EXAMINING CONSEQUENCES OF PRINCIPAL-AGENT AND CORPORATE GOVERNANCE INTERACTIONS IN SOUTH AFRICA. A STUDY OF FTSE/JSE TOP40 COMPANIES.

by

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I declare that the above thesis is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references.

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ABSTRACT

This study examined the consequences of Principal-Agent and Corporate Governance interactions within South Africa's FTSE/JSE Top40 listed companies from 2008 to 2016. The study's objectives were to examine the prevalence of Principal-Agent and Corporate Governance problems, to ascertain potential costs of these problems, to establish their socio-economic consequences, and evaluate the effectiveness of the governance codes. The study is anchored in Principal-Agent theory. Mixed methods methodology was employed, specifically Concurrent and Exploratory Sequential Mixed Methods design logics. The main findings include that, 23.91% of sample companies experienced Principal-Agent and Corporate Governance problems-significantly exceeding the study's expectations that negligible governance problems exist and reveals the pervasiveness of these problems; executive compensation plays a bigger role in exacerbating Principal-Agent and Corporate Governance problems than expected and often considered in governance mechanisms; multi-billion rands potential costs are ascribed to Principal-Agent and Corporate Governance problems incurred by principals; unjustifiable salary inequalities resulting in other inequalities that build social mistrust; and there is limited conviction that current governance codes are effective. This study's contributions include; proposing an executive remuneration model that considers governance of the company in determining executive compensation; formulating a governance index calculated based on King III and King IV recommendations to standardise the measurement of the quality of governance in companies; the salary Gini was used to establish compensation gaps and red-flag potential Principal-Agent problems and flaws in governance systems; and used value at risk procedures to quantify potential Principal-Agent and Corporate Governance costs. The main theoretical implications of the study's findings are; agency theory needs extension to capture socio-economic costs and not only focus on the principal; remuneration models should consider the executive's company governance and social and economic egalitarianism; flexibility of 'comply or explain' should subordinate socio-economic consequences, suggesting a hybrid approach which makes certain governance code provisions compulsory; and finally, behavioural finance theories should be used in governance research for better insights.

KAFUSHANE NGOCWANINGO

Lolu cwaningo lwacubungula futhi lwahlolisisa imiphumela yokuxhumana phakathi kwesimo seNhloko ne-Ejenti, i-Principal-Agent, (lapho umuntu eqoka omunye ukuba athathe izinqumo kanye/noma izinyathelo egameni lakhe) nokuPhathwa nokuLawulwa Kwenkampani, ezinkampanini ezingama-40 ebezikleliswe phezulu ohlwini lwe-FTSE/JSE eNingizimu Afrika kusukela ngowezi-2008 kuya kowezi-2016. Izinhloso zalolu cwaningo kwabe kuwukubheka ukuthi zivamise kangakanani futhi zisabalele kangakanani izinkinga eziphathelene neNhloko ne-Ejenti kanye nokuPhathwa Nokulawulwa Kwenkampani ukuze kutholakale ukuthi zingakanani izindleko ezibangelwa yilezi zinkinga, nokuthola umthelela walokhu kwinhlalomnotho, kanye nokuhlola ukuthi zisebenza kahle kangakanani izinkambiso zokuphathwa nokulawulwa kwezinkampani. Lolu cwaningo lwakhelwe phezu kwethiyori yeNhloko ne-Ejenti. Kwasetshenziswa izindlela zocwaningo ezixubile, ikakhulukazi izindlela ezixubile zokuhlola kusetshenziswa izinyathelo ezenziwa kanyekanye noma ngesikhathi esisodwa kanye nezinyathelo ezilandelanayo. Okusemqoka okwatholakala ocwaningweni kubandakanya nokuthi izinkampani okwenziwa kuzona ucwaningo ezingama-23.91% zahlangabezana nezinkinga eziphathelene neNhloko ne-Ejenti kanye nokuPhathwa Nokulawulwa Kwenkampani – okuyinani elingaphezulu kakhulu kwalokho obekulindelekile ocwaningweni, ngoba phela kwakulindeleke ukuthi zibe yingcosana kakhulu izinkinga ezikhona eziphathelene nalokhu, kepha-ke ucwaningo lwaveza ukuthi lezi zinkinga zixhaphakile impela; imiholo yabaphathi abakhulu bezinkampani idlala indima enkulu ekubhebhethekiseni izinkinga eziphathelene neNhloko ne-Ejenti kanye nokuPhathwa Nokulawulwa Kwenkampani kunalokho obekulindelekile futhi esikhathini esiningi lokhu akuyona neze into evamise ukubhekisiswa uma kwenziwa izinqubo zokuphatha nokulawula; zibalelwa kwizigidigidi zamarandi izindleko ezingena kuzona izinhloko zezinkampani okucatshangwa ukuthi zibangelwa yizinkinga eziphathelene neNhloko ne-Ejenti kanye nokuPhathwa Nokulawulwa Kwenkampani; ukungalingani ngokwemiholo, ngaphandle kwesizathu esizwakalayo salokhu, okuyinto eholela kokunye futhi ukungalingani, okudala ukungathembani emphakathini; futhi kuncane kakhulu ukuqiniseka nokukholelwa ekutheni zisebenza kahle izinkambiso zokuphatha nokulawula ezikhona njengamanje. Igalelo lalolu cwaningo libandakanya isiphakamiso semodeli yemiholo yabaphathi abakhulu ebhekisisa nodaba

lokuphathwa nokulawulwa kwenkampani ngenkathi kucutshungulwa udaba lwemiholo yabaphathi abakhulu; ukuhlanganiswa kwenkomba yokuphathwa nokulawulwa kwenkampani ebalwa ngokususela kwizincomo ze-King III kanye ne-King IV zokusetshenziswa kwesikali esifanayo sokukala ikhwalithi yokuphathwa nokulawulwa kwezinkampani; isikali semiholo se-Gini sasetshenziswa ukuhlonza amagebe akhona phakathi kwemiholo kanye nokuxwayisa ngezinkinga ezingahle zivele eziphathelene neNhloko ne-Ejenti kanye nokuPhathwa Nokulawulwa Kwenkampani kanye namaphutha nobuthakathaka obukhona ezinhlelweni zokuphatha nokulawula; futhi kwasetshenziswa izinqubo zezikali zobungozi bokulahlekelwa kwenkampani ukubala inani lezindleko okungenzeka kungenwe kuzona ngenxa yezinkinga eziphathelene neNhloko ne-Ejenti kanye nokuPhathwa Nokulawulwa Kwenkampani. Imibonongqangi evele kulokho okutholakale ocwaningweni yilena elandelayo; ithiyori echaza ubudlelwano phakathi kwenhloko ne-ejenti kumele yelulwe ukuze ifake phakathi nezindleko eziphathelene nenhlalomnotho futhi lokhu kungagcini nje kuphela kwinhloko; amamodeli omholo kumele abhekisise nendlela ephethwe ngayo inkampani ngabaphathi abakhulu kanye nemfundiso yokulingana kwabantu bonke ngokwenhlalo nangokomnotho; ukuguquguquka ‘kokuthobela umthetho noma ukuchaza’ (‘comply or explain’) kumele kube ngaphansi uma kuqhathaniswa nemiphumela yenhlalomnotho, ukuze kuqhanyukwe nendlela exubile ephoqelela ukusetshenziswa kwezinkambiso zokuphatha nokulawula ezithile; kanti futhi, okokugcina, ocwaningweni lokuphatha nokulawula kumele kusetshenziswe amathiyori aphathelene nesimo somqondo sabaphathi ngenkathi bethatha izinqumo nezinyathelo eziphathelene nokuphathwa nokusetshenziswa kwezimali ukuze kuqondakale kangcono konke okuphathelene nalokhu.

OPSOMMING

Hierdie studie het van 2008 tot 2016 die gevolge van die wisselwerking tussen hoofagent- en korporatiewe regering in Suid-Afrikaanse FTSE/JSE Top 40-genoteerde maatskappye bestudeer. Die oogmerke was om die voorkoms van probleme met hoofagent- en korporatiewe regering te ondersoek; die moontlike koste en die sosio-ekonomiese gevolge daarvan te bepaal; en die doeltreffendheid van die regeerkodes te evalueer. Hierdie studie berus op die hoofagentteorie. Gemengde metodes is as metodologie gebruik, in die besonder gelyklopende en verkennende, opeenvolgende metodes. Die belangrikste bevindings is dat 23,91% van steekproefmaatskappye probleme met hoofagent- en korporatiewe regering ondervind. Dit is beduidend hoër as die persentasie wat verwag is, en ’n aanduiding van hoe diepgaande hierdie probleme is. Die vergoeding van uitvoerende beamptes is ’n groter oorsaak van die probleme met hoofagent- en korporatiewe regering as wat verwag is en waarvoor in regeermeganismes voorsiening gemaak word. Die potensiële koste, wat miljarde rande beloop, word gewyt aan die probleme met hoofagent- en korporatiewe regering wat prinsipale hulle op die hals haal. Onregverdigbare salarisverskille lei tot ongelykheid wat sosiale wantroue wek. Hierbenewens is daar bedenkinge oor die doeltreffendheid van die huidige regeerkodes.

Die bydrae van hierdie studie behels ’n vergoedingsmodel vir uitvoerende beamptes wat korporatiewe regering in ag neem. Hierdie studie formuleer ’n regeerindeks wat op King III- en King IV-aanbevelings berus, en die meting van die gehalte van korporatiewe regering standaardiseer. Verskille in vergoeding, potensiële rooivlag-hoofagentprobleme en gebreke in regeerstelsels is met behulp van die salaris-gini bepaal. Waarde-op-risikoprosedures is gebruik om die potensiële koste van hoofagent- en korporatiewe regering te kwantifiseer. Die belangrikste teoretiese implikasie van die bevindings is dat die agentskapsteorie uitgebrei moet word sodat die sosio-ekonomiese koste vasgestel word, en daar nie alleen op die hoofsom gekonsentreer word nie. Afgesien hiervan moet vergoedingsmodelle rekening hou met ’n uitvoerende beampte se korporatiewe regering en met maatskaplike en ekonomiese egalitarisme. Voorts moet die sosio-ekonomiese gevolge ondergeskik wees aan die buigsaamheid van “voldoen of verduidelik”. Dit impliseer ’n hibridiese benadering wat

die bepalings van sekere regeerkodes verpligtend maak. Ten slotte behoort finansieringsgedragteorieë in regeernavorsing aangewend te word om groter insig te verkry.

TABLE OF CONTENTS

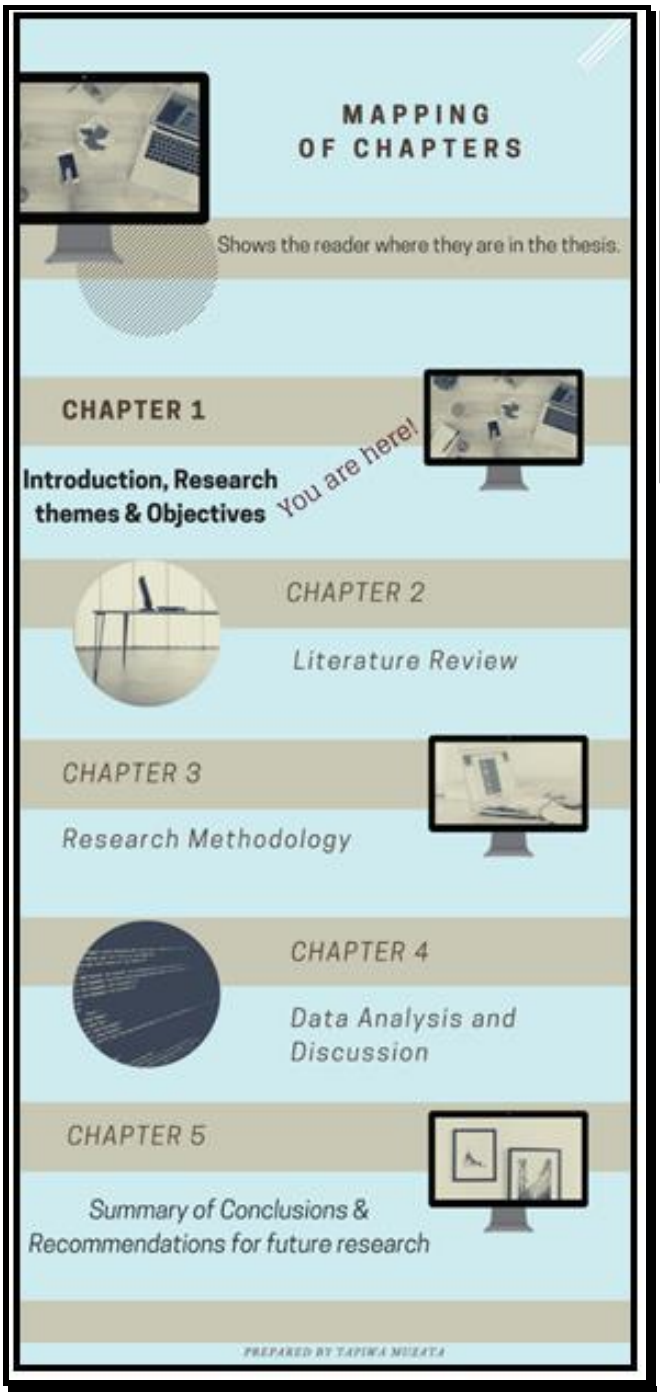
LIST OF FIGURES

LIST OF TABLES

LIST OF ABBREVIATIONS

CEO	Chief Executive Officer
CFO	Chief Financial Officer
CG	Corporate governance
E-Index	Entrenchment Index
EMH	Efficient Market Hypothesis
EPS	Earnings per share
ES	Event Studies
FTSE	Financial Times Stock Exchange
GDP	Gross Domestic Product
GEPF	Government Employees Pension Fund
G-Index	Governance Index
GLS	Generalised least squares
GMM	Generalised method of moments
Gov	Governance index
HPR	Holding Period Return
IAR	Integrated Annual Report
IAS	International Accounting Standards
IFC	International Finance Corporation
INED	Independent non-executive director
JSE	Johannesburg Stock Exchange
LID	Lead independent director
LSDVC	Least square dummy variable corrected
MOI	Memorandum of incorporation
NED	Non-executive director

OECD	Organisation for Economic Cooperation and Development
P-A	Principal-Agent
PwC	PricewaterhouseCoopers
SENS	Stock Exchange News Service
s-Gini	Salary Gini
Stats SA	Statistics South Africa
TSR	Total shareholder return
UK	United Kingdom
US	United States of America
VaR	Value at risk



Chapter 1: Introduction, research themes and objectives

This chapter outlines the foundation of this thesis and puts it into context. The contents of the chapter are listed below.

Chapter 1 Contents

CHAPTER 1: INTRODUCTION, RESEARCH THEMES AND OBJECTIVES

1.1 INTRODUCTION AND BACKGROUND

Principal-agent (P-A) problems are inherent in corporate governance (CG) structures, and are mainly due to the separation of ownership and the way companies are governed and managed. Agency theory identifies shareholders and debt holders as the main providers of capital (equity and debt respectively). They contract with executives and give them a mandate to manage the shareholders' assets or debt holders' funds in a way that maximises value for them. The consequences being examined in this study emanate from the conflicting objectives[1] and P-A problems that exist between the principal and the agent, and the mechanisms put in place to achieve goal congruence.

These conflicting objectives have caused severe problems to companies and economies, even presenting in proportions that threaten the existence of countries (for example, Iceland in 2008 as cited by Boyes, 2009) as well as the collapse of the global financial system in 2008/2009. The 2008 financial crisis provides evidence that economies are vulnerable when exposed to the problems arising from P-A and CG problems. To this end, Maskara, Eser and Claassen (2012) conducted a study of companies that collapsed in the recent past: Barings Bank in 1995, Enron in 2001, Arthur Andersen in 2002, WorldCom in 2002, Bear Stearns in 2008, and Lehman Brothers in 2008. Their findings showed that P-A problems explain some of these biggest corporate failures in history.

Without proper governance controls and systems, agents may pursue their own objectives resulting in unintended consequences for the principal, the economy and possibly the global financial system. Given the continued existence of agency problems, questions arise as to whether or not the CG structures are effective in

[1] Mallin (2010) states that potential problems arising from principal-agent relationships were identified by Smith in 1838. Mallin (2010) refers to the work of Smith (1838) who posited that directors (agents) who are charged with governance manage other people's (shareholders'/debt holders') funds and thus cannot be expected to manage it vigilantly as their own. Managers can pursue their own personal objectives that are not aligned to the objectives of shareholders. Thus, the separation between those that own and control companies inherently creates conflicting objectives.

resolving the conflicting incentives of agents. Accordingly, CG structures have been developed to try and find ways of minimising the prevalence of agency problems. In other words, governance structures have been put in place as a means of finding ways in which principals (owners or shareholders) can control agents (executives) in such a way that the latter prioritise the interests of the former. In South Africa, the King III and King IV[2] codes have been major instruments in ensuring goal congruence between principals and agents, as well as the CG structures of companies.

Research into CG as a discipline has intensified in the last two decades, although it is still considered to be a relatively new field of study (Mallin, 2010; McNulty, Zattoni & Douglas, 2013). Prominent CG researchers, with their distinguished research work, (Jensen & Meckling (1976); Fama & Jensen (1983); Farmer & Winter (1986); Shleifer & Vishny (1997); Edmans & Gabaix (2009); Shah (2014)) have explored mechanisms that assist in aligning the objectives of principals and agents, and that may alleviate CG problems. However, empirical evidence still reveals the existence and complexity of P-A and CG problems, even after two decades of research into CG (Maskara *et al.*, 2012; McNulty *et al.*, 2013; Chapple & Truong, 2014; Shaukat & Trojanowski, 2017). The existence and complexity of P-A and CG problems are exacerbated by the breadth and nature of P-A relationships and CG mechanisms. Moreover, CG research is characterised by the use of various theories which are not unified and show limited understanding on whether CG practices substitute or complement each other (Brown, Beekes & Verhoeven, 2010). The silver lining is that while research work continues to expose the existence and complexity of P-A and CG problems, immense contributions are being made to CG as a practice in companies and the field of study.

Most CG research focuses on either company-internal characteristics which are a culmination of decisions and actions by principals and their appointed boards, or

[2] The 'King Code of Governance Principles' (King III and King IV) are codes of best practice functioning on the "apply or explain" and "apply and explain" basis which allow flexibility of application and an explanation as to why the reporting entity deviated from best practices. King III and King IV function on a non-legislative basis which reveal an appreciation that best practices are not just a compliance issue but consider the benefits of applying best practice principles. The intention of the King III and King IV principles are to ensure that those charged with governance operate in the best interest of the company, and achieve fairness, accountability, responsibility and transparency. Read more from the Introduction and Background section of the King III and King IV Reports in the Institute of Directors of Southern Africa- King Report on Governance for South Africa 2009 and 2016.

external characteristics which include monitoring by external parties such as regulators, institutional investors and activists (Brown *et al.*, 2010). Further, a review of CG literature by Brown *et al.* (2010) reveals that most CG research in the fields of accounting and finance focuses on financial outcomes. The financial outcomes focus on relationships between P-A and CG characteristics and company performance, capital structure, cost of capital, dividend pay-out policy and agency costs. This study has incorporated both internal characteristics (as it examined the strength of governance through board indices, executive compensation and ownership structure) and external characteristics (monitoring by regulators, media reports and institutional investors).

In South Africa, a number of large-sized companies have exemplified weak and poor governance systems stemming from observable agency and governance problems. Chapple and Truong (2014) asserted that companies not complying with the laws, regulations and recommended best practices reveal weak or poor governance. For instance, companies that have had to pay significant penalties imposed by competition authorities for engaging in anticompetitive conduct (for example, collusion), as cited later, have exemplified weak governance and agency problems linked to the possible behaviour of the executives - the agents. Among others, the following companies fall into this category: Tiger Brands, MTN Group Ltd., Vodacom, Sasol, British American Tobacco Plc, Netcare Hospital Group and Steinhoff. The potential scale of the problems in terms of the size of these companies, the key sectors they operate in, their role in the economy and the magnitude of the fines imposed by competition authorities provided red flags. These red flags indicate possible prevalence, costs, and socio-economic problems that are caused by agency problems and flaws in CG structures.

For brevity, this study examined the consequences of CG interactions in the FTSE/JSE Top40 listed companies from 2008 to 2016, rather than venturing into the main stream focus of aforementioned finance outcomes. CG interactions are considered in this study as relationships put in place to achieve goal congruence by defining, directing, controlling and monitoring the dealings that exist between the principal and agent. These CG interactions become the vehicles employed to try and align the interests of both the principal and agent. Also, the CG interactions are designed to monitor the behaviour and actions of the agent as he or she has both the

motivation and ability to divert from the principal's interests. The reason for concentrating on the consequences of CG interactions is that finance outcomes focus on the impact of CG relationships, mostly related to principals, and not so much on the socio-economic consequences of CG interactions between principals and agents. Thus, this research study sought to find answers to thematised research questions covering the prevalence of P-A and CG problems, the role of executive compensation and potential costs, the socio-economic consequences, and effectiveness of current CG codes. The context of the research is South African FTSE/JSE Top40 listed companies.

The FTSE/JSE Top40 companies are the largest 40 listed companies (by market capitalisation). Companies listed on this index represent over 80% of the total JSE market capitalisation, are among the most traded shares and have wider institutional ownership (Courtney Capital Private Wealth, 2013). These characteristics were identified by GIM (2003) as positively linked to governance. These features arouse expectations that negligible P-A and CG problems should exist because they influence the agent's behaviour, and governance systems that restrain agency and CG problems. Furthermore, the FTSE/JSE Top 40 companies have a very strong influence on corporate governance and tend to shape corporate behaviour in a country, hence the focus on these companies.

South Africa's unique circumstances in relation to past political and social injustices, the current political system and cultural diversity makes it prone to P-A and CG problems similar to those found in developed countries. Literature cited in this study (for example Maake & Masote (2013); Massie, Collier & Crotty (2014); Crotty (2018); Rose (2018); Rossouw (2018)) revealed that there are widespread P-A and CG problems. However, the frequency of the problems is becoming higher and more complex leading to more severe crises that warrant the attention of scholars, law-makers, policy-makers, and investors, among others. This is the phenomenon that motivated the study. Moreover, the increase in reported incidences of corporate scandals involving top South African executives placed this study in context.

Section 1.2 that follows provides an outline of the problem statement, research themes and related questions that the study sought to answer.

1.2 PROBLEM STATEMENT, RESEARCH THEMES AND QUESTIONS

It has been proven that P-A and CG problems do exist and are at the heart of some of the past corporate failures (Maskara *et al.*, 2012). This study differs from other prominent corporate governance studies that focus on financial outcomes of company performance, capital structure, cost of capital, dividend pay-out policy and agency costs. What is missing in extant governance literature are explicit consequences tied to P-A and CG problems. As such, the study's primary purpose is not to assess the existence of P-A and CG problems in South Africa, but rather to examine the prevalence, costs and socio-economic consequences of P-A and CG problems in South Africa, including the effectiveness of governance codes. Thus, the problem to be examined is: what are the consequences of the P-A and CG interactions in South African companies, with a particular focus on FTSE/JSE Top40 listed companies. This study's thematised research questions further deconstruct the problem statement by investigating the consequences of CG interactions related to selected internal and external CG characteristics found in sample companies. As a result, the study attempted to answer the following questions which are categorised into four themes.

1.2.1 Theme I: Incidence and interaction with company success or failure

This theme covered the incidence and interaction with the company's success or failure. The related research questions were:

- What is the prevalence of P-A and CG problems in South Africa's FTSE/JSE Top40 listed companies?
- Have these P-A and CG problems been at the heart of some of the corporate failures[3] or problems in South Africa?

1.2.2 Theme II: Costs arising from P-A and CG problems

This theme covered the costs arising from P-A and CG problems. The related research questions were:

[3] Failure included both financial failure and involvement (for example, involvement in collusion) in conduct which attracted penalties and other sanctions or reputational damages.

- What is the role of executive compensation schemes in exacerbating P-A and CG problems in South Africa?
- What are the potential costs and who bears these costs of P-A and CG problems?

1.2.3 Theme III: Socio-economic consequences of P-A and CG problems

This theme covered the socio-economic consequences of P-A and CG problems. The related research question was:

- To what extent do the P-A and CG problems contribute to socio-economic inequality in South Africa?

1.2.4 Theme IV: Effectiveness of governance codes in South Africa

This theme covered the effectiveness of governance codes in South Africa. The related research question was:

- How effective have the current codes of good CG been in mitigating P-A and CG problems and consequences?

1.3 RESEARCH OBJECTIVES

The aforementioned research questions were answered by pursuing the following research objectives:

i. To examine the prevalence of P-A and CG problems in South African companies and to determine if these problems could explain some of the corporate failures (including both financial failure and involvement in collusion) and conduct which attracted penalties and other sanctions or reputational damage. Achieving this objective provided insights into the pervasiveness of P-A and CG failures in some of South Africa's largest companies and the effectiveness (or lack thereof) of board and board committee oversights. Furthermore, the attainment of this objective provided comparative insights into how the occurrences of P-A and CG problems in South Africa compare to research carried in developed countries by researchers like Shaukat and Trojanowski (2017), who cite Renders, Gaeremynck, and Sercu (2010), Guest (2008), and Dahya and McConnell (2007). Regulatory authorities should take a keen interest in research with this type of

objective so that they can formulate policies and laws that mitigate the pervasiveness of P-A and CG problems and their consequences.

ii. Ascertaining the potential costs of agency problems and the role of executive compensation in exacerbating P-A and CG problems, in light of the severe distress caused to companies, economies[4] and investors losing their savings. The study sought to discern the potential pecuniary impact of agency and CG problems in South Africa. The pecuniary severity of P-A and CG problems need to be ascertained for agents to discern that the consequences are not only at the micro-level, but at the macro-level as well. In addition, it was necessary to ascertain the role played by executive compensation in exacerbating CG problems in South Africa, given the conclusions by Nordberg (2011) that compensation schemes are the biggest aspect of CG. Pursuing this objective also permitted the researcher to formulate and propose an executive remuneration model that captures pertinent aspects of CG in incentivising executives. The model attempts to address the assertions by Kirkpatrick (2009) which suggested that mismatches in incentive systems may cause weaknesses in CG.

iii. To establish the potential relationship of P-A and CG interactions with the socio-economic challenges and inequality in South Africa (for example, the widening income gap in the face of deep poverty). This objective supported the call by Germain (2010) who posited that financial crises events, and by inference CG problems, must consider the social impact in the long term and not just events impacting capital markets players. Moreover, Rezaee (2009) advocated for CG to be used to address socio-economic concerns. Accordingly, the researcher sought to establish the level of inequality, as measured by the s-Gini that was formulated, and also discussed the probable socio-economic burdens potentially carried by the country's fiscus.

iv. To evaluate the effectiveness of the current South African governance codes, despite the international reputation of King III and King IV. The attainment of this objective required the evaluation of the other theme-findings and arose from the observations by McNulty *et al.* (2013) that after decades of CG prescripts, P-A

[4] Highlighted in the studies by Maskara, Eser, and Claassen (2012), and Mallin (2010).

and CG problems still exist. Tracking this objective enabled this study to establish the alignment of that which the sample companies preach regarding the adoption of the King III and King IV recommendations and their real actions based on evidence. This objective made it possible to compare our South African findings with those from studies done in developed countries by Seidl (2007), Shah (2014), and Shaukat and Trojanowski (2017). Factors that weaken the efficacy of CG codes were also established and discussed.

A mixed methods research process with a pragmatist worldview was employed to achieve the above objectives and to answer the associated thematised research questions. The mixed methodologies and pragmatist worldview were appropriate to address the scope of the research questions and objectives. Moreover, the research strands and their steps, procedures and expected outcomes, design logics, mixed-methods timing, integration, weighting, archival research strategy, inductive reasoning and interpretative enquiry enhanced the achievements of the study's objectives.

1.4 BENEFITS OF THE STUDY

The study provided deeper insights into P-A and CG problems in some of South Africa's largest companies. Some of the benefits of this study are outlined below:

i. The study contributes by providing a better approach to the construction of governance indices (proxy for governance). This approach is more relevant to South Africa as it used recommendations (which are called provisions in this study) from King III and King IV. In addition, this approach standardised the provisions and made it easier to assess the quality of governance in companies, despite differences in industry, size, board composition and other variations that may exist. This approach to the construction of a governance index standardises the measurement of the quality of CG in companies.

ii. This study adds to the CG body of knowledge by attempting to quantify the rand cost of identified CG events. A risk management technique called Value at Risk (VaR) was employed to ascertain how much each of the considered CG events cost the principal and other stakeholders. The employment of VaR is testimony of the multidisciplinary nature of CG. Hence, the study contributes by showing that insights in CG issues can be obtained by using existing models from other fields

of study. To the best of the researcher's knowledge, this study was the first to employ VaR in CG and attempt to quantify the cost of P-A and CG problems in FTSE/JSE Top40 listed companies. The establishment of the rand-cost of P-A and CG problems was a bellwether, especially considering that studies done in the past linked agency and governance problems to company performance, capital structure, cost of capital, share prices, board composition, and not potential rand cost.

iii. Another contribution made by the study was the formulation of the salary Gini (called s-Gini) which was adapted from the Gini coefficient to measure the levels of inequality between executives and other employees in the sample companies. This study contributes by exposing the opportunism displayed by executives. This opportunism resulted from the unintended consequences of agency theory propositions that endeavour to align the objectives of the principal and agent.

iv. Further contributions made by the study are through the recommendations to extend the agency theory to cover socio-economic costs and to not only focus on agency costs. The study contributed by highlighting socio-economic costs that need considerations. The opportunism and the socio-economic gap exposed in the study is likely to attract the attention of lawmakers and other CG scholars.

v. This study made further contributions by proposing an executive remuneration model that captures pertinent aspects of CG in incentivising executives.

Combined, the contributions made by this study add to the existing understanding of P-A and CG in South Africa, and a reasonable basis is provided to allow comparisons with findings from studies conducted in other developed countries.

1.5 ETHICAL CONSIDERATIONS

The research held the minimum risk of ethical implications for the researcher, the sample companies and the University of South Africa (UNISA), as the data used was publicly available. Moreover, the researcher obtained an ethical clearance certificate from UNISA before any data was acquired from the Johannesburg Stock Exchange (JSE), a company called Profile Data and collected from company websites.

1.6 THESIS STRUCTURE

This section provides a brief layout of the chapters in this thesis.

Chapter 1: Introduction and background

This chapter provided an explication of this research and placed it in context. The research questions and their themes were discussed. This chapter also presented the objectives of the study, as well as a brief discussion of the methodology employed and the benefits of the study. A summary of the structure of the thesis was also provided.

Chapter 2: Literature review

The chapter reviewed the literature pertaining to P-A and CG theories, the separation of ownership and control, executive compensation, rewarding systems and the effectiveness of CG codes. The discussion included an integration of the theoretical and empirical issues related to CG. The literature discussion concluded by highlighting the disjoint between the heightened reporting on corporate scandals involving executives, amidst the robust recommendations of King III and King IV that have been adopted by companies. This placed the study in context.

Chapter 3: Methodology

Chapter 3 provided a discussion of the mixed methodologies, design logics, timing, integration, weighting, archival research strategy, inductive reasoning and interpretative enquiry employed in the study. Furthermore, this chapter extensively discoursed the approaches used in the construction of governance indices, executive compensation model, Event Studies (ES), VaR and s-Gini. Data inputs into the governance indices, executive remuneration estimation model, ES, VaR and s-Gini are also outlined in the chapter.

Chapter 4: Data analysis and discussion

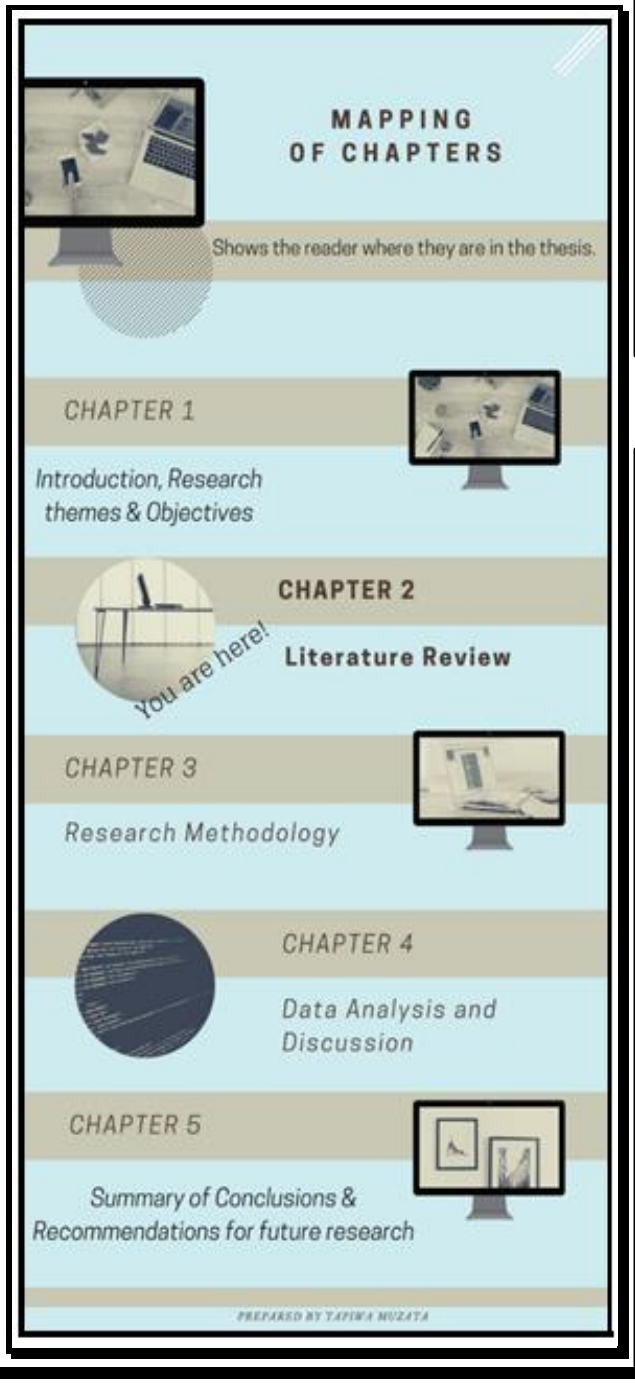
In this chapter, the findings and results obtained from the research methodologies employed are presented and discussed. The findings from Theme I through Theme IV are presented separately, as well as integrated, to support the conclusions reached by this study. The concurrences and divergences between this study's findings and those of other researchers are discussed, and possible reasons for the differences are provided. Finally, the inferences drawn from the findings are cogently discussed.

Chapter 5: Summary of conclusions and recommendations for future research

This final chapter summarises the conclusions reached by this study. The theoretical implications of the findings, the contributions of the study, a summary of recommendations, and suggestions for future research are outlined as well. The last section of the chapter highlights possible shortcomings of the study which are discussed as areas for future research.

1.7 CONCLUSION

The purpose of this chapter was to introduce and provide context to this study. After the introduction and background, the discussions that followed covered the thematised research questions, the objectives of the study, its benefits, ethical considerations and the structure of the thesis.



Chapter 2: Literature Review

This chapter focuses on the theoretical and empirical literature. The chapter also depicts how the literature review unfolds.

Chapter 2 Contents

CHAPTER 2: LITERATURE REVIEW

This chapter will present the background to and provide an introduction to agency theory and corporate governance problems. In addition, key findings from previous empirical studies will be discussed.

2.1 BACKGROUND

Mallin (2010) and McNulty *et al.* (2013) have identified CG as a relatively new area of study that is still developing and which draws a strong influence from the fields of finance, economics, accounting, law, management, psychology, sociology and organisational behaviour. Durisin and Puzone (2009) also highlighted similar fields from which practical CG implications have been drawn.

According to Dühnfort, Klein and Lampenius (2008), and McNulty *et al.* (2013), there are generally four broad popular CG theoretical frameworks, namely; principal-agent theory (P-A theory) also known as agency theory, stewardship theory, stakeholder theory and political/social theory. It is worth noting that the agency theory is the dominant theory in CG (Clarke, 2004; Dühnfort *et al.,* 2008), as was also acknowledged by Mallin (2010) who pointed out that agency theory has provided the main theoretical framework which has had significant influence in the development of CG as a field of study. Further to the dominance of P-A theory in CG, Otten and Wempe (2009) assert that the agency paradigm features strongly in the CG body of knowledge. This is despite the fact that an acceptable theoretical foundation and conceptual framework for CG that sufficiently show the reality of CG practices is still being sought. This study focused on the dominant P-A theory due to its significant influence on the development of CG principles. This study employed the P-A theoretical lens (agency theoretical lens) in its approach to examining consequences of CG interactions in South Africa's FTSE/JSE Top40 listed companies.

In this study, the CG principle is anchored in the goal of P-A theory, which aims to find governance structures and control mechanisms that minimise the problems created by the separation of ownership and control or management. The P-A theory attempts to create ways in which owners or shareholders of a company can control executives (agents) to ensure that shareholders' (principals') interests are foremost. This may be

a ‘forced’ way of trying to achieve goal congruence, as both the principals and agents may have different objectives.

