dependent variable over time. It is measured as the calendar year minus 2002. |
| K3 | K3 variable is a dummy variable representing the pre-King III or the post-King III period. The value is one if the observation is recorded during the post-King III period, otherwise it will be zero. This variable is expected to capture the change in the dependent variable from the pre-King III to post-King III period. |
| NEDOpsDummy | This is a dummy variable with a value of one for treatment companies, (the companies paying share options to NEDs), its zero for control companies (companies that never paid share option compensation to NEDs. |
| Performance (perf) | Company performance is measured using both stock market measures and accounting measures. The proxy of stock market measures is share price return while the proxy for accounting performance is the ROA.<br>Other market measures of performance include; the dollar share return which is measured performance by taking a product of the annual share return multiply by the market capitalisation at the beginning of the year and change in market capitalisation, which is measured as the annual change in market capitalisation |

| | |
|---|---|
| NEDOpsDummy*K3*Perf | The variable shows how CEO pay-performance sensitivity changes in the post-King III for treatment companies relative to control companies |
| NEDOpsDummy *K3 | It is the interaction term between the measure of share option compensation and the time of the treatment effect. It shows how the dependent variable changes in the post-King III period for treatment companies relative to control companies. |
| **Interaction terms** | |
| InstOwn | Institutional ownership, the variable is measured as the number of shares held by institutions scaled by the number of outstanding shares. The institutions include banks, investment companies, pension funds, insurance companies, hedge funds, mutual funds and research firms.<br>Institutional ownership is coded as dummy variable which equals one if a company has institutional ownership in their ownership structure, its zero if the company has no institutional ownership. |
| Monitoring InstOwn | Monitoring institutional ownership, the variable is measured as the number of shares held by monitoring institutions scaled by the number of outstanding shares. Monitoring institutional ownership includes investment companies. These are institutions with a long-term view and they have a strong incentive to monitor management (discussed in 3.3.1 and 3.3.2 of Chapter 3)<br><br>Monitoring institutional ownership is coded as a dummy variable which equals one if a company has monitoring institutional ownership in their ownership structure, its zero if the company has no monitoring institutional ownership. |
| Non-Monitoring InstOwn | Institutional ownership, the variable is measured as the number of shares held by non-monitoring institutions scaled by the number of outstanding shares.<br>The non-monitoring institutions include banks and insurance companies. These are institutions with a short-term view and their monitoring abilities might be compromised due to business ties with the investee firms (discussed in 3.3.1 and 3.3.2 of Chapter 3)<br><br>Non-monitoring institutional ownership is coded as a dummy variable which equals one if a company has non-monitoring institutional ownership in their ownership structure, its zero if the company has no non-monitoring institutional ownership. |
| Block | Block-holder ownership is defined as shareholders with a stake of 5% or more in the company. It is the proportion of share held by blockholder scaled by outstanding shares.<br>Blockholder ownership is coded as a dummy variable which equals one if a company has blockholder ownership in their ownership structure, its zero if the company has no blockholder ownership. |
| Government blockholder | Government block-holder ownership is defined as a government or a government institution with a stake of 5% or more in the company. It is measured as the proportion of share held by a government blockholder scaled by outstanding shares.<br>Government blockholder ownership is coded as a dummy variable which equals one if a company has government blockholder ownership in their ownership structure, its zero if the company has no government or government institution blockholder ownership. |