2.2 INTRODUCTION

The study employed a mixed-methods research design, and used P-A theory as a framework to inform the various aspects of the literature review, data collection, and the analysis and interpretation of both the qualitative and quantitative data. The P-A theory was incorporated into the mixed methods design in the form of a social sciences theoretical framework (Creswell, 2014) as a way of achieving the research objectives. Eisenhardt (1989) presented a compelling argument and advocated for the adoption of the P-A theory when one examined problems related to P-A relationships. As such, the study adopted the P-A theory as a lens that shaped the examination of the consequences of P-A and CG interactions in South Africa’s FTSE/JSE Top40 listed companies. The review of key literature and the mapping of the chapter unfolds as depicted in Figure 2.1:

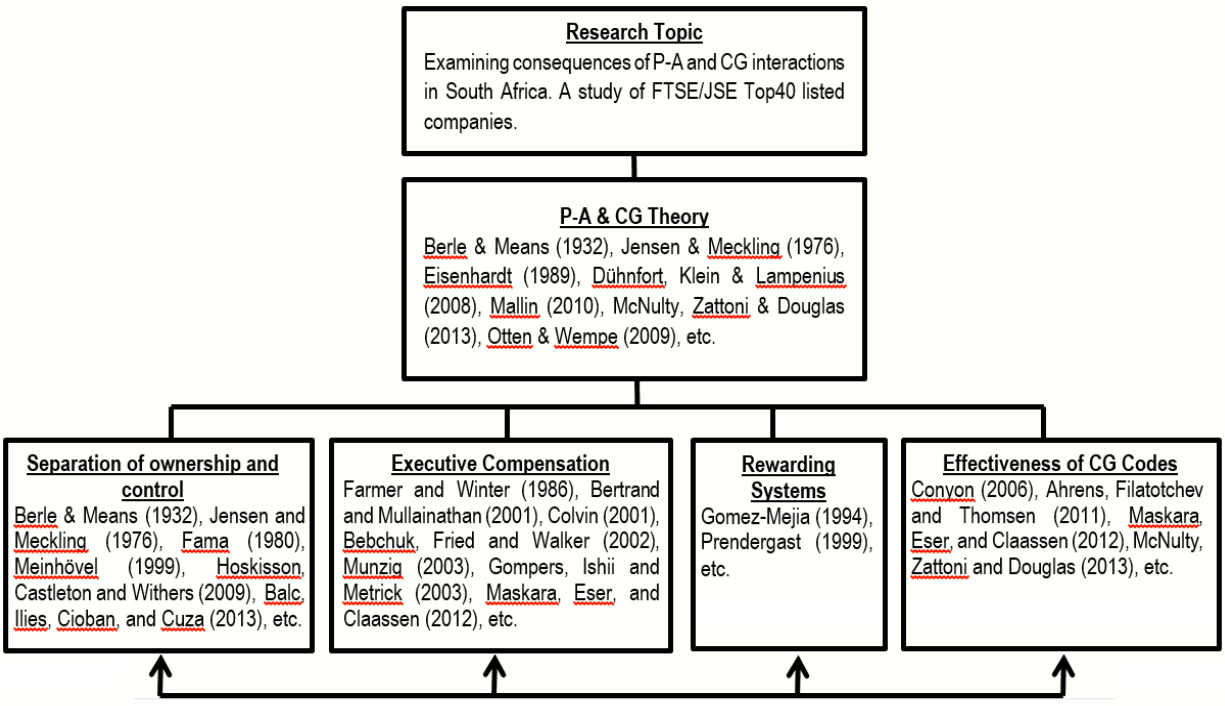


Figure 2.1: Key literature and mapping of literature review chapter

Source: Researcher’s inferences from literature

The literature review chapter unfolds from the P-A theory and transitions to consider literature that covers the variables that are of temporal order, which Creswell (2014)

explains as one variable that precedes another in time and affects or probably causes another variable, and can be observed or measured. This includes a review of the literature on the separation of ownership and control, executive compensation, rewarding systems and effectiveness of current CG codes.

2.3 PRINCIPAL-AGENT THEORY

2.3.1 How the Principal-Agent relationship arises

Principal-Agency theory (P-A theory) identifies shareholders and debt holders as the main providers of capital (equity and debt respectively). They contract with executives and give them a mandate to manage the shareholders' assets or debt holders' funds in a way that maximises value for them. There are a host of various P-A problems that arise between shareholders (principals) and executives (agents). Shah (2014) asserts that if the interests and incentives of the agent are not aligned with the principal's interest, the principal will find it difficult to monitor the behaviour and actions of the agent as he or she has both the motivation and ability to divert from the principal's interests. This is what is termed the P-A problem.

The P-A problems in the relationship being investigated emanate from the conflicting objectives amongst the parties involved and the mechanisms put in place to achieve goal congruence. Therefore, the CG mechanisms become the vehicle employed to try and align the interests of both the principal and agent. As a consequence, CG mechanisms are used to define, direct, control and monitor the interactions that occur between the principal and agent. These CG mechanisms and the resultant interactions have consequences that are examined in this study. Figure 2.2 depicts the simplest possible interactions that may exist between the principal and agent. Lambert (2001) describes this P-A relationship in terms of the roles of the principal and agent. He further mentions:

- The principal's role is to supply capital, carry the residual risk and structure incentive packages for the agent so as to attract the best skill. Moreover, Lambert (2001) suggests that the principal can be seen as a 'representative shareholder' or the board of directors.
- The agent's role is to make decisions on behalf of the principal and bear some risks that are in line with the principal's risk appetite.

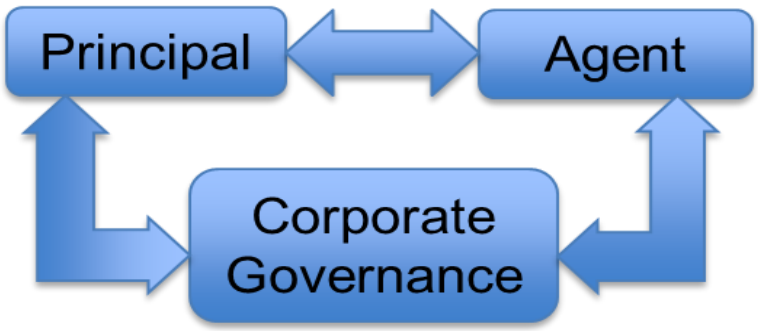


Figure 2.2: Possible CG interactions

Source: Researcher's inferences from literature

As depicted in Figure 2.2, the principal and the agent can interact directly with one another without any governance systems, as is generally found in a smaller owner-managed business and where there are only one or two other employees. However, in publicly listed companies (which is the focus of this study) there are legislative and JSE listing requirements, as well as other requirements which may be stipulated in the company's Memorandum of Incorporation (MOI), that mandate the formal appointment of the senior management, including the Chief Executive Officer (CEO) and Chief Financial Officer (CFO) (Institute of Directors Southern Africa, 2009). Thus, the formal mandate and appointment of senior executives entails that there be contracts and systems which govern the relationships or interactions between the principal and appointed agent and their functions within the company. The result is a 'nexus of contracts' (Jensen & Meckling, 1976) between the principal and agent, designed to enforce agent-compliance and the alignment of interests which give rise to agency costs. Otten and Wempe (2009) classify these into monitoring costs and bonding costs (incentives). The discussions around the agency costs are revisited later in this review.

From another perspective, but not different from the depiction in Figure 2.2, Lambert (2001) presents what he called a 'plain vanilla principal-agent model' which is germane to the sequence of events leading to the establishment of a P-A relationship.

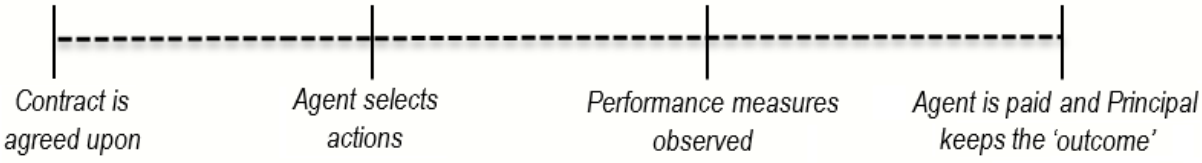


Figure 2.3: Plain vanilla principal-agent model

Source: Lambert (2001)

Lambert's (2001) 'plain vanilla principal-agent model' seems to support the Jensen and Meckling (1976) assertion that a company is a 'nexus of contracts' because the P-A relationship in his model is governed by the agreed-upon contract. In addition, Lambert (2001) highlighted that the principal determines the performance evaluation system and performance measures which form the basis of the agent's compensation.

The agent's compensation is based on observable performance outcomes which are contracted upon (Lambert, 2001). However, Lambert (2001) accentuates that there is an implicit assumption that the property rights of the agreed-upon outcomes belong to the principal. This could be the reason why the agent may embark on earnings management and fraudulent financial reporting in order to acquire a slice of the uncontracted property that belongs to the principal, especially considering that there is a possibility that the principal compensates the agent based on information provided by the agent. The result is a moral hazard which may require the principal to verify the information provided by the agent to ensure that there is a deterrent on the agent's behaviour and to limit the impact of his/her actions (Negash, 2011). This provides a plausible reason why the compensation of the agent is an important component of the P-A theory.

Tied to performance evaluation, performance measures and compensation are the decisions made by the agent (defined in Lambert's model as 'agent selects actions'). These decisions can be categorised into operating decisions, financing decisions and investment decisions. All three categories of decisions are prone to interference by the personal motives of the agent, and have the capacity to impact the long-term wealth of the principal, as well as widening the divergence in the interests of the principal and agent.

2.3.2 Sources of P-A problems and assumptions of P-A theory

P-A problems are inherent in CG structures due to the separation of ownership and the way companies are governed and managed. Eisenhardt (1989) concluded that empirical evidence reveals the presence of P-A problems between the shareholders and top executives because of conflicting objectives. Furthermore, Otten and Wempe (2009) asserted that CG problems exist when serving the interests of any group of stakeholders involved with the company. Moreover, the aforementioned authors argue

that these CG problems do not only emanate from conflict of interests and differing objectives, but also from varying opinions, expectations, notions and perceptions of what is best for the company.

Eisenhardt (1989) classified assumptions about P-A into the following categories:

- The people, which include aspects related to self-interest, constrained rationality, risk aversion, and so on.
- The company, which include issues around the conflict between those involved with the company in terms of the vision, strategic direction, differing objectives, and so forth.
- Information, where those who are involved with the company on a daily basis, and who have certain valuable expertise, have more information than the principals or shareholders who are supposed to control and monitor the activities of the agents who are hired to maximise value for them. As a result, information and expertise of the agent become a commodity that can be sold by the agent to the 'highest-bidder'.

In addition to the above categories of assumptions, Eisenhardt (1989) considered more pertinent aspects of the contracts that govern the relationships between the principal and the agent by classifying P-A contracts into:

- Behaviour-oriented contracts which focus on salaries and hierarchical governance (a top-down structural arrangement that reveals how governance interactions in a company occur); and
- Outcome-oriented contracts which focus on commissions, share options, transfer of property rights to the agent, and market governance.

Eisenhardt (1989) questioned which of the two types of contracts was the most efficient in governing the P-A relationship. To this end, she (the aforementioned author) suggested that the question of which was the most efficient P-A contract (behavioural or outcome-oriented contract) could be applied to company phenomena covering issues around compensation, ownership and capital structure, among others. Furthermore, Eisenhardt (1989) asserted that agency theory was rooted in information economics, and cited Jensen (1983) in highlighting that the theory had developed along the lines of positivist and P-A streams.

The development of the two streams, namely positivist and P-A, are based on similar assumptions as mentioned above, and use a contract as the unit of analysis (Eisenhardt, 1989). However, the positivist and P-A streams diverge on mathematical rigour, dependent variable, and style (Eisenhardt, 1989). Developing the positivist line further, Eisenhardt (1989) posited that positivist studies are replete with P-A relationships between the shareholders (owners) and executives of publicly listed companies (citing Berle and Means, 1932). In addition, she (the abovementioned author) highlighted that the work of Jensen and Meckling (1976) on company ownership and structure had influenced how share ownership by executives can assist in the alignment of objectives with shareholders. Eisenhardt (1989) suggested that the positivist's theoretical perspective explores governance mechanisms that seek to solve the P-A problems that arise due to the separation of ownership and control. In concluding, Eisenhardt (1989) suggested that positivist results in outcome-oriented principal-agent contracts that minimise opportunistic behaviour by the agent and produce information which the principal can use to monitor and control the behaviour of the agent (which is the purpose of the board). On the other hand, the line of P-A research as opposed to the positivist research seeks a general theory of P-A relationship which can be applied to other P-A relationships, such as auditor-client, employer-employee, lawyer-client, and so forth (Eisenhardt, 1989, citing Harris & Raviv, 1978).

This research, however, did not focus on other P-A relationships that may exist within the FTSE/JSE Top40 listed companies other than the positivist approach to the P-A relationship that exists between the owners/shareholders (principals) and executives (agents). Even though this study leans heavily on the positivist line, as suggested by Eisenhardt (1989), it uses the two lines of P-A theory as complements to ensure that the efficiency of contracts under varying levels of outcomes, risk tolerance, information and other observable variables are considered.

2.3.3 Nature of the P-A problems

There are various P-A problems which manifest themselves in different ways in the interactions between the principal and agent. Shleifer and Vishny (1997) pointed out the nature of P-A problems which manifest in the course of interaction between the

principal and agent. The discussion below briefly explains the nature of P-A problems as pointed out by Shleifer and Vishny (1997).

- **Transfer pricing:** The agent may expropriate funds from the principal through transfer pricing. This occurs where the agent owns a business interest (outside of that in which he is an executive) that supplies goods and/ or services to the one in which he is an executive, or his personal business is a customer of the business he is an executive. In such instances, there needs to be investigated whether the pricing arrangements are not detrimental to the principal. This aspect of P-A problems requires that related party transactions should be carefully examined and they should be disclosed in the financial statements to ensure that these transactions are disclosed in accordance with International Accounting Standard 24 (*IAS 24-Related party disclosures*). The examination of related party transactions would cover how they are recognised (included), measured and disclosed in the financial statements to ensure that they are not materially misstated to mislead the principals.
- **Empire building:** P-A problems are also related to empire building as the agent ring-fences his/her power. This happens when the agent uses his/her control rights to pursue projects or activities that benefit them more rather than the principal. Shleifer and Vishny (1997) term these 'private benefits of control'. The existence of these 'private benefits of control' need to be carefully examined to find out if agents are not acting contrary to maximising wealth for the principal.
- **Managerial entrenchments:** Managerial entrenchments (protection through a nexus of contracts, including employee contracts) can also result in the expropriation of the principal's wealth by making it difficult and costly for the principal to remove or fire the agent. In such instances, a non-performing agent may be protected by a nexus of contracts that will work against the principal.
- **Diversification:** Diversification can reveal possible embedded P-A problems, especially where it can be established that the diversification benefits the agent more than the principal. This becomes similar to empire building which is briefly explained above. Shleifer and Vishny (1997) cited the work by Kaplan and Weisbach (1992) who documented the history of companies that went the

diversification route and that were shortly followed by divestures which suggested that the diversification was an adverse move for the principal in the first place.

- **Resisting takeovers:** Companies resisting takeovers may be as a result of the agents' self-serving behaviour that seeks to protect private benefits rather than benefiting the principal. Shleifer and Vishny (1997) posited that in takeover-resistance situations, P-A problems emanate from the agents not wanting to lose private benefits. Further, they argued that executives may be less likely to resist takeovers if there were financial benefits that accrued to them in the form of share options or financial buy-outs.
- **Issuance of debt securities:** This is related to management issuing debt securities that are least sensitive to the executives' behaviour or the executives' private information, so that debt financiers only concern themselves with the value of collateral and not the entire company value. This point is paramount, especially in terms of the 2008 global financial crisis where bondholders/creditors woke up to realise that the collateral was valueless or illiquid because it could not be sold. The majority of creditors would rarely concern themselves with the value of the entire company and the underlying assets. For this reason, agents might borrow excessively to finance their self-serving ambitions.

The nature of the P-A problems as discussed in the work of Shleifer and Vishny (1997) may determine and have consequences on the CG interaction within the Top40 listed companies. As such, the nature of the P-A problems needs to be examined to address Theme I of the research questions. Theme I is concerned with the incidences and interactions with company successes and failures (failure includes both financial failure and involvement in conduct, for example, involvement in collusion, which might attract penalties and other sanctions or reputational damage). In addition, the nature of P-A problems as listed above, namely, transfer pricing, empire building, managerial entrenchments, diversification and takeover resistance would encroach into the other three themes which are concerned with the costs, socio-economic consequences and the effectiveness of the current codes of good governance.

At this point and pertinent to this study, it is worth signifying the inclusion of P-A theory. The study is anchored in P-A theory because it is open to the examination of:

- The conflicts of interest that exist between the principals and agents or the conflict of interest situations that the agent is susceptible to in a P-A relationship;
- The incentive problems that result in the agent acting in their own interest and not that of the principal; and
- The CG mechanisms put in place to deal with the two issues above.

The above three aspects, as highlighted by Lambert (2001), are important because they are at the core of well-managed, well-directed and well-controlled companies which make significant contributions to the economy and are good corporate citizens. Furthermore, Lambert (2001) accentuated that the P-A theory provides a framework to examine issues like the separation of ownership and control, executive compensation, rewarding systems and effectiveness of CG codes. These issues are also vital in the decision-setting of any company. Moreover, CG mechanisms need to be safeguards against the agent diverting the company's (principal's) resources for personal gain, and his/her susceptibility to focusing on the short-term performance at the expense of the long-term good of the company (Lambert, 2001; Bolton, Scheinkman & Xiong, 2006).

The CG mechanisms also need to deal with effort aversion, which Comerford and Ubel (2013) defined as a situation where the agent chooses to avoid effortful work even if it is predicted that the work will provide him/her with better work experience. This effort aversion, Lambert (2001) asserted, is one of the reasons why a conflict of interest may exist between the principal and agent. The other reasons for the existence of conflict of interest are identified by Lambert (2001) as the agent's potential to divert the principal's resources for personal benefits and the differential in time horizon, that is, the agent being focused on short-term performance as well as associated rewards, and the principal concerned with the long-term good of the company.

2.4 CORPORATE GOVERNANCE THEORY

Empirical evidence accentuates the recognition that CG interactions can significantly impact shareholders (Bebchuk, Cohen & Ferrell, 2004). Taking a step back and trying to understand why CG systems must be in place for companies to operate efficiently and in the interest of all shareholders, Balc, Ilies, Cioban and Cuza (2013) traced the origin of the term governance from the Latin word '*gubernare*' which means 'to lead'.

Therefore, CG would entail all the processes and systems that ensure that companies are led efficiently and effectively. In addition, Guillén (2000) espoused the argument that CG plays a critical role in the economy by contributing to economic efficiency and social equity as well as having political and managerial implications. Furthermore, Guillén (2000) maintained that good CG enables companies to pursue their intended as well as emergent strategies, while on the contrary, poor and/ or weak CG can cause mayhem in the economy as it may lead to the misallocation of resources and failure to curb exploitative behaviour. Guillén (2000) advocated for more research to be carried out to understand how CG may impact the various societal groups. This study hopes to contribute towards the call by Guillén (2000) as it seeks to ascertain the socio-economic consequences of CG interactions in South Africa.

With regards to the financial and the capital markets, Padgett (2012) noted that good CG by companies aids economic development in developing countries, especially when coupled with financial sector reforms. Consequently, good governance enables access to capital which is critical for growth or expansion of companies. Good CG in companies improves the monitoring of the agent's activities and leads to greater efficiencies and profits, as well as better performance as measured by operating or market returns (Padgett, 2012). Padgett (2012) also argued that in emerging markets, improved governance leads to better company performance, lower cost of capital and increases share price (company value goes up) as investors are willing to pay a premium for well governed companies (citing McKinsey & Co., 2002). Well governed companies are noted by Padgett (2012) as having improved monitoring systems, better disclosures or accountability and stand out against their competitors with regards to share-price performance. In the analysis done by Padgett (2012), she concludes that good CG by companies results in higher valuations, encourages investors (local and international investors) to enter into capital markets, makes capital available for companies, leads to growth or expansion in companies which may end up listing on the stock exchange and contributes to the growth and development of the economy. The snowball results are better economic, social, health and educational improvements which reduce the inequalities between the various groups of people who live in the country (Padgett, 2012). By inference, poor and or weak governance yields the opposite results.

Padgett (2012) further extended her argument to link CG to reputational risk and the ability of the company to list on stock exchanges beyond its parent country's borders. She posited that there is good empirical evidence that reveals that companies that decide to list outside their parent country will encounter tougher listing requirements, but good CG serves as an indicator of corporate quality that finds favour from overseas capital markets. Moreover, Padgett (2012) emphasised the importance of this fact for companies that are parented in developing countries with a reputation for being corrupt, as their success may be associated with the corrupt environment they come from.

In general, CG has to do with the systems and structures by which companies are governed and controlled or managed[5]. Hence, the owners of and investors in the business will appoint a board of directors with a chairperson at its helm. The board can be comprised of numerous board committees, for example, nominating, remuneration, audit, risk management and social and ethics committees, depending on its size, the requirements of the South African *Companies Act 71 of 2008, c.2,* and whether it is listed or not. Shleifer and Vishny (1997) maintained that there are three main CG systems around the world. These CG systems are:

- The Anglo-Saxon system which consists of mixed boards dominated by outside non-executive (mostly independent) directors as in the UK and the US. This is by and large the system adopted in South Africa;
- The German system which has a two-tiered supervisory and management board, and the Japanese one which is insider-dominated; and
- The rest of the systems around the world that are family-owned systems with a few large outside investors and banks.

Shleifer and Vishny (1997) posited that these different CG systems emanate from the nature of the legal obligations executives have to shareholders or bond-holders, and how courts interpret and enforce these obligations. Furthermore, the aforementioned

[5] This study does not intend to concentrate on the definition of corporate governance, thus its adoption of the International Finance Corporation (IFC) definition. The IFC defines Corporate Governance as the structures and processes by which companies are directed and controlled. (ifc.org/corporate governance (January 2014)). Cadbury Report (1992) has a similar definition and was adopted by The Organization for Economic Cooperation and Development (OECD), (OECD, 2009).

authors asserted that the best CG system is the one that integrates the legal protection of investors and concentrated ownership. Moreover, the Organisation for Economic Co-operation and Development (2009) suggested that the purpose of such a CG system in companies is fundamentally connected and necessitated by the separation that exists between shareholders and executives. Shleifer and Vishny (1997) went a step further to highlight the characteristics of a good CG system. These characteristics include that the system has extensive rules that protect minority rights, allows the transfer of shares, keeps directors' elections from management interference, and allows extensive shareholder-power to hold the agent to account (even to sue the agent).

The source of the shareholder power is the legal protection (Shleifer & Vishny, 1997; La Porta, Lopez-de-Silanes, Shleifer & Vishny, 1999) that the legislative framework affords the principal, and the withdrawal of capital from the company (that is, by selling their shareholding) that large institutional investors have as a way of controlling or expressing their dissatisfaction with the agent's behaviour (Fama & Jensen, 1983). The decision by principals to dispose of their shareholding in a company is a way of taking decision power on their investments away from agents. Furthermore, the alienability of the ownership of listed companies also acts as an outside governance mechanism (Rezaee, 2009; Fama & Jensen, 1983). In addition, Shleifer and Vishny (1997) asserted that democratic companies have governance systems that have more shareholder rights and allow less manager power or managers' interference in the shareholder control processes. Such democratic governance systems permit principals to vote on the assets and other important decisions that affect the company, for example, board nominations, mergers and acquisitions, and so on.

Shleifer and Vishny (1997) highlighted circumstances where the agent usurps power or control from the principal and renders the monitoring of the agent's behaviour in making important decisions ineffective. The circumstances where the agent usurps power from the principal may arise when the principal is not qualified or does not have the competences required to run the business or does not have time to do so. The principal becomes vulnerable if the agent has more expertise than the principal, and this may expose the principal to the self-serving behaviour of the agent. The agent's personal benefits will also be heightened if there are differences in the expertise levels between the principal and the agent and this can be considered as a way the agent

can gain power or control over the principal. Fortunately, the power-sharing relationship between the principal and agent is defined by the CG arrangements (Gompers, Ishii & Metrick, 2003).

The hired agent with heightened competence might end up with more knowledge about the business and this may result in information asymmetry. Such situations result in eclectic limitations on the principal's voting rights, that Shleifer and Vishny (1997) list as:

- Management's interference in the voting process and too much control on the Annual General Meeting's (AGM) agenda;
- Weak legal systems and Memorandum of Incorporation (MOI) that result in shareholder rights being violated;
- Threats to the principal to vote in a particular way that favours management. This includes all kinds of coercion that may be experienced by the principal to vote with the agent;
- Failures to notify shareholders of meetings. This may include the late dispatch of meeting notices, or inefficient modes of delivering meeting notices, for example, using the South African Post Office which is notoriously unreliable, and other operational problems;
- Blocking shareholders who are perceived to be hostile through technicalities. The agent may also use techniques to block or limit the voting power of the principal. The techniques used may include declaring voting limits on some shares illegal, requiring a super-majority for an item to be put on the meeting agenda, losing voting records, and so forth;
- Flaws in the voting process, including those who count the votes. External auditors maybe used but they may also be compromised as they are agents who may peddle their agenda to retain a client who may be a source of significant revenue in other service engagements;
- Shleifer and Vishny (1997) highlighted that majority shareholding only works when the voting mechanism grants the power to dictate the decisions of the company. For minority shareholders to exercise decision control, they need to amass significant votes and obtain some proxies which are, however, susceptible to

interference by the agent. Furthermore, minority shareholders have limited incentives to be informed on how to vote as they are normally diversified in their investment portfolios (Fama, 1980). Fama (1980) postulated that the principal diversifies across shares in different sectors and within the same industry to avoid the concentration of his wealth depending on one company. The principal will not have any special interest to personally oversee the daily activities of any of the companies he/she has shareholding in. In such instances, the minority shareholders would focus on share-price growth and dividend pay-outs as they seem to accept that they have no 'muscle' to fight the agent who has entrenchments that are expensive to deal with. These managerial entrenchments come in the form of the entitlement to terminal benefit pay-outs, automatic bonuses or share-based schemes in the event of termination, balloon payments, severance packages because of the change in control, and other pay-outs to executives due to loss of office (Gompers *et al.,* 2003);

- The subordination of equity to other debt instruments makes the protection of shareholders' voting rights inferior and poorer, as the equity holders have residual claims on the company. The decline in residual claims reduces the wealth of the principal due to the conflicting interest between the principal and agent. Companies that are heavily geared are likely to be in the control of debt-holders and the shareholders will lose control of the company. This limits or eliminates the shareholder power, as control of the company is surrendered to the debt financier because of the self-serving behaviour of the agent that may have yielded power to debt-holders. In such instances, debt-holders become better protected than shareholders as the debt covenants restrict some operational aspects of the company, and places limitations on the riskiness of projects to be embarked on, as well as decisions and behaviour of agents (Jensen & Meckling, 1976). However, Gompers *et al.*, (2003) suggested that shareholders consciously accept restrictions on their voting rights and power to control the agent in exchange for their wealth maximisation. As such, the principal may become acquiescent to the unethical and illegal behaviour of the agent.

Maskara *et al.* (2012) argue that the CG system introduced to deal with the misaligned interests of the principal and agent has had aforementioned consequences which have been detrimental to the shareholders and economies. Kirkpatrick (2009) further

asserted that the 2008 financial crisis which the world economy is still smarting from (at least nine years later) can be attributed to failures in CG interactions. He added that the possible causes of the CG failures were a result of the poor governance procedures, rather than inadequate computer models, risk management being seen as a task and not being enterprise-based, boards approving company strategies without appropriate monitoring systems in place, and remuneration systems which were not linked to the company strategy, risk appetite as well as long-term interests of the company. Kirkpatrick (2009) presented a compelling argument that weaknesses in CG can be perfected by a mismatch in the executive incentive system, risk management[6] and internal control systems. Alternatively, according to Kirkpatrick (2009), these mismatches may cause weaknesses in CG systems.

The ensuing discussion zeroed-in on the literature that focuses on the P-A relationships, with the emphasis on the separation of ownership and control, executive compensation, rewarding systems, information asymmetry and other agents' behaviour that cause or exacerbate P-A problems. The mapping of the literature discussion and research themes is as follows:

- Theme I: addressed by literature on separation of ownership and control in Section 2.5.
- Theme II: addressed by literature on executive compensation, rewarding systems and agency costs in Sections 2.6 and 2.7.
- Theme III: addressed by literature on separation of ownership and control, executive compensation and rewarding systems. The separation of ownership and control, executive compensation and rewarding systems have socio-economic costs or consequences considered in this theme.
- Theme IV: addressed by literature discussed in Section 2.8.

[6] The study considered the behavioural and CG aspects of risk management. The behavioural aspect of risk management considers the risk the company finds itself exposed to due to the behaviour of the agent and principal. The CG aspect of risk management considers how the information generated by risk management systems/models is transmitted or used by or within the company's governance structures.

2.5 SEPARATION OF OWNERSHIP AND CONTROL

A separation exists between shareholders and those that direct or manage (executives) the companies on a day-to-day basis.

2.5.1 Reasons for the separation

Those that direct or manage the companies on a daily basis are compensated for their expertise and time. Fama (1980) suggested the following possible reasons for the separation:

- Shareholders and those who manage companies each have a market for their services. For example, the shareholder has capital markets for his investment which she/he chooses to invest in company A instead of company B. He/she can buy shares in any of the listed companies and become a shareholder depending on the preferred risk-return trade off. Similarly, there is a market for the expertise and time of the executives who run the companies. These would require a market-related compensation and they may be susceptible to following their personal interests other than the interests of the shareholders who hire them.
- Shareholders and executives are each able to explore alternative opportunities. For example, shareholders can diversify their portfolios, transfer funds from one share to another at relatively low transaction costs, and sell off their shareholding in a company as a way of showing their dissatisfaction with the decisions taken by the executives. Executives also have alternative opportunities in terms of which companies to join and they are rewarded appropriately for their expertise and time.
- Both the shareholder and executive have motivations that will influence their behaviour. The shareholder will be motivated to own shares in company A if she/he envisages that there is greater potential for a maximised return. On the other hand, the executive might be motivated by incentives, potential ownership through share schemes offered by the company, empire under his control, other private benefits, and so on. However, the agent may deviate from the contractual arrangements, especially in circumstances where the deviation results in greater personal wealth than when he abides by the contractual arrangements. Situations where contractual deviations are more rewarding for the agent result in the agent engaging in risky behaviour that goes beyond the principal's risk preferences, although at times the principal may be complicit during periods of excess returns.

Demsetz and Lehn (1985) further highlighted the determinants of the ownership structure as:

- Value-maximising the size of the company: The aforesaid authors refer to this factor as the risk-neutral effect of the size of the company on ownership. The authors maintain that the higher price of shareholding should minimise shareholding concentration. In effect, the increased cost of providing share capital to the company will discourage the ownership of large blocks of shares which could result in concentrated ownership. The optimal size that allows the company to compete at a level that maximises value for shareholders is attained when there is a greater diffusion of ownership.
- Control potential: The authors argue that it is the profit potential which results in the principal exercising more effective control in the company. Furthermore, the authors assert that the principal can achieve wealth gains by effectively monitoring the agent's performance. However, monitoring the agent's performance has cost implications for the principal (which will be discussed later as part of monitoring costs). The authors suggest that the more unstable the company's operating environment is, the more the principal should implement and maintain tighter controls, and the costlier it becomes. That is, the more unstable the environment, the more there should be concentrated ownership of the company. This analogy suggests that the governance structures should be stronger and more concentrated in unstable or volatile environments as well as in unstable companies.
- Systematic regulation: The authors state that this restricts the options available to the principal and in the process erodes the control potential discussed above.

Demsetz and Lehn (1985) and Bhabra and Luu (2015) maintained that the main effect of regulation can be called 'subsidised monitoring', where rules and regulations monitor the actions of the agent. Non-compliant management will be disciplined, however, the law increases risk and exposes the agent to the risk of being dismissed. Moreover, the authors argued that the primary impact of regulation is that it may reduce the concentration of ownership in favour of a greater diffusion of ownership, especially in key economic sectors and industries, some of which are highly regulated. On the other hand, the spread of ownership tends to have consequences that pose

constraints on the power of the shareholder against the agent. Demsetz and Lehn (1985) argued that the spread of ownership results in the agent sacrificing the wealth of the principal to serve his/her own interest.

2.5.2 The role of the executive (agent)

Whatever separation and ownership structures exist, even beyond those suggested by Fama (1980) and Demsetz and Lehn (1985), the shareholder, as the principal, will hire an executive, as an agent, to act on his/her behalf and to maximise the principal's interest. This arrangement between the principal and agent is what is known as the P- A relationship.

There are inherent problems that emanate from conflicting interests between the two parties. Mallin (2010) stated that the potential problems arising from P-A relationships were identified by Smith as long ago as 1838. Mallin (2010) referred to the work of Smith (1838) who posited that directors (agents) who are charged with governance manage other people's (shareholders'/debt holders') funds and cannot be expected to manage it as vigilantly as their own. Consequently, the separation between those that own and those who control companies inherently creates conflicting interests. Moreover, Fama and Jensen (1983) argued that there is a separation that exists between decision management (which includes initiation and implementation of decisions) and decision control (which includes decision ratification and monitoring). Fama and Jensen (1983) emphasised that control of P-A problems through the decision process is important because of the separation that exists between ownership and management.

The realities of the separation between shareholders (principals) and management (agents) as discussed by Berle and Means (1932) is also acknowledged by Mallin (2010), Demsetz and Lehn (1985) and Dühnfort *et al.* (2008) as being essential in explaining the relationships that exist between companies and shareholders. Mallin (2010) went further by stating that the work by Berle and Means (1932) has had a significant influence in shaping the thinking around how companies are owned, managed and controlled.

Balc *et al.* (2013) expanded further on the separation between shareholders and management when they highlighted that the concept of an 'absent' shareholder became prevalent after the Second World War. The result was that management

(agents) were leading companies and shareholders were content to receive dividends without taking part in the operations of the business. Boards of directors were then put in place to oversee the interests of the shareholders. Fama and Jensen (1983) sustained the argument by stating that the boards had the power to employ, dismiss and compensate the top decision executives and to ratify and monitor important decisions taken by these executives. The boards are to exercise control rights over the top decision executives to ensure decision management and control (Fama & Jensen, 1983).

Balc *et al.* (2013) highlighted that in the 70s and 80s there were a few boards that had independent directors that were dominated by the CEO and the chairperson of the board which led to fractures in the decision-control and monitoring systems. In addition, Fama and Jensen (1983) suggested that the other source of dominance by the agent, apart from the expertise and time discussed above, is the agent's ability to manipulate the company's decision-control and monitoring systems.

To mitigate the possible effects on the principal's wealth due to the agent manipulating the decision-control and monitoring system, Fama and Jensen (1983) argued that the principal could put in place a multi-member board that would make it difficult for agents within the company to collude to the detriment of the principal's wealth. Fama (1980) sustained that the absence of a multi-member board may result in agents engaging in collusive behaviour and the expropriation of the principal's wealth. To lower the chances of collusive behaviour and expropriation of the principal's wealth, as well as to enhance the efficacy of the board as a low-cost internal governance mechanism, Fama (1980) proposed that a company should have non-executive board members (outside directors). These directors would be able to curtail collusion and the expropriation of wealth that might take place at industry, as well as company level.

The separation of ownership and control has resulted in the concept of the 'absent' shareholder (Balc *et al.*, 2013), as highlighted above. This absence causes an information asymmetry, where managers (agents) have more information about the business. The agents may be highly tempted to use the information at their disposal to their full advantage and to the detriment of the principal. To limit the impact of information asymmetry, the board may seek information on decision-initiation and implementation from both the lower levels and the top executives of the company by incorporating executives into the board (Fama & Jensen, 1983). On the other hand,

Fama and Jensen (1983) suggested that the top executives on the board can use the board platform to peddle their agendas, as they may prevent information flow to the board. Moreover, executives may make it difficult or costly to dismiss them as they may influence the MOI's requirements to require a certain majority to dismiss them.

2.5.3 Agency costs

To keep the goals of the shareholders (principals) aligned to those of executives (agents), the principal would incur 'agency costs' which Meinhövel (1999) differentiated into monitoring costs, bonding costs and residual loss.

Hoskisson, Castleton and Withers (2009) submitted that the intensive monitoring of management may transfer the risks of running the business to the executives, who need to be paid higher packages to reward them for the high employment risks taken as key individuals in the company. This is the high-risk, high-return attitude of the agent, while the principal will seek to incur the least amount of agency costs.

The agency costs are regarded by Jensen and Meckling (1976) as unavoidable due to the separation of ownership or P-A relationship. Jensen and Meckling (1976) suggested that the enormity of the agency costs is determined by:

- Tastes of the agent/executive;
- Ease with which they can exercise their own preferences, rather than value maximisation in decision-making;
- Costs of monitoring and bonding activities;
- Costs of measuring and evaluating the agent's performance;
- Costs of devising ways of compensating the agent in a manner commensurate with the shareholder's value maximisation;
- Costs of devising and enforcing policies and procedures that guide the agent's behaviour; and
- Competition or demand for the agent's expertise, and the availability of his/her skill in the market may make his/her services cheaper or more expensive.