| | |
|---|---|
| Family blockholder | Family block-holder ownership is defined as a family with a stake of 5% or more in the company. It is measured as the proportion of share held by family blockholder scaled by outstanding shares.<br>Family blockholder ownership is coded as a dummy variable which equals one if a company has family blockholder ownership in their ownership structure, its zero if the company has no family blockholder ownership. |
| Foreign blockholder | Foreign block-holder ownership is defined as a foreign individual or family or foreign institution with a stake of 5% or more in the company. It is measured as the proportion of share held by a foreign blockholder scaled by outstanding shares.<br>Foreign blockholder ownership is coded as a dummy variable which equals one if a company has foreign blockholder ownership in their ownership structure, its zero if the company has no foreign blockholder ownership. |
| Pension blockholder | Pension block-holder ownership is defined as a pension fund or endowment fund with a stake of 5% or more in the company. It is measured as the proportion of share held by a pension blockholder scaled by outstanding shares.<br>Pension blockholder ownership is coded as a dummy variable which equals one if a company has pension blockholder ownership in their ownership structure, its zero if the company has no pension blockholder ownership |
| **Control variables** | |
| NEDs | NEDs stands for the proportion of NEDs on the board. It is measured as the number of NEDs scaled by the board size. |
| Indp | Indp stands for the proportion of independent NEDs on the board. It is measured as the number of NEDs scaled by the board size. An independent board member is classified using King III requirements. The criteria identifies an independent NEDs as one who; does not receive share option compensation or compensation contingent on the performance of the company, does not represent a shareholder with a significant influence (shareholding above 5%) on the company, the board and the management, is not employed or was not previously employed by the company in the preceding three years, is not providing any other service to the company, this is applied is applied over the full sample period.<br>It should be noted that the board independence requirements changed from King II to King III. To mitigate the effect of the change in requirement the study applies the King III criteria throughout the whole sample. |
| CEOOwn | CEOOwn stands for CEO equity ownership. It is measured as the number of shares held by a CEO scaled by the number of outstanding shares for the company. |
| Tobin's Q | Tobin's Q represents the firm's growth opportunities. The growth opportunities is measured by the Tobin's Q ratio, which is calculated as the market value of equity and the book value of total debt, divided by the book value of assets. |
| Boardsize | Board size is total number of board members, it includes both executive and NEDs. |
| CFOSls | Cashflow from operations scaled by total sales |
| Firmsize | Firm size is measured as the natural log of total assets. |
| Leverage | Leverage is measured by the debt ratios, total debt scaled by total assets. |
| NEDOpsDummy*Perf | Shows the CEO pay-performance sensitivity for treatment companies relative to control companies. |
| CEO Age (CEOAge) | The age of the CEO. |

| | |
|---|---|
| CEODuality | CEO duality is measured as a dummy variable of one is the CEO is also the Chairman of the board, or zero if otherwise. |
| Firm risk | Firm risk is measured as the volatility share price, measured as the standard deviation of monthly returns. |
| COAct | It's a dummy variable of one of the observations is post-2008 and the zero if its pre-2008. |

## Appendix 2: Black Scholes Formula and Option Delta formula

a) Black-Scholes formula adjusted for dividend (Guay, 1999; Core & Guay, 2002; Hayes, Lemmon & Qiu, 2012; Chang et al., 2015)

$$Option\ Value = [(Se^{-dT}N(Z) - Xe^{-rT}N(Z - \sigma T^{(1/2)})]$$

$$Option\ Delta = e^{-dT}N(Z)$$

where,

$Z = [\mathrm{In}(\mathrm{S}/\ \mathrm{X}) + \mathrm{T}(\mathrm{r} - \mathrm{d} + \sigma^2/2]/\sigma\ T^{(1/2)}$
N=cumulative probability function for the normal distribution
S= price of the underlying share
X= exercise price of the option
$\sigma$=the historical 5-year annualised share price return volatility based on daily returns.
r=natural logarithm of risk-free interest rate
T= time to maturity of the option in years. This was extracted from the financial statements.
d=the current dividend yield for each firm

## Appendix 3: Results on the impact of share option compensation for NEDs on CEO pay-performance sensitivity (using two alternative market measures of performance

Difference-in-different results, the impact of share option compensation for NEDs on CEO pay-performance sensitivity, when performance is measured using two alternative measures of market performance, dollar share return and change in market value.

The Table below shows the results of the difference-in-difference method for the impact of share option compensation for NEDs on the sensitivity of total CEO pay to the two measures of performance, Panel A presents the results when company performance is measured using the dollar share return while in Panel B it is measured using the change in market value. The coefficient of interest is NEDopsDummy*K3*Perf. The variable shows how pay-performance sensitivity changed after the implementation of the King III code for the treatment companies compared to the control firms. Perf is the short for performance, which is share price return in Panel A and ROA in Panel B. The rest of the variables are as defined in Appendix 1. Robust standard errors in parentheses. *,**,*** denote the significance at 10%,5% and 1% level, respectively.

| | (3) | (3) |
|---|---|---|
| VARIABLES | Dollar Share Return | Change in Market Value |
| Perf | -8.86e-09 | -7.57e-09 |
| | (9.17e-09) | (8.22e-09) |
| K3*Perf | 1.56e-08 | 1.37e-08 |
| | (1.12e-08) | (1.05e-08) |
| K3 | 0.235* | 0.232* |
| | (0.120) | (0.120) |
| Firmsize | 0.315*** | 0.314*** |
| | (0.0521) | (0.0521) |
| Firmrisk | -0.0778 | -0.0789 |
| | (0.0999) | (0.0999) |
| Leverage | 0.0895 | 0.0921 |
| | (0.0973) | (0.0973) |
| CEOAge | -0.00828* | -0.00824* |
| | (0.00486) | (0.00485) |
| CEOOwn | -0.418 | -0.423 |
| | (0.373) | (0.373) |
| Duality | -0.0447 | -0.0442 |
| | (0.153) | (0.153) |
| CoAct | 0.190* | 0.188* |
| | (0.105) | (0.105) |
| Block | -0.0166 | -0.0173 |
| | (0.107) | (0.107) |
| InstOwn | 0.0156 | 0.0139 |
| | (0.114) | (0.114) |
| Boardsize | -0.00160 | -0.00200 |
| | (0.0101) | (0.0101) |
| Tobin'sQ | 0.0252* | 0.0249* |
| | (0.0142) | (0.0142) |
| Indp | 0.0992 | 0.0999 |
| | (0.155) | (0.154) |
| NEDOpsDummy*K3 | -0.238*** | -0.238*** |

| | | |
|---|---|---|
| | (0.0908) | (0.0911) |
| c.NEDOpsDummy*Perf | 1.02e-08 | 9.41e-09 |
| | (9.35e-09) | (8.40e-09) |
| c.NEDOpsDummy*K3*Perf | -1.57e-08 | -1.38e-08 |
| | (1.14e-08) | (1.07e-08) |
| Constant | 8.882*** | 8.908*** |
| | (1.152) | (1.153) |
| Observations | 1,146 | 1,146 |
| R-squared | 0.301 | 0.302 |

## Appendix 4: Results on the impact of share option compensation for NEDs on CEO pay-performance sensitivity, for the pre-King III period.

The Table below shows the results of the difference-in-difference method for the impact of share option compensation for NEDs on the sensitivity of total CEO pay to financial performance. The coefficient of interest is NEDopsDummy*ROA. The variable shows the sensitivity of CEO total pay to changes in financial performance during the pre-King III period. The rest of the variables are as defined in Appendix 1. Robust standard errors in parentheses. *,**,*** denote the significance at 10%,5% and 1% level, respectively

| Variables | ROA |
|---|---|
| ROA | 0.321 |
| | (0.293) |
| Firmsize | 0.364*** |
| | (0.0974) |
| Firmrisk | -0.0854 |
| | (0.175) |
| Leverage | 0.0841 |
| | (0.138) |
| CAge | -0.00536 |
| | (0.00812) |
| CEOOwn | -0.682 |
| | (0.541) |
| Duality | -0.131 |
| | (0.183) |
| CoAct | 0.000872 |
| | (0.101) |
| Block | -0.162 |
| | (0.137) |
| InstOwn | 0.196 |
| | (0.167) |
| Boardsize | -0.00907 |
| | (0.0142) |
| Tobin'sQ | 0.0256 |
| | (0.0219) |
| Indp | 0.352 |
| | (0.297) |
| NEDOpsDummy*ROA | -0.843** |
| | (0.428) |
| Constant | 7.637*** |
| | (2.116) |
| Observations | 538 |
| R-squared | 0.237 |

## Appendix 5: Results when the sample population period excludes the noisy years, 2010-2011

### A. How the change in option compensation for NEDs affected CEO pay-performance sensitivity-sensitivity

Difference-in-different results, the impact of share option compensation for NEDs on CEO pay-performance sensitivity.