The aforesaid determinants of the magnitude of agency costs can be viewed as the costs of conflicting interests that exist between the principal and agent, as well as a

means of transferring wealth from the principal to the agent. In reality, agency costs are also the real costs incurred by the principal (Jensen & Meckling, 1976).

2.5.4 The 'absent' shareholder (principal)

In examining the aforementioned 'absent' shareholder concept, it can be said that it provides a breeding ground for shareholder value-destroying behaviour, which Fama (1980) stated would only be detected later due to the assumption that most shareholders tended to diversify their portfolio holdings and would normally be distant from internal details of each investment. The assumption that the principals (shareholders) are well diversified, hence their absence, may result in excessive corporate salaries that cause great company losses due to the number of mergers and acquisitions designed to justify salaries earned by executives (Balc *et al.*, 2013). Balc *et al.* (2013) further maintained that the acquisition of shares, and the mergers and acquisitions did not improve the performance of companies studied but were actually motivated to increase the advantages of companies that were overvalued.

In the same analogy of the 'absent' principal, in South Africa, Murray & Roberts is a case in point where the principal denied knowledge of the anti-competitive behaviour of the agent (executive). Henry Laas, the CEO of Murray & Roberts was quoted by the *Business Times* (July 2013) denying that the board and shareholders were aware of the management's collusive behaviour. The denial by Murray & Roberts CEO is similar to the findings cited by Bris (2010) on Lehman Brothers where the examiner's report stated that the board was not aware of Lehman's Repo 105 programme and transactions. The self-serving behaviour highlighted by Bebchuk and Fried (2006) is revealed by some South African companies, for example, in the case of Fidentia boss, J. Arthur Brown who was the CEO when the R1,4 billion fund meant to support the widows and orphans of mine workers that his company administered, could not be accounted for or disappeared (Davis, 2013). Another example is that of CIPLA Medpro as reported in the *Business Times* (June 2013) where the CEO, CFO and Human resources director were allegedly investigated by the board for paying themselves unauthorised pay increases and bonuses among other charges. This incident resulted in the external auditors Mazars, being replaced by KPMG in December 2012 (Maake & Masote, 2013).

The above cited South African cases of Murray & Roberts, Fidentia and CIPLA are possible red flags that point to the deep entrenchment of P-A and governance problems. The cases ameliorate the possible demise of these companies as can be seen in the case of Fidentia's liquidation.

2.5.5 In conclusion

The discussions above covered the possible reasons for the existence of separation of ownership and control (Fama, 1980), the determinants of the ownership structure as highlighted by Demsetz and Lehn (1985), issues about decision management and control, as well as board structure (Fama & Jensen, 1983), the concept of the 'absent' shareholder, and how information asymmetry arises (Balc *et al.*, 2013), the determinants of the enormity of the agency costs (Jensen & Meckling, 1976), among other literature aspects and problems that arise due to the separation of ownership and control.

In considering the above, the study examined the agent's behaviour in the absence of the principal and the possible costs to the principal arising from potential conflicting interests. In establishing the costs of the agent's behaviour, the study tried to ascertain the socio-economic impact of such costs, especially when things go wrong.

The separation of ownership and control is possibly the foremost variable that precedes the other variables (temporal order variables as per Creswell, 2014). Hence, the study considered the CG principles to be anchored in the goal of P-A theory, which is to find governance structures and control mechanisms that minimise the problems created by the separation of ownership and control or management.

2.6 EXECUTIVE COMPENSATION

The compensation of executives is a controversial topic (Edmans & Gabaix, 2009). However, CG also incorporates issues around executive (agent) compensation and therefore warrants inclusion in this research. Also, this study took on the challenge by Kirkpatrick (2009) who recommended that there be more scrutiny on executive compensation structures and their implications on CG. Taking on the challenge, this study was interested in understanding compensation structures, because in many cases they are used as CG mechanisms and have consequences that need to be examined to establish the impact on the principal's wealth, the company, the economy

and effectiveness of the governance codes. The effectiveness of boards needs further granulated scrutiny (Kumar & Zattoni, 2014a) in the face of the impact of executive compensation on CG.

The theory suggests that executive compensation is designed and set by the board to seek a way to maximise shareholder value by formulating and signing contracts that attract talented executives, rewarding them for their efforts in exploiting growth opportunities, minimising costs and rejecting wasteful projects (Edmans & Gabaix, 2009). The aforementioned authors further asserted that empirical evidence suggests inconsistencies with theory, citing examples from the United States (US) where the compensation of executives has substantially increased at a faster pace than company performance and average salaries. Edmans and Gabaix (2009) provided what seemed to be plausible explanations of the driving forces behind the faster increases in executive compensation. These driving forces are:

- The size of the company and growth in the size of the company.
- The transferability of human capital which increases the executive's external options.
- The possibility of job switching which entices the executive to engage in short-term projects (at the expense of long-term projects), which when successfully implemented will increase the executive's marketability and rise in compensation.
- An increase in multinational companies entering developing economies and attracting talented executives at a lower cost to the foreign company, although the cost will be higher in the developing economy given the weaker exchange rates.
- Complex company structures and tight CG systems that increase the pressure on the executive and increase the risk of the executive being fired. An increase in the risk of being fired demands a higher compensation, namely, the high risk–high return assumption.
- To boost market perception of the company, based on the assumption that higher compensation equals good performance.

Despite the seeming plausibility of the driving forces in the rise of executive compensation, Edmans and Gabaix (2009) mentioned that there appeared to be a very small relationship between the executive's wealth and the performance of the

company, and/ or the insensitivity of the executive's compensation to company performance, especially in larger companies. Moreover, Bebchuk and Fried (2004) suggested that executives endeavour to maximise their own wealth through compensation which they set for themselves. This executive-acquired wealth appears to have a weak relationship with company performance, resulting in a major outcry for CG reforms that convey more shareholder power on executive compensation (Edmans & Gabaix, 2009).

The phenomenon discussed above justified the inclusion of executive compensation (as a variable) in this study of FTSE/JSE Top40 listed companies in South Africa, as well as revealing its relationship with CG. Further and pertinent to this study was the fact that executive compensation may be structured in such a way that it entices the executive to hedge a component of his share-compensation against market risk and to favour projects that hedge his/her compensation position (Edmans & Gabaix, 2009), thus compromising governance interactions. Kirkpatrick (2009) presented a very strong assertion that remuneration and incentive systems cause the development of untenable positions on the company's balance sheet. In such instances, there may be excessive aggregate risk in the economy (Edmans & Gabaix, 2009) resulting in unforeseen socio-economic consequences, therefore they were included for examination in the study.

One of the contributing factors to the P-A problems may include the agent's compensation structure (Shah, 2014). Munzig (2003) further mentioned that executive compensation and attempts to align shareholder-executive interests are part of CG, and as such, are directly linked to agency problems. Shah (2014) agreed with this assumption by stating that when there was a divergence between the principal's and agent's interests and monitoring was difficult, agents may act in their own interests which did not necessarily reflect that of the principal. As a result, in governance systems, the implications are that the shareholder will bear heavy monitoring costs, as well as the high costs of enforcing the negotiated contracts to attempt to maximise value on the invested capital. Therefore, the structuring of the contract negotiated between the principal and agent is important, as the agent may act contrary to his/her fiduciary responsibilities.

Shah (2014) cited the survey of 250 financial services industry role-players on Wall Street which was carried out by Sorkin (2013). This survey discovered that 26% of the

participants believed that compensation and bonus structures within their companies were major reasons why employees compromised ethical standards and legislative violations. The survey further pointed out that 17% of participants believed that leaders chose to ignore, supposedly 'top performers' when they were violating ethics and the law. Moreover, 15% of the participants suggested that the leaders will not report such violations. The survey inferred that where conflicting interests existed, the agent had both the incentive and capacity to act undetected, and this situation may have been ongoing for a long time. A case in point, where the agent had the incentive and capacity to act undetected, is that of Olympus, a Japanese camera maker, which hid losses for more than 20 years (Hawkes & Goodley, 2011). This points to the fact that weaknesses in board oversight systems can impact the efficacy of CG codes.

The costs of trying to attain shareholder–executive goal congruence may include, for example, profit-related/ economic value-added pays, attractive share offers to executives, and share option schemes. Balc *et al.* (2013) pointed out that excessive salaries and generous expenses have been the result of trying to align the agent's objectives, and these have been incorporated in the majority of companies as part of executive compensation. These excessive compensations have resulted in an ever-increasing compensation gap, to the extent that executive perks are often seen as 'obscene'. The situation is further compounded by the diversity of incentive structures that may exist within companies, and among executives, and which result in more difficulties in monitoring the agent (Shah, 2014, citing the work of Laffont & Martimort, 2002).

The various incentive structures within and among executives may stem from the compensation negotiations with the appointments of new executives, which then result in the distortions of the existing compensation structures. A case in point is that of Prudential, a UK company that hired a new executive and agreed to pay £513 750 towards the stamp duty for the purchase of his personal house and a further interest of £56 604 per annum for a period of three years (Pratley, 2016). These benefits were not extended to his predecessor or other executives.

This goes to the heart of contract theory which asks two sets of questions between the principal and agent: questions before the contract is agreed upon, and questions after the agreement has been reached. For example, beforehand questions are asked

about acceptable optimal behaviour, and after the agreement has been reached, questions are asked about actions caused by misaligned incentives like the agent shirking duties (Shah, 2014). This study mainly considered the agent's behaviour which may emanate from conflicting incentives, and private information that may be acquired by the agent after the contract has been agreed upon. Moreover, this study cogitates on issues raised by Shah (2014) around adverse selection (problems arising from hidden knowledge) and moral hazards (problems arising from hidden actions) by the agent. This study does not explicitly distinguish between adverse selection and moral hazards but sought to investigate subtle issues around them which may be the cause of P-A problems that weaken the CG interactions.

Furthermore, without delving deeply into the constructs of contract theories which study the aspects of how individuals and companies generate and develop legal contracts or agreements, the research conceded that contract theory may be paramount to the issues around executive compensation. However, the researcher considered certain aspects of contract theory that analyse how the contracts between the principal and agent may influence decisions under certain environmental conditions and in the presence of information asymmetry as well as governance structures. Consideration was also given to the notion that contracts can be incentivised so that the principal can achieve certain outcomes which may result in moral hazards to the agent (that is, the agent does not sign the contract in good faith). This complicates contracts and places more of burden on compensation contracts in the real world than that suggested by contract theories (Lambert, 2001).

Bebchuk, Fried and Walker (2002) and Bertrand and Mullainathan (2001) maintained that the modern-day executive pay schemes are instruments for 'rent-extraction' from principals. Scholars, such as Colvin (2001), have gone further to label these executive pay schemes as 'highway robbery'. The 'rent-extraction' and 'highway robbery' are accelerated by the principal's 'short-termism', especially when they base their investment decisions on the short-term performance evaluation of the agent (Shah, 2014). Shah (2014) asserted that 'short-termism' is broadly acceptable as an aspect of human nature in investing, but the author cited Rappaport (2005) who described short-termism as 'a disease' and its carrier is the obsession with short-term 'earnings'. Shah (2014) argued that earnings have limited informational power for the principal, as the agent can manage the reported earnings, and current earnings are just a small

portion of a company's future life-long earnings. Alas, in most instances the agent's compensation is based on current company earnings.

Shah (2014) stated that short-termism has its roots in a number of established psychological effects which include recency (the focus on recent-past experiences) and saliency (overweighting an issue at hand and underweighting an issue which is distant in thought). Thus, the high demand for short-term performance and the associated bonus, or lack thereof, placed on the agent by the principal (recency) results in the agent overweighting short-term performance at the expense of the future good of the company which may be underweighted by the agent. In addition, Shah (2014) cited the work of Kay (2012) who stated that the principal causes of short-termism are the decrease in trust and misalignment of incentives in the share-investment arena.

This short-term performance focus results in the search for immediate gratification for both the principal (in investment returns) and agent (in compensation), with consequences on the long-term value of the company. An example where the long-term value was sacrificed for short-term performance is provided by Shah (2014) who cited Crotty (2009) who found out that AIG's Financial Products division paid $220 million in bonuses for the year to its employees, while the company lost $40.5 billion in 2008. Further examples are cited by Schumpeter (2016) who highlighted the £3.7 billion loss made by Anglo American whilst the executive was paid a bonus of almost £1 million in 2015. In such cases, the principal becomes complicit in the agent's company-value-destroying behaviour.

Short-termism by the principal has consequences for the CG interactions. The impact and consequences may be that the agent will sacrifice the long-term interests of the company for speculative gains which fuel the misalignment of interests. Hence, there will be an increase in excessive short-term speculative behaviour which increases market volatility or risk (Edmans & Gabaix, 2009), risk-taking by the agent, complexity in compensation structures, and which may entice the agent to neglect the long-term best interest of the principal (Shah, 2014). This brings into focus the whole concept of shareholder value maximisation by reflecting on whether the agent should be overly concerned with short-term period investors or whether the agent should be mainly concerned with continuing shareholders who hold company shares for a set period of time, for example, a minimum of five years (Rappaport, 2005).

Gompers *et al.*[7] (2003) upheld the view that modern-day complex executive pay schemes are problematic, as they make it difficult to fire or change the executives of companies that have a number of governance provisions. This is because the provisions and managerial entrenchments limit the rights of a shareholder or other stakeholders, and hence, increase the control or influence of the executives. In consequence, the independence of the board committees and its monitoring capacity is compromised (Linck, Netter & Yang, 2008). The end result is that executives may end up extracting personal benefits at the expense of shareholders (principals), leading to a higher degree of agency costs and decline in the value of the company. These personal benefits are significant, and in some instances, do not reflect the magnitude of their impact on the company's current and future value. Crotty, (2009) cited by Shah (2014), highlighted that Merrill Lynch's executives received $240 million over an eleven-year period (1997-2008), while the company lost all the earnings of that period in two years (2007 and 2008). The situation is exacerbated by the fact that the agent may employ private information to further his/her interests at the expense of the principal (Shah, 2014 citing Crotty, 2009).

Reflecting back to the modern-day complex executive pay schemes as raised by Gompers *et al.* (2003), Shah (2014) cited the 2006 research by Kirkpatrick (2009) which revealed that the executive compensation structures of European banks comprised 24% in fixed salary, 36% in cash bonuses and 40% in long-term benefits (which were not specified). The compensation structure in European banks varied significantly from that of six US banks, which Kirkpatrick (2009) found, only paid 4-6% in salary and the balance in share compensation. According to Shah (2014), a higher percentage in share compensation entices the agent to take excessive risks, to make excess returns, manage earnings and engage in fraudulent financial reporting, all designed to keep the share price high. This may suggest a possible explanation for the scandal at Olympus (mentioned earlier) which hid losses for more than 20 years (Hawkes & Goodley, 2011).

The high compensation levels through shares and options can be viewed as a way of transferring shareholder wealth to the executive. The consequences of the modern-

[7] Gompers, Ishii and Metrick (2003) developed the index known as the GIM which will be discussed at a later stage.

day complex executive pay schemes, which may be dominated by share compensation, are that agents may fail (perhaps deliberately) to put in place, and/ or override the systems that inform the principals of excessive risks they might be taking to keep the share prices high. In addition, the agent may be taking strategic decisions (which may be approved by the principal) that do not have appropriate control and monitoring systems in place (Kirkpatrick, 2009). This situation creates and intensifies problems associated with information asymmetry between the principal and the agent, as well as rendering existing CG systems ineffective.

Kirkpatrick (2009) asserted that in the pre-2008 financial crisis period, board members failed in their governance responsibilities of representing shareholders, in detecting excessive risks taken by agents and in implementing monitoring systems to keep the agents in check. The 2008 financial crisis was a consequence of P-A and CG problems (Kirkpatrick, 2009) which resulted in financial bail-outs to avoid a total collapse of the global financial system. Thus, by nature, the financial bail-outs were a consequence of the problems in P-A and CG interactions between the principal and the agent. Although outside the scope of this study, it's worth mentioning that the bail-outs need to be examined from the socio-economic perspective, that is, their likely impact to the economy. Government 'printing' money (or 'quantitative easing' which refers to the injection of new money into the money supply equation by Central Banks), and diverting funds that could have been used for social upliftment to preserve companies that would have had a severe impact on the economy if they collapsed.

According to Edmans and Gabaix (2009), citing Bebchuk and Fried (2004), executive compensation is set by the executives themselves. Furthermore, Bebchuk *et al.* (2006) have argued that actions to monitor and reward management have realised limited success in reducing and governing the executive's self-serving behaviour. The said authors mentioned that executive rewarding systems are unreasonably high in some instances, and have spiked much more sharply than the performance of the companies (as previously discussed). In proving the existence of excessive rewarding systems, Mergence Investment Managers (2014), cited by Pickworth (2014), observed in a survey report that, on average, the CEO of a JSE-listed company earned more than 300 times what an average South African employee earned in 2013 (the year previous to the report). The report also stated that in South Africa, Shoprite had the highest compensation gap of 725 times. In the US, Guillén (2000) recorded that the

compensation gap was 419 times in 1999, up from 44 times in 1965 (citing O'Sullivan, 1999). Meanwhile, the highest paid CEO in the UK earned 1 374 times more than the average salary earned by a Reckitt Benckiser employee in 2008 (Padgett, 2012).

Massie, Collier and Crotty (2014) highlighted the seriousness of the compensation gap that translates to some CEOs earning approximately R55 000 per day (assuming a 365-day year), which is what most low-paid workers earn in a year in many South African industries. In some cases, the compensation structure includes share options which, when exercised, can give the agent (executive) an additional sizable stake in the business. For example, Crotty (2014) noted that share options granted to the CEOs of African Rainbow Minerals and Sanlam in 2013 gave them shares worth R71.8 million and R41 million respectively. An accumulation and exercise of these share options over time will result in the executive being among the top largest shareholders in a company, thus putting them in a serious conflict of interest situation. Massie *et al.* (2014) further highlighted how share options can significantly widen the compensation gap by using the Naspers example, where the company's CEO was awarded 12 million options which vested over his five-year contract period. Although the Naspers CEO was not being paid a salary and bonuses, the pre-tax face-value of these options vested in 2012 at a value in excess of R1 billion, even though he did not exercise the options then. The value of the CEO's options will increase as long as the share price increases.

Farmer and Winter (1986) argued that offering management share option schemes are ineffective in resolving the agency problem. Farmer and Winter (1986) demonstrated that share options can only be effective if the outside stakeholder's position (long and short position on the share) is equivalent to risk-free debt. Nevertheless, the proponents of share-based compensation argue that compensating the agent with shares is forward-looking, as the share price represents the present value of future cash flows, based on publicly available information (Lambert, 2001). The forward-looking nature of share-compensation benefits the principal because it addresses the concerns around the agent's decision-making horizon (Lambert, 2001). That is, the agent is incentivised to make long-term decisions that are good for the principal as well as his/her wealth creation.

Lambert (2001), however, presented a counter-argument by Barlcay, Gode and Kothari (2000) who stated that the forward-looking nature of share-compensation can

be detrimental to the principal. Barclay *et al.* (2000), as cited by Lambert (2001), asserted that share prices echo market expectations and possible future decisions, thus compensating the agent, and based on that, it is tantamount to rewarding the agent before the delivery of results. The disadvantage is to the principal should there be a contract dispute and the agent leaves the company as there is no provision for the agent to reimburse the compensation made based on expected delivery. Edmans and Gabaix (2009) added to the argument by stating that the risk-aversion trait of an agent may result in him/her preferring options to shares, as options limit any down-side risk. This seems to be the case with the Naspers CEO's case previously cited.

Maskara *et al.* (2012) argued that the performance bonuses paid to agents (executives) to try and achieve goal congruence with shareholders and to diminish agency problems may create complications for the principal. They maintained that by paying performance bonuses, as is current common practice, the principal effectively grants the agent a call option on the performance of the company. Thus, the agent shares profit with the principal, yet there is no sharing of losses with the principal. The authors further argued that this method of mitigating agency problems creates an unruly incentive scheme that results in the agent taking excessive risk. Maskara *et al.* (2012) posited that this performance call option given to the agent is what enticed Nick Leeson who was held responsible for the demise of Barings Bank in 1995. Similarly, in 2008, Jerome Kerviel cost the French bank, Societe Generale losses that amounted to $7 billion. In both cases they took derivative positions that exceeded their approved trading limits and concealed their unauthorised positions. Edmans and Gabaix (2009) elaborated further on the subject and pointed out that most executives have severance packages that reward them for failing or poor performance that results in dismissal. They point out that, even though the severance package may be designed to protect the agent from the principal's unfair treatment, it may be abused by the agent.

The widening compensation gaps caused by huge executive salaries, share options and other complex executive incentive schemes, are likely to cause socio-economic problems in South Africa where the greater proportion of the population live below the poverty datum line and are paid meagre wages, as well as trade unions that have significant influence in economic policies. Jones (2016) and PwC (2013) noted that attention on widening compensation gap is gaining impetus both locally and globally, with the risk of regulatory intervention which may result in undesired consequences.

Another phenomenon related to executive compensation and agency costs that are worth considering is a discovery made by a study carried out in Germany by Elston and Goldberg (2003) that revealed that where there is greater concentration of share ownership, there is less capacity for the executive to extract higher compensation. For this reason, the CG dimensions on executive remuneration need to be compatible with the ownership structure, interests and risk-appetite of the principal (Kirkpatrick, 2009).

Kirkpatrick (2009) cited KPMG (2008) which stated that boards and their audit committees need to improve their effectiveness in addressing risks exposures driven by the executive compensation structures. More so, at a time when the 2008 financial crisis exposed how managers could pocket millions, while the shareholders and economy are left to pick up the pieces, as well as the amount of public anger which was provoked by the widening inequalities worsened by huge pay-gaps (Schumpeter, 2016). This is critical, especially in South Africa's economy where the public perceives the executive pay as excessive. As a result, the study examined the interaction between executive compensation and other monitoring costs in relation to the occurrence, extent and socio-economic consequences of the P-A and CG problems.

2.7 REWARDING SYSTEMS

Citing some of the world's biggest and well-known corporate failures, Kirkpatrick (2009) suggested that although no absolute causal relationship between the failures and CG deficiencies can be found, weaknesses in governance ameliorated the practices that caused poor performance. Bebchuk and Fried (2004) accentuated the existence of significant flaws in the compensation systems which are injurious to the principal, and might even encourage practices that exacerbate inequalities between the executives and other employees.

Mallin (2010) ruminated on the inequities between how the agent is rewarded and the underperformance of the companies they direct. Mallin (2010) concluded that it is the principal who incurs huge losses, sometimes even losing life savings, while employees are seriously disadvantaged as they may end up with shorter working weeks, lower salaries or retrenchments as the company tries to save costs. While these and other aspects of executive compensation were discussed in the previous section, it is also necessary to consider fair rewarding systems that ensure that there is goal congruence between the shareholders and executives.

There has to be a performance measurement and rewarding system that will not incentivise both the principal and the agent to engage in value-destroying behaviours, such as participating in creative accounting, choosing the timing of announcements to suit their purposes, issuing misleading earnings forecasts, increasing dividends or agent salaries and bonuses, and other behaviours that may result in similar crises that the global economy is currently battling with.

Schumpeter (2016) noted that although companies are supposedly making rewarding systems conditional on performance, some complexities still exist in the alignment of compensation and performance. Furthermore, Schumpeter (2016) asserted that setting comprehensive performance targets for the executive may result in distorted behaviour by the executives, as well as tipping the company towards failure (citing Valeant, a Canadian-based drug-speciality company that ended up setting ambitious growth targets which resulted in 'improper' financial reporting in 2014 and 2015 (Steele, Mcnish & Benoit, 2016)).

2.7.1 Principles of a rewarding system

Louw and Venter (2013) advocated for a strategically aligned rewarding system that embeds the following principles that are:

- Internally equitable, acceptable to employees and that monitor the gap between the highest and lowest paid workers.
- Market-related to retain skills and experienced staff.
- Have a healthy balance between financial and non-financial rewards.
- Linked to output and overall company performance.
- Have a low time gap between the performance period and when the reward is paid out.
- Taking diversity of the workforce into account to ensure that it is suitable to the local environment.
- Not rewarding below par and poor performance.

These principles of a rewarding system should align the executive's compensation, risk, and the company strategy in such a way that they encourage performance, and retain skill and experience, while ensuring that the agent does not take excessive risk

in his/her performance. Mallin (2010) further highlighted and discussed the remuneration guidelines of the Association of British Insurers which state that compensation packages should be balanced between fixed and variable pay; performance-based pay should be aligned to the business strategy and objectives; pay packages should consider the conditions within the company, the economy and the size and complexity of the business; and everything should be aligned to the long-term interests of the principal.

2.7.2 Short-termism and rewarding systems

The rewarding system should not be engrossed in short-term earnings that Rappaport (2005) calls 'short-termism' which he refers to as a disease that is transmitted by an obsession with earnings and tracking error (that is, how close are the portfolio returns to the index benchmark). Short-termism by the agent is exacerbated by his/her need to build or protect his/her reputation which is measured or supported by an increase in the company's share price, and hence the rewarding system becomes focused on short-term measures like quarterly earnings (Rappaport, 2005). To further fuel short-termism, the principal (in this case collective market investors) has tempted the agent by demanding and rewarding short-term results to feed his/her short holding period and speculative habits. These short holding periods and speculative habits were confirmed by Rappaport (2005) who revealed that the holding period for investors has become shorter. He asserted that in the mid-1960s, the average holding period for an investor was approximately seven years, while the current holding period is less than a year for professionally managed investments. It is this reduction in the holding period that has enticed the agent to focus on acceptable short-term performance measures like earnings (Rappaport, 2005).

Coupled with shorter holding periods, is the belief that by meeting the earnings expectations, the agent influences an increase in share prices, provides assurance to outside stakeholders and improves the reputation of the company (Rappaport, 2005). However, earnings as a performance measure have limitations as they are a combination of facts and assumptions that are made when financial reports are being prepared (Rappaport, 2005). Moreover, the agent is tempted to push for short-term performance as he/she may be compensated by, and hold shares which should increase in value to create wealth for him or herself. The result is that the agent becomes conflicted and his/her short-term focus compromises long-term shareholder

value by delaying or foregoing value-creating operating, investment and financing decisions, as well as exploiting accounting discretion that permits certain transactions to be recognised in a way that conceals the true nature of the financial transactions.

To support the assertion that the agent's short-term focus compromises long-term shareholder value, Rappaport (2005) cited the survey by Graham, Harvey and Rajgopal (2004) that revealed that 80% of the respondents (400 financial executives were surveyed) would forgo or delay value-creating investments, or delay spending on research and development, advertising and hiring so that they could meet short-term earnings expectations. More boldly, Rappaport (2005) declared that the greater impairment to good governance and long-term value creation for the principal is the obsession with earnings in the short-term. He raised more contention by stating that the four main reasons why the efficacy of share options is limited as a way of rewarding the agent in promoting long-term value maximisation for the principal are:

- Low performance targets (also identified by Allcock (2012));
- Very short holding periods or investment horizon;
- Underwater options (that is, a call option whose exercise price is higher than the market price or a put option whose exercise price is lower than the market price) undermine motivation and retention; and
- Options can entice risk-aversion or risk-taking.

The impact of rewarding systems that are based on short-term performance targets, as well as share options which vest in shorter periods, are that they fuel a rapid increase in share prices (creating a bubble), encourage executives to manage earnings, exercise their options quickly and cash out on their options (Rappaport, 2005).

Compounding the impact of the loss to the company and principal are the negotiated generous severance packages that almost resemble a 'pay for failure' which guarantees the agent a pay-out when he/she underperforms (Mallin, 2010). Mallin (2010) further concluded that the severance packages to departing executives reduce the value of the company and threaten the livelihood of other employees, and board governance has the responsibility to ensure that the greater good of the company is preserved.

Gomez-Mejia (1994) and Prendergast (1999) suggested that results-based incentive alignment systems should only be used when measured results are comprehensive, difficult to manipulate, and reveal the agents' behaviours as agreed by principals. The implementation of such systems will nullify the notion that pay is the major factor exhibiting a strong association with performance, especially where performance measurement lures executives (agents) to 'misbehave', manipulate financial information and window dress figures to perpetuate the agency and governance problems that may exist.

2.7.3 Rewarding systems should be simple

Schumpeter (2016) suggested that rewarding systems should be simpler and have no performance-based conditions, but should have restrictions on the selling of share options to encourage a focus on long-term performance. Unfortunately, empirical results by Padgett (2012) revealed that the most common rewarding systems for executives are complicated, and are inclined to measure performance based on profit, earnings per share growth (EPS), relative total shareholder return (TSR), and deferred bonuses, with a deferral period averaging three years (which is hardly long-term for value creation). Padgett (2012) further argued that rewarding systems based on the aforementioned can be manipulated by the agent through the accounting systems used to produce the financial information. She cited Enron as an example of how the bases of the rewarding systems can be manipulated by the agents in various capacities.

In light of the Enron example mentioned by Padgett (2012), Rappaport (2005) raised a pertinent point that should be entrenched in all CG systems with regards to executive compensation and rewarding systems. He stated that incentives offered to the agent should consider a trade-off between the desired performance levels that reward the principal for taking the equity risk and keeping the agent motivated at his/her level of expertise. Furthermore, Padgett (2012) cited Osterloh and Frey (2004) who advocated for an independent directors' rewarding system that paid a fixed compensation to reduce the incidences of self-serving decisions, and which ultimately resulted in strengthened CG systems.

Gordon (2002) also raised a defining point on the impact of the rewarding systems that tend to focus in the short-term. He presented an argument against strategies that

are said to justify improvements in the value of the company. Gordon (2002) stated that rewarding systems that involve factors such as share options, which are based on an improvement in company value, may tempt the executive to take drastic measures to reduce the company risk, and thus there is a risk of failure to achieve the agreed performance targets. The drastic measures that may be taken, for example, include the following: the company exiting certain markets, closing manufacturing or mining plants, redeploying assets, and other strategies that disrupt the livelihood of employees (Gordon, 2002; Pitelis & Clarke, 2004), local communities and other stakeholders, such as pension funds, that would have invested in the company. However, in improving performance, company value, and reducing company risk in such ways (factored in rewarding the executive), there are serious socio-economic consequences which are considered in Chapter 4.

2.8 EFFECTIVENESS OF THE CORPORATE GOVERNANCE CODES

In considering the seemingly ineffective practices that the principal may implement to monitor the agent, Conyon (2006) argued that, although the current monitoring systems are not completely effective, they are more necessary than ever, and need to be strictly enforced. The tight enforcement may be through increased number of independent outside stakeholder representations on boards of directors and board committees, as promoted by the so-called good CG systems, such as South Africa's King III and IV, the Sarbanes-Oxley Act of 2002 (US), the Combined Code (UK), and the listing requirements of most stock exchanges, including the JSE. However, McNulty *et al.* (2013) observed that after two decades of research and reforms, CG problems still exist, despite the increase in prescriptive codes and other forms of regulations that have been implemented for better governance.

An explanation for this phenomenon might be that the 'apply or explain' and 'apply and explain' basis upon which the governance codes, like the King III and King IV, respectively, are based (Mallin, 2010; Institute of Directors Southern Africa, 2009, 2016) have provided escape routes that permit agents to indulge in practices that weaken the effectiveness of the codes (Andres & Theissen, 2008; Arcot, Bruno & Faure-Grimaud, 2010), as long as they can 'explain' their rationale. Furthermore, the ability to explain the non-compliance deviations, combined with boards approving company strategies without implementing appropriate controls and monitoring

mechanisms that oversee risk exposures render CG codes ineffective (McNulty's *et al.*, 2013 argument augmented by Kirkpatrick, 2009).

The failure in the board oversight role erodes the effectiveness of governance codes to the extent that Bogle and Sullivan (2009) were cited by Shah (2014) as suggesting that governments should impose a tax on very short-term gains made by executives to curtail speculative trading. Blinder (2009), also cited by Shah (2014), suggested governments should implement interventions to curb compensation structures that result in the misalignment of interests. However, Blinder (2009) conceded that the project he was involved in and that had attempted to implement governmental interventions did not yield positive results as the boards reflected the interests of executives more, as opposed to interests of shareholders. Shah (2014) further pointed out that for the governance codes to be effective, the way in which non-executive board members are compensated needs to change so that their interests are aligned with those of the ultimate shareholders. It is a fact that a P-A relationship may also exist between the appointed non-executive board members and the ultimate shareholder whom they represent.

Weaknesses in the effectiveness of the governance codes are worsened by the related-party transactions (between non-executive board members and the company) as described by International Accounting Standard 24 (IAS 24, *Related Party Disclosures*). These related party transactions put the non-executive board members in a conflicted situation (Crotty, 2009, cited by Shah, 2014). Kirkpatrick (2009) went on to suggest that for the board and prescripts of governance codes to be effective in implementing higher standards of accountability, shareholders have to be active with regards to voting, and board members need to be educated on company risk issues, understand the company risk appetite and risk-adjusted company performance.

The risk and audit committees have to be independent and be constituted by people with technical financial skills, as well as solid business experience (Kirkpatrick, 2009). The technical financial experience among non-executive directors ensures that they understand the many dimensions contained in the information packs provided by the agent (Lambert, 2001).

Kirkpatrick (2009) further posited that weaknesses in CG may be embedded in the limited or poor understanding of the company's risk management methodologies by

the majority of board members. The author also presented a picture that revealed that the majority of the non-executive board members may have limited knowledge of the business, more so if they are members of technical committees with no or limited expertise when one considers the functional requirements of the committees. This has implications for the implementation and effectiveness of the prescripts of governance codes. In other words, the question can be asked: will the board understand the importance and requirements of the codes or they will simply disregard them because they are viewed as not important to the running of the business?

A counter-argument related to the notion that the board should be comprised of more independent people with technical financial skills and solid business experience (Kirkpatrick, 2009) was forwarded by Gordon (2002) who suggested that this would not have been effective in the case of Enron. Gordon (2002) pointed out that the Enron board had 14 members of which two were executive. These board members were astute professionals who had diverse skills and senior-level experience. However, Gordon (2002) stated that the board governance was ineffectual as the board members were compromised by the share option compensation granted to them. The high share option compensation was to attract highly qualified board members, but it compromised their independence, ability to question the executives, as well as resulting in subtle pressures on future board nominations (Gordon, 2002). Further compromises related to the independence of Enron's non-executive directors were uncovered through external networks with executives (Goh and Gupta, 2016) which Gordon (2002) termed 'soft-conflicts', and included the company making financial contributions to charitable organisations where board members were patrons.

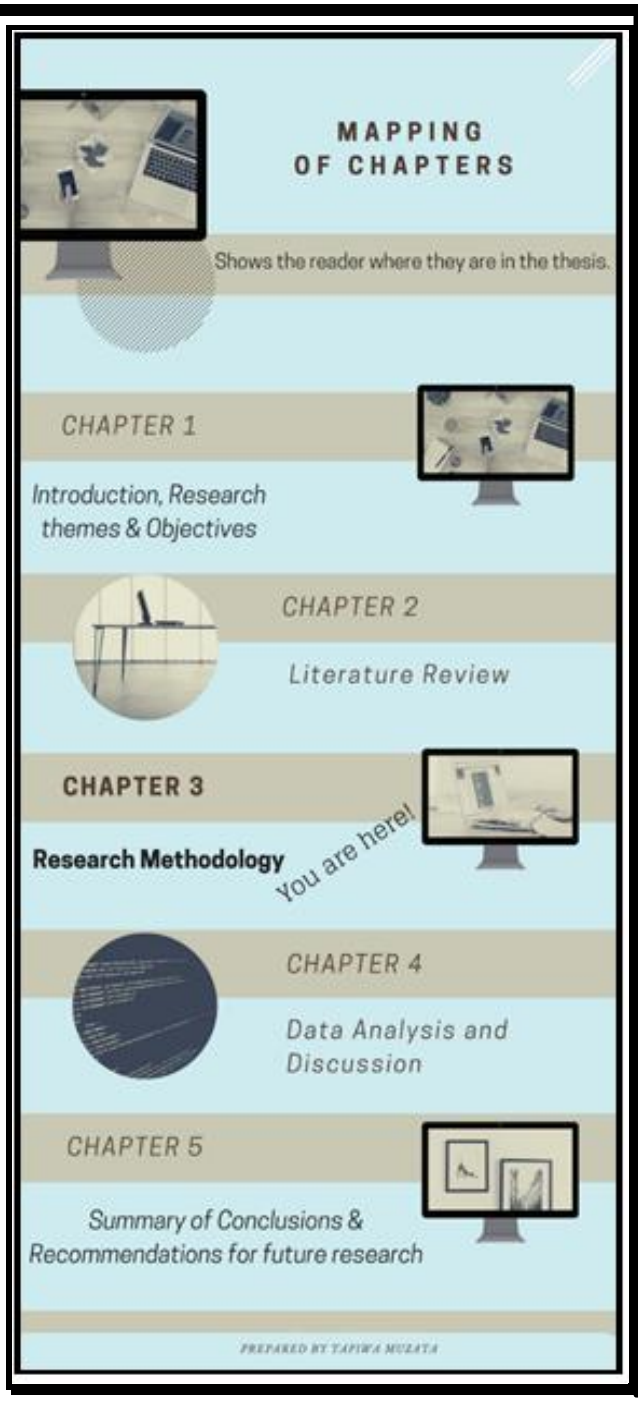
Thus, from the codes of best practices across the world, and King III and King IV in South Africa, this study investigated if these codes were effective in minimising the incidences, costs and socio-economic impact of the P-A and CG problems in the presence of above-mentioned issues.

Ahrens, Filatotchev and Thomsen (2011) suggested that the 2008 financial crisis has revealed that much more insight is required into the CG arena to fully understand its major socio-economic and political significance on a global scale. In a study of the largest corporate failures, from the demise of Barings Bank in 1995 to the bankruptcy of General Motors in 2009, Maskara *et al.* (2012) concluded that despite myriad reasons given as causes for the failures, the majority of the cases were due to agency

and governance problems. Empirical evidence in their study revealed that the companies that ultimately failed had deteriorating CG measures over the time running up to their demise.

Could it be that the companies operating in South Africa might be facing the same agency problems that are a threat to the socio-economic and political stability? In South Africa, the King III [now King IV] code is applauded for advocating for companies to report on how its economic activities impact the communities and environment it operates in, as well as sustainability being a major aspect of company performance (Mallin, 2010). However, there seems to be a disjoint between the 'integrated sustainable reporting' advocated by King III and King IV, and the corporate scandals involving executives' self-serving behaviour that is detrimental to the communities, environment and the principal.

In investigating the complex incidence, extent, costs and socio-economic consequences of the P-A and CG problems, this thesis provides significant insights into the debate from a South African perspective, as well as exposing the effectiveness or lack thereof of these codes.



Chapter 3: Research Methodology

The mixed methods used, its design logics, timing, integration, weighting, archival strategy, inductive reasoning and interpretative enquiry are discussed in this chapter. The chapter also covers other method-logical techniques used.

Chapter 3 Contents

CHAPTER 3: RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter covers the study's research design and methods that were used to answer the research questions raised. In answering these four research question themes, the study employed a mixed methods research approach to examine the consequences of P-A and CG interactions within companies listed on the FTSE/JSE Top40. Mixed research implies a process of research where at least one quantitative approach and at least one qualitative approach are integrated (Plano Clark & Ivankova, 2016, citing Johnson & Onwuegbuzie (2004)). Furthermore, the term 'mixed research' was used as a more inclusive term to mean a wider range of mixing possibilities than only mixing quantitative and qualitative data collection and analysis methods (Plano Clark & Ivankova, 2016).

3.2 PHILOSOPHICAL WORLDVIEW

The research subscribes to the pragmatic view as it arises from an effort to try to understand the actions, situations and consequences (Creswell, 2014) of the P-A and CG interactions within companies listed on the FTSE/JSE Top40. Moreover, Creswell (2014) posited that the pragmatist worldview is the most appropriate philosophical foundation for a mixed methodology for the following reasons which were accepted by the researcher:

i. The pragmatist view is not committed to any one philosophy and provides the researcher with the freedom to employ both qualitative and quantitative assumptions in their research. Thus, the mixed methodologies that were employed in this study addressed wider concerns which touch on a broader spectrum of role players involved in the CG and P-A (shareholder-executive) relationships, particularly at a time when major financial uncertainties and regulatory changes were experienced. Furthermore, the pragmatist view allowed the researcher to use various methods, techniques and procedures that best suited the needs and purposes of the research work. Various data collection and analysis techniques were applied without being limited to one worldview. The methodologies employed in the study enabled the researcher to enhance understanding and to ascertain the nature of the phenomenon being investigated

as well as to achieve the stated objectives. The study's pragmatic view is aligned to the mixed methods research employed.

ii. The pragmatic worldview is best suited for the study as it examined the consequences of P-A and CG interactions in the South African Top40 companies. Employing a mixed methods approach to the study enabled the application of multiple methods, different worldviews, different assumptions, as well as different forms of data collection and analysis. Thus, it permitted the researcher to ride on the strengths of each view, assumption and form of data collection and analysis. The pragmatic approach was suitable for the South African context of the study in order to significantly contribute to the existing body of CG knowledge that is largely based on the developed world. McNulty *et al.* (2013) observed that the milieu in which most of the P-A and CG interactions are studied are in developed countries. In this study, the focus was on assessing the prevalence, costs and socio-economic consequences of the P-A and CG interactions in South Africa, as well as assessing the effectiveness of CG codes. This South African focus was vital, especially in light of the reported occurrences of corporate scandals involving top South African executives. From Dewey's[8] work, cited by Cherryholmes (1992), the adoption of the pragmatist's view for the study was not just to record and report corporate scandals, and P-A and CG problems in South Africa. Instead, as Dewey's work, documented by Cherryholmes (1992), highlighted the study that has a pragmatic foundation needs to understand the basis of how these P-A and governance interactions can be improved, and their socio-economic consequences be mitigated to achieve better effectiveness in the adopted codes of good governance. The pragmatic view and the aligned mixed methods approach enhanced the achievement of a comprehensive research output. Cherryholmes (1992) further asserted that pragmatists aspire to replace the desire to be in touch with reality with that of willingness to be in harmony with the community. This study's pragmatic view accepted the assertion by Cherryholmes, in that it sought to understand how the agents and those charged with governance can be in harmony with shareholders and other stakeholders. In addition,

[8] Cherryholmes (1992) cited quotations from Dewey without providing specific in-text references from research papers. However, in the Reference section of the paper, Cherryholmes (1992) listed the publications by Dewey in 1917, 1931, 1934 and 1980.

Cherryholmes (1992) cited the work of Dewey (1917, 1931, 1934 and 1980) who advocated that pragmatists tend to value the communities (shareholders and other stakeholders) more. This view supports the research focus as it sought to examine the socio-economic consequences (that is, impact on South African communities) of the P-A and CG interactions.

iii. Creswell (2014) advocated the notion that the pragmatic view, with its alignment to mixed methods research, is most appropriate when researching in relatively new fields or areas where not much research has been done. This study adopted this notion, since CG as a discipline is considered to be a relatively new field of study (Mallin, 2010; McNulty *et al*., 2013) and the application of the pragmatic view and mixed methods research was therefore appropriate.

In answering the four research question themes and in efforts to achieve the research objectives, a pragmatic worldview was adopted and a mixed research method was employed which was supported by the aforementioned justifications. The researcher believes that the pragmatic view and its alignment to the mixed methods research are most appropriate for the study as it examined the consequences of P-A and CG interactions within companies listed on the FTSE/JSE Top40.

3.3 RESEARCH DESIGN

This section of the thesis presents the research design in terms of the methodology, notations, design logics, design typologies and other methodological considerations.

3.3.1 The methodology

A mixed methods research process was applied by combining both qualitative and quantitative methods to allow for the building of a quantitative study using the results of a qualitative research, or building a qualitative study using the results of a quantitative research process (Creswell & Clark, 2007). Applying a mix of methods helped in developing a richer picture and was a means of checking and ensuring the robustness of the results. Furthermore, the use of mixed methods neutralised the weaknesses of each form of data (Creswell, 2014). Creswell (2014) emphasised that the use of mixed methods provides a way of:

- Integrating qualitative and quantitative data and allows for checking the accuracy (validity) of the dataset;

- Explaining other datasets that can explore various types of research questions;
- Using tools or techniques better suited to a sample or population being considered in the study; and
- Building other datasets, especially in fields like CG research, which are considered relatively new (Mallin, 2010; McNulty *et al.,* 2013) and longitudinal studies that are likely to be conducted in the near future.

Having considered the philosophical view and justifications for employing mixed methods research in this study, it is prudent to next discuss the notations and the design logics which incorporate the mixed methods timing, integration/mixing and weighting/priority as used in the study.

3.3.2 Notations

The notation system used was adapted from Plano Clark and Ivankova (2016) which in its turn, is based on the work of Morse (1991, 2003). The notation used in the study is presented in Table 3.1:

Table 3:1: Notation system

Notation	Description
Quan, Qual	The capitalised shorthand refers to either the quantitative or qualitative component of a mixed methods study without any indication of the relative priority or weighting of the method.
QUAN, QUAL	Full capitals indicate a higher priority or weighting of either the quantitative or qualitative method in the study.
quan, qual	Indicates a lower priority or weighting of either the quantitative or qualitative method in the study.
+	Indicates that the quantitative and qualitative strands[9] are implemented concurrently in the study.
→	Indicates that quantitative and qualitative strands are done sequentially in the study.

Source: Adapted from Plano Clark and Ivankova (2016)

[9] A strand is a component of a mixed method study that encompasses the basic process of conducting quantitative or qualitative research, that is, research question, data collection and analysis and interpreting the results (Plano Clark & Ivankova, 2016, citing Teddlie & Tashakkori, 2009).

3.3.3 Design logics, timing, integration and weighting of methods

As far as a mixed methods design is concerned, Creswell (2014) highlighted that there are three main designs that are found in the social sciences research arena. These designs are Convergent Parallel Mixed Methods (or Concurrent Qual + Quan Mixed Methods, which terms will be used hereafter in the study), Explanatory Sequential Mixed Methods (Explanatory Sequential Quan → Qual Mixed Methods) and Exploratory Sequential Mixed Methods (or Exploratory Sequential Qual → Quan Mixed Methods which are the terms used hereafter). The discussions that follow focus on Concurrent Qual + Quan Mixed Methods and the Exploratory Sequential Qual → Quan Mixed Methods design logics employed in this study, as well as other pertinent mixed method research aspects that need considerations. The other methodological aspects centre around the timing, integration or mixing, and weighting or priority of the mixed methods and are embedded in the discussions.

As previously mentioned, the Concurrent Qual + Quan mixed methods design logic was adopted which Plano Clark and Ivankova (2016) asserted implies concurrent timing[10] of the qualitative and quantitative strands. Moreover, Creswell (2014) explained that in the Concurrent Qual + Quan design, the study converges or merges the qualitative and quantitative data (to embed each other) so as to conduct a comprehensive analysis of the data to answer the research questions. He further asserted that both qualitative and quantitative data are collected at the same time and integrated when interpreting the results[11] to pick up contradictions or similarities from the findings, and efforts are also made to interrogate further to find explanations, as well as better insights into the phenomenon. The results from the two strands were combined to draw inferences in response to the research questions. The design logic is depicted in Figure 3.1.

[10] Concurrent timing implies that the researcher collects and analyses both quantitative and qualitative data at the same time or independent from each other.

[11] Plano Clark and Ivankova (2016) refer to this integration approach as combining quantitative and qualitative data sets of results as they are jointly interpreted at the completion of data collection and analysis.

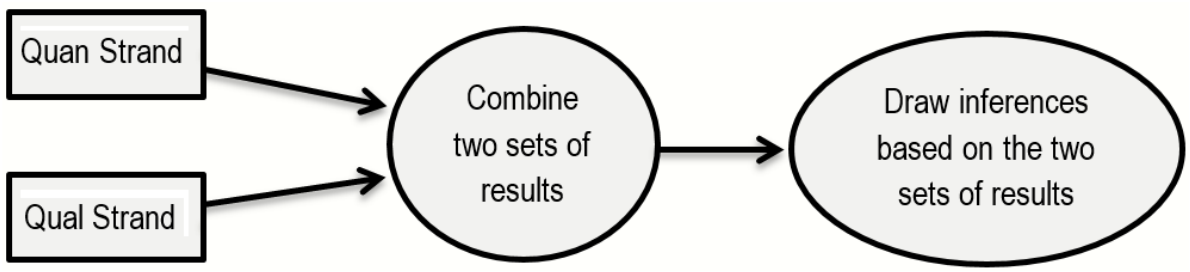


Figure 3.1: Concurrent design logic showing timing and integration

Source: Plano Clark and Ivankova (2016)

The employment of the Concurrent Qual + Quan design is advantageous in that it is bound to produce well validated and substantiated findings, due to the concurrent strands that permit the obtainment of different but complementary data on the same topic (Plano Clark & Ivankova, 2016, citing Morse, 1991). Furthermore, this design allowed the researcher to collect and analyse both qualitative and quantitative data within a short period of time which saved time and costs associated with carrying out the study (Plano Clark & Ivankova, 2016, citing Creswell & Plano Clark, 2011).

In addition to the Concurrent Qual + Quan Mixed Methods, in some instances, the Exploratory Sequential Qual → Quan Mixed Methods were applied. The two are consubstantial and felicitous to achieving the objectives of the study. The Exploratory Sequential Qual → Quan Mixed Methods design logic is depicted in Figure 3.2. The Exploratory Sequential Qual → Quan design logic implies the sequential timing of the two strands. The qualitative strand was completed first, before the quantitative strand, and the results of the first strand informed the next strand. The sets of results were connected at the conclusion to develop inferences that addressed the research questions.

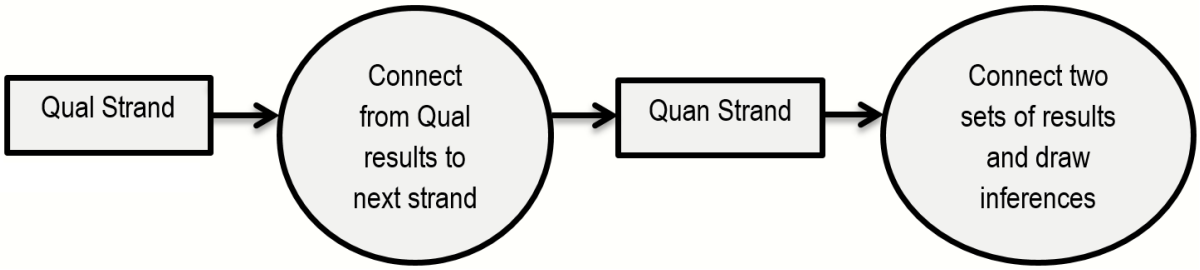


Figure 3.2: Exploratory sequential design logic depicting timing and integration

Source: Plano Clark and Ivankova (2016)

With the Exploratory Sequential Qual → Quan Mixed Methods designs, Creswell's (2014) argument that is aligned to the intentions of the study. Creswell (2014)

reasoned that in the Exploratory Sequential Qual → Quan design, qualitative data is collected and analysed to build quantitative data sets, like the governance scores from the governance recommendations implemented as provided in King III and King IV. In this study, with the application of the Exploratory Sequential Qual → Quan Mixed Methods design it became clear that a sequence needed to be followed by first collecting qualitative data from King III and King IV, Annual Statements and/ or Integrated Annual Reports.

Having identified and analysed the King III and King IV governance recommendations, the governance provisions were formulated and scored into the board indices which are seen as governance proxies. That is, the mixed methods design was sequential in the sense that the researcher collected and analysed qualitative data from King III and King IV, Annual Statements and/ or Integrated Annual Reports first, and then transitioned into quantifying the information to construct governance indices. Furthermore, qualitative methods were targeted at ensuring that the state and nature of P-A and CG interactions in South African companies are ascertained. The qualitative information was expected to identify the essential provisions, quality of governance, and independence required in ascertaining potential P-A and CG problems nuanced in governance indices.

The qualitative data was used to build quantitative instruments that best suited the study, and specific variables used in the quantitative models were also identified and defined. In this case, the quantitative data and its analysis were 'nested' in the qualitative data without necessarily placing any greater weighting or priority on any one of the two methods. This was done so that the quantitative results would verify and generalise the initial exploratory qualitative findings. The 'nesting' of the quantitative data and its analysis in the qualitative data were aimed at constructing the governance indices, and determining the potential costs of P-A and CG problems in South African companies to the principal, the company, as well as the economy.

Hence, quantitative methods were employed to exemplify the magnitude of the problems and potential costs. The advantages of this design are that it was chronological, more predictable and made it easier for one researcher to implement. It was also suitable in situations where the researcher wanted to understand a phenomenon with a small sample size, but needed to generalise it to a larger population (Plano Clark & Ivankova, 2016).

The use of qualitative data and its analysis to 'nest' the quantitative data analysis was plausible, considering the observations by McNulty *et al.* (2013) who pointed out that qualitative methods in CG are gaining popularity as they provide better insights into understanding or interrogating the problems than quantitative methods. McNulty *et al.* (2013) observed that a small fraction of CG researchers uses qualitative research, and these are mostly developed by UK and European scholars and published in European journals. They further noted that most of the studies tend to focus on boards of directors more than other governance-related issues.

It was beneficial for this study to primarily employ qualitative research methodologies (not necessarily with greater weighting) in exploring and gaining insights into the incidence, costs and socio-economic consequences, as well as effectiveness of CG codes. In support of the insights that qualitative research brings, Yasin, Muhamad and Sulaiman (2014) argued that many of the quantitative studies ignore processes related to key CG activities and mechanisms, and these need to be addressed by qualitative research methods.

The use of the Concurrent Qual + Quan and Exploratory Sequential Qual → Quan Mixed Methods designs also gave the study a basis of challenging and re-thinking some of the major assumptions and meanings of how CG role-players function. In addition, the recent CG issues are challenging researchers to go beyond input and output models (McNulty *et al.*, 2013) which are based on agency assumptions. Hence, the use of a mixed methods research provided a better understanding of the complex realities of P-A and CG issues, as well as allowing the researcher to push theoretical boundaries.

Using Concurrent Qual + Quan and Exploratory Sequential Qual → Quan Mixed Methods designs also addressed the call by McNulty *et al.* (2013) suggesting that the CG arena is now ripe for, and requires enquiries that must intensely explore, describe and compare these phenomena with sensitivities for the diversities and context in which P-A and CG are embedded. This is particularly relevant when it is considered that most of the P-A and CG researches are based in Europe, UK, US and other developed countries. In this study, a South African perspective was considered, given the differences in cultures, political set-up, past political and social injustices which are traits that may make corporate South Africa susceptible to P-A and CG problems.

The employment of the above-discussed mixed methods designs enhanced the exploration of current P-A and CG processes and interactions in practical contexts, and unearthed the issues covered by the research questions. This became vital as the research moved beyond the prescriptions provided by current CG codes.

3.3.4 Design typologies

The discussions on the design logics, timing, integration and weighting above culminated in a typological design that has characteristics described in Table 3.2. A design typology refers to a set of different possible mixed methods designs that attempt to convey the range of design options available to the study (Plano Clark & Ivankova, 2016). The mixed method design typologies provide a variety of paths or ideal design types that may be selected to achieve the goals of the study (Teddlie & Tashakkori, 2009, cited by Plano Clark & Ivankova, 2016).

By adopting a typology-based approach, the researcher selected a particular mixed methods design from a set of available alternatives, and adapted the chosen design to suit the study. The typology was adapted from Plano Clark and Ivankova (2016) and they refer to it as Interactive-Independent Dimension Design Clusters. The typology entails the convergence and integration of mixed methods designs that have the following characteristics:

Table 3:2: Typology considerations and their characteristics

Typology Consideration	Characteristics
Timing	Timing of data collection and analysis was concurrent and sequential.
Integration or mixing	Integration took place across all the stages of the research or at the interpretation of the results.
Weighting or priority	The weighting or priority of each method was equal.

Source: Plano Clark and Ivankova (2016)

Plano Clark and Ivankova (2016) asserted that the typology is suitable when the researcher writes in the context of evaluation and social sciences. The authors' stated assertion was suitable for the context of this study and hence, it was adopted for the current study.

3.3.5 Other methodological considerations

Creswell (2014) highlighted a few defining characteristics of the qualitative research strand that required some reflection from the researcher to be able to address the raised research questions effectively. These characteristics are:

- Data collection is in the natural field setting allowing the researcher to go to the primary source of the information. Since this study employed archival analysis or research[12], it used administrative records filed (for example filed with the JSE) by those charged with governance, and these records and documents were the principal sources of data (Saunders, Lewis & Thornhill, 2009). It is worth noting that in this case, the filed records and documents were not to be considered or conflated as secondary data, as they will not be when used in an archival research strategy (Saunders *et al.*, 2009). Saunders *et al.* (2009) provided a compelling argument that resonated with this study when they asserted that the administrative records and documents used in an archival research strategy are not secondary data as it would have been originally collected for a different purpose, for example, reporting on the company's performance. Thus, when the information is used in an archival research strategy, it is analysed with a lens that considers that the data is a product of the daily activities of the company (Saunders *et al.*, 2009, citing Hakim (2009). That is, the company is reporting on its day-to-day activities and that is what produced the data. Therefore, the data produced is the reality that is being studied in the research and not "having been collected originally as data for research purposes" (Saunders *et al.*, 2009:150). As a result, the original data is collected and analysed for purposes other than for which it was generated, in order to investigate and ask new questions of the 'old' data. The use of the archival research strategy permitted the researcher to focus on the past and changes over time, which suited the analysis of the governance indices, VaR and s-Gini. In addition, the researcher was persuaded by Corti (2004), as she suggested that archival analysis enables researchers to immerse themselves in the found archived data to evaluate, review, reclassify and discover emerging issues (for example, board independence and the magnitude of compensation gap) over time.

[12] Archival research can be defined "as the locating, evaluating and systematic interpretation and analysis of sources found in archives" (Corti, 2004:20)

- Multiple data sources (for example, documents and reports produced by companies and regulatory authorities), as there will be stakeholders who provide information that can be triangulated for accuracy. The study evaluated the validity and reliability of the data, based on the assumption that the filed records and documents are official and a true or fair representation of the companies' position at the time the records and documents were filed with the JSE and Competition Authorities. A content analysis was then employed, as one of the traditional social science analytical approaches (Corti, 2004), on the filed records and documents to determine the presence of certain words or concepts that have implications on P-A interactions, and governance provisions that improve or worsen the constructed governance indices.
- Allows for inductive reasoning, so as to focus on meanings extracted from the records and documents filed by companies to observe possible newly generalised patterns that can be explained. This is referred to as pattern explanation (Blaikie, 2004) which permits more data to be collected to strengthen or verify the possible newly generalised patterns. This process of induction allowed the researcher to move from particular statements to generalised statements (Blaikie, 2004). In this case, particular statements that were made and filed by companies were examined, as well as generalised statements that were used to address the research questions and reach generalised conclusions about the consequences of P-A and CG interactions in South Africa.
- Allows for interpretive enquiry[13] that gleans lessons learnt from the data collected and analysed. The interpretations are based on the researcher's personal understanding influenced by culture, history, experiences, interests, and values (Smith, 2012; Creswell, 2014). Thus, Smith (2012) advocated that interpretive enquiry should not be viewed as a scientific activity, but as a practical and moral undertaking. This argument was suitable, as the researcher sought to examine the socio-economic consequences of P-A and CG interactions. Therefore, P-A and CG interactions have practical and moral considerations that need understanding so that they inform and shape the economic policies of the country. Moreover,

[13] Interpretive enquiry focuses on understanding the meanings, purposes and intentions behind actions and interactions with others (Smith, 2012).

Creswell (2014) argued that the interpretations may also be influenced by comparisons to the reviewed literature and theory. This may result in unexpected questions emerging from the data analysis, providing the basis for recommending future researches in the CG field. Furthermore, this study applied a theoretical lens to form interpretations that call for action agendas for transformation (Creswell, 2014). Consequently, it permitted the researcher to revisit the literature at the end of the research process to compare the findings and literature reviewed (Creswell, 2014).

The above characteristics enabled the researcher to interpret the data (filed records and documents), to interrogate governance relationships, and provided the researcher with an understanding of the behavioural traits that arise due to the CG structure and P-A contracts that are in place.

Over and above these characteristics, qualitative research methodologies were appropriate for this study as McNulty *et al.* (2013) found that qualitative studies tend to focus on a single country more than quantitative articles do. McNulty *et al.* (2013) supplied reasons for this due to "both the difficulties in accessing data in qualitative study and the strong impact of legal and cultural institutions on governance phenomena and mechanisms". The focus of qualitative research methodologies on a single-country context enhanced the evaluation of the effectiveness of CG codes in the context of South Africa's economic, political, legal and cultural set-up.

Overall, the employment of a qualitative strand ensured a deep engagement with the P-A and CG issues raised in the research questions. This study acceded to the compelling suggestion by Roberts, McNulty and Stiles (2005) that CG theory and reforms in governance should be informed by the main qualitative methods on existing key governance relationships and interactions.

Although qualitative research methods have challenges related to the trustworthiness and integrity of access to information, data collection, analysis and presentation, when compared to quantitative methods, McNulty *et al.* (2013) argued that in the face of such challenges, they should not inhibit the researcher from undertaking high quality research in CG and its facets. The McNulty *et al.* (2013) argument was supported by Tracy (2010) who highlighted the characteristics of excellent qualitative research which include rich rigor, sincerity, credibility, resonance, significant contribution, ethics

and significant coherence. The researcher believes that the application of the above-discussed design logics, mixed methods timing, integration, weighting, the archival research strategy, inductive reasoning and interpretative enquiry helped encompass these characteristics to enrich its quality. These characteristics also ensured that the quantitative strand was fed with credible and reliable information that provided integrity to the results.

Figures 3.3 and 3.4 are diagrammatical views of the strands and their steps, procedures and expected outcomes from applying the above-discussed design logics, mixed methods timing, integration, weighting, the archival research strategy, inductive reasoning and interpretative enquiry.

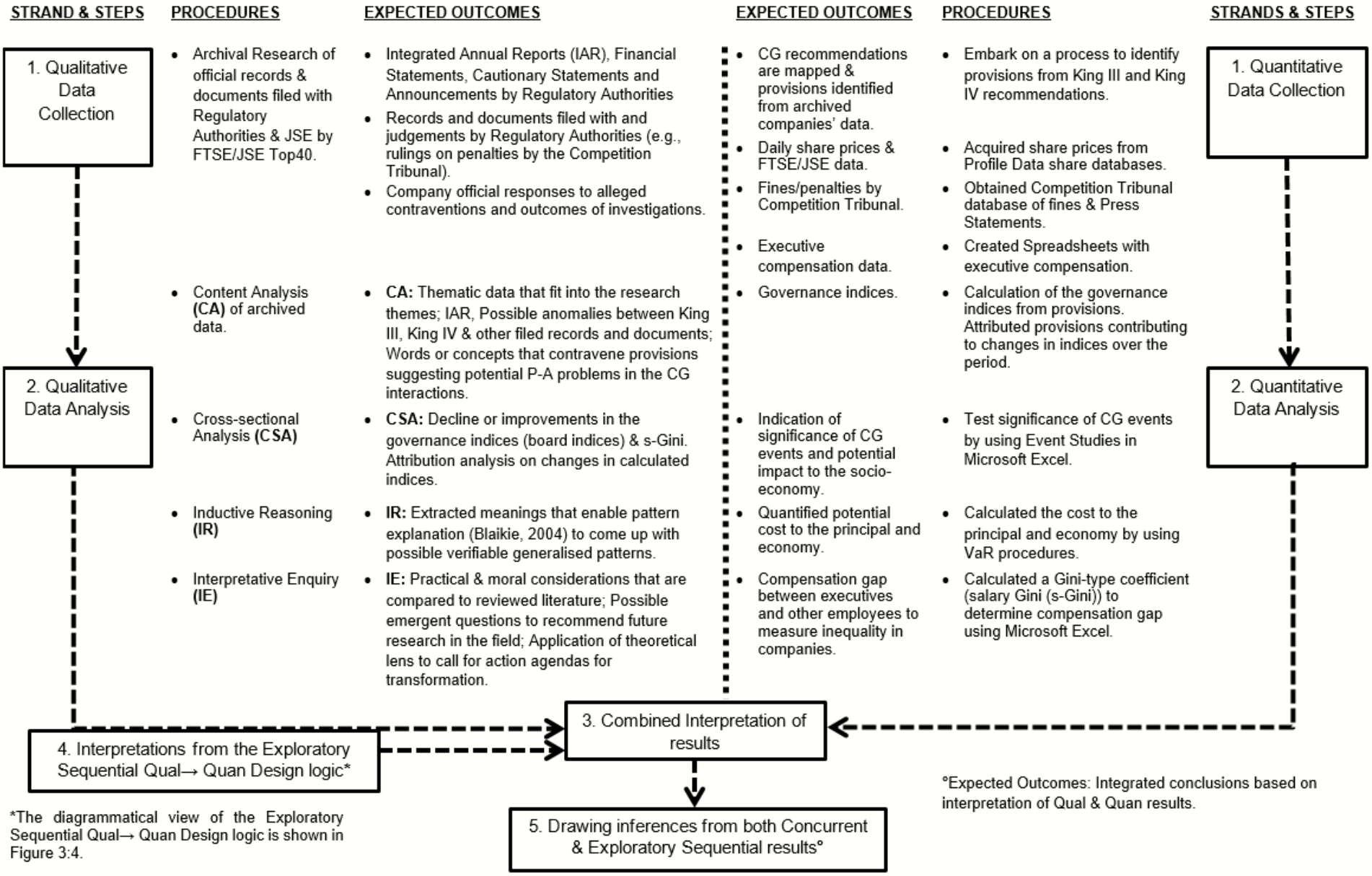


Figure 3.3: Pictorial view of the Concurrent Qual + Quan Mixed Methods Research Design Logic applied in this study

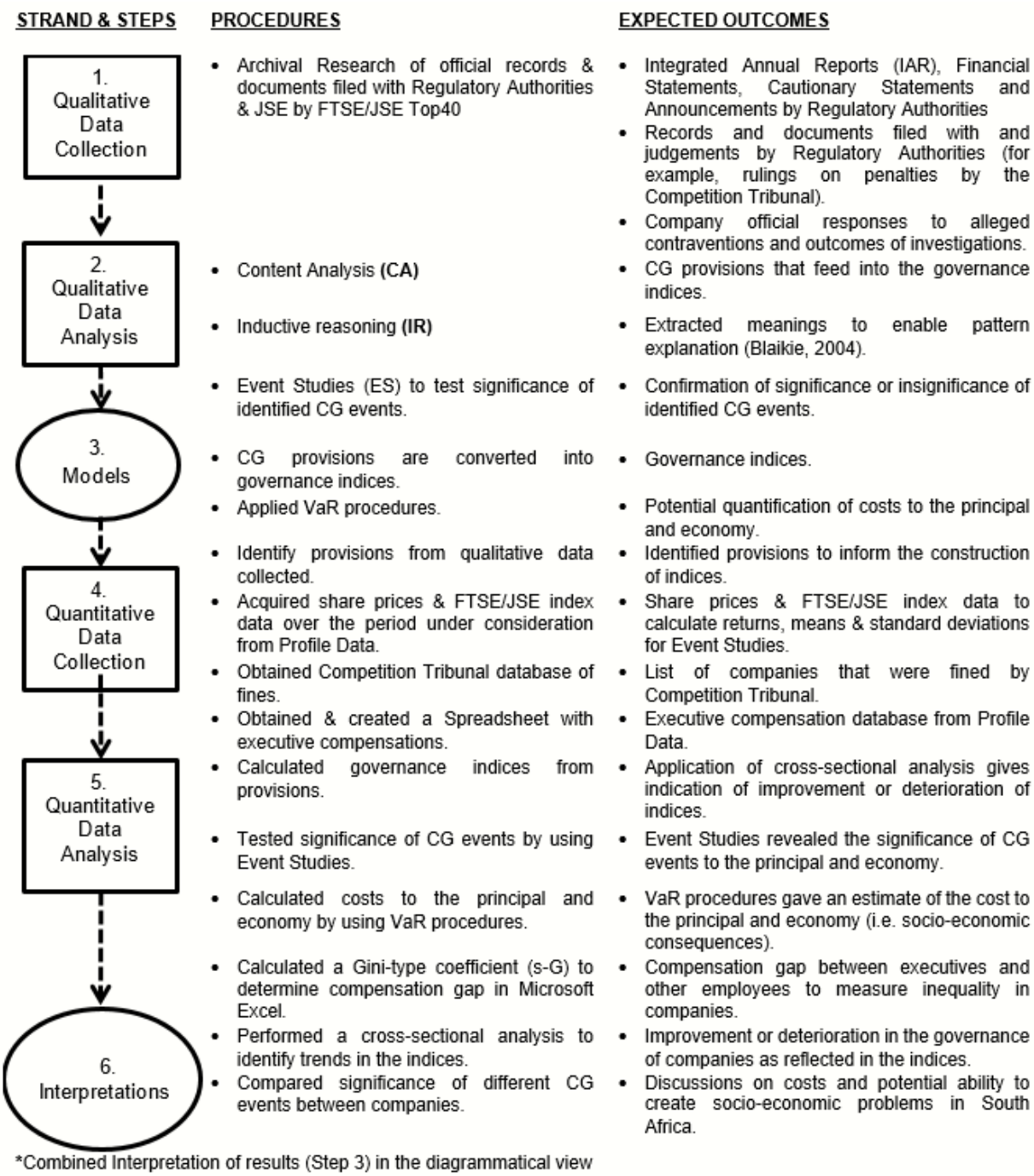


Figure 3.4: Pictorial view of the Exploratory Sequential Qual → Quan Mixed Methods Research Design Logic applied in this study

Note: There are overlaps of some of the procedures and expected outcomes from the Concurrent Qual + Quan and Exploratory Sequential Qual → Quan Design Logics which are inherently addressed by the typological considerations of timing, integration and priority within the Mixed Methods application. For example, the Content Analysis applied in both the Concurrent Qual + Quan and Exploratory Sequential Qual → Quan Design Logics were similar procedure(s) that were expected to produce similar outcomes but the timing of the procedures varied.

3.4 GOVERNANCE INDICES AND EXECUTIVE COMPENSATION MODEL

The data required in the mixed methods research design described above was necessary to feed into the comprehensive P-A and CG measurements that were used in this study. The Governance index (G-index) and E-index (Entrenchment index) were identified by Maskara *et al.* (2012) as the most popular CG measurement methods. The indices have been used in most recent governance studies to identify companies that had agency problems in the years preceding their demise. The study by Maskara *et al.* (2012) observed that over 1 600 governance studies cited the Gompers *et al.* (2003)[14] index which is known as the G-Index, while the Bebchuk webpage lists more than 75 studies that used the E-Index. The G-index uses 24 company-specific governance provisions, while the E-index by Bebchuk, Cohen and Ferrell (2004) gleaned six company-specific provisions from the Gompers *et al.* 24 company-provisions. Gupta, Krishnamurti and Tourani-Rad (2013) also use company-specific provisions.

Brown and Caylor (2006) developed a Governance Score which has 51 firm-specific provisions and they then simplified it to a 'parsimonious index' that used seven of the 51 firm-specific provisions. Maskara *et al.* (2012) observed that the results obtained from the E-Index "fully explained the results documented by the GIM".

The two indices seem to be most popular and validate each other. Maskara *et al.* (2012) used the G-Index and the E-Index in their studies as they attempted to identify the companies that ultimately failed primarily due to the agency and governance problems that overwhelmed these companies. Maskara *et al.* (2012) discovered that although there have been many CG studies that have attempted to establish and provide evidence of the influence of CG on, among others, securities valuation, information disclosure, firm performance, and financial distress, there are conspicuous similarities in the CG measurement methods utilised in the various studies.

This study did not design a new measurement method, but adopted the same index-construction architect as used by aforementioned researchers. However, this study showed a variation in the index construction regarding the source of provisions used

[14] Gompers, Ishii and Metrick (2003), are commonly referred to as GIM (2003) in the field of study.

in the index calculations. The provisions were drawn from the King III and King IV recommendations, whereas the provisions of the cited studies where drawn from company MOIs. That is, the King III and King IV recommendations, which include principles and practices, and provisions that exemplify the strength of governance within the sample companies, were mapped. The mapping of the recommendations to the provisions are depicted in Appendix 1. The mapped provisions are related to the various oversight functions by the board and board-committees to allow the study to comprehensively capture the strength and quality of CG. By adopting this approach, the study was able to develop indices that are rooted in agency theory and that are supported by empirical evidence (Shaukat & Trojanowski, 2017).

Twenty provisions from the King III and King IV recommendations, broadly covering board and committee independence and compliance to laws and regulations, were extracted. The focus was on the King recommendations regarding the oversight functions of the nominating, remuneration, audit, risk, social and ethics committees, committee overseeing technology and information governance, and compliance to laws, regulations, rules, codes and standards.

This approach to constructing the indices enabled the researcher to establish a measurement that was analysed over a period of time in evaluating deteriorations or improvements in the governance of companies. This revealed the prevalence of agency problems in corporate South Africa with a focus on the changes in these governance indices over time, thereby providing a cross-sectional analysis of the indices. In addition, using the provisions extracted from the King III and King IV recommendations made them relevant to South African companies.

The trends in the adapted South African board indices were examined and the deterioration or improvement in the P-A and CG problems from 2008 to 2016 were assessed. The trends are important for South Africa to try and avoid similar financial catastrophes that were, and have been, caused by agency and governance problems[15] experienced by the developed world and have been filtering to the emerging markets since 2008. Moreover, a cross-sectional and attribution analysis

[15] Some researchers, for example Ahrens *et al.* (2011), Maskara, *et al.* (2012), McNulty *et al.* (2013) and Balc *et al.* (2013) directly and indirectly ascribe the 2008 and other recent financial crises to weak or deteriorating CG structures.

provided indications of provisions that contributed to changes (whether deterioration or improvement) in the overall indices and the effectiveness of the adopted governance codes. In carrying out an attribution analysis, the researcher potentially ascertained the areas where the governance codes were and were not effective within sample companies.