The Table below shows the results of the difference-in-difference method for the impact of share option compensation for NEDs on the sensitivity of total CEO pay to the two measures of performance, Panel A presents the results when company performance is measured using share price returns while in Panel B it is measured using the return on assets (ROA). The coefficient of interest is NEDopsDummy*K3*Perf. The variable shows how pay-performance sensitivity changed after the implementation of the King III code for the treatment companies compared to the control firms. Perf is the short for performance, which is share price return in Panel A and ROA in Panel B. The rest of the variables are as defined in Appendix 1. Robust standard errors in parentheses. *,**,*** denote the significance at 10%,5% and 1% level, respectively.

| | Panel A | Panel B |
|---|---|---|
| Variables | Share price returns | Return on Assets (ROA) |
| Perf | -0.0282 | 0.348 |
| | (0.0509) | (0.287) |
| K3*Perf | 0.183 | -0.173 |
| | (0.143) | (0.322) |
| K3 | 0.425*** | 0.524*** |
| | (0.135) | (0.137) |
| Firmsize | 0.292*** | 0.265*** |
| | (0.0603) | (0.0615) |
| Firmrisk | -0.122 | -0.104 |
| | (0.116) | (0.115) |
| Leverage | 0.195* | 0.173 |
| | (0.115) | (0.114) |
| CEOAge | -0.00619 | -0.00766 |
| | (0.00573) | (0.00573) |
| CEOOwn | -0.651 | -0.488 |
| | (0.463) | (0.460) |
| Duality | -0.0770 | -0.0218 |
| | (0.171) | (0.172) |
| CoAct | -0.0335 | -0.0196 |
| | (0.109) | (0.109) |
| Block | -0.0171 | 0.00971 |
| | (0.127) | (0.127) |
| InstOwn | 0.0366 | 0.0582 |
| | (0.134) | (0.135) |
| Boardsize | 0.00559 | 0.00722 |
| | (0.0116) | (0.0116) |
| Tobin'sQ | 0.0211 | 0.0206 |
| | (0.0175) | (0.0184) |
| Indp | 0.136 | 0.172 |

| | | |
|---|---|---|
| | (0.180) | (0.182) |
| NEDOpsDummy*K3 | -0.267** | -0.481*** |
| | (0.108) | (0.122) |
| c.NEDOpsDummy*Perf | 0.158* | -0.695* |
| | (0.0881) | (0.420) |
| c.NEDOpsDummy*K3*Perf | -0.138 | 1.719*** |
| | (0.204) | (0.624) |
| Constant | 9.223*** | 9.785*** |
| | (1.340) | (1.363) |
| Observations | 876 | 876 |
| R-squared | 0.323 | 0.327 |

**B. Results on the impact of the change in share option compensation for NEDs on the level earnings management?**

Difference-in-different results, the impact of share option compensation for NEDs on earnings management.

This table shows the results of the difference-in-difference (based on Fixed effects) method for the impact of share option compensation for NEDs on earnings management (measured using discretionary accruals and abnormal cashflows). The dependent variables the proportion of discretionary accruals deflated by the total assets (shown in Panel A) and the abnormal cashflows representing real earnings activities manipulation, presented in Panel B. The coefficient of interest is NEDOpsDummy*K3, it shows how the earnings management changed in the post-King III period, after the removal of share option compensation for NEDs. Robust standard errors in parentheses. *,**,*** denote the significance at 10%,5% and 1% level, respectively.

| | Panel A | Panel B |
|---|---|---|
| Variables | Discretionary Accruals | Abnormal Cash flows |
| Boardsize | 0.00368 | 0.000811 |
| | (0.00889) | (0.00190) |
| NEDs | -0.0651 | -0.00490 |
| | (0.222) | (0.0475) |
| Firmsize | -0.0143 | -0.0172* |
| | (0.0477) | (0.00987) |
| Firmrisk | -0.0212 | -0.0226 |
| | (0.0871) | (0.0186) |
| CEOAge | -0.00451 | -0.000228 |
| | (0.00438) | (0.000937) |
| Leverage | -0.0307 | 0.0131 |
| | (0.0888) | (0.0187) |
| CEOOwn | 0.0849 | 0.0416 |
| | (0.354) | (0.0754) |
| Tobin'sQ | 0.0224 | -0.00243 |
| | (0.0203) | (0.00290) |
| Block | 0.264*** | 0.0562*** |
| | (0.0982) | (0.0209) |
| CFOSls | -0.000245 | 0.000235*** |
| | (0.000273) | (5.83e-05) |
| InstOwn | -0.0436 | 0.0391* |
| | (0.105) | (0.0221) |