3.4.1 Calculation of Governance Indices

As elucidated in Section 3.3.5, the researcher collected quantitative data on companies that were listed on the FTSE/JSE Top40 index from 2008 to 2016. This study uses data from 2008 to 2016 as this period is acknowledged by King III report that since the 2008 financial crisis, South African listed companies were regarded as amongst the best governed emerging market companies by foreign institutional investors. In addition, King III highlights that South African listed companies are benefiting from implementing good CG principles and practices. These CG best practices attracted significant investment inflows into South Africa's capital markets (King III, 2009:7). Also, 2016 was the end period that had all officially published and available company data that suited this study's timelines bearing in mind that companies have different financial reporting periods during the calendar year. The data was collected from the IAR, JSE, and other regulatory authorities like the Competition Commission and Tribunal, Annual Financial Statements, Cautionary Statements, media reports, and other publicly available records and documents. This data was from companies that are found in the following categories *(a)* South Africa's FTSE/JSE Top40 listed companies from 2008 to 2016 (that is, the 40 largest companies by market capitalisation[16]) *(b)* former FTSE/JSE Top40 listed companies that were no longer on the index within the 2008 to 2016 period, and *(c)* Steinhoff, which was part of the FTSE/JSE Top40 listed companies but was initially excluded due to some missing data. However, Steinhoff was separately included and analysed

[16] Market capitalisation $= number\ of\ outstanding\ shares\ x\ share\ price$. This study will use the Top40 companies, as it accepts the claims by Courtney Capital Private Wealth which states that

"The Top 40 index is a fair reflection of what happens to the South African stock market as a whole, because even though it contains only 40 out of the roughly 400 shares listed on the JSE, it represents over 80% of the total market cap of all JSE listed companies."

Statement as at June 2013. http://www.courtneycapital.co.za/jse-top-40-shares/ [Accessed: 08 May 2015].

in this study due to apparent major P-A and CG problems that were reported at the end of 2017 and the first quarter 2018.

A total number of 46 companies fell in the aforesaid *(a)* and *(b)* categories. All the data from 2008 to 2016 was available for these 46 companies. The targeted sample of 46 companies and Steinhoff enabled the researcher to determine the prevalence of P-A and governance problems in the largest listed companies in South Africa. In addition, these companies are among the most traded, with yearly-weighted average traded volumes, and they have wide institutional ownership, which are characteristics identified by GIM (2003) as positively related to governance indices.

These characteristics gave rise to expectations that negligible P-A and CG problems should exist because of their influence on the agent's behaviour, and governance systems that restrain agency and CG problems. However, the characteristics may also exacerbate the P-A and CG problems. For example, the size of a company by market capitalisation may put pressure on the agent's (executive's) performance which results in the agent wanting higher compensation at the expense of the principal (shareholder). There is also an implication on performance management and measurement resulting from the agent taking undue risk and empire-building at the cost of the principal. Coupled with the performance measurement problem is the pressure to keep the share price high, thus enticing the agent to engage in unethical dealings, fraudulent accounting and/ or financial reporting, and non-compliance with legislative and JSE Listing Requirements. Sometimes, the principal benefits and becomes complicit in the process.

Apart from being the biggest companies by market capitalisation, these FTSE/JSE Top40 listed companies[17] were selected for the study, based on the following reasons:

- They need to comply with listing and legislative requirements, hence one would expect the P-A and CG problems to be minimal, and they should be a good indicator to foreign investors looking to South Africa as a destination for foreign portfolio and foreign direct investments. Further, the governance structures in these companies, coupled with the compliance to listing and legislative

[17] This study included companies that have fallen in and out of the FTSE/JSE Top40 index from 2008 to 2016.

requirements, ensure that the South African financial markets and companies are integrated to the global financial system, particularly when one considers the dual listing of some companies. Also, the FTSE/JSE Top 40 companies have a very strong influence on corporate governance and tend to shape corporate behaviour in a country, hence the focus on these companies.

- There are disclosure requirements and institutional investors who require both private and public information to perform their due diligence before they invest, and this made information readily available or relatively easy to find.

As explained in Section 3.3.5 above, an archival research strategy (Saunders *et al.*, 2009) was employed to collect qualitative data. Content analysis was applied to the collected qualitative data to identify provisions that informed the construction of indices. The identified provisions were converted into a governance index for each company in the sample. The researcher systematically evaluated the information provided under the Governance Sections of each of the 423 Annual Integrated Reports for the years from 2008 to 2016. The calculated governance indices over the period were used to determine the incidence, deterioration or improvement in the agency and governance problems.

The 20 provisions were equally weighted. The provisions were converted into a governance index by adding 1 where the company complied and 0 for non-compliance with the King III and King IV recommendation. This suggests that the calculated governance index, as a proxy of governance, has to be closer to 20 for better governed companies, and closer to 0 for poorly governed companies. This is aligned to GIM (2003), and Shaukat and Trojanowski (2017). As previously mentioned, there are 20 provisions and a company that fully complied with the King III and King IV recommendations would have a governance score of 20, and a fully non-compliant company would have a governance score of 0[18]. The final governance indices calculated for each of the sample companies are tabulated in Table 4.2 (later in this thesis).

[18] Gratitude to Professor Grzegorz Trojanowski (Professor of Finance, Director of Xfi, Head of Finance at University of Exeter, Business School, UK) who provided clarity and guidance on the construction of the index in Excel through our email communications.

To ascertain which of the 20 provisions were not fully complied with, per year, by all the companies in the sample, from 2008 to 2016, the use of a Microsoft Excel COUNTIF function was employed. For each sample company per year, per provision, the researcher determined its compliance status across 2008-2016 and a tick was inserted for non-compliance in the year. The number of sample companies that did not comply during the years was determined by using the COUNTIF function. For each provision per year, the researcher observed and included the number of companies that did not comply with the specific provisions and expressed the companies as a percentage of the total companies in the sample. The results of the COUNTIF function also indicated the period of greater adoption of the King III and King IV recommendations by a decline in the percentage of sample companies that were non-compliant. Appendix 2 depicts the percentage of non-adherence by the sample companies to each of the 20 provisions, per year.

To establish provisions that were major contributors to deteriorations and or improvements in governance indices, the researcher also used the Microsoft Excel COUNTIF function. The results are presented in Appendix 3 and the researcher did an exegesis of changes in the governance indices. Indices that changed from one year to another were identified, and the provisions that contributed to the change in the indices were determined. The number of provisions that caused the change across companies in each of the years was established. The researcher then expressed the number of decline-changes or improvements per provision, as a percentage of the total declines and improvements for all the provisions during the 2008-2016 period. The results are presented in Tables 4.4 and 4.5 (in Chapter 4).

To complement the calculated indices as explained above, the qualitative strands in the Concurrent Qual + Quan and Exploratory Sequential Qual → Quan Design Logics, and the combined interpretations of their results provided plausible inferences and supported the attribution analysis that responded to the research questions. Therefore, it was possible to cogently perform pattern explanation from the results (Blaikie, 2004).

3.4.2 Executive Compensation Model

Theory signals that executive compensation structures are designed to align the objectives of the principal and agent (Edmans & Gabaix, 2009). For this reason, executive compensation structures are part of CG mechanisms, and Theme II sought

to determine the role of executive compensation in exacerbating P-A and CG problems.

In endeavouring to make the determination, the researcher proposed the model depicted by Equation 3.1. The researcher factored in the strength of governance by the company executive in the compensation structure. As a result, the researcher proposed that executive remuneration should be determined by the governance index (governance proxy measure), performance (revenue), GDP, inflation, ownership structure, executive net share trades (net buyer or seller of the company's shares), number of share-trades by executives, and the number of board members who traded in the company's shares per year. The estimation of the executive compensation relationship is expressed as:

$$Rem_{it} = \alpha_{it} + \beta_{i1}Rem_{it-1} + \beta_{i2}Perf + \beta_{i3}Gov + \beta_{i4}GDP + \beta_{i5}Inf + \beta_{i6}OS + \beta_{i7}NT + \beta_{i8}TY + \beta_{i9}DTY + \varepsilon_{it}$$

Equation 3:1: Estimation of executive compensation relationship

Source: Researcher's proposed model

Where:

$Rem_{it} = Remuneration\ for\ director\ at\ company\ i\ at\ time\ t,$

$Rem_{it-1} = Remuneration\ for\ director\ at\ company\ i\ in\ previous\ year,$

$\alpha_{it} = intercept,$

$Perf = Performance\ as\ measured\ by\ revenue\ in\ this\ study$[19]$,$

$Gov = Governance\ index,$

$GDP = Annual\ Gross\ Domestic\ Product,$

$Inf = Average\ Annual\ Inflation,$

$OS = Ownership\ Structure,$

[19] Padgett (2012) cited Shire Plc, a global specialty biopharmaceutical company with dual listing on the London Stock Exchange and NASDAQ Stock Exchange, which uses revenue as a measure of short-term performance measure. Bhabra, Kaur and Seoungpil (2016) also used revenue as a measure of performance. Hence, this study's adoption of revenue as a measure of performance.

$$NT = Net\ Share\ Trades,$$

$$TY = Share\ Trades\ by\ a\ director\ per\ year,$$

$$DTY = Number\ of\ Directors\ who\ Traded\ Share\ in\ a\ year,$$

$$\beta_{it} = sensitivity\ of\ Remuneration\ to\ the\ variable\ at\ time\ t\ \ and$$

$$\varepsilon_{it} = Error\ term\ for\ company\ i\ at\ time\ t.$$

The approximation of the relationship that should exist between remuneration and the suggested independent variables is expected to align what the executive earns with how well they run the company (governance and performance), company ownership (ownership structure), their share-trading activities (through the exercise of their options) and the general economic environment (GDP and inflation are included in a similar way as Mensah and Abor (2014) who included inflation and other macroeconomic variables like interest and exchange rates in determining net interest rates spreads that in-turn influence executive compensation in Ghanaian banks). These variables should be the main determinants of the executive's remuneration.

The researcher ran the proposed model in a statistical software package called STATA. The following data inputs were used:

- Each of the 46 sample companies and the period covering 2008 to 2016 (inclusive).
- Governance indices calculated for each sample company over the period, as explained earlier.
- The researcher lagged the executive remuneration because the current year's remuneration is usually based on last year's remuneration adjusted for performance, inflation and other adjustments. The executive remuneration data was publicly available, as officially disclosed by sample companies, as required by the South African Companies Act 71 of 2008.
- Dual or single listing of the sample companies. A dummy variable of 1 was used if dually listed, and 0 otherwise.
- Ownership structure with a dummy variable 1 where the sample company had concentrated ownership (top five institutional shareholders) and 0 otherwise.
- Revenue as a measure of performance was lagged, because revenue targets are based on previous years with adjustments based on inflation and other

performance factors. The information was publicly available, as officially disclosed by sample companies in the Annual Financial Statements.

- GDP and inflation figures obtained from Statistics South Africa databases.
- Directors' trades per year, and the number of directors who traded on the company's share (buying and selling of shares) is information that was publicly available, as officially disclosed by sample companies, as required by the South African Companies Act 71 of 2008, and JSE listing requirements.
- The net trades were calculated by subtracting the value of shares bought (call options exercised) from the value of shares sold (put options exercised).

Having the aforementioned data inputs, the researcher employed the Hausman Test which has the null hypothesis that the preferred model is the random effects, and the alternative hypothesis is the fixed effects model (Torres-Reyna, 2007). The Hausman Test helped in determining which model was efficient and consistent between the Fixed and Random Effects. The researcher also incorporated a robust test to control for heteroscedasticity which corrects multi-collinearity[20] and non-normality among other redundancies. Further, pooled effects, random effects, generalised least squares (GLS), the two-step generalised method of moments (GMM), and least squares dummy variable corrected (LSDVC) models were run for diagnostics and validation purposes. Brown *et al.* (2010) and Aslan and Kumar (2014) also applied similar models. The model and diagnostic results are presented, discussed and analysed in Section 4.4.1, Chapter 4.

3.5 EVENT STUDIES (ES)

Event Studies (ES) assist in measuring the impact of new information or events on the return of a single financial asset, like a share. The impact of the event information on a single share can be extrapolated to establish the statistical significance of identified CG events to the principal and economy.

[20] Multi-collinearity takes place in circumstances where two or more independent variables are highly correlated. That is, one independent variable can be used to predict the other. The result of multi-collinearity is the generation of redundant information that skew regression model results.

3.5.1 Use of ES in the study

The adaptation of the ES in this study was useful in assessing whether the identified CG events were statistically insignificant or significant enough to warrant the next step of calculating the costs to the principal and economy using the VaR procedures (discussed in Section 3.6). The use of ES also gave an indication of the magnitude of the damage caused by the identified CG events, which was validated by the calculated costs using VaR procedures.

The datum of ES is that it is anchored in the Efficient Market Hypothesis (EMH) which purports that information that is known, or can be known, about a company is inherent in the current share price (semi-strong form of the EMH). Thus, as information on identified CG events, announcements and cautionary statements filter into the market, share prices should change in reaction to the information. The researcher assumed that the FTSE/JSE Top40 Index is efficient in the semi-strong form, suggesting that as the company information filtered into the market, share prices also changed as reflected in the historic share prices used in the study.

The historical analysis of share prices in ES helped create an understanding of their past behaviour, and the current analysis of the prices on the event and post-event dates helped create an understanding of the change in price behaviour in relation to the significance of the event being analysed (Muzata, 2006, citing Elton, 1967 and Gummesson, 2000).

It is on this premise that the researcher advanced the notion that the identified CG events caused movements in the company share price, market and the economy, depending on the size or influence of the company on the economy. Hence, ES provided a plausible way of testing the statistical significance of the identified CG events to the principal, company and economy. The logic of employing ES in ascertaining the statistical significance of the identified CG events is outlined below.

- Statements on CG events filtered into the market and share prices moved up or down to reflect the sentiments of investors regarding the event and/ or statements.
- Share prices represented the value of a company or the value of the principal's investment.

- The share price movements, in response to the identified CG events, resulted in returns that were statistically significant to the principal, company and economy.
- The possible positive abnormal returns may reflect situations where the principal is complicit in the agent's 'bad' behaviour (CG event) in good times and may be statistically significant to the company and economy.
- The researcher then aggregated the abnormal returns and tested the statistical significance and impact of the identified CG events.

Having considered how the ES can be adapted to statistically test the significance of the identified CG events, the study adopted the steps discussed by Saponara (2003).

3.5.2 Statistical significance of identified corporate governance events using ES

This section will discuss the steps to calculate the statistical significance of the identified CG events, using ES. The steps are listed below:

1. The researcher identified the event dates when official statements about the identified CG events, for example, a Cautionary Statement, or Announcements by the company, JSE and regulatory authorities were released on the Stock Exchange News Service (SENS)[21]. That is, the date the Announcement or Cautionary Statement was publicly released. This was assumed to be the date when the information was first known market-wide. The idea is to narrowly define the event date to allow for an accurate measure of the impact of the identified CG event on the share price. Before discussing the subsequent steps as listed by Saponara (2003), it is prudent to depict the ES timeline as used in this research in Figure 3.5. The identified company's CG events are depicted in Section 4.2.1, 4.2.2 and summarised in Appendix 4.

[21] Stock Exchange News Service (SENS) is the system established by the JSE to disseminate real-time company information to the market (JSE Limited Listings Requirements, n.d).

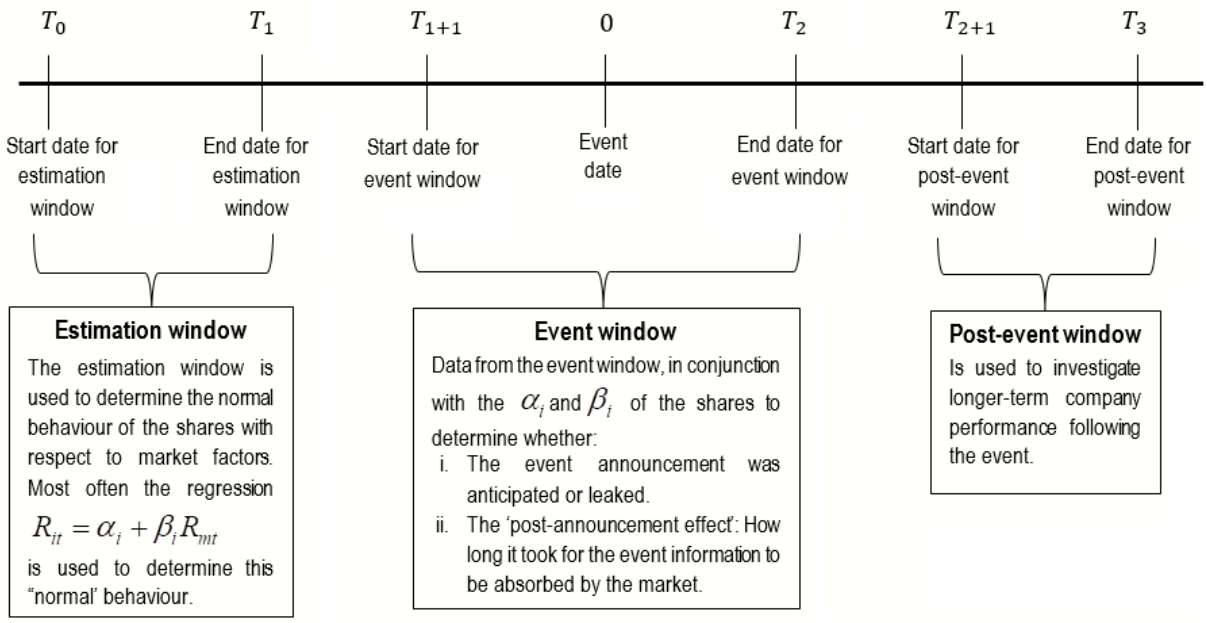


Figure 3.5: Event Study timeline

Adapted from Benninga (2014)

2. The researcher defined the event window which is the number of trading days preceding, and days after, the event date and were viewed as necessary to capture the impact of information leakages and wide information filtration into the market. The event window didn't need to be too long as many events may occur that result in the conflation of events and then the specific impact of events may be missed. In this study, the event window of 30 trading days started 15 trading days (-15 trading days) before the CG event was announced to ensure that the pre-event information leakages were captured, event day (1 day) and extended to 14 trading days after the announcement (+14 trading days) to capture post-event effects. The 30-day event window is longer than Benninga (2014) recommended because the JSE Listing Requirements compel companies that have issued Cautionary Statements to issue further Cautionary Statements every 30 business days if the 'matter' regarding the Cautionary Statement is not finalised. The implication on the event window of the JSE Listing Requirements might be that some event windows will be longer than 30 trading days if further Cautionary Statements were issued by some of the companies in the sample. However, the JSE Listing Requirements recommend that the information pertaining to the Cautionary Statement must be communicated to the JSE and the market immediately.

3. The researcher defined the estimation period of time where no CG event or Announcement or Cautionary Statements were released. This period was used to calculate how the companies' share returns should have behaved in the absence of the identified CG event, for example, an Announcement or Cautionary Statements. The estimation period covers the time before the identified CG event or Announcement or Cautionary Statements were released. The researcher covered a total of 216 trading days as the whole event period for each event (T_0 to T_3), namely, the 126[22] trading days estimation window (T_0 to T_1), the 30 trading days event window (T_{1+1} to T_2), and the 60 trading days post-event window (T_{2+1} to T_3) over which the share prices, their returns, abnormal returns and cumulative abnormal returns were observed and calculated. A 126 trading-day estimation window was used to establish the normal behaviour of the companies' share prices in relation to the FTSE/JSE Top40 index in the absence of the identified CG event. The 60 trading-day post-event window is designed to evaluate the performance of the companies' share prices after the identified CG event was announced. The post-event window allowed for the longer-term impact of the identified CG event to be assessed (Benninga, 2014).

4. The sample of companies was constituted by the 14 FTSE/JSE Top40 listed companies that had contraventions reported (as discussed in Section 4.2.1 and 4.2.2). Some companies in the sample had more than one CG event and the significance of each event was tested. Companies that had more than one CG event included MTN Group Ltd., Tiger Brands, Sasol and Mediclinic. For the interest of ES, the researcher used purposive sampling to gather and analyse the data of the companies in the population that had identifiable CG events. The researcher tested the significance or insignificance of the identified CG events. The application of ES on a purposively selected sample was cost- and time-effective for this study as it only tested the significance and/ or insignificance of identified CG events. The CG events tested were envisaged to have greater influence on the principal's wealth and the socio-economic well-being of other stakeholders. For the companies that were found to have significant CG events,

[22] We adopted the minimum 126-day estimation window recommended by Benninga (2014) with the assumption that events that may have happened during this period were at most 'noise' that was not material for the events considered in this study (*ibid*).

VaR was employed to calculate the cost of the identified CG events to the principal, the company and the economy. The one exception was Steinhoff for which the significance was not calculated using ES. This was because the magnitude of the initially reported losses were very high in absolute values and were assumed to be significant.

5. The researcher calculated the 'normal' returns (returns outside of the event), that is, returns that the principal's investment would have achieved if the event had not occurred. The 'normal' behaviour of the companies' daily shares prices, in the absence of the identified CG events, during the estimation window (126 trading days) were observed, and the shares' returns using the market model were estimated. A multifactor statistical model could also be used to calculate the returns, but this study accepted the assertion by Campbell, Lo and MacKinlay (1997) that in practice there are minimal gains in using multifactor models. Campbell *et al.* (1997) observed that there is negligible explanatory power that additional factors provide beyond the market factor and there is an insignificant reduction in the variance of abnormal returns. For this reason, the market model was used to estimate the returns and is a regression of the companies' share returns against the market index (Benninga, 2014). In the case of this study, the market return was that of the FTSE/JSE Top40 index. The market model was applied as below:

$$R_{it} = \alpha_i + \beta_i R_{mt}$$

Equation 3:2: Market model

Source: Adapted from Benninga (2014)

Where R_{it} is the return on Company *i's* share at time *t*, calculated using the holding period return (HPR), which incorporates the shares' capital gains or losses, as well as dividends paid, with the assumption that the dividends were paid at the end of the holding period. R_{mt} is the market return (FTSE/JSE Top40 index) at time *t*, calculated using the HPR; α_i is the estimated return for Company *i* in the absence of market return sensitivity and β_i is the sensitivity of returns to changes in market return for Company *i*. The market model can

also be used to estimate the $\hat{\alpha}_i$ and $\hat{\beta}_i$ given the R_{it} and R_{mt} calculated by HPR. The calculation of actual returns over the 216 trading days were based on the daily share prices and dividends of purposively sampled companies. The calculation of actual returns, based on daily share prices and dividends, is standardised across ES, as it allows for the accurate measurement of abnormal returns and is more informative when studying announcement effects (Muzata, 2006, citing Rhodes, 1994; Khotari & Warner, 2006).

6. The researcher calculated the abnormal returns (AR_{it}). The application of the market model or equation during the estimation window permitted the researcher to evaluate the impact of identified CG events on companies' returns in the event window. This was done by observing the 'normal' behaviour of the companies' share returns in the estimation window, and then comparing them with the companies' actual returns in the event window between time T_{1+1} (which is the start of event window), 0 (which is the event date, that is, announcements of the identified CG events) through to T_2 (which is the end date of event window). The difference between the companies' actual returns in the event window (between time T_{1+1} through T_2) and the companies' expected returns, using the market model is referred to as abnormal returns. These abnormal returns AR_{it} are given by:

$$AR_{it} = R_{it} - (\alpha_i + \beta_i R_{mt})$$

Equation 3:3: To calculate abnormal return

Source: Adapted from Benninga (2014)

Where R_{it} = Actual return on Company *i's* share at time *t* and $(\alpha_i + \beta_i R_{mt})$ is the return predicted by the share's α_i, β_i and market return at time *t* (Benninga, 2014).

The interpretation of the abnormal returns (AR_{it}) calculated by Equation 3.3 is that they measure the impact of the identified CG events on the market value of the companies' shares. The implicit assumption in this interpretation is that the changes in the returns are as a result of the identified CG events.

7. Calculate the cumulative abnormal returns. The event window abnormal returns were aggregated to calculate Cumulative Abnormal Returns (CAR_i) from time T_{1+1} through T_2 (end of event window).

8. Calculate the statistical significance of the abnormal returns and cumulative abnormal returns. The determination of the statistical significance or insignificance of an event was the main goal of ES as it revealed the event's impact or lack thereof. To determine the statistical significance of the AR_{it} and CAR_i from time T_{1+1} through T_2, the study tested the null hypothesis that the AR_{it} and CAR_i are equal to zero (Campbell *et al.*, 1997). This suggests that the identified CG event does not have statistically significant impact. The null hypothesis will be rejected if the AR_{it} and CAR_{it} are not equal to zero, and the alternative hypothesis that suggests that the identified CG event is statistically significant will be accepted. The test was done on the CAR_{it} for the event window. The CAR_{it} was then used to calculate the t-statistic as follows:

$$t = \frac{CAR_{it}}{\sigma_{it}}$$

Equation 3:4: To calculate the t-statistic

Source: Adapted from Benninga (2014)

Where σ_{it} is the standard error of the abnormal returns during the estimation period.

The abnormal returns of all shares in the sample during the event window were calculated to determine the average abnormal returns (AAR_{it}), which aggregate to calculate the cumulative average abnormal returns ($CAAR_{it}$). The AAR_{it} will be a simple average of the sum of the individual AR_{it} in the sample. The t-statistic would then be calculated as follows:

$$t = \frac{CAAR_{it}}{\sigma_{it}}$$

Equation 3:5: To calculate the t-statistic using $CAAR_{it}$

Source: Adapted from Benninga (2014)

The standard deviation in this case was the simple average of the individual share's standard deviation, assuming that no co-variance exists between the shares and there are no overlaps in the event window.

In calculating the t-statistic or testing the statistical significance of the identified CG events as above, the researcher assumed that the regression residuals are normally distributed (Benninga, 2014). In such a case, the calculated absolute t-statistic values which are greater than 1.96 (positive or negative) suggest that the abnormal returns are statistically significant at 95% level. This suggests that the likelihood of the calculated abnormal return being random and statistically insignificant will be less than 5% (Benninga, 2014).

At this point, it is worth highlighting that all the above calculations were carried out using the Microsoft Excel Data Analysis regression function. The Excel regression calculations were over the estimation window, event window and post-event window. The results are presented and discussed in Section 4.4.2. Appendix 5 also provides the full results generated by Excel.

Moreover, the researcher employed Value at risk (VaR) procedures on companies with identified CG events that had calculated absolute t-statistic values greater than 1.96 (positive or negative). The calculated VaR (discussed next in Section 3.6) determined the magnitude of the cost, the consequence of the identified CG events to the principal, the company and possible inferences to the economy.

3.6 VALUE AT RISK

This study sought to establish the pecuniary impact of P-A and CG problems. As such, Value at Risk (VaR) was employed to measure the cost of the identified CG events to the principal, company and possible inferences to the economy. VaR is a risk management measurement technique and can be defined as the maximum amount the company is likely to lose over a period of time at a given level of confidence (Dowd, 1998). According to Dowd (1998:39), "VaR is the maximum expected loss over a given horizon period at a given level of confidence". Dowd (1998) further highlighted that a VaR procedure is a numerical, statistical or mathematical procedure that produces a VaR figure or number. In risk management, VaR procedures produce a summarised single statistical measure of possible losses that can be incurred by a single asset or

portfolio as a result of normal or abnormal market movements. With assumptions in the VaR calculation, VaR aggregates risks into a single measure that can be used for various reporting and disclosure requirements. That single measure gives an idea of the magnitude of the likely losses to be incurred.

3.6.1 Application of VaR in the study

The VaR method was adapted to calculate the maximum likely cost or loss incurred by the principal due to the identified CG event and agent's behaviour at a given confidence level. The VaR approach has the advantage of being adaptable, as different VaR procedures can be applied to suit different circumstances, which in the case of this study, included the separation of ownership and control, compensation schemes, rewarding systems and other agent behaviours. All these formed part of the CG aspects that were identifiable, and their significance and costs were calculated to suit the objectives of this study. As can be deduced from the steps discussed later, the VaR approach made it possible to quantify the total monetary losses incurred by a company as a result of the agent's self-serving behaviour and ultimately can be extrapolated to measure the cost to the company and economy.

The use of VaR gave a comparable and consistent way of measuring cost across different positions and risk factors. In the same way, when measuring the cost to the principal of the identified CG events and agent's behaviour, VaR provided a comparable and consistent way of measuring the cost of the agent's behaviour as seen in different decisions or actions that were identified as self-serving and not maximising value for the principal. Thus, the measuring of the cost to the principal was done with a common yardstick, regardless of the nature of the identified CG event and self-serving decision or action.

Cheung and Powell (2012) explained the step-by-step procedures of calculating VaR as a parametric method where asset returns are purported to follow a known probability distribution. Cheung and Powell (2012) further argued that the assumed normal trading conditions allow for simplified VaR calculations that have a distribution of risk factors which belong to a family of parametric families, like normal distribution. Cheung and Powell (2012) assumed that asset returns are presented as probability distributions, rather than values.

In this study, the same Microsoft Excel parametric method as used by Cheung and Powell (2012)[23] to calculate the VaR of a single asset was adopted. This method enabled the researcher to ascertain the magnitude of the loss or cost incurred by the principal/shareholder of a single company as a result of an agent's perceived self-serving behaviour, or an identified CG event that would have been statistically tested for significance. The researcher was concerned with establishing the magnitude of the loss or cost that the agent's behaviour or the identified CG event caused to the principal and company. In addition, the aggregation of these costs gave an idea of how much the behaviour of agents or the identified CG event cost the economy. To determine the cost, the researcher considered the total value of the principal's investment as the market capitalisation provided by the JSE at the time (t) in the year in which the Announcement or Cautionary Statement was made public (that is, published on SENS and announced by Regulatory Authorities). In this case, the risk factor is the share price and the Confidence Levels (α) are 95%, 99% and 99.9%[24]. This means that the researcher was concerned with ascertaining the worst possible daily cost that the principal of a company could have incurred in, for example, 95 out of the 100 times. Further, the researcher considered the risk factor as the share price (p), the risk horizon period is the trading day when the Announcement or Cautionary Statement was made public, the historical data series of the FTSE/JSE Top40 index covering the study's period, and the Confidence Levels (α) of 95%, 99% and 99.9%.

Before proceeding to the steps discussed by Cheung and Powell (2012) in their simplified parametric method for a single asset in Microsoft Excel, it is worth noting the assumption of normal distribution in share prices and returns. Cheung and Powell (2012) pointed to the work by Bachelier (1900) who used the central limit theorem to derive a normal distribution in the price movements of the Paris Stock Exchange.

[23] For more on the step-by-step procedure to calculate VaR in Microsoft Excel, read Cheung, Y. and Powell, R. 2012. Anybody can do Value at Risk: A Teaching Study using Parametric Computation and Monte Carlo Simulation. *Australasian Accounting, Business and Finance Journal*, 6 (5 Article 7), pp. 101-118.

[24] The Confidence level is an arbitrarily selected parameter (Dowd, 1998:39) and this study used the 95%, 99% and 99.9% Confidence Level, which means that the VaR covered all but the highest 5%, 1% and 0.1% of the losses respectively.

Since that time, the normal distribution assumption in share price movement has been acceptable, hence the use of that assumption in this study.

3.6.2 Steps to calculating VaR (cost to the principal)

Cheung and Powell (2012) discussed the essential steps and calculations that need to be carried out when using Microsoft Excel to determine the VaR of a single asset. The calculations included the mean and standard deviation of the normal distributions from the historic price data. When these two calculations were carried out, the 95%, 99% and 99.9% Confidence Levels were applied to obtain the VaR which represents the maximum possible loss or cost the principal may have incurred due to the identified CG events or agents' behaviour. In essence, the Khan (2011)[25] Invest-Excel website sums up the steps by Cheung and Powell (2012) into the following Microsoft Excel steps which were adopted for the study.

1. The researcher determined the market value of each sample company. For this study the market capitalisations at the end of the year in which the CG event occurred were used. The market capitalisation data was provided by the JSE.
2. The researcher calculated the sample companies' average returns for a single period of time, which could be a day, month or year. The researcher used daily average returns.
3. The standard deviation of the companies' returns for a single period of time were calculated.
4. The researcher applied the 95%, 99% and 99.9% Confidence Levels.
5. The calculations of the minimum expected return with respect to the selected Confidence Levels were done. In Microsoft Excel, the researcher used the NORMINV (probability, mean, standard deviation) function.
6. The researcher then calculated the minimum expected return in Rand value at the given Confidence Levels.

[25] Samir Khan has a website that has various Microsoft Excel models of which one is titled: "Calculate Value at Risk in Excel". He discusses similar steps in the VaR calculations of a single asset using Excel as Cheung and Powell (2012) but his steps are more simplified. To read more on Samir Khan's steps visit http://investexcel.net/calculating-value-at-risk-in-excel/ [Accessed 20 August 2015].

7. The researcher obtained the VaR for a single period of time (that is, the Value in step 1, minus the Value in step 6).

The researcher interpreted the final value obtained as the loss or cost per day to the principal caused by the identified CG event and self-serving behaviour of the agent or executive. To convert the daily VaR calculated as above to a monthly VaR that represents the loss or cost to the principal, the daily VaR is multiplied by the square root of the total number of trading days (n) in the month. Thus,

$$VaR\ for\ the\ month = Daily\ VaR\ x\ \sqrt{n}$$

Equation 3:6: To convert the daily VaR to a monthly VaR

Source: Adaptation from Cheung and Powell (2012)

However, the researcher did not proceed to calculate the monthly VaR, as the study was focused on ascertaining the daily maximum possible losses incurred due to the identified CG events at 95%, 99% and 99.9% Confidence Levels.

3.7 GINI-TYPE COEFFICIENT

Section 3.4.1 explained how the governance indices were calculated in order to evaluate the deteriorations or improvements in the governance of companies. Section 3.5 tested the statistical significance of the identified CG events, and Section 3.6 calculated the cost to the principal, company and economy. This section discourses the calculation and use of the salary Gini (an adapted Gini-type coefficient) to enable comparisons of the compensation gap within and between the companies in the sample.

The salary Gini (termed s-Gini hereafter) within a company was used as an indicator of the agent's self-serving enrichment at the expense of the principal and other stakeholders like employees who play a part in the performance, reputation build-up, corporate citizenry and sustainability of the company, and for which they also ought to be fairly remunerated. This indicator was used to red-flag potential P-A problems and flaws in the governance system, particularly in the performance measurement systems and effectiveness of remuneration committees.

The remunerating system should monitor this s-Gini across the company's grading system to reduce the chances of wider compensation gaps between the lowest paid

employees and the executives. If anything, the compensation gap should be consistently maintained. An aggregated widening compensation gap may spill over into the socio-economic arena and potentially cause problems with Unions and lead to social unrest in a country with strong labour movement that is in coalition with the ruling political party. The researcher sought to calculate the compensation gap and suggests that HR practitioners should track it as part of good governance. An equitable distribution of income ensures that no one is worse off, and there will therefore be less need for re-distribution laws or policies. Hence, the s-Gini within the company should frequently be calculated, monitored and evaluated to ensure that the compensation gap is taken into account as a key component of a company's governance systems.

Moreover, this study was interested in discoursing about the potential socio-economic consequences arising from the income gap between executives and other employees. This addressed the socio-economic consequences of P-A and CG interactions that the researcher endeavoured to establish. The calculated s-Gini was analysed in relation to the governance indices, remuneration estimation model and costs were established through VaR.

3.7.1 The s-Gini calculation

The Gini coefficient is widely accepted as a measure of inequality, especially wealth inequality. The coefficient is measured as a ratio which has values from 0 to 1 and can be multiplied by 100 to convert into a percentage. A calculated value of 0 reveals perfect equality (for example, perfect income equality where everyone earns the same amount) and a value of 1 reveals perfect inequality (for example, perfect income inequality where people earn different incomes due to myriad reasons). Evidently, a value of 0 can only be ideal and not realistic. The calculated values are expected to incline towards 1 as people earn different incomes.

Thomas, Wang and Fan (2001) investigated educational inequality and modified the traditional direct method for calculating the Gini Coefficient due to the difficulty in attaining educational data from most countries and the fact that attaining education is a discrete variable. The direct method modified by Thomas *et al.* (2001) is depicted in Equation 3.7:

$$Gini = \frac{1}{\mu N(N-1)} \sum_{i>j} \sum_{j} |y_i - y_j|$$

Equation 3:7: Traditional direct method for calculating Gini coefficient

Source: Modified by Thomas *et al.* (2001)

Where $Gini$ is the Gini coefficient being calculated, μ is the mean of the income as a variable, N is the total number of observations, and y_i and y_j are the currency values of income earned by individuals.