| | | |
|---|---|---|
| Indp | 0.00102 | -0.00719 |
| | (0.145) | (0.0309) |
| CoAct | 0.0236 | -0.0120 |
| | (0.0853) | (0.0181) |
| ROA | -0.0659 | 0.122*** |
| | (0.155) | (0.0225) |
| K3 | 0.0618 | 0.0195 |
| | (0.107) | (0.0229) |
| NEDOpsDummy*K3 | -0.0762 | -0.0169 |
| | (0.0814) | (0.0173) |
| Constant | 0.339 | 0.333 |
| | (1.052) | (0.218) |
| Observations | 838 | 844 |
| R-squared | 0.023 | 0.101 |

## Appendix 6: The impact of share option compensation on CEO pay incentives and earnings management: Results based on the normal OLS regression

### A. The impact of share option compensation for NEDs on CEO pay-performance sensitivity.

| | Panel A | Panel B |
|---|---|---|
| Variables | Share price returns | Return on Assets (ROA) |
| Perf | -0.0682 | 0.0564 |
| | (0.143) | (0.0592) |
| Firmsize | 0.377*** | 0.374*** |
| | (0.0631) | (0.0630) |
| Firmrisk | -0.653 | -0.655 |
| | (0.478) | (0.486) |
| Leverage | -1.169 | -1.210 |
| | (0.745) | (0.746) |
| CEOAge | 0.0118 | 0.0121 |
| | (0.0143) | (0.0144) |
| CEOOwn | -3.595* | -3.601* |
| | (2.160) | (2.158) |
| Duality | 0.465 | 0.497 |
| | (0.525) | (0.520) |
| Boardsize | -0.0156 | -0.0138 |
| | (0.0185) | (0.0191) |
| Tobin'sQ | 0.0320** | 0.0327** |
| | (0.0146) | (0.0155) |
| Indp | 0.258 | 0.250 |
| | (0.287) | (0.288) |
| ROA | 0.0997 | 0.0991 |
| | (0.252) | (0.269) |
| Block | -0.460** | -0.457** |
| | (0.186) | (0.187) |
| InstOwn | 0.248 | 0.240 |
| | (0.179) | (0.179) |
| NEDOpsDummy | 0.0701 | 0.138 |
| | (0.165) | (0.162) |
| NEDOpsDummy*Perf | 0.227 | -0.198 |
| | (0.157) | (0.549) |
| Constant | 8.491*** | 8.553*** |
| | (1.483) | (1.494) |
| | | |
| Observations | 1,146 | 1,146 |
| R-squared | 0.568 | 0.566 |

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

B. The impact of share option compensation for NEDs on earnings management.

| | Panel A | Panel B |
|---|---|---|
| Variables | Discretionary Accruals | Abnormal Cash flows |
| Boardsize | 0.000195 | -0.00130 |
| | (0.00390) | (0.00166) |
| NEDs | -0.0254 | 0.0317 |
| | (0.178) | (0.0578) |
| Firmsize | 0.0101 | 0.00443 |
| | (0.0112) | (0.00486) |
| Firmrisk | -0.00749 | -0.0246 |
| | (0.0248) | (0.0151) |
| CEOAge | -0.00200 | 0.000439 |
| | (0.00223) | (0.000640) |
| Leverage | 0.0125 | -0.00922 |
| | (0.0318) | (0.0215) |
| CEOOwn | 0.0705 | 0.0491 |
| | (0.102) | (0.0570) |
| Tobin'sQ | 0.000965 | 0.000775 |
| | (0.00113) | (0.000683) |
| Block | 0.0636 | 0.00905 |
| | (0.0421) | (0.0209) |
| CFOSls | -0.000211*** | 0.000263*** |
| | (1.83e-05) | (1.26e-05) |
| InstOwn | -0.0484** | 0.0389** |
| | (0.0228) | (0.0173) |
| Indp | 0.0629 | -0.0427 |
| | (0.0596) | (0.0340) |
| NEDOpsDummy | 0.0512 | 0.00682 |
| | (0.0323) | (0.0167) |
| Constant | -0.181 | -0.129 |
| | (0.190) | (0.109) |
| | | |
| Observations | 1,096 | 1,105 |
| R-squared | 0.019 | 0.067 |