As stated, Equation 3.7 was modified to address several identified obstacles that made it difficult to apply the conventional direct method. Thomas *et al.* (2001) then formulated a formula that gave plausible measures of educational inequality. Equation 3.8 became the formula Thomas *et al.* (2001) formulated to measure education inequality.

$$E_L = \left(\frac{1}{\mu}\right) \sum_{i=2}^{n} \sum_{j=1}^{i-1} p_i \ |y_i - \ y_j| p_j$$

Equation 3:8: Final equation used by Thomas *et al.* (2001) to calculate education inequality

Source: Thomas *et al.* (2001)

Where:

E_L= the education Gini based on educational attainment distribution, large population;

μ = is the average years of schooling for the concerned population;

p_i and p_j = the proportions of population with certain levels of schooling;

y_i and y_j = the years of schooling at different educational attainment levels;

n = the number of levels/categories in attainment data, and *n* = 7

The researcher adapted the formula being used by acquiescing to the reasoning by Thomas *et al.* (2001) when dealing with data difficulties in measuring educational inequality, as previously alluded to. The logic to adapt the coefficient equation is also supported by Chen, Tsaur and Rhai (1982) who assert that the Gini can be properly adjusted to suit certain circumstances. These adaptations were due to the difficulties encountered in obtaining an individual worker's income data, as a result of the

confidential nature of salary information. Furthermore, formula modifications were necessitated by the big population sizes (that is, the total number of employees per industry (N)), which for practical and cost purposes could not be completely surveyed, and the high salary differentials per company and within industries (that is, the differences between the average lowest salary earned in an industry and the highest salary earned by a company executive).

This study had to simplify the formula to capture the significantly big population sizes, as this study used the total number of employees in each of the industries, due to difficulties experienced in obtaining credible sources to provide an accurate number of employees per company from 2008 to 2016. For the aforesaid reasons, Equation 3.9 was formulated to measure the s-Gini which is also based on the coefficient measure as below:

$$Gini = \frac{1}{2}(Relative\ mean\ difference)^{\dagger}$$

†The difference is relative to the mean

Equation 3:9: Researcher's own formulation to measure s-Gini

Source: Researcher's proposition

Equation 3.9, therefore, becomes:

$$s - Gini = \frac{1}{2}\left(\frac{Y_i - Y_j}{\mu}\right)$$

Equation 3:10: Final equation used to calculate the s-Gini

Source: Equation formulated by the researcher

Where:

$s - Gini = the\ salary\ Gini\ to\ measure\ salary\ inequality\ between\ a\ company's\ executive\ and\ the\ lowest\ paid\ employees\ in\ an\ industry,$

$Y_i = the\ highest\ salary, i.e.\ company's\ executive\ salary\ per\ year,$

$Y_j = the\ lowest\ average\ salary\ per\ year\ in\ an\ industry\ and$

$\mu = the\ mean\ salary\ per\ year$

Data from Statistics South Africa (Stats SA) was used, which provided the total number of employees per industry per quarter, and ultimately per year, as well as the average quarterly and annually lowest salaries per industry. The actual executive salaries were obtained from the companies' Annual Financial Statements which are a mandatory disclosure under the Companies Act No. 71 of 2008. That meant that there were now two categories to the population, that is, executives and other employees whose average data was obtained from Stats SA. The modifications were necessitated by our N, salary differential $(Y_i - Y_j)$ and ultimately the mean (μ). This modification of the formula provided plausible results corresponding to the number of times the executives' salaries exceeded the average salary earned by employees in the industries. The s-Gini results are presented and discussed in Section 4.5.1.

3.7.2 Data inputs into the s-Gini calculation

Deininger and Square (1996) asserted that to improve the quality of data input into the Gini calculation, there has to be standardised individual assessments, comprehensive coverage of the population and income sources. This study encapsulated these qualities in that the:

- individuals considered were the employees in salary bands in the industry in which the companies operated. Since this study sought to measure inequality caused by compensation in the workplace, it used salaries. The average industry salaries, within the quantiles or categories, provided more accurate and standardised measures of inequality in the s-Gini across companies. To measure the inequality, the gross income of the employees in the industry in which the company operates were used, as published by Stats SA. On the other hand, the executive compensation was obtained from the published Annual Financial Statements as well as other publicly available information like options granted to executives, and are reflected in directors' share dealings.
- the population of the number of employees in each of the industries the companies operate in was also obtained from Stats SA,
- the income sources considered are the salaries earned by the employees in the respective industries, based on Stats SA data.

All three data inputs for the s-Gini were used for all the sample companies. The s-Gini calculations were carried out in Microsoft Excel, and the results are tabulated in Table 4.15, while the full results are presented in Appendix 12.

3.8 CONCLUSION

This methodology chapter started by outlining the pragmatic philosophical worldview applied to the study. The philosophical worldview section discussed the need for the pragmatic foundation to aid in understanding the basis of P-A and governance interactions and how their socio-economic consequences can be mitigated to achieve better effectiveness in the adopted codes of good governance. From the philosophical worldview, the discussions transitioned into the research design, design logics, timing, integration and weighting, which are key elements in mixed methods research. This section of the chapter focused on the Concurrent Qual + Quan Mixed Methods and the Exploratory Sequential Qual → Quan Mixed Methods design logics and its related aspects of timing, integration and weighting.

Having laid this foundation, the chapter presented pictorial views of the design logics that reflected the strands, procedures followed and the expected outcomes of every procedure followed. Given this framework which was shaped by the study's philosophical worldview, design logics and their procedures and expected outcomes, the chapter delved into explaining how the governance indices, remuneration estimation model, ES, VaR procedures and s-Gini were calculated. The calculated indices were designed to reveal declining trends or improvements in governance within the companies (addressing the prevalence of P-A and CG problems). The remuneration estimation model aimed to incorporate governance in executive compensation, while the ES aimed to test the statistical significance of identified CG events.

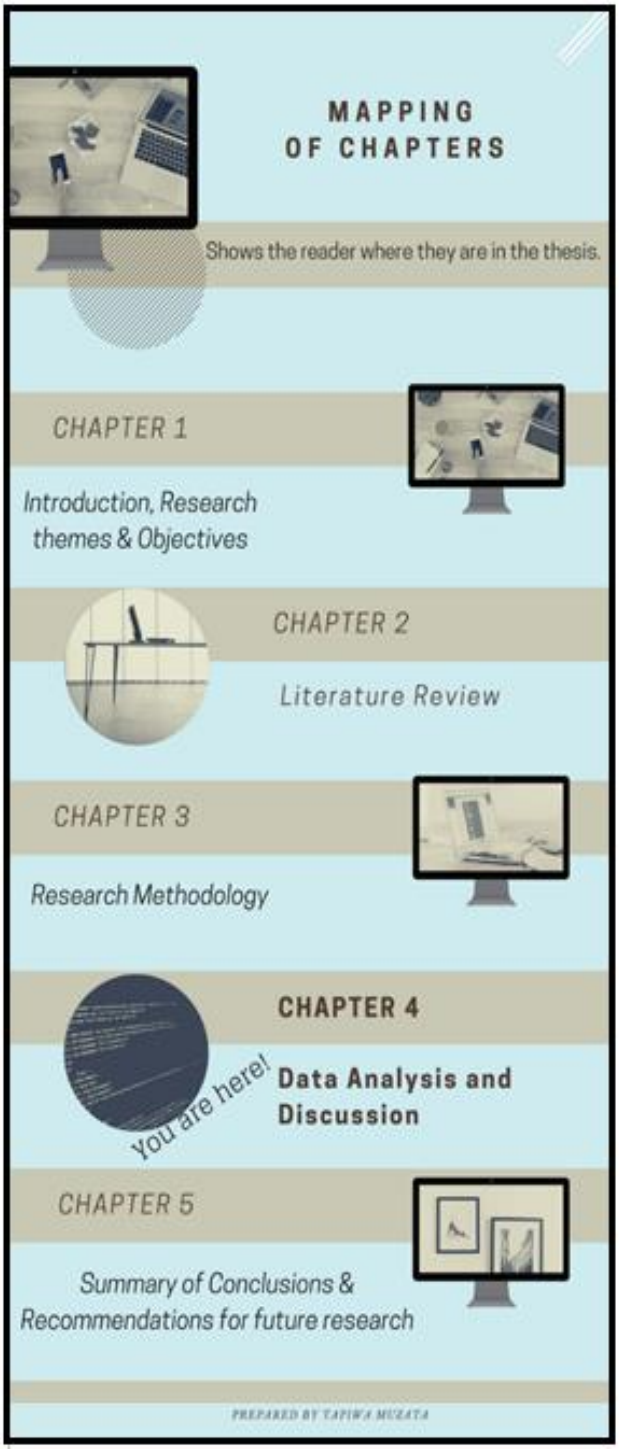
Furthermore, the chapter explained how the VaR procedures were carried out to establish the cost to the principal, company and cost-inferences to the economy. The chapter went a step further by discussing the measurement of the compensation gap by using an adapted Gini coefficient, which it called a salary Gini (s-Gini). The data collection and analysis techniques were integrated in the sections that discussed the governance indices, remuneration estimation model, ES, VaR and s-Gini.

The researcher believes that the application of the archival research strategy, inductive reasoning, pattern explanation and interpretative enquiry, as well as the techniques discussed in this chapter, enriched the quality of the research and enabled an exploration for answers to the four research question themes. Table 3.3 summarises the research methods used to answer each research question in the four themes.

Table 3:3: Themes, Research Questions and methods used

Theme	**Research Questions**	**Method used to answer the research question**
Theme I: Incidence and interaction with company success or failure	What is the prevalence of P-A and CG problems in South Africa's FTSE/JSE Top40 listed companies?	Archival research and content analysis on archived records were employed to check reported cases of CG failures or problems from 2008 to 2016. Board indices were also calculated to evaluate the strength of governance in the sample of companies. To complement the calculated indices, the qualitative strands in the Concurrent Qual + Quan and Exploratory Sequential Qual → Quan Design Logics, and the combined interpretations of their results provided plausible inferences and supported the attribution analysis that responded to the research questions. Therefore, it was possible to cogently perform pattern explanation from the results (Blaikie, 2004).
	Have these P-A and CG problems been at the heart of some of the corporate failures or problems in South Africa?	
Theme II: Costs arising from P-A and CG problems	What is the role of executive compensation schemes in exacerbating P-A and CG problems in South Africa?	The study ran some dynamic panel data estimation models, analysed executive compensation against the minimum wages in the sectors which the FTSE/JSE Top40 operate in and employed an adapted Gini coefficient (called salary Gini, s-Gini henceforth).

	What are the potential costs and who bears these costs of P-A and CG problems?	Conducted Event Study to establish the significance of identified P-A and CG problems in Theme I. VaR procedures were then applied to calculate the potential costs to the principal who is the shareholder. In addition, who bears the cost was ascertained by the losses reported in fund Factsheets.
Theme III: Socio-economic consequences of P-A and CG problems	To what extent do the P-A and CG problems contribute to socio-economic inequality in South Africa?	The study uses the s-Gini and executive salary multiples over the lowest paid employees in industries to capture the socio-economic consequences emanating from P-A and CG problems. In addition, P-A and CG problems in Theme I were used to indicate inequalities that may snowball to other socio-economic areas.
Theme IV: Effectiveness of governance codes in South Africa	How effective have the current codes of good CG been in mitigating P-A and CG problems and consequences?	The board indices and findings in Theme I through to Theme III were evaluated to establish the effectiveness of current CG codes.



Chapter 4: Data Analysis and Discussion

This chapter presents the findings and results of the thesis. It separately discusses as well as integrates findings and results obtained from Theme I through Theme IV. Findings' concurrences, divergences and inferences drawn are cogently conversed in the chapter.

Chapter 4 Contents

CHAPTER 4: DATA ANALYSIS AND DISCUSSION

4.1 INTRODUCTION

Chapter 3 discussed agency theory as the dominant theory in CG (Clarke, 2004; Dühnfort *et al.*, 2008), and the acknowledgement by Mallin (2010) that agency theory provided the main CG theoretical framework. It is for this reason that the analysis of findings in this chapter is through the agency theory lens. The previous chapter also considered how agency theory is rooted in information economics (Eisenhardt, 1989, citing Jensen, 1983). The data used in this study is publicly available through the SENS, the companies' websites, the JSE and regulatory authorities' websites. The data is related to the separation of ownership and control, executive compensation, reward systems and governance principles, the recommended practices and outcomes of the King III and King IV reports.

This chapter discusses the results of the research study, and examines the issues pertaining to the research questions in each of the four themes as presented earlier. The chapter begins by presenting and discussing the results addressing Theme I, which ascertains the prevalence of CG failures amongst FTSE/JSE Top40 listed companies. In the subsequent section, the results of the role of executive compensation and the potential costs of P-A and CG problems are presented and discussed under Theme II. The chapter concludes by presenting the results addressing the potential socio-economic consequences in Theme III, and the effectiveness of CG codes in Theme IV.

4.2 THEME I: IDENTIFIED CORPORATE GOVERNANCE EVENTS

Chapter 1 identified CG events as corporate failures which include both financial failure and the involvement in conduct which attracts penalties and other sanctions from regulatory authorities, or conduct resulting in reputational damage (for example, involvement in collusion which attracts penalties from the Competition Commission or Tribunal).

As found by Chapple and Truong (2014), the role of the board of directors is to monitor and ensure that the company complies with all laws and regulations that govern the operations of the business. The board and its committees are a fulcrum in governance (Chapple & Truong, 2014, citing Gillan, 2006) and monitor the agent's performance

including the compliance with laws and regulations (Chapple & Truong, 2014, citing Fama & Jensen, 1983; Carter *et al.,* 2010). In addition, King III states that the Audit Committee should be informed and be aware of 'reportable irregularities' which was not the case in the tabulated cases. The cited literature by Chapple and Truong (2014) and the King III recommendations imply that the companies in Table 4.1 (on the next page) had failures in CG interactions which possibly emanated from the board and board committee's failure as fulcrums in governance. This implies that the boards' governance interaction systems failed to effectively restrain, monitor and ensure that the agents (executives) complied with the applicable laws and regulations resulting in fines and or other sanctions being imposed by the regulatory authorities.

4.2.1 Corporate governance failures manifested in contraventions of laws and regulations

Table 4.1 depicts the companies in the sample that had CG failures and it reveals the pervasiveness of problems in the CG interactions within companies listed on the FTSE/JSE Top40 index.

Table 4.1 and the subsequent discussions address the research questions under Theme I, as well as the first objective that examines the prevalence of P-A and CG problems in South African companies.

Table 4:1: Companies in the sample that had CG failures

Company name	Nature of the identified CG event	Event date
Tiger Brands' subsidiary Albany Bakeries	Contravention: Price fixing of bread and dividing markets in contraventions of Chapter 2 of the Competition Act, 1998 (Act No. 89 of 1998). Outcome: Fined R 98 874 869.90 according to Competition Commission Press Statement dated 5 May 2008.	14 February 2007
Tiger Brands' subsidiary Adcock Ingram Critical Care (Pty) Ltd ("AICC")	Contravention: Collusive tendering and market allocation, both of which are contraventions of Section 4 of the Competition Act, 1998 (Act No. 89 of 1998). The Competition Commission alleged that certain directors of the parent company were aware of the competition law breaches. Outcome: Fined 8% of turnover amounting to R53 502 800.00. The highest penalty then, according to Competition Commission Press Statement dated 9 May 2008.	11 February 2008
Sasol's subsidiary: Sasol Chemical Industries Limited	Contravention: Abusing fertiliser market dominance by charging excessive prices and collusion to fix prices of certain fertilisers with its competitors such as Kynoch and Omnia. Outcome: Fine amounted to R250 680 000.00, according to the Competition Commission Consent Order Decision dated 20 May 2009.	3 May 2005
Sasol's subsidiary: Sasol Chemical Industries Limited	Contravention: Sasol engaged in collusive conduct as a result of the implementation of the supply agreement, including the operation of the pricing formula and the exchange of information relating to the pricing of polypropylene. Sasol was found guilty of charging domestic customers excessive prices for purified propylene and polypropylene between January 2004 and December 2007. Outcome: Fined R534 000 000.00, according to Competition Tribunal Press Statement dated 5 June 2014.	12 August 2010
MTN Group	Contravention: The Competition Commission investigated MTN for price discrimination in contravention of Section 9(1) of the Competition Act, 1998 (Act No. 89 of 1998). The Commission alleged that MTN's conduct substantially reduced competition between telecommunication network operators. The amount of the fine could not be established. Further contraventions and non-compliance by MTN Nigeria (a subsidiary of the group) in 2015 culminated in a fine. Outcome: A fine of US$5 200 000 000.00 imposed by Nigeria Communications Commission (NCC) on 26 October 2015 (MTN, 2015). As a consequence of this fine, the JSE temporarily	30 July 2007 (CCSA investigation), 26 October 2015 (NCC fine), Turkcell announcement (29

Company name	Nature of the identified CG event	Event date
	suspended the trading of the MTN shares on 2 November 2015. The final amount of the fine of US$2 573 000 000.00 was settled between NCC and MTN in June 2016 (MTN, 2016). Other contraventions: In addition to the two aforementioned MTN incidences of flouting laws and regulations, Fin24 (2015) narrates the company's history of breaching laws in various countries it operates in. The highlighted cases include: Incidence: MTN employees in Uganda allegedly manipulated the mobile money platform and swindled a substantial amount of money in 2011. Loss: about US$160 000 000.00. Incidence: Turkcell (a Turkish telecommunications operator), a competitor in Iran accused MTN of bribing Iranian officials in 2012. The case between Turkcell and MTN continued in 2017 with the South Gauteng High Court (South Africa) granting Turkcell a go-ahead with a lawsuit against MTN (van Zyl, 2017). Potential Loss: about US$4 200 000 000.00. Incidence: MTN's IT specialist in Zambia allegedly manipulated the company's Let's Go BEEG promotion to allow his girlfriend to win in 2012. Potential loss: about US$500 000 000.00 as of 23 April 2012. However, the loss was averted as MTN conducted a re-draw of the competition prize. Incidence: MTN's Chief Corporate Services Officer was accused of diverting sponsorship funds in 2013. Loss: undisclosed.	March 2012 and 28 November 2013)
Vodacom	Contravention: The Competition Commission laid criminal charges against a Vodacom Executive Director in terms of Section 73 of the Competition Act, 1998 (Act No. 89 of 1998). Section 73 provides that it is an offence to knowingly provide false information to the Commission. The Commission asserted that the Executive Director intentionally provided false information to mislead it and contravened the Act. Outcome: Vodacom is alleged to have failed to provide the Commission with pertinent documents pertaining to the acquisition of Glocell by Vodacom. Furthermore, in a Competition Commission's Press Statement dated 24 July 2008, The Competition Tribunal stated that they believed that Vodacom deliberately withheld pertinent information from the Commission. The Tribunal observed that the strategic rationale provided by Vodacom to the Commission for acquiring Glocell was substantially different from that contained in the company's Board Minutes. Upon further investigations by the Commission, the true rationale of acquiring Glocell by Vodacom was to eliminate competition that was threatening its profit margins, according to the Competition	24 July 2008

Company name	Nature of the identified CG event	Event date
	Commission's Press Statement dated 24 July 2008. The amount charged could not be ascertained.	
Netcare Hospital Group	Contravention: The Competition Commission alleged and Netcare accepted that it implemented a merger with Community Hospital Group (Pty) Ltd without the Commission's approval, thus contravening Section 13 A(3) of the Competition Act, 1998 (Act No. 89 of 1998). In addition, Netcare contravened Section 4(1)(b) of the Act by having a similar pricing structure for tariffs it charged in its hospitals with those charged by Community Hospital Group (Pty) Ltd before the unauthorised merger. According to the Consent Order issued on 10 March 2008. Outcome: Netcare was fined a total of R6 000 000.00. The fine amount of R6 000 000.00 was initially rejected by the Competition Tribunal but was eventually upheld by the Competition Appeal Court of South Africa, based on the hearing that took place on 27 October 2008.	10 March 2008
Rand Merchant Bank	Contravention: Allegations of dividing the grain trade market in which they compete by allocating territories and customers. This follows an agreement entered into by RMB and NWK in 2005 in respect of grain owned by RMB and stored in NWK silos in contravention of the Competition Act, 1998 (Act No. 89 of 1998). Outcome: Fined R2 100 000.00, according to Competition Commission's Press Statement dated 6 June 2011.	17 March 2009
Supermarkets: Pick n Pay Stores, Shoprite/Checkers, Woolworths and Massmart (this study excluded Spar and Metcash as they are not part of the sample but were part of the investigation by the Commission)	Contraventions: The Commission's investigations focused on abuse of buyer power, category management, exclusive long-term leases and information exchange with regards to staple foods. The commission found no evidence on abuse of buyer power, category management and information exchange. However, the Commission raised serious concerns relating to long-term exclusive leases in shopping malls which are structured in ways that may constitute contraventions of the Competition Act, 1998 (Act No. 89 of 1998), particularly where supermarkets have market power. The Commission's concern is that the long-term exclusive leases in the local markets are not justifiable and result in anti-competitive outcomes that enhance market power and that can stifle competition from independent and small retailers. Furthermore, the Commission found that a third party service provider like AC Nielsen and Synovate gathered scanner data from these supermarkets and disseminated it to suppliers. The commission alleged that this conduct impacted on competition. As at the announcement date of 27 January 2011, the Commission was still investigating the long-term exclusive leases and information-sharing through third parties.	29 June 2009

Company name	Nature of the identified CG event	Event date
	Outcome: No penalties were imposed as investigations are ongoing as per the Competition Commission's Press Statement dated 27 January 2011.	
Liberty Group	Contravention: Liberty colluded to divide markets by allocating customers and territories through two deeds of restraint. The conduct was found to contravene Section 4(1)(b)(ii) of the Competition Act, 1998 (Act No. 89 of 1998). Outcome: Fine amounted to R272 187.95 according to the Competition Commission Consent Order Decision dated 10 October 2012.	13 March 2011
Mediclinic	Contravention: Investigated for alleged price fixing on 10 February 2012 and another on 26 February 2013, based on the relationship that Mediclinic had with Victoria Hospital Proprietary Limited, Newcastle Private Hospital Proprietary Limited, Howick Private Hospital Holdings Proprietary Limited, Mediclinic Tzaneen Proprietary Limited, Mediclinic Hermanus Proprietary Limited and Mediclinic Upington Proprietary Limited. The basis of the price fixing investigation was the fact that Mediclinic negotiated and determined tariffs on behalf of each of the stated hospitals. Outcome: The Commission concluded that the tariff determination arrangement between Mediclinic and the managed hospitals contravened Section 4(1)(b)(i) of the Competition Act, 1998 (Act No. 89 of 1998). This is based on the Consent Order dated 18 March 2015. There was no administrative penalty imposed by the Commission but there was an agreement on non-pecuniary remedies.	10 February 2012 and 26 February 2013
British American Tobacco Plc	Investigative journalism discovery: The BBC Panorama Programme (2015) conducted a five months' investigation into alleged bribes paid by BAT employees to politicians, public officials and people working for competitors to damage competitors' reputations. Outcome: The uncovered documentary evidence by the BBC Panorama Programme (2015) revealed that the alleged bribes were of significant amounts as follows: US$26 000.00 paid to public official in Rwanda, Burundi and Comoros Islands. The amounts were paid to three officials connected to the United Nations in 2012. Other significant amounts paid and reported by the BBC (2015) were US$20 000.00 and US$10 000.00. The evidence submitted by BAT to the Employment Tribunal confirmed that the payments made were a series of 'unlawful bribes' (BBC, 2015), and were at the behest of the company's East Africa Corporate and Regulatory Affairs department (Gillard, 2016). Gillard (2016) reported that BAT's Legal and	30 November 2015

Company name	Nature of the identified CG event	Event date
	Intelligence Department at its head office were aware of the 'unlawful bribes'. BAT also faced allegations of corruption in Kenya and investigations by the UK's Serious Fraud Office (Gillard, 2016). In addition, an amount in excess of US$300 000.00 was allegedly paid by BAT (over a 13-year period) to erode the competitors' competitive advantage (Webb, 2015). The investigations extended to South Africa where BAT was purported to have committed corporate espionage against its competitors (Connett, 2016).	
Aspen Pharmacare Holdings Ltd	Contravention: The Italian Competition Authority (ICA) charged and found Aspen guilty of infringing Article 102 of the Treaty on the Functioning of the European Union[26] by setting excessive prices for life-saving and irreplaceable drugs in the treatment of oncohematological patients. Outcome: A fine of €5 200 000.00 (approximately R73 700 000.00) was imposed on Aspen Pharmacare Holdings Ltd. Furthermore, Aspen failed to disclose the fine to shareholders via SENS, stating that the amount was insignificant (Crotty, 2017).	29 September 2016

Source: Researcher's findings

[26] The Treaty on the Functioning of the European Union (TFEU) addresses the abuse of market dominance which affects trade between European Union Member states.

4.2.2 Contraventions of laws and regulations

A total number of 46 sample companies were analysed, which included companies that are currently, and those that were once, part of the FTSE/JSE Top40 index, as discussed in Chapter 3. Eleven[27] out of the 46 sample companies contravened and/ or did not comply with laws and regulations that govern their operations. The laws and regulations that were contravened and/ or not complied with are highlighted in Table 4.1.

The 11 companies in Table 4.1 represent 23.91%[28] of the total FTSE/JSE Top40 listed companies included in this study. The 23.91% significantly increases to 30.43% if industry-wide collusion by dominant supermarkets is assumed. The reason for this assumption is that the Competition Commission investigated the supermarket industry as a whole and if each investigation is considered as a separate occurrence, the number of companies that flouted laws increases to 14. That is, 30.43% denotes that 14 out of 46 sample companies contravened and/ or were non-compliant. Nevertheless, these discussions and analyses will regard the Competition Commission's investigation of the supermarkets as a single incidence. For this reason, the analyses focus on the 23.91% result.

As previously stated, the cited literature by Chapple and Truong (2014), King III and King IV imply that the companies in Table 4.1 experienced failures in CG interactions. The 23.91% constitutes a substantial proportion of the sample of companies and reveals the pervasiveness of P-A and CG failures, especially considering the size of the companies, the role they play in capital and investment allocation, as well as their contributions to South Africa's economic performance. Also, 23.91% of the sample of the largest listed companies experiencing P-A and CG problems significantly exceeds

[27] Sasol's subsidiary Sasol Chemical Industries Limited was involved in two separate cases breaching the Competition Act, 1998 (Act No. 89 of 1998) in 2005 and 2010. Tiger Brands had two of its subsidiaries, Albany Bakeries and Adcock Ingram Critical Care (Pty) Ltd fined for contravening the Competition Act, 1998 (Act No. 89 of 1998) in 2007 and 2008 respectively.

[28] The figure includes supermarkets investigated by the Competition Commission as a single incidence of abuse of buyer power, category management, exclusive long-term leases and information exchange with regards to staple foods. The Commission's investigation was industry-wide focusing on the dominant players. In addition, although Steinhoff is a FTSE/JSE Top40 company, it was originally not part of the sample as it was excluded due to missing data in some years. For this reason, Steinhoff's CG event which surfaced at the end of 2017 is considered separately in the discussions and analyses.

the study's expectations that negligible P-A and CG problems exist because of the laws and listing regulations designed as external governance systems that restrain agency and CG problems as well as protecting investors from agent's behaviour. Weak standards of governance in these companies may divert capital allocation, thus negatively affecting economic growth and productivity, ultimately leading to failures in meeting the expectations of workers, consumers and society (Preece, 2017).

These CG failures provide credence to agency theory and suggest that a significant 23.91% of FTSE/JSE Top40 listed companies experienced the consequences of P-A and CG problems. The Steinhoff company case (also listed on the FTSE/JSE Top40 index) suffered the consequences of agency problems over the research period. In addition to the cited companies, and mainly outside the timelines of our study, Steinhoff had reported cases of CG failures. Details were still unfolding but Steinhoff had reported cases of accounting 'irregularities' being investigated by the European, US and South African regulatory authorities. Steinhoff's website had a statement stating that "Steinhoff has announced the restatement of financial statements, and as a result these documents can no longer be relied on" (Steinhoffinternational.com, 2018). At the time of the announcement, Steinhoff had a significant weighting on the FTSE/JSE Top40 index, accounting for about 3.52% of the total market capitalisation of Top40 listed companies and was the seventh largest company, with a market capitalisation of R285 billion (BusinessTech, 2017). CG failures in a large company like Steinhoff are expected to have severe consequences for South Africa's capital markets. The statistical significance of each of the aforementioned events (including Steinhoff's event) and the magnitude of the cost to the principal are calculated and presented in Section 4.4.2.

The cited contraventions reveal that P-A problems are inherent in CG structures due to the separation of ownership and the way companies are governed and managed (Eisenhardt, 1989). The assertions by Otten and Wempe (2009) that CG problems exist when serving the interests of any group of stakeholders are also supported by the aforesaid 23.91% of sample companies and Steinhoff which contravened various laws and regulations. Moreover, the classification of P-A assumptions by Eisenhardt (1989) as discussed in Chapter 2 are affirmed in the contraventions. The contraventions also provide confirmation of Jensen's (1983) assertion that agency theory has its roots in information economics, because Steinhoff and 23.91% of the

FTSE/JSE Top40 listed sample companies' executives managed to breach laws and regulations without their respective governance structures picking up information on the breaches.

The findings of the study confirm that company executives (agents) withheld information about the collusions, price fixing and financial reporting irregularities from the principal who is represented by the board. In these cases, relevant regulatory authorities conducted investigations that identified that the breaches were going on for a number of years without the relevant CG interactions deterring and detecting the executives' misconduct. However, in some instances, the boards or directors of parent companies were complicit to the misconduct of the subsidiary's executive directors. For example, the Competition Commission alleged that certain directors of Tiger Brands (the parent company) were aware of the competition law breaches in Adcock Ingram Critical Care (Pty) Ltd (a subsidiary company). The existence of information asymmetry in CG interactions between agents and principals was confirmed by the findings of this study because the respective boards of the cited companies failed to deter and detect the misconduct for some time. Ultimately, it can be plausibly suggested that CG interactions in the companies presented in Table 4.1, and Steinhoff, failed to monitor the agent's performance including compliance with laws and regulations. This submission is aligned to Chapple and Truong (2014) and Carter *et al.* (2010).

In addition to Eisenhardt's (1989) assertion that agency theory is rooted in information economics, Jensen (1983) highlighted that agency theory has developed along the positivist and P-A streams, as previously discussed in Chapter 2. The positivist and P-A lines have similar assumptions and use a contract as the unit of analysis. Considering that a contract is a unit of analysis, there is acknowledgement that there is separation of ownership and control resulting in incentivising the agent through basic compensation, performance bonuses, share options, and so forth. These incentives are susceptible to self-interest, moral hazards (problems arising from hidden actions) and adverse selection (problems arising from hidden knowledge). Hence, it is plausible for this study to assert from the results that Steinhoff and the 23.91% of the sample of companies that were cited for contravening various laws and regulations, were driven by the self-interest of agents, at the expense of their principals.

It can be safely assumed that the core of the self-interest is to maximise the agent's compensation as it would be based on performance as previously mentioned. The justification of this assumption is that the nature of the contraventions is designed to maximise the agent's performance which is the basis of his/her compensation. The contraventions include price-fixing and collusion (Tiger Brands, Sasol, RMB, Liberty and Mediclinic), abuse of market dominance (Tiger Brands, Sasol, supermarkets), bribing politicians (MTN and BAT), and paying illicit amounts to employees of competitors to acquire trade secrets (BAT) to maximise business revenue, profitability and share prices.

To fix prices means that the consumer becomes a price-taker, and coupled with abuse of market dominance, the company then has the power to determine profit margins, resulting in the agent attaining the revenue or profit targets agreed with the board. Moreover, market allocation eliminates the competition and ensures a better degree of the agent's performance, as a market for the company's products is guaranteed, regardless of the quality of service. Bribing politicians to bypass country laws which protect the local economy, people and competition, for example, support for anti-smoking laws (Owen, 2015), and to obtain an operating licence, as alleged in the case of BAT and MTN, ensures the continued achievement of the agent's performance targets. The nature of these contraventions are designed to maximise the compensation due to the agent within the agreed contract period.

The mentioned contraventions support the assertion by Shah (2014) and Bolton, Scheinkman and Xiong (2006) that high demands on short-term performance and the associated bonuses offered to the agent by the principal may result in the agent overweighting short-term performance at the expense of the future good of the company. Moreover, the majority of the tabulated CG failures recorded some of the highest s-Gini (perfect salary inequality) and the highest number of times an executive earns more than the lowest paid employee. (Salary inequality is discussed later in Section 4.5.1.) What can be noted at this stage is that the salary inequality seems to support the self-serving behaviour of the agent at the expense of other employees, and this is a time-bomb for socio-economic crisis in a country with influential trade unions that have the potential to halt the economic activities of South Africa.

The motivation by the executives in the companies listed in Table 4.1 to implement operating decisions that contravene stated business and country laws and regulations

further postulate that the agent pursued personal interests that impacted on the long-term wealth of the principal. Progressively, short-term performance focus results in the search for immediate gratification for both the principal (in investment returns) and agent (in compensation), with dire consequences on the long-term value of the company (Shah, 2014, citing Kay, 2012). The agent's compensation and the magnitude of the fines represent a significant cost to the principal.

The cited misconduct by Steinhoff and 23.91% of the largest FTSE/JSE listed companies concurs with the findings from the study carried out by Sorkin (2013) on the Wall Street financial services industry in the US, cited by Shah (2014). The study found that 26% of all Wall Street participants believed that employees would compromise ethical standards and contravene laws because of the compensation and bonus structures within companies. The Wall Street study also found that 17% of the participants believed that leaders would ignore ethical breaches and contravention of laws by top performers, and 15% believed that leaders would not report the violations. These Wall Street findings concur with this study's findings that the Competition Commission's investigations discovered that some of Tiger Brands' directors (parent company) were aware of the Competition Act breaches by Adcock Ingram Critical Care (Pty) Ltd (a subsidiary), that Vodacom's executive director knowingly provided false information to the Competition Commission when applying for the acquisition-approval of a competitor, and some of BAT's top leaders are alleged to have been aware of the bribery of politicians and illicit payments being made to sabotage its competitors. These ethical misconducts and contraventions of laws highlight failures in CG interactions to control the agent's activities, as well as failures when the principal is complicit in a quest to maximise the agent's compensation and principal's return, respectively.

Failures in the effectiveness of adopted CG Codes are also highlighted in the contraventions discussed above. Further discussion on the effectiveness of CG codes is presented in Section 4.6. However, there are bigger socio-economic consequences, especially considering the findings by the Competition Tribunal on Sasol's subsidiary, SCI. The Competition Tribunal concluded that SCI's mark-up on the polypropylene[29]

[29] Polypropylene is an intermediate product whose pricing is significant to household plastic goods like buckets, brooms, storage containers and industrial products like motor car parts and water tanks.

price over actual costs (including an appropriate return on capital) during the complaint period was in the range of 26.9% – 36.5%. Furthermore, the Tribunal judged that the local price of polypropylene was on average 23% higher than average deep sea export prices of polypropylene (excluding exports into Southern Africa). The Tribunal also discovered that: “SCI’s domestic prices charged for polypropylene were 41% and 47% higher for homopolymer and raffia grade polypropylene respectively in the complaint period compared to the discounted prices in Western Europe computed on the basis of feedstock costs comparable to SCI” (Competition Tribunal Press Statement, 5 June 2014). The Tribunal’s findings reveal seemingly exorbitant and unjustifiable local prices that are higher than export prices and those charged in Western Europe. Therefore, it is reasonable for this study to posit that local South African consumers of industrial and household plastic products carried the burdens of CG failures through higher prices. These exorbitant prices result in the agent being credited with producing greater profitability (performance) and share price or return, both of which are the basis for his/her compensation. In essence, the consumer unnecessarily funds CG failures.

While the average South African consumer is battling continued higher prices, pension and retirement funds, collective investment schemes, and insurance companies, and asset and investment managers have, on their behalf, invested in companies that have subsequently experienced CG failures and therefore, the consumer’s hard-earned savings have been significantly impacted. Conceivably, this leads to consumers failing to adequately provide for their retirement, school and tuition school fees and other investment objectives, thus increasing the pressure on government’s social spending and fiscus. The magnitude of potential losses and socio-economic consequences are discussed in Sections 4.4.2 and 4.5, respectively.

The findings and discussions above addressed the Theme I research questions and associated objectives. From these findings, it can be cogently concluded that P-A and CG failures are significantly prevalent on the FTSE/JSE Top40 listed companies, albeit in a variety of different magnitudes. The findings show that 23.91% of the FTSE/JSE Top40 listed companies experienced CG failures and attracted sanctions from regulatory authorities over the period considered in this study. This must be worrying to policymakers/lawmakers, listing authorities like the JSE, academia, and society at large, considering the size of these companies, their roles in capital and investment allocation, as well as economic performance. Some form of marginal CG failures in

the biggest 40 listed companies, by market capitalisation, would have been expected given the level of required compliance to various laws and listing requirements. That is, 23.91% significantly exceeds the study's expectations that negligible P-A and CG problems exist. What should be more concerning to policy makers, scholars and others is that these FTSE/JSE Top 40 companies have a very strong influence on corporate governance and tend to shape corporate behaviour in a country. The CG failures amidst current compliance requirements provide credibility to the suggestion that the success of voluntary CG codes has been limited. However, the findings of the study are consistent with the outcomes of above-cited literature.

Figure 4.1: Infographic of the findings on the prevalence of CG failures

Source: Researcher's findings

The next section focuses on the discussion on the findings around governance indices and their changes during the period from 2008 to 2016.

4.3 BOARD INDICES

The previous section discussed the findings that credibly suggested that P-A and CG failures are significantly prevalent on the FTSE/JSE Top40 listed companies, although in varying degrees. This section continues by presenting and discussing the results addressing Theme I research questions and related objectives. The focus is on the strength of CG within the FTSE/JSE Top40 listed companies by calculating the governance indices (proxy for governance) for each sample company based on their adherence to the provisions of the King III and King IV codes.