Robust standard errors in parentheses

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

## Appendix 7: The impact of share option compensation on CEO pay incentives and earnings management: Results based on the normal Fixed effects model

The main independent variable is share options ownership for NEDs. The rest of the models presented in this study use a dummy variable of one if a company pay share options to non-executive or zero if otherwise. The basis for using share option ownership in this case is because Stata package is dropping the dummy variable when using the fixed effects model.

### A. The impact of share option compensation for NEDs on CEO pay-performance sensitivity.

| | Panel A | Panel B |
|---|---|---|
| Variables | Share price returns | Return on Assets (ROA) |
| Perf | 0.0199 | 0.213* |
| | (0.0303) | (0.122) |
| Firmsize | 0.335*** | 0.306*** |
| | (0.0523) | (0.0528) |
| Firmrisk | -0.0715 | -0.0743 |
| | (0.100) | (0.100) |
| Leverage | 0.0711 | 0.103 |
| | (0.0978) | (0.0989) |
| CEOAge | -0.00882* | -0.00939* |
| | (0.00484) | (0.00486) |
| CEOOwn | -0.438 | -0.336 |
| | (0.374) | (0.375) |
| Duality | -0.0593 | -0.000178 |
| | (0.153) | (0.153) |
| Block | -0.0289 | -0.0319 |
| | (0.107) | (0.107) |
| InstOwn | 0.0502 | 0.0390 |
| | (0.114) | (0.114) |
| Boardsize | 0.00175 | 0.00202 |
| | (0.0100) | (0.0101) |
| Tobin'sQ | 0.0251* | 0.0316** |
| | (0.0142) | (0.0144) |
| Indp | 0.143 | 0.133 |
| | (0.156) | (0.157) |
| NEDOWn | 0.00258 | 0.0146* |
| | (0.00658) | (0.00780) |
| NEDOwn*Perf | 0.0195** | -0.0462 |
| | (0.00761) | (0.0344) |
| Constant | 8.684*** | 9.341*** |
| | (1.191) | (1.200) |
| Observations | 1,146 | 1,146 |
| R-squared | 0.301 | 0.298 |

B. The impact of share option compensation for NEDs on earnings management.

| | Panel A | Panel B |
|---|---|---|
| Variables | Discretionary Accruals | Abnormal Cash flows |
| Boardsize | 0.00480 | 0.000956 |
| | (0.00702) | (0.00160) |
| NEDs | -0.0815 | 0.00224 |
| | (0.173) | (0.0396) |
| Firmsize | -0.00772 | -0.0111 |
| | (0.0381) | (0.00844) |
| Firmrisk | -0.0175 | -0.0205 |
| | (0.0696) | (0.0159) |
| CEOAge | -0.00464 | -0.000100 |
| | (0.00342) | (0.000781) |
| Leverage | -0.0617 | 0.0155 |
| | (0.0717) | (0.0162) |
| CEOOwn | 0.00935 | 0.0411 |
| | (0.262) | (0.0598) |
| Tobin'sQ | 0.0149 | -0.00153 |
| | (0.0159) | (0.00249) |
| Block | 0.210*** | 0.0519*** |
| | (0.0762) | (0.0171) |
| CFOSls | -0.000236 | 0.000234*** |
| | (0.000233) | (5.32e-05) |
| InstOwn | -0.0510 | 0.0372** |
| | (0.0801) | (0.0182) |
| Indp | -0.0415 | -0.0214 |
| | (0.117) | (0.0267) |
| ROA | -0.0434 | 0.129*** |
| | (0.122) | (0.0192) |
| NEDOwn | -0.00755* | -0.000623 |
| | (0.00440) | (0.00100) |
| Constant | 0.324 | 0.183 |
| | (0.866) | (0.193) |
| Observations | 1,096 | 1,105 |
| R-squared | 0.024 | 0.098 |