This study uses the recommendations from the King III and King IV as provisions in the construction of the indices, similar to Shaukat and Trojanowski (2017) who used the recommendations from the UK Corporate Governance Code. Shaukat and Trojanowski (2017) found that adherence to the provisions of the codes strengthens the capacity of boards to monitor executives and mitigate agency and CG problems. For this reason, the study uses the King III and King IV provisions as opposed to MOI provisions. Shaukat and Trojanowski (2017) further argued that using the provisions of the codes condenses the quality of governance arrangements at board level within companies and are easier to tailor-make and amend than the MOI. The use of code provisions is flexible and provides governance choices under the 'apply or explain' regime. This approach in constructing the indices is rooted in agency theory predictions and is supported by empirical evidence (Shaukat & Trojanowski, 2017).

4.3.1 Findings on calculated indices

This study carefully considered recommendations dealing with board oversight functions from the King III and King IV reports. These chosen board oversight functions (including board committees) are considered to be complementary aspects of the robustness of board governance. The study engaged in Content Analysis (CA) by systematically evaluating information provided under the Governance Sections of the Annual Integrated Reports for each of the years from 2008 to 2016 to identify compliances or non-compliances with the King recommendations. The study drew compliance inferences from what is presented in the publicly available Integrated

Reports of each of the sample companies. A total of 423 Integrated Reports were systematically evaluated.

The considered recommendations are the provisions equally weighted and 1 is added where the company complies and 0 for non-compliance with the King III and King IV recommendations in line with GIM (2003) and Shaukat and Trojanowski (2017). There are twenty provisions and a company that fully complies with the King III and King IV recommendations will have a governance index of 20, while a fully non-compliant company will have a governance index of 0. This suggests that the calculated governance index, as a proxy of governance, will be closer to 20 for better governed companies and closer to 0 for poorly governed companies. For example, a company with a calculated governance index of 18 suggests that it is better governed than a company with a calculated index of 11. Furthermore, increases and decreases in the calculated indices suggest improvements and deteriorations, respectively, in the governance of sample companies during the 2008 to 2016 period.

Table 4.2 (on the next page) depicts the summary of governance indices for each sample of companies from 2008 to 2016 and presents averages for all the nine years. Refer to Appendix 1 for the mapping of the provisions to King III and King IV and Appendix 13 for the justifications of each of the provisions included in the index calculated.

The study presents and discusses the results of the calculations in the next section.

Table 4:2: Summary of governance indices for the period 2008-2016

Company Name		Sector	2016	2015	2014	2013	2012	2011	2010	2009	2008	Average
Anglo American plc	1	Mining-Metals & Minerals	14	14	14	15	15	15	14	14	14	14
AngloGold Ashanti Ltd.	2	Mining-Gold	19	19	19	20	20	20	20	16	16	19
Anglo American Platinum Ltd.	3	Mining-Platinum	16	15	18	17	18	15	14	14	16	16
Aspen Pharmacare Holdings Ltd.	4	Manufacturing-Pharmaceutical	18	19	19	18	19	16	17	16	14	17
Barclays Africa Group Ltd.	5	Banks-Financial Services	19	19	18	19	19	19	16	16	15	18
BHP Billiton Plc	6	Mining-Metals & Minerals	16	16	16	16	16	16	16	16	16	16
British American Tobacco plc	7	Manufacturing-Tobacco	19	18	19	19	19	19	19	19	19	19
The Bidvest Group Ltd.	8	Industrial-Diversified	16	16	16	15	16	14	14	14	12	15
Discovery Ltd.	9	Insurance-Financial Services	12	13	13	13	13	12	12	12	12	12
FirstRand Ltd.	10	Banks-Financial Services	18	16	17	15	15	11	15	15	15	15
Gold Fields Ltd.	11	Mining-Gold	18	17	17	17	17	15	15	15	15	16
Growthpoint Properties Ltd.	12	Real Estate	17	17	17	17	17	13	13	13	13	15
Impala Platinum Holdings Ltd.	13	Mining-Platinum	18	15	16	16	16	18	18	17	17	17
Investec Ltd.	14	Investment-Financial Services	19	19	18	18	18	14	14	14	14	16
Intu Properties plc	15	Real Estate	16	16	16	16	16	16	16	16	15	16
Life Healthcare Group Holdings Ltd.	16	Hospital Mgt-Healthcare	19	19	18	19	19	19	15	15	15	18
Mondi Ltd.	17	Manufacturing-Paper	17	17	17	17	17	14	14	14	14	16
Mr Price Group Ltd.	18	Retail-Soft goods	19	18	18	17	17	15	15	16	16	17
MTN Group Ltd.	19	Wireless Telecom Services	16	16	20	18	17	18	14	15	14	16
Nedbank Group Ltd.	20	Banks-Financial Services	20	20	20	20	20	20	16	16	16	19
Naspers Ltd.	21	Broadcasting Contractors	19	19	19	19	13	13	16	16	13	16
Netcare Ltd.	22	Hospital Mgt-Healthcare	18	16	15	15	15	12	12	13	12	14
Old Mutual plc	23	Insurance-Financial Services	16	16	15	15	15	15	15	15	15	15
Redefine Properties Ltd.	24	Real Estate	15	15	14	15	15	13	13	13	11	14
Remgro Ltd.	25	Industrial-Diversified	19	19	19	19	19	17	17	17	17	18
RMB Holdings Ltd.	26	Banks-Financial Services	17	17	18	17	18	17	14	13	14	16
Sappi Ltd.	27	Manufacturing-Paper	19	18	18	18	15	15	15	15	15	16
Standard Bank Group Ltd.	28	Banks-Financial Services	15	17	18	18	17	17	13	13	13	16
Shoprite Holdings Ltd.	29	Retail-Food & Drug	18	18	18	17	16	9	10	9	9	14
Sanlam Ltd.	30	Insurance-Financial Services	14	14	15	15	15	15	12	12	12	14
Sasol Ltd.	31	Manufacturing-Chemical Spec.	20	20	20	20	20	18	17	18	18	19
Tiger Brands Ltd.	32	Manufacturing-Food Processes	15	15	15	15	17	12	12	14	14	14
Vodacom Group Ltd.	33	Wireless Telecom Services	13	13	13	13	13	13	11	9	8	12
Woolworths Holdings Ltd.	34	Retail-Multi Department	19	19	19	19	19	15	15	14	14	17
African Rainbow Minerals Ltd.	35	Mining-Metals & Minerals	15	15	15	15	15	15	13	13	13	14
Assore Ltd.	36	Mining-Metals & Minerals	12	12	12	12	12	10	10	10	10	11
Barloworld Ltd.	37	Industrial-Diversified	18	18	18	17	18	18	15	14	14	17
Capital & Counties Properties plc	38	Real Estate	16	16	16	16	16	16	16	16	16	16
Capitec Bank Holdings Ltd.	39	Banks-Financial Services	16	16	16	16	15	13	13	14	14	15
Exxaro Resources Ltd.	40	Mining-Coal	19	19	19	19	18	14	14	13	14	17
Imperial Holdings Ltd.	41	Transportation Services	18	18	18	18	17	17	15	14	14	17
Kumba Iron Ore Ltd.	42	Mining-Steel	19	19	18	17	16	17	13	13	13	16
Liberty Holdings Ltd.	43	Insurance-Financial Services	19	19	19	19	18	18	15	15	15	17
Massmart Holdings Ltd.	44	Retail-Multi Department	15	15	15	15	15	15	17	16	16	15
Pick n Pay Stores Ltd.	45	Retail-Food & Drug	16	16	17	16	17	16	16	16	14	16
Truworths International Ltd.	46	Retail-Soft goods	16	14	16	15	15	13	13	13	13	14
Average Gov Score over the period 2008-2016												16

Source: Research results

Table 4.2 exhibits the calculated governance indices that are reasonably high, denoting greater adoption and seemingly high compliance to the King III and King IV recommendations. The average governance index for all companies during the study's period is 16, with the lowest company recording an average index of 11, and the highest of 19. Generally, there is not much variation of calculated indices within companies from 2008 to 2016. This suggests consistency in the governance of the companies in the sample.

On the other hand, the high governance indices, on average, have not mitigated the incidences of corporate malfeasance, like in the cases of Steinhoff and the 23.91% of the FTSE/JSE Top40 listed companies discoursed earlier. However, the companies that recorded lower governance indices do not necessarily suggest having worse P-A and CG problems as there could be plausible reasons why they did not fully comply with the provisions.

Shaukat and Trojanowski (2017) provide efficiency and costs as possible reasons that drive non-compliance, as benefits may outstrip costs. This is aligned to the fundamental reason why King III and King IV are premised on 'apply or explain' and 'apply and explain' framework, respectively. While possible reasons exist for non-compliance, caution and scrutiny are required as the agent may opportunistically expropriate the principal's wealth (Fama, 1980; Shleifer & Vishny, 1997) because the agent has the capacity to act undetected (Hawkes & Goodley, 2011; Shah, 2014, citing Sorkin, 2013).

Before ascertaining the reasons that could suggest P-A problems and CG weaknesses in the sample companies, the significant provisions not complied with are presented in Table 4.3. This attribution breakdown shows which provisions were not complied with and the companies that did not comply as a percentage of the sample companies through the period of the study. For the full list of provisions not complied with, refer to Appendix 2.

Non-Adherence to King III & IV (Non-compliant companies as % of Total Sample)	2008	2009	2010	2011	2012	2013	2014	2015	2016	Average
Majority of NEDs on board are Independent	23.40%	17.02%	17.02%	19.15%	14.89%	17.02%	12.77%	12.77%	10.64%	**16.08%**
Presence of Deputy Chair and or Lead INED (LID)	36.17%	36.17%	36.17%	36.17%	36.17%	36.17%	36.17%	36.17%	36.17%	**36.17%**
Remuneration Committee comprised of NEDs & majority are INEDs	46.81%	42.55%	46.81%	51.06%	38.30%	36.17%	31.91%	34.04%	27.66%	**39.48%**
All Audit Committee members are INEDs	55.32%	48.94%	44.68%	48.94%	46.81%	44.68%	42.55%	44.68%	40.43%	**46.34%**
Nominating Committee comprised of NEDs & majority are INEDs	40.43%	36.17%	40.43%	44.68%	42.55%	36.17%	29.79%	38.30%	31.91%	**37.83%**
Majority of Risk Committee members are NEDs	42.55%	42.55%	34.04%	34.04%	31.91%	31.91%	31.91%	29.79%	31.91%	**34.52%**
Presence of a Committee overseeing technology and information governance	42.55%	42.55%	40.43%	38.30%	38.30%	38.30%	38.30%	38.30%	38.30%	**39.48%**
Presence of a Social and Ethics Committee	85.11%	85.11%	85.11%	53.19%	12.77%	8.51%	8.51%	8.51%	10.64%	**39.72%**
NED Chairs the Social and Ethics Committee	87.23%	87.23%	87.23%	57.45%	14.89%	10.64%	10.64%	10.64%	12.77%	**42.08%**
Majority of Social & Ethics Committee members are NEDs	89.36%	89.36%	87.23%	68.09%	42.55%	40.43%	42.55%	42.55%	40.43%	**60.28%**

Table 4:3: Non-adherence to King III & King IV for the period 2008-2016

Source: Research results

The study calculated the non-compliance for each company per year and per governance provision in the overall index by using the COUNTIF function in Excel. The compliance status was determined for each sample company per year and per provision, across 2008 to 2016. For each provision, the number of companies that did not comply with the specific provisions were observed and included, and the

companies were expressed as a percentage of the total companies in the sample. For example, on the presence of deputy chair and/ or lead independent non-executive director, there were 17 companies not complying with this provision, and the 17 was expressed as a percentage of 46 to obtain 36.17%.

Table 4.3 and the graphs in Figures 4.2 to 4.4 reveal that the adoption of the provisions seem to have largely occurred from 2012 onwards, two years after the effective date of King III which was on 1 March 2010. The percentages of non-compliant companies in the sample significantly declined from 2012 and they have seemed to be sticky since then to 2016. This is consistent with the argument by Shaukat and Trojanowski (2017) that the adoption of recommendations of the code initially rises and then slows down over time.

The study also observed that there are individual provisions with very high adoption and compliance during the period 2008 to 2016. The provisions with low non-compliance percentages across the companies include no Chair/CEO duality (average 0.24%, in essence one company in 2016), the presence of remuneration and audit committees (0%, i.e. all companies complied), independent non-executive director (INED) chairs the remuneration committee (average 5.2%), INED chairs the audit committee (average 2.36%), the presence of nominating committee (average 5.67%), non-executive director (NED) or board chairperson chairs the nominating committee (average 6.15%), the presence of a risk committee (average 0.47%), and NED chairs the risk committee (average 3.07%).

The study noticed that these low non-compliance percentages are dominated by provisions to set up key board committees and their chairing and they are not so much about the independence[30] of committees. The presence of the recommended committees and their chairing by a non-executive director is only the starting point, as the presence, dominance and influence of an executive in a committee tends to be

[30] The concept of independence was applied, as explained by Rezaee (2009:41) that states that "independence in governance determines the extent to which the CG process and its related mechanism minimise or avoid conflicts of interests and self-dealing actions of its key personnel". This concept is similar in King III and King IV. This concept of independence is referred to throughout the study unless stated otherwise.

significant and may weaken board governance arrangements (Shaukat & Trojanowski, 2017).

The graphs in Figures 4.2 to 4.4 depict significant non-compliance with the provisions on board and committee independence. Figure 4.2 shows the non-adherence to board independence and the presence of deputy chair or lead independent director provisions in the period from 2008 to 2016.

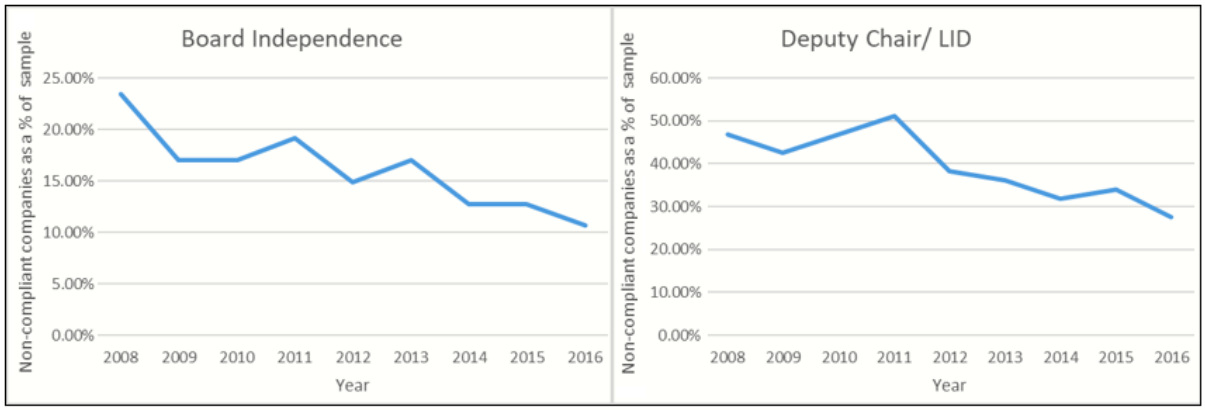


Figure 4.2: Non-adherence to board independence and presence of deputy chair or lead independent director

Source: Research results

The two graphs in Figure 4.2 reveal that the adoption of board independence and the presence of a deputy chair or lead independent director (LID) on the board largely started gaining traction from 2008. However, compliance with the two provisions exemplify a zigzag pattern from around 2010, and steadily depict consistent adherence from 2013 to 2016. The level of compliance by the companies is shown by the slope of the line from 2008 to 2016. That is, as the slope comes down from the left (2008) to the right (2016), it suggests that the number of companies that complied with the provisions of having an independent board and LID on the board have increased. Nonetheless, an average of 36.17% of companies did not have a deputy chairperson or lead independent non-executive director on their boards. An average figure of 36.17% of the FTSE/JSE Top40 listed companies is significant, and it may weaken governance within companies and result in executives acting opportunistically (Shaukat & Trojanowski, 2017).

The study also considered the level of non-compliance to the independent provisions of the audit and nominating committees. The two graphs in Figure 4.3 depict the non-compliant sample of companies as a percentage of the total number of companies in

the sample. The graphs show the non-adherence to the independence of audit and nominating committees provisions in the period from 2008 to 2016.

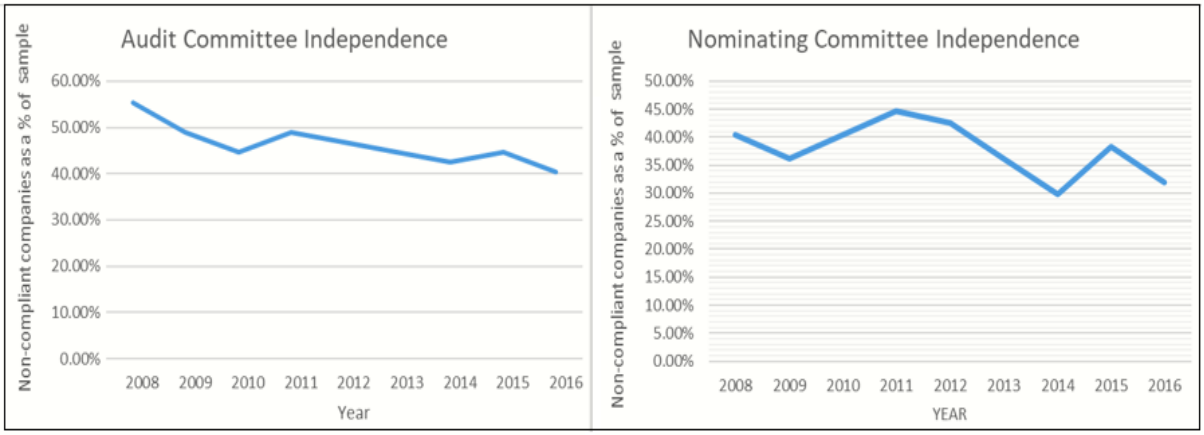


Figure 4.3: Non-adherence to the independence of audit and nominating committees provisions

Source: Research results

The graphs show that a significant number of the sample companies did not comply with the provision that all members of the audit committee should be INEDs (an average 46.34% of companies did not comply); an average of 37.83% of the companies did not comply with the provision that the nominating committee should be composed of NEDs, the majority of whom should be independent; and a further average of 34.52% of the companies did not comply with the provision that the majority of the risk committee (not graphically depicted) should be comprised of NEDs.

The two graphs in Figure 4.4 continue to illustrate provisions that were significantly not complied with as part of the independence of board committees. The graphs show the non-adherence to the provisions of addressing the presence of a committee overseeing technology and information and the independence of social and ethics committee in the period from 2008 to 2016.

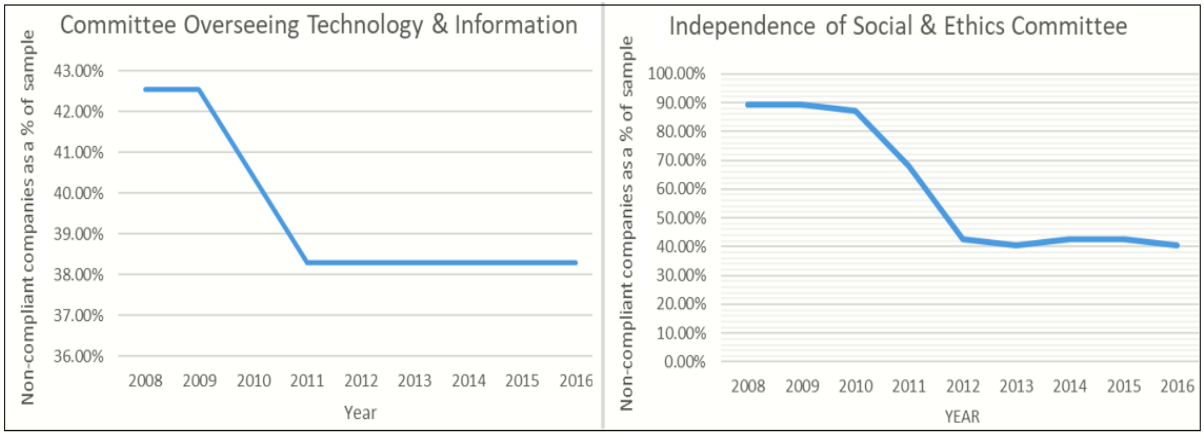


Figure 4.4: Non-adherence to the provisions addressing the presence of a committee overseeing technology and information and independence of social and ethics committee

Source: Research results

The two graphs exhibit a similar pattern, showing that the adoption of the respective provisions largely took place around 2008 to 2009, as shown in the decline of the graphs. That is, as more sample companies adopted the provisions' requirements, fewer companies became non-compliant leading to a decline in the percentage of companies that were non-compliant. The graphs show stickiness from around 2011 to 2016, suggesting that fewer companies adopted the provisions after the initial period/ and/ or some of the companies that initially adopted the provisions were inconsistent in complying with the provisions. This is consistent with Shaukat and Trojanowski's (2017) findings, and these authors also cited similar findings by Dahya and McConnell (2007), Guest (2008), and Hillier and McColgan (2006).

The graphical results in Figure 4.4 reveal that an average of 60.28% of the sample of companies did not comply with the provision that the majority of members of the social and ethics committee should be NEDs, while 39.72% of companies did not have a social and ethics committee present. In addition, an average of 39.48% of the companies did not comply with the provision that there should be a committee dedicated to overseeing technology and information governance.

Another important provision that was not significantly complied with was the independence of the remuneration committee (not graphically depicted). An average of 39.48% of companies did not comply with the provision that the remuneration committee should be comprised of NEDs, the majority of which should be independent.

The consequences of the above-stated non-compliances are magnified by considering the critical role played by the provisions in ensuring good governance and mitigating P-A and CG problems that may arise. For example, from King III and King IV, the social and ethics committee oversees the integrity of the companies' reporting, corporate citizenry, sustainable development and stakeholder relationships; the remuneration committee ensures accountability on remuneration in the context of other employees within the company to curb the compensation gap; and the audit committee provides assurances on the accuracy of financial statements which are supposed to be free from material misstatements due to fraud and error. When considered together, the lack of independence in these committees can severely compromise the governance of companies and weaken the board's monitoring capacity and that will drive the agent's opportunism (Shaukat & Trojanowski, 2017).

The non-adherence percentages in the study's findings are relatively high and it was determined that they provide fertile ground for P-A and CG problems. These findings concur with the findings by Fama (1980), Shleifer and Vishny (1997), Hawkes and Goodley (2011), Shah (2014), and Shaukat and Trojanowski (2017). The non-compliance may explain Steinhoff and the significant 23.91% of the FTSE/JSE Top40 listed companies that contravened the laws and regulations as previously discussed in Sections 4.2.1 and 4.2.2. Steinhoff and the 23.91% are alarming when one considers the expectation that the FTSE/JSE Top40 index is a listing of the largest companies (by market capitalisation) in South Africa and are envisaged to be well governed. The non-compliance in Table 4.1 sheds more light on the pervasiveness of P-A and CG problems experienced within FTSE/JSE Top40 listed companies. This is despite the fact that the calculated overall indices are, on average, on the high end.

4.3.2 Attribution analysis on index changes

To discern the major contributors to the changes, namely, deterioration (denoting potential P-A and CG problems) or improvement (denoting decline in P-A and CG problems) in governance indices, the study conducted an attribution analysis to ascribe the changes to non-compliance with specific provisions. The study went through all the changes in the calculated indices from 2008 to 2016 and determined the provision(s) that changed. The COUNTIF function in Excel was then employed to find out the number of provisions that changed across companies in each of the years.

The study expressed the number of decline-changes per provision as a percentage of total declines for all provisions during the 2008 to 2016 period. The same was done for improvements in the indices. Tables 4.4 and 4.5 exhibit the decreases and increases in indices ascribed to declines and increases in specific provisions as tabulated.

Table 4:4: Decreases in indices ascribed to provisions for the period 2008-2016

Decrease in Indices that may be ascribed to provisions:		Change as a % of total worsening CG indices
Board	8	**16%**
No Lead Independent Director	1	**2%**
Remuneration Committee Chair	2	**4%**
Remuneration Committee	11	**22%**
Audit Commmittee	9	**18%**
Nomination Committee	13	**25%**
Risk Committee Chair	1	**2%**
Risk Committee	2	**4%**
Social Committee Chair	1	**2%**
Social Committee	3	**6%**
Total Changes	**51**	**100%**

Source: Research results

Table 4.4 reveals that the major contributors to the deterioration in governance indices (denoting potential P-A and CG problems) can be ascribed to the independence of the nominating committee (25%), remuneration committee (22%), audit committee (18%) and the overall board independence (16%). Essentially, the findings correspond with Shaukat and Trojanowski's (2017) findings that had similar committees dominating the deteriorations in indices, although their results showed greater declines in the remuneration provision. Aggregated, deteriorations in the governance of these committees create a thriving ground for executive opportunism and information asymmetry that weaken the board's monitoring capacity and governance (Shaukat & Trojanowski, 2017, also citing Adams *et al.*, 2010; Duchin, Matsusaka & Ozbas, 2010). Independence of these committees at company level may entrench the power of the executives leading to the board members failing to effectively represent the shareholders (Kirkpatrick, 2009). Failures in the independence of the remuneration and audit committees exposes the company to the risks of financial reporting fraud, creative accounting and the expropriation of the principal's wealth. This creates and perpetuates existing P-A and CG problems.

In addition, the lack of independence in the board nominating process creates an 'old-boys club' platform resulting in boards appointing members with limited knowledge of the business. More so, these board members become members of technical committees, such as audit committees, where they may have limited and/ or no competence, thus becoming ineffective in discharging their board responsibilities (Lambert, 2001; Kirkpatrick, 2009).

The abatement in the independence of the nominating committee exposes the companies to related party transactions (IAS 24) that put the board members in a conflicted situation, as revealed by the findings of Nordberg (2011) and Crotty (2009). This further introduces more complications to existing challenges, as when Hawkes and Goodley (2011) discovered that executives have the capacity to conceal losses for a long time, an example of which happened with Olympus in Japan. The executives of Olympus concealed losses for more than 20 years. Concurring with similar findings regarding the concealment of losses, Schreiber and Strozyk (2018) also discovered that the former CEO of Steinhoff had managed to manipulate financial statements since 2014, but with some items referenced to the 2011 financial statements. The observations in the study are consistent and acquiesce with the inferences by Shaukat and Trojanowski (2017), citing Chan and Li (2008), who asserted that the importance of the independence of key board committees (nominating, remuneration and audit committees) is more important than the overall independence of the board.

The results depicted in Table 4.5 (on the next page) show that there were more changes ascribed to improvements (134) than deteriorations (51). The improvements suggest adoptions and compliance to the provisions of the codes as more companies strive for full compliance over time, notwithstanding a slowing rate (Shaukat & Trojanowski, 2017, citing Renders *et al.*, 2010; Guest, 2008; Dahya & McConnell, 2007).

Where companies strengthened their governance (that is, made improvements in governance indices), the same cohort of committees were responsible for causing deteriorations as previously discussed. The 23% of improvements in the indices are attributed to the independence of the person (NED) chairing the social and ethics committee; 18% is ascribed to the setting up of a social and ethics committee; 15% to the independence of remuneration committee; 14% to the independence of the nominating committee, and 13% to the independence of the audit committee.

Generally, these improvements in the independence of the nominating, remuneration and audit committees during the period 2008 to 2016 could have reversed due to higher percentages in deteriorations. For example, a 14% improvement in the independence of the nominating committee is eroded by a 25% deterioration, and a 15% improvement in the remuneration committee independence is off-set by a 22% deterioration, while a 13% improvement in the audit committee independence is depleted by an 18% deterioration during the same period. The net deteriorations could explain some of the overall declines in the indices experienced by some companies, from one year to another during the period of the study.

This observation is similar to Shaukat and Trojanowski's (2017) findings. Consequently, overall governance would have worsened during this period. However, meaningful improvements in governance are recorded in the independence of the social and ethics committee which showed net improvements. That is, 23% improvements against 2% deteriorations in the NED chairing the committee, and 18% improvements, against 6% deteriorations in the independence of the committee.

Table 4:5: Increases in indices ascribed to provisions for the period 2008-2016

Increase in Indices that may be ascribed to provisions:		Change as a % of improving CG indices
Board	9	**7%**
No Lead Independent Director	1	**1%**
Remuneration Committee Chair	6	**4%**
Remuneration Committee	20	**15%**
Audit Commmittee	18	**13%**
Nomination Committee	19	**14%**
Risk Committee Chair	2	**1%**
Risk Committee	4	**3%**
Social Committee Chair	31	**23%**
Social Committee	24	**18%**
Total Changes	**134**	**100%**

Source: Research results

On average, the calculated governance indices are on the high end. Greater levels of adoption and compliance to the recommendations of King III and King IV seem to have mostly occurred from 2012 onwards. This is consistent with cited empirical findings that in the early stages of the introduction of the code there are greater levels of compliance which slows down in later years (Shaukat & Trojanowski, 2017, citing

Renders *et al.*, 2010; Guest, 2008; Dahya & McConnell, 2007). However, the high indices have not mitigated the incidences of corporate malfeasance as seen in 23.91% of the FTSE/JSE Top40 listed companies.

The study also noted greater levels of compliance in setting up board committees as recommended by King III and King IV. Conversely, there are low levels of compliance with regards to the independence of key board committees, like the nominating, remuneration, audit and risk committees. Aggregated, the lack of independence in these committees creates fertile ground for executive opportunism and information asymmetry that may worsen or create P-A and CG problems (Shaukat & Trojanowski, 2017). This enhances the ability of the agent to conceal losses from the principal.

Furthermore, the results ascribe the declines and improvements in governance indices to the provisions cited in the respective tables. The study noticed that the setting up of the social and ethics committee and the independence of its chair (chaired by NED) recorded net improvements after factoring in the deteriorations. On the other hand, there are greater percentages in governance declines ascribed to nominating, remuneration and audit committees that significantly erode any improvements. The overall outcomes are net deteriorations in governance indices, which could explain some index declines being observed in some companies in the years during the period of the study. This is in line with empirical evidence, as previously discussed.

4.4 THEME II: ROLE OF EXECUTIVE COMPENSATION AND POTENTIAL COSTS

Theme II of this study covers the second objective and the two research questions that seek to ascertain the potential pecuniary impact of agency problems and the role of executive compensation in exacerbating the P-A and CG problems. From the methodological perspective, the study ran some dynamic panel data estimation models, analysed executive compensation against the minimum wages in the sectors which the FTSE/JSE Top40 operate in, employed an adapted Gini coefficient (called salary Gini, s-Gini henceforth), and conducted Event Study and VaR procedures.

The literature review chapter cited Edmans and Gabaix (2009) who asserted that the compensation of executives (agent) is a controversial topic. In addition, Edmans and Gabaix, (2009) posited that theory signals that executive compensation is designed and set by the board to seek a way that maximises shareholder value by formulating

and signing contracts that attract talented executives, rewarding them for their efforts in exploiting growth opportunities, minimising costs and rejecting wasteful projects. The literature with findings were discussed revealing how CG incorporates issues around executive compensation, thus warranting the inclusion in this research.

Accordingly, the study takes on the challenge by Kirkpatrick (2009) who recommended that there should be more scrutiny of executive compensation structures and their implications on CG. Furthermore, Gompers *et al.* (2003) highlighted the complexity of executive pay schemes which they state are problematic. This study aims to understand compensation structures, as in many cases they are used as CG mechanisms, and have consequences that need to be examined to establish the impact on the principal's wealth, the company, the economy and effectiveness of the governance codes. The findings in this aspect of executive compensation provide the answers to the Theme II research questions and the associated objective of ascertaining the role of executive compensation in exacerbating the P-A and potential costs of agency problems. The results from the dynamic panel data estimation models run in this study will first be presented and discussed.

4.4.1 Dynamic panel data estimation model results

As alluded to in Chapter 3, this study sought to propose an executive compensation model that factored in the strength of governance by the executive into the compensation structure. This section presents and discusses the results regarding this. The proposed executive compensation model is motivated by theory and the notion that executive remuneration structures are part of governance mechanisms. Despite the existence of complex and diverse executive compensation schemes in companies (Gompers *et al*., 2003; Shah, 2014, citing Laffont & Martimort, 2002), this study did not come across an executive compensation structure that incorporates CG by the agent. During the investigation to come up with an executive compensation model that incorporates CG, the researcher ran some regression with panel data (cross-sectional time-series data). In the regression, remuneration was the dependent variable and the regressors are governance index (governance proxy measure), performance (revenue), GDP, inflation, ownership structure, executive net share trades (net buyer or seller of the company's shares), number of share-trades by executives and the number of board members who traded in the company's shares per year. The study also employed the Hausman Test, which has the null hypothesis

that the preferred model is the Random Effects Model, and the alternative hypothesis is the Fixed Effects Model (Torres-Reyna, 2007). In essence, Hausman tests whether the unique errors are correlated with regressors, and the null hypothesis states that they are not. The Hausman Test results were for the model which incorporates the Governance Index (gov). Table 4.6 presents the Hausman Test results from STATA:

Table 4:6: Hausman Test Results from STATA

Description	Results	
Model with Governance Index	Chi Square	103.86
	Probability	0.0000

Source: Research Results

Based on the Hausman Test results, the study rejected the null hypothesis that the Random Effects Model is efficient and consistent[31]. Therefore, the Fixed Effects Model was chosen, as it also has the added advantage that it can be employed to study the causes of changes within an entity in panel data (Torres-Reyna, 2007). In the Fixed Effects Model, the researcher also incorporated a robust test to control for heteroscedasticity which corrects multi-collinearity and non-normality. A dynamic model was employed because the current year's remuneration and revenue are usually based on the previous year's remuneration and revenue. In addition, for diagnostic purposes and the validation of the Fixed Effects Model, the study ran other models, such as pooled effects, random effects, generalised least squares (GLS), two-step generalised method of moments (GMM) and least squares dummy variable corrected (LSDVC).

Equation 4.1 expresses the empirical estimation of the relationship between the executive remuneration and governance index (governance proxy measure), performance (revenue), GDP, inflation, ownership structure, executive net share trades (net buyer or seller of the company's shares), number of share-trades by

[31] In as much as the Fixed Effects model is efficient and consistent based on our Hausman Test results, it's worth noting that Brown, Beekes and Verhoeven (2010) also used the Fixed Effects Model to address the endogeneity problem that may arise.

executives, and the number of board members who traded in the company's shares per year. Equation 3.1 is restated as Equation 4.1 below:

$$Rem_{it} = \alpha_{it} + \beta_{i1}Rem_{it-1} + \beta_{i2}Perf + \beta_{i3}Gov + \beta_{i4}GDP + \beta_{i5}Inf + \beta_{i6}OS + \beta_{i7}NT + \beta_{i8}TY + \beta_{i9}DTY + \mathcal{E}_{it}$$

Equation 4:1: Estimation of executive compensation relationship

Source: Researcher's proposed model

Where:

$Rem_{it} = Remuneration\ for\ director\ at\ company\ i\ at\ time\ t,$

$Rem_{it-1} = Remuneration\ for\ director\ at\ company\ i\ in\ previous\ year,$

$\alpha_{it} = intercept,$

$Perf = Performance\ as\ measured\ by\ revenue\ in\ this\ study$[32]$,$

$Gov = Governance\ index,$

$GDP = Annual\ Gross\ Domestic\ Product,$

$Inf = Average\ Annual\ Inflation,$

$OS = Ownership\ Structure,$

$NT = Net\ Share\ Trades,$

$TY = Share\ Trades\ by\ a\ director\ per\ year,$

$DTY = Number\ of\ Directors\ who\ Traded\ Share\ in\ a\ year,$

$\beta_{it} = sensitivity\ of\ Remuneration\ to\ the\ variable\ at\ time\ t\ and$

$\mathcal{E}_{it} = Error\ term\ for\ company\ i\ at\ time\ t.$

The suggested model is applied to proximate the relationship that exists between the executive's remuneration and the aforesaid independent variables. Kirkpatrick (2009) asserted that mismatches in the executive incentive system may cause weaknesses

[32] Padgett (2012) cited Shire Plc, a global specialty biopharmaceutical company with dual listing on the London Stock Exchange and NASDAQ Stock Exchange, which uses revenue as a measure of short-term performance measure. Bhabra, Kaur and Seoungpil (2016) also used revenue as a measure of performance. Hence, this study's adoption of revenue as a measure of performance.

in CG systems. Jensen and Meckling (1976) attempted to articulate the magnitude of the determinants of agency costs, of which executive remuneration is one. Jensen and Meckling (1976) viewed executive compensation as the cost of conflicting interests between the principal and agent. Furthermore, they posited that executive compensation is a means of transferring wealth and it represents the real costs incurred by the principal. As such, the determination of executive compensation needs a careful examination of its variables, albeit complex and problematic (Gompers *et al.*, 2003). For this reason, the researcher proposes the model depicted in Equation 4.1 which is believed to capture pertinent variables or aspects of CG. These CG variables have the potential to exacerbate P-A and CG problems. Capturing the variables in the proposed model may reduce or slow down the salary gap and inequality that the s-Gini results have revealed. The s-Gini results will be discussed in Section 4.5.1.

In the analysis, the study focused on significant correlations and P-values to establish the significance of the relationships and the directionality of the depicted relationships (i.e. negative or positive relationships). The Fixed Effects Model that was run in STATA provided the correlations presented in Table 4.7 on the next page.

Table 4:7: Summary of significant correlations from STATA

	l.rem	gov	dual	inf	gdp	l.rev	os	nt	ty
l.rem	1.0000								
gov	-0.0622	1.0000							
dual	-0.0901*	0.1404***	1.0000						
inf	-0.0053	-0.1608***	-0.0000	1.0000					
gdp	-0.0356	-0.0611	0.0000	-0.6632***	1.0000				
l.rev	-0.0251	-0.0687	0.0282	0.0284	0.0991**	1.0000			
os	-0.0393	0.0621	0.1152**	0.0649	-0.0284	-0.0056	1.0000		
nt	-0.0520	-0.0476	0.0937*	0.0541	-0.0345	0.0067	-0.3033***	1.0000	
ty	0.1206**	0.0335	-0.1986***	-0.0214	-0.0209	-0.0065	-0.1469***	0.0443	1.0000
dty	0.0913*	-0.0119	-0.1564***	-0.0051	0.0014	0.0495	-0.2937***	0.1038**	0.7953***

*****significant at 0.01, **significant at 0.05, *significant at 0.10**

KEY: **l.rem**= lagged remuneration; **gov**= governance index; **dual**= dual listing; **inf**= inflation; **gdp**= gross domestic product; **l.rev**= lagged revenue; **os**= ownership structure; **nt**= executive net share trades; **ty**= number of share-trades by executives per year and **dty**= number of board members who traded in the company's share per year.

Source: Research results

Table 4.8 depicts the significant positive correlations at 1% and the alignment to theory and empirical evidence.

Table 4:8: Summary of significant correlations and theory and empirical alignment

Significant positive correlations between:	Theory and Empirical alignment
Dual listing and governance.	Suggests that dually listed companies are better governed. This affirms the findings by Padgett (2012) that dually listed companies tend to comply with primary and secondary listing requirements which tend to be tougher than complying with requirements from one bourse. There tends to be more scrutiny on dually listed companies, hence improved governance (Padgett, 2012, citing Klapper & Love, 2004).
Share trades by a director per year and the number of directors who trade in company shares per year.	Posits that more executives frequently trade the company's shares in a year and this finding is aligned to the empirical evidence. This might be a result of the fact that the fixed salary component of the executive's compensation is relatively small compared to very high rewards components in countries like the UK and US (Padgett, 2012; Nordberg, 2011; Bruce, Buck & Main, 2005; Rappaport, 2005) and in the findings of this study in South Africa. This is the rent extraction process that Bebchuk and Fried (2006) argued is the bedrock of executive pay and its aim is to do it without "provoking excessive social outrage". The excessive use of equity-based components of executive compensation fuels the executive's self-interest (Ertugrul, 2005) and are not socially legitimate, as argued by Bruce *et al.* (2005) and Nordberg (2011). Moreover, Padgett (2012) cited Randøy and Nielson (2002) and CFA (2008) who stated that high executive compensation is not socially acceptable in Nordic countries and Japan, respectively.

Source: Research results

Table 4.9 shows other positive significant correlations at 5% and the alignment to theory and empirical evidence.

Table 4:9: Summary of significant correlations and theory and empirical alignment

Significant positive correlations between:	Theory and Empirical alignment
Lagged remuneration and share trades by a director per year.	Reflects that the executive's remuneration is positively linked to their trading in company shares. The reason is similar to the explanation already provided that the fixed salary component of the executive compensation forms a small part of the total package. This is aligned to the findings in other countries like the UK and US (Padgett, 2012; Bruce *et al*., 2005; Rappaport, 2005).

Significant positive correlations between:	Theory and Empirical alignment
Dual listing and ownership structure.	Reveals that the dual listing of companies positively influences the ownership structure or that the ownership structure influences the decision by companies to dually list. This is aligned to the argument that dual listing is expected to influence governance (Padgett, 2012) as well as the ownership structure (as a governance feature that influences strategic decisions, internal financial and reporting systems, executive compensation schemes and so forth (Bruce *et al.,* 2005).
Directors' net trades in company shares and the number of directors who trade in company shares per year.	Shows that more directors, as a proportion of the total number of directors on the board, are net traders of the company's shares. This is verified by the finding that 77% of companies in our sample had directors net selling the companies' shares, as opposed to 23% of net buys. This finding contradicts the proposition of agency theory which states that when executives are made part-owners of companies, largely through share options, their interests align with those of the shareholders (Padgett, 2012). However, the net selling revealed in the findings suggests that executives are essentially not interested in owning the companies they run, thus their self-interest is preeminent. The values of the share dealings and net trades vary (Bruce *et al.,* 2005), as in the findings of this study. Perhaps, the directors' net trades and the number of directors who trade in company shares have to do with shorter share option vesting periods, as Qu *et al.* (2016) assert are strongly linked to CG.
GDP and lagged remuneration.	Reflects the positive link between GDP as a measure of economic performance and the remuneration paid to executives in the previous year. As stated in economy theory: economies go through cycles (boom, recession, depression and recovery), the GDP also fluctuates accordingly. As such, economic cycles impact company performance which has implications on executive packages due to the structure of the rewarding systems. In such instances, the executives are tempted to manage reported earnings which may drive short-termism (Shah, 2014). The high demand for short-term performance and the associated bonuses results in the agent overweighting short-term performance at the expense of the future good of the company. The sacrificing of the future good of the company is exhibited in the findings of Crotty (2009), as cited by Shah (2014). Crotty (2009) found that in 2008, AIG's Financial Products division paid $220 million in bonuses for the year to its employees while the company lost $40.5 billion. A further finding was cited by Schumpeter (2016) who highlighted the £3.7 billion loss made by Anglo America whilst the executive was paid a bonus of almost £1 million in 2015.

Significant positive correlations between:	Theory and Empirical alignment
	Such flaws in the way executives are rewarded are ubiquitous in that when companies underperform and shareholder wealth is eroded, there is no corresponding reduction in the executives' compensation (Jiraporn, Kim & Davidson, 2005). The findings contradict the correlations shown in the results. Shan and Walter (2016) squarely put the blame on the existing performance contracts that are inherently flawed in design.

Source: Research results

On the other hand, Table 4.10 exhibits significant negative correlations at 1% and the alignment to theory and empirical evidence.

Table 4:10: Summary of significant negative correlations and theory and empirical alignment

Significant negative correlations between:	Theory and Empirical alignment
Governance and inflation.	The relationship suggests that higher inflation may result in a decline in governance, resulting in problems such as fraudulent financial reports, creative accounting, earnings management and so forth. The opposite effect can be anticipated under low inflationary conditions. This relationship points to the same economic cycle and short-termism discussion under the GDP and lagged remuneration correlation.
Dual listing and share trades by a director per year as well as the number of directors who trade on the company's shares per year.	Posits that where companies are dually listed, there are reduced share trades by directors per year, and the number of directors who trade in company shares per year. Alternatively, companies that are not dually listed experience more share trades by their directors and have a higher number of directors who trade in company shares per year. The correlation is confirmed by the findings that sample companies, not dually listed, had the highest number of directors who traded shares (an average of 8 directors compared to 5 for dually listed companies), and the highest average trades by directors per year of 24 trades (compared to 17 for dually listed companies). This finding may be supported by Padgett's (2012) assertions that dually listed companies tend to comply with listing requirements from the primary and secondary bourse. One of the two bourses may restrict the directors' share trading patterns, suggesting that dually listed companies will have less trading activities when compared to the other. This aspect encroaches on varying restrictions on insider trading which are outside the scope of this study.

Significant negative correlations between:	Theory and Empirical alignment
Ownership structure and directors' net trades in company shares; share trades by a director per year, as well as the number of directors who trade in company shares per year.	Proposes that the composition of the ownership structure (defined by concentrated or diffused using a dummy variable 1 for concentrated ownership or 0 otherwise) inversely relates to net share trades by directors. This correlation is confirmed by Bruce *et al.* (2005) who found that in countries like Germany this aspect of share trading tends to be restricted by the strong voices of 'internal' shareholders (for example, employees) who are committed to the long-term success of the company. Other outside stakeholders like banks and unions add a strong voice that regulates the share trades component of executives' compensation (Bruce *et al.*, 2005). Rezaee (2009) also argued that shareholders (as part of the ownership structure) influence CG as they can exercise their rights to determine the MOI and provisions which can restrict share trades by directors.

Source: Research results

To summarise the correlation results, they do not exemplify strong correlations affirming the assertions by Brown *et al.*, (2010) that the lack of consensus on a single CG theoretical framework (Clarke, 1998 and 2004; Coffee, 2006; Mallin, 2010) contributes to little cross-sectional correlations and predictive power. The consequence is the measurement of different CG constructs, and/ or a higher magnitude of measurement error that demonstrates unreliability (Brown *et al.*, 2010). However, the correlations from the results of the study, albeit with weak cross-sectional correlations, provide insight into the directionality of the relationships that exist between the variables. For example, the positive correlation between dual listing and governance is expected to influence better compliance, as dually listed companies tend to comply with primary and secondary listing requirements which are often tougher than complying with requirements from one bourse.

The positive relationship (directionality) provides insight into what the synchronisation of the listing requirements of the primary and secondary listing can achieve with regards to better governance. Some insights can also be made from the negative associations (directionality) between the ownership structure and directors' net trades in the company's shares; share trades by a director per year; as well as the number of directors who trade in the company's shares per year. These insights can further be informed by lessons from countries like Germany that tend to restrict the directors' share trades through the strong voices of 'internal' shareholders who are more

committed to the long-term success of the company (Bruce *et al.*, 2005). Rappaport (2005) and Bebchuk and Fried (2006) further support restrictions on the trading of shares that have been acquired through executive option schemes. The directional insights obtained from the results of the study may provide plausible lessons for South African regulatory authorities and FTSE/JSE Top40 companies in improving governance, and in curbing the role of executive compensation in exacerbating CG and associated problems (Brown *et al.*, 2010, citing Cheng & Warfield, 2005; Bergstresser & Philippon, 2006; Houmes & Skantz, 2010).

In the next discussion, the thesis presents the results of the Fixed Effects Model and the diagnostic statistics which establish the significance and insignificance of the relationships, as well as the directionality (that is, negative or positive relationships) as generated by STATA. Table 4.11 presents the dynamic panel data estimation results, with executive remuneration as a dependent variable. Table 4.12 that follows shows the estimation diagnostic statistics, and Appendix 8 depicts the model data inputs.

Table 4:11: Summary of Fixed Effects Model results

Estimation Results including Gov	Fixed Effect	Pooled Effects	GLS	Random Effects	LSDVC Dynamic Regression	Two-Step System GMM
l.rem	0.6230000***	0.9390000***	0.9770000***	0.9390000***	0.8760000***	0.8350000***
	-9.38	-8.78	-11.62	-28.12	-24.22	-11.92
inf	0.0918000	0.1250000	0.1680000	0.1250000	0.1040000	0.0048400
	-1.15	-1.44	-1.73	-1.28	-0.96	-0.05
gdp	0.0551000	0.0826000	0.1120000	0.0826000	0.0673000	-0.0001230
	-1.07	-1.37	-1.63	-1.25	-1.22	(-0.00)
l.rev	-0.0001020	-0.0001520	0.0000183	-0.0001520		0.0000747
	(-0.80)	(-1.05)	-0.05	(-1.01)		-0.29
rev					-0.0013000	
					(-1.30)	
os	0.0009320	-0.0001810	-0.0000739	-0.0001810	0.0007300	-0.0004580
	-0.98	(-0.37)	(-0.10)	(-0.40)	-0.13	(-0.31)
nt	0.0000000	0.0000000	-0.0000000**	0.0000000	-0.0000000***	0.0000000
	(-0.86)	(-0.99)	(-2.94)	(-0.88)	(-4.07)	-0.33
ty	-0.0000335	0.0000157	0.0000745**	0.0000157	-0.0000215	0.0001210
	(-0.93)	-0.99	-2.77	-1.5	(-0.94)	-0.46
dty	0.0002030	0.0000384	-0.0002160*	0.0000384	0.0001480	-0.000236
	-0.95	-0.43	(-2.14)	-0.42	-1.12	(-0.35)
gov	0.0002310	-0.0000441	0.0001050	-0.0000441	0.000133	-0.000308
	-1.25	(-0.40)	-0.75	(-0.94)	-0.49	(-0.86)
_cons	-0.0089600	-0.0064200	-0.0110000	-0.0064200		0.0045800
	(-1.04)	(-1.06)	(-1.63)	(-1.03)		-0.56
N	368	368	368	368	368	368
NB: t statistics in parentheses ="* p<0.05 ** p<0.01 *** p<0.001"						

Source: Research results

Table 4:12: Summary of Diagnostic Statistics

Estimation Results including Gov	Fixed Effect	Pooled Effects	GLS	Random Effects	LSDVC Dynamic Regression	Two-Step System GMM
Observations	368	368	368	368	368	368
Groups	46	46	46	46	46	46
F-stas/Wald chi2	-	-	172.97	-	-	24.49
Prob>F/Prob>Wald chi2	0	-		-	-	0
Hausman test	103.86			103.86		
Prob>chi2	0		0	0		
R-SQUARED						
Within	0.4014			0.3898		
Between	0.9629			0.9905		
Overall	***0.6868***	***0.7082***		***0.7082***		
rho	***0.38925***			0		
Arellano–Bond AR(1)						-1.42
Prob>z						0.155
Arellano–Bond AR(2)						1.25
Prob>z						0.213
Sargan test of overid						222.62
Prob>chi2						0
Hansen test of overid						4.4
Prob>chi2						0.623
Instruments						16

Source: Research results

The tabulated results depict a positive and significant relationship between the current executive remuneration and the lagged remuneration. It was expected that current remuneration would change, based on the previous period's remuneration, for example, an increase in remuneration due to performance (measured by revenue growth as a key shareholder value-driver) as per studies by Rappaport (2005), Padgett (2012), Bender (2014) and Bhabra *et al.* (2016), and would be calculated based on the director's package in the period of performance measurement. The results of this study concur with the theory that signals that executive compensation is designed and set by the board to seek a way to maximise shareholder value by formulating and signing contracts that attract talented executives, rewarding them for their efforts in

exploiting growth opportunities, minimising costs and rejecting wasteful projects (Edmans & Gabaix, 2009). However, Kirkpatrick (2009) recommended more scrutiny on executive compensation structures and their implications on CG. The performance benchmarks and measurements need to be scrutinised to ensure that executives are not managing company earnings, especially in companies with weaker CG (Brown *et al.*, 2010, citing Aboody, Barth & Kasznik, 2006; Allcock, 2012) thereby exacerbating P-A and CG problems.

As expected, the results revealed a positive relationship, although insignificant, between remuneration and inflation. The change in executive compensation that is ascribed to inflation is 9.18% (shown in the Fixed Effects Model), as minor salary inflationary adjustments are expected in a stable economy. Furthermore, a positive, but insignificant, relationship is also recorded between GDP and remuneration. This result suggests that when the economy performs better, as measured by the GDP, executive compensation increases. However, Brown *et al.* (2010) argued that such instances entice executives to manage earnings for fear of failing to meet the shareholders' (market) expectations. Brown *et al.* (2010) suggested that one way that executives might manage earnings is through an understatement of expenses, thereby increasing profitability. This is likely to occur in companies with weaker CG systems (Brown *et al.*, 2010, citing Aboody *et al*., 2006). The consequences are further weakening of governance and worsened P-A problems.

As previously stated in the section on the GDP and remuneration model results, there is a consistent positive and insignificant relationship across the models, namely, the Fixed Effects, Pooled Effects and GLS, except for the two-step system GMM which exhibits a negative but insignificant relationship. The two-step system GMM result suggests instances of an inverse relationship, which concurs with the findings by Crotty (2009) and Schumpeter (2016). The GMM results accentuate flaws in the way executives may be rewarded in times of poor economic performance, where companies underperform and shareholder wealth is eroded. There will not be a corresponding reduction in the executives' compensation (Jiraporn *et al.,* 2005).

The study's GMM results, together with the examples of malfeasance at AIG and Anglo American, are convincing enough to allow the researcher to plausibly conclude that poor economic performance provides fertile breeding ground for earnings management by executives as they take the opportunity to meet performance and

market expectations. This may be especially so in companies with high-powered incentive contracts that create huge opportunities for the executive's self-serving behaviour (Nordberg, 2011; Shleifer & Vishny, 1997), thus exacerbating P-A and governance problems.

The results show an insignificant negative relationship between lagged revenue and remuneration across models, except for the result from the two-step system GMM, which shows a positive relationship, albeit insignificant. The two-step system GMM results acquiesce to expectations of the study because directors are expected to be remunerated based on performance. That is, when revenue (a key shareholder value driver) increases, directors' remuneration increases. However, the directionality of the relationship from the other models are contrary to expectations possibly because of the labour market for directors.

The labour market for directors may drive their packages more than actual performance, especially considering Fama's (1980) assertion that there is a market for the expertise and time of the executives who direct the companies on a daily basis. To support Fama's (1980) assertion, Eisenhardt (1989) stated that the labour market for directors values their information and expertise and it becomes a commodity that can be sold by the agent to the 'highest-bidder'. Moreover, Fama (1980) argued that the executive requires market-related compensation and may be susceptible to following personal interests other than the interests of the shareholders who hire them.

However, the expertise and information may not translate into the expected performance. Edmans and Gabaix (2009) asserted that empirical evidence suggests inconsistencies in the theory, citing US examples where the compensation of executives has substantially increased at a faster pace than company performance and the average salaries of other workers. This study found evidence concurring with the US findings by Edmans and Gabaix (2009) that the increase in executive compensation (sample average of 30.33%) for FTSE/JSE Top40 companies was faster than the revenue growth (sample average 13.79%) during the period of this study. Appendix 7 presents the full contrast of percentage changes of the revenues against the executive compensation percentage changes from 2008 to 2016 for the sample of companies.

Despite the seeming plausibility of the driving forces in the rise of executive compensation (for example, company size, transferability of human capital and complex company structure), Edmans and Gabaix (2009) mentioned that there appears to be an extremely small relationship between the wealth of the executives and the performance of the company, and/ or the insensitivity of executive compensation to company performance, especially in the larger companies. Moreover, Bebchuk and Fried (2004) suggested that executives endeavour to maximise their own wealth through the compensation which they set for themselves. This means that P-A and CG problems may worsen.

The ownership structure results are mixed in directionality across models, for example, the Fixed Effects showed a positive relationship between ownership structure and remuneration, while the Pooled Effects, GLS, Random Effects and GMM depicted a negative relationship. However, all the results are insignificant. It is a possibility that the directional mixed results are a reflection of the shareholder activism phenomenon on excessive executive compensation schemes that Bebchuk *et al.* (2002) and Bertrand and Mullainathan (2001) stated as rent extraction instruments.

Empirical evidence from some companies with concentrated shareholding (principals) in South Africa, the US and UK revealed that they are now endeavouring to restrain the excessive executive compensation schemes. Therefore, it is possible that the concentrated ownership by institutional investors may result in restricted directors' remuneration. Examples of this can be seen in Allan Gray voting against the Naspers remuneration policy (Prinsloo, 2017), and 10 and 20% of shareholders refusing to support pay proposals at 62 S&P 500 companies and at 18 FTSE 100 companies in 2017. These actions are recorded as the highest level of shareholder dissent on executive pay in at least five years (Wheatley, 2017). Moreover, a report by Thomson Reuters (2017) reveals that a substantial number of FTSE listed companies received substantial votes against their remuneration policy at AGMs in the 2016 financial reporting period. The restraints on executive compensation align with Demsetz and Lehn (1985) who asserted that the principal can achieve wealth gains by effectively monitoring the agent's performance. However, monitoring the agent's performance has cost implications for the principal.

To mitigate the effects on the principal's wealth due to the agent manipulating the decision-control and monitoring system, Fama and Jensen (1983) argued that the

principal might put in place a multi-member board that would make it difficult for agents within the company to collude to the detriment of the principal's wealth. Fama (1980) sustained that the absence of a multi-member board may result in agents engaging in collusive behaviour and lead to the expropriation of the principal's wealth through higher compensation. Bruce *et al.*, (2005) further maintained that this institutional shareholding (ownership structure) feature, coupled with a multi-member board in Germany, can shape and restrain executive compensation. From the results, it can plausibly be concluded that the relationship between remuneration and the ownership structure has implications on the strength of governance.

Directors' net trades in the company's shares and remuneration demonstrate a significant negative relationship. The results suggest that when executives are better remunerated, they are expected to retain the share options granted. Therefore, there should be a negative relationship between remuneration and net sales in line with the results. This is in relation to remuneration. When directors are compensated well, they are expected to remain invested in the companies so that goal congruence with the principal is achieved, concurring with the propositions of the agency theory. Despite the results depicting negative and significant results, the study discovered that 77% of companies in the sample had directors net selling the companies' shares as opposed to 23% of net buying by directors. The net selling position is contrary to the propositions of agency theory, as directors are exercising their put options and are not becoming part owners who have interests aligned with those of the shareholders (Padgett, 2012). The net selling position suggests extensive self-serving behaviour of executives and renders the agency theory's propositions ineffective. The challenge with the net selling position, coupled with the frequency of share trades by directors per year (shown as significant and positive in the results) and the number of board directors who trade in the company's shares (shown as significant and negative in the GLS results) is that they intensify executives' obsession with short-term performance (Rappaport, 2005) and become prone to earnings management (Brown *et al.*, 2010).

To sustain the assertion that share options increase the susceptibility to manage earnings, Brown *et al.* (2010) cited Bergstresser and Philippon (2006) who discovered that in the year when share options were exercised, there were greater levels of accounting accruals recorded in the financial statements. Other unethical and undesirable business behaviours arise due to the need to achieve better performance

which influences share prices, compliance and so forth. To empirically support this, Shah (2014) cited the Sorkin (2013) survey of 250 financial services industry role-players on Wall Street which discovered that 26% of the participants believed that compensation and bonus structures within their companies were major reasons why employees compromise ethical standards and legislative violations. The survey further pointed out that 17% of participants believed that leaders choose to ignore, supposedly, top performers when they are violating ethics and the law, and 15% suggested that the leaders would not report such violations.

In South Africa, the Competition Commission's investigations unearthed that parent company Tiger Brands' directors were allegedly aware of the subsidiary's, Adcock Ingram Critical Care's, breaches of Section 4 of the Competition Act, 1998 (Act No. 89 of 1998) but did not report it (Competition Commission Press Statement, 9 May 2008). Another South African example of self-serving behaviour is that of Steinhoff who had reported cases of accounting 'irregularities' investigated by the European, US and South African regulatory authorities. Steinhoff has had to restate its 2015, 2016 and 2017 financial statements because of 'irregularities' that seemed to benefit the 'trusted' dominant executive (Steinhoffinternational.com, 2018). This accedes to the findings from Sorkin's (2013) survey. The survey by Sorkin (2013), the Competition Commission's findings on Tiger Brands (2008), and a statement on Steinhoffinternational.com (2018) all infer that where conflicting interests exist, the agent has both the incentive and capacity to act undetected, maybe for a long time. The consequences are weaknesses in CG and worsening P-A problems, or are a reflection of existing CG and P-A problems.

The results showing the relationship between governance and remuneration are positive but insignificant, suggesting that well governed companies remunerate their executives better. Well governed companies tend to perform better (GIM, 2003 and Brown *et al.*, 2010) and plausibly infer they remunerate executives handsomely. The positive relationship was in line with expectations considering Munzig's (2003) argument that executive compensation and attempting to align shareholder-executive interests are part of CG and are directly linked to agency problems. Nevertheless, a significant relationship was expected, since better governed companies should remunerate their executives better. A credible explanation of this result can be obtained from the review carried out by Brown *et al.* (2010) on CG research in

accounting and finance. Brown *et al.* (2010) posited that lack of consensus on one CG theory that underpins the construction of governance indices (governance proxy) with respect to the weighting of provisions make the construction arbitrary. Brown *et al.* (2010) cited research done by Bhagat *et al.* (2008) and Daines *et al.* (2010) who have similar findings and arguments. The constructed governance indices employed in this study could have suffered from the issues highlighted by Brown *et al.* (2010). However, it is submitted that a better way of constructing the indices needs to be found, since executive compensation and the alignment of shareholder-executive interests are part of CG. This argument is strengthened by Shaukat and Trojanowski (2017) who recommended that the link between governance indices and executive compensation is required to ascertain the nuanced and realistic dynamics of board governance and its role in ensuring alignment of principal-agent interests. Furthermore, the study concurs with Shaukat and Trojanowski (2017) who recommended investigating the link between governance indices and other components of governance, like audit quality, quality of corporate reporting, mergers and acquisitions.

To summarise the model results and address one of the aspects covered in the Theme II research questions and associated objectives, the study observed that executive compensation structures in companies play a weightier role in exacerbating P-A and CG problems than often envisaged and considered in CG mechanisms. This concurs with Nordberg's (2011) conclusions that executive compensation has probably become the biggest aspect of CG. The role of executive compensation in CG needs further investigations as this study's model results show an insignificant relationship, albeit mostly positive.

The infographic in Figure 4.5 summarises the model results and the alignment with theory and the empirical findings previously discussed.

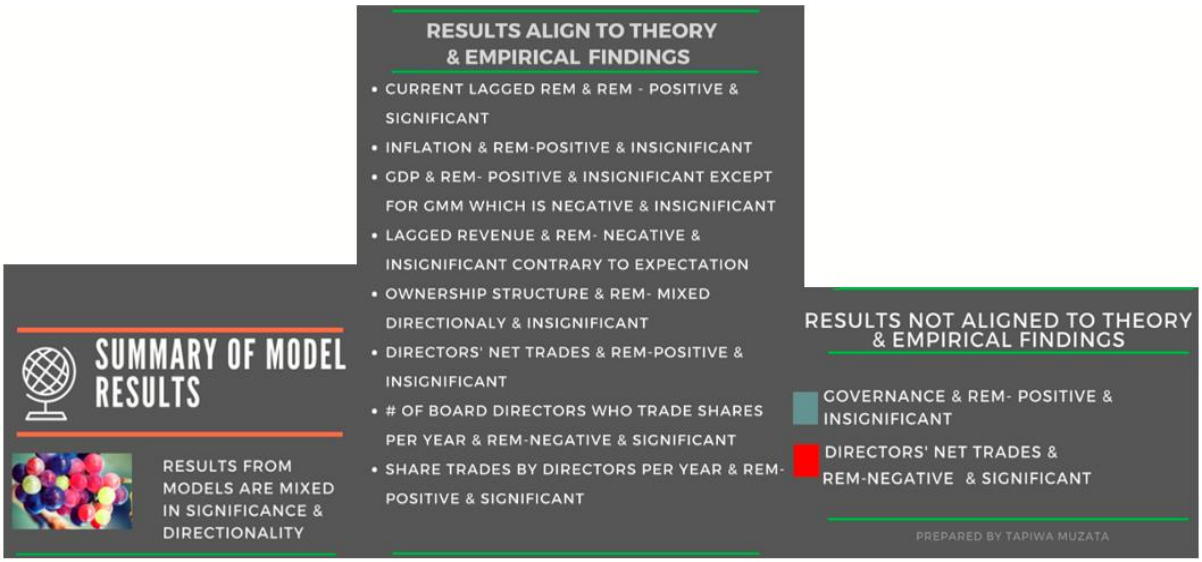


Figure 4.5: Infographic of the model results and alignment to theory and empirical findings

Source: Researcher's findings

The directionality of the relationships in the study's model results provides a compass for future research and may hopefully contribute towards consensus on CG theory that underpins further research in the field. Furthermore, the results persuaded the researcher to conclude that the executive compensation schemes and performance evaluation need to significantly factor in how well the executive has governed the business. The focus of executive compensation need not heavily weight on performance, as the study discovered from literature that executives can manipulate this aspect through earnings management, fraudulent financial reporting, creative accounting, and so forth. Thus, worsening P-A and CG problems were confirmed as found from the literature and the findings of this study.

Aspects of CG need to be significantly incorporated in the executive compensation structures. The 'how' to incorporate the CG structures in the compensation structures requires future collaboration between governance scholars and human resources practitioners and researchers. This multidisciplinary approach is now imperative.

4.4.2 Discussion and analysis of potential costs

This section addresses the Theme II research questions and their objectives regarding the aspect of potential costs.

Previously, in Sections 4.2.1 and 4.2.2, contraventions that highlighted the prevalence of P-A and CG problems in the governance interactions within the FTSE/JSE Top40 listed companies were presented and discussed. As discoursed in the methodology chapter, this study employed the Event Study (ES) method to assess the significance and insignificance of tabulated CG events. ES also indicated the magnitude of the damage caused by the identified CG events. Having identified companies with significant CG events from those listed in Table 4.1 in Section 4.2.1, VaR procedures were applied to calculate the potential costs to the principal who is the shareholder. Outside of the costs obtained from VaR calculations, the study cites some costs that are provided from other sources to demonstrate the enormity of the consequences of P-A and CG problems.

Firstly, the ES results are presented that show the criteria used in the study to determine which company to use for the calculations in order to determine the potential costs using VaR procedures. Thereafter, the VaR results are presented and discussed.

Table 4.13 (on next page) depicts the results obtained after running some regressions in Microsoft Excel.

Table 4:13: ES coefficients and p-values for companies with identified CG events

Description	Aspen Pharmacare Holdings Ltd.	Netcare Ltd.	MTN Group Ltd. (29 Mar 2012)	MTN Group Ltd. (28 Nov 2013)	MTN Group Ltd. (26 Oct 2015)	Tiger Brands Ltd.-Albany Bakeries (14 Feb 2007)	Tiger Brands Ltd.-Adcock Ingram Critical Care (Pty) Ltd ("AICC") (11 Feb 2008)	Massmart Holdings Ltd.	Shoprite Holdings Ltd.	Woolworths Holdings Ltd.	Liberty Holdings Ltd.	Mediclinic (26 Feb 2013)	British American Tobacco plc
Alpha													
Estimation Window Alpha (α)	0.000672637	-0.004053305	-0.000013444	-0.000289316	-0.00174	0.001282233	-0.002241118	0.00003667	-0.000026406	-0.001231102	0.000068832	0.003407985	0.001841851
Event Window Alpha (α)	-0.003967433	0.001639565	-0.003237106	0.001805480	-0.00792	-0.000412669	-0.004042067	-0.001628439	0.001935315	0.006692099	-0.004504214	0.001809002	0.002243633
Post-Event Window Alpha (α)	-0.000981008	-0.000075240	0.001354637	0.000282689	-0.00023	0.000955580	0.001074391	-0.000244724	0.000190178	0.000379157	0.000768757	0.001032740	0.000669664
p-Value													
Estimation Window p-Value	0.717146353	0.022161047	0.992733282	0.837631684	0.310508	0.391378935	0.086395862	0.989042945	0.988352468	0.589699971	0.952236295	0.002383288	0.056512131
Event Window p-Value	0.284904824	0.755643473	0.361940506	0.543948721	0.253427	0.859075511	0.332578429	0.46834126	0.622863846	0.038640719	0.169949980	0.507740048	0.453834493
Post-Event Window p-Value	0.415277606	0.969866575	0.227252758	0.825361906	0.939771	0.490993360	0.571800694	0.875340958	0.898429159	0.822046855	0.409191316	0.494080152	0.583313850

Source: Research results

The results show that a number of companies had negative coefficients across estimation, event and post-event windows. Significant p-values are also depicted in the estimation windows of Netcare, Mediclinic (26 February 2013) and British American Tobacco. Only Woolworths has a significant p-value in the event window period. Significant p-values suggest that the events were statistically significant and warrant inclusion in the calculation of VaR to determine potential costs.

With regards to negative coefficients, it means that the company is underperforming the stock market as given by $\alpha_i = R_{it} - \beta_i R_{mt}$ in the market model. The inclusion of these companies is justified as below:

- Negative coefficients in the estimation window, but positive coefficients in the event window, could be explained by:
  i. the company earning negative returns in the estimation window, and the identified CG event (referred as event henceforth) contributed to positive coefficients in the event window. This suggests that the event was considerable enough to alter the directionality of the coefficients, although it might not be statistically significant.
  ii. contamination in the estimation window due to other confounding events or market sentiments towards the company. However, the study did not pick up any confounding events, suggesting that market sentiments could be the reason.
  iii. information leakage about the event that is already factored in the share returns during the event and post-event window. This supports the study's assertion that the FTSE/JSE Top40 index is in the semi-strong form in the Efficient Market Hypothesis (EMH). The share returns in the event window have already captured the impact of the event. This reasoning is plausible because events of investigations and/ or their outcomes by regulatory authorities tend to leak into the market before the official pronouncements. For this reason, the share returns will not react in a sudden swing in the event window period and it makes the event seem statistically insignificant. This might be the reason why the events did not show statistical significance across companies. However, this explanation is not applicable to Steinhoff whose market value declined by an estimated R206 billion, representing 85% of its market capitalisation in six

weeks (Rose, 2018; Rossouw, 2018). This was after the announcement of Steinhoff being investigated for financial irregularities. The losses are significant even in absolute value.

- Negative coefficients in the post-event window could be explained by delayed market reaction to the event announcement in the event window period. Thus, when the stock market eventually reacts, the coefficients become negative, showing negative excess returns. Possible reasons for the delayed stock market reaction could be that investors/principals are still trying to understand the nature, impact and/ or significance of the event. For example, it took months (from the announcement dated 18 September 2017 to at least the end of January 2018) for the market to make sense or understand the 'accounting regularities' Steinhoff was embroiled in. This is largely because the company did not provide sufficient information, except for the appointment of PwC to investigate the 'irregularities', as well as that the 2015 and 2016 financial statements would be restated. However, in this Steinhoff case, the stock market reaction to the event was severe as the company lost 85% of its market value.
- Negative coefficients might also suggest reasons the company is underperforming on the stock market. The reason could be investors are bearish or have negative sentiments about the event, and as a result, returns are below the FTSE/JSE Top40 index's return after considering the company's sensitivity (β_i) to the index. Where the coefficient is positive, especially in the event window period, investors are bullish or have positive sentiments about the impact or significance of the event on the company's returns. However, it is not expected in the case of this study because of the nature of the contraventions to the laws governing the operations of the companies. Nevertheless, in cases where this occurs (for example, Netcare, MTN (28 Nov 2013), Shoprite, Woolworths, Mediclinic (26 February 2013) and British American Tobacco, it had positive coefficients in the event window), it suggests the principal was complicit in breaching the laws in a quest to earn better returns. Unfortunately, such instances reveal possible total failures in the company's governance system. The failures would modify the intended functioning of the company's governance system, as well as direct and informal interactions as shown in Figure 2.2 in Chapter 2. Therefore, the governance system, and direct

and indirect interactions between the agent and the principal will be distorted as depicted in Figure 4.6.

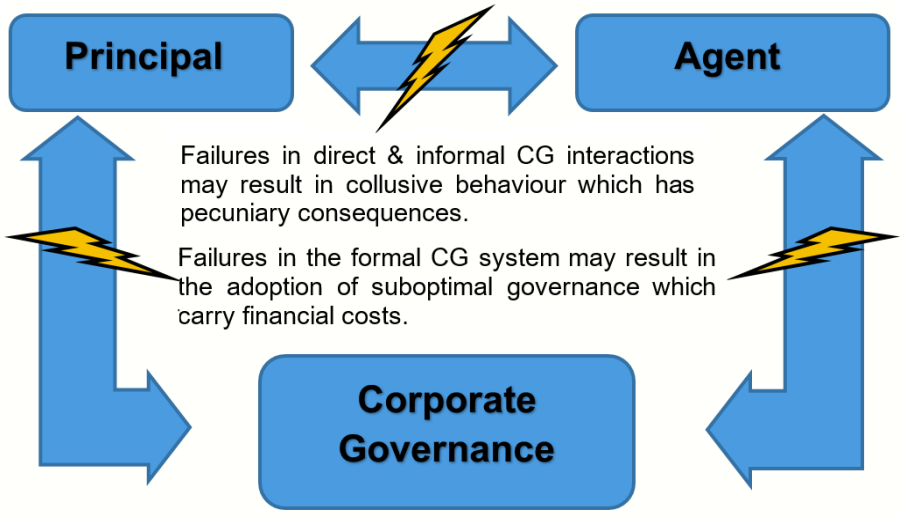


Figure 4.6: Failures in CG

Source: Researcher's inferences from findings

In such cases of CG failures, external governance systems and interactions would need to be effective to pick and restrain the collusion between the principal and agent. This external governance can either be exercised through legislation or capital markets regulation to ensure the right balance in the governance of companies (Rezaee, 2009; Dallas & Pitt-Watson, 2016) and as a way of taking decision power from the agent (Fama & Jensen, 1983).

The earlier findings have already been cited that companies like Tiger Brands and Vodacom, as parent companies (at least some board members), knew about the competition law breaches that were taking place in the subsidiary companies. The collusion between the agent and principal results in suboptimal levels of governance that need controlling through external mechanisms.

The CG failures depicted in Figure 4.6 have consequences that incur costs to the principal, the company and maybe the economy at large (Nordberg, 2011). In