**Appendix 8: Results after controlling for serial correlation and heteroskedasticity**

**Difference-in-different results, the impact of share option compensation for NEDs on CEO pay-performance sensitivity.**

| | Panel A | Panel B |
|---|---|---|
| Variables | Share price returns | Return on Assets (ROA) |
| Perf | -0.0275 | 0.316** |
| | (0.0335) | (0.125) |
| K3*Perf | 0.187* | -0.206 |
| | (0.101) | (0.167) |
| K3 | 0.491*** | 0.556*** |
| | (0.148) | (0.129) |
| Firmsize | 0.319*** | 0.301*** |
| | (0.0478) | (0.0353) |
| Firmrisk | -0.0806 | -0.0695 |
| | (0.0597) | (0.0694) |
| Leverage | 0.108 | 0.118 |
| | (0.140) | (0.124) |
| CEOAge | -0.00836 | -0.00927 |
| | (0.00808) | (0.00843) |
| CEOOwn | -0.468 | -0.412 |
| | (0.580) | (0.582) |
| Duality | -0.0458 | -0.0112 |
| | (0.309) | (0.289) |
| CoAct | 0.374*** | 0.394*** |
| | (0.102) | (0.0961) |
| Block | -0.0231 | -0.000243 |
| | (0.121) | (0.115) |
| InstOwn | 0.0130 | 0.0321 |
| | (0.0779) | (0.0816) |
| Boardsize | -0.000387 | 0.00113 |
| | (0.0173) | (0.0180) |
| Tobin'sQ | 0.0242*** | 0.0197** |
| | (0.00726) | (0.00652) |
| Indp | 0.134 | 0.139 |
| | (0.227) | (0.220) |
| NEDOpsDummy*K3 | -0.216** | -0.373** |
| | (0.0909) | (0.119) |
| NEDOpsDummy*Perf | 0.0863* | -0.436 |
| | (0.0419) | (0.295) |
| NEDOpsDummy*K3*Perf | -0.0685 | 1.428* |
| | (0.0872) | (0.659) |
| Constant | 8.397*** | 8.762*** |
| | (0.964) | (0.683) |
| Observations | 1,146 | 1,146 |
| R-squared | 0.304 | 0.306 |

**Difference-in-different results, the impact of share option compensation for NEDs on earnings management.**

| | Panel A | Panel B |
|---|---|---|
| Variables | Discretionary Accruals | Abnormal Cash flows |
| Boardsize | 0.00436 | 0.000807 |
| | (0.00503) | (0.00196) |
| NEDs | -0.121 | -0.00225 |
| | (0.117) | (0.0312) |
| Firmsize | -0.00741 | -0.0112 |
| | (0.0112) | (0.0105) |
| Firmrisk | -0.0138 | -0.0204 |
| | (0.0127) | (0.0127) |
| CEOAge | -0.00458 | -6.11e-05 |
| | (0.00465) | (0.000521) |
| Leverage | -0.0436 | 0.0185 |
| | (0.0574) | (0.0137) |
| CEOOwn | 0.0298 | 0.0422 |
| | (0.0694) | (0.0463) |
| Tobin'sQ | 0.0159 | -0.00150 |
| | (0.0157) | (0.00931) |
| Block | 0.206 | 0.0518 |
| | (0.196) | (0.0445) |
| CFOSls | -0.000236*** | 0.000236*** |
| | (1.73e-05) | (8.48e-06) |
| InstOwn | -0.0586* | 0.0354 |
| | (0.0290) | (0.0255) |
| Indp | -0.00714 | -0.0188 |
| | (0.0292) | (0.0187) |
| CoAct | -0.00442 | 0.00445 |
| | (0.0252) | (0.0106) |
| ROA | -0.0384 | 0.131*** |
| | (0.0496) | (0.0272) |
| K3 | 0.0287 | 0.0173 |
| | (0.0247) | (0.0103) |
| NEDOpsDummy*K3 | -0.0448 | -0.0172** |
| | (0.0383) | (0.00712) |
| Constant | 0.315 | 0.181 |
| | (0.317) | (0.253) |
| Observations | 1,096 | 1,105 |
| R-squared | 0.021 | 0.099 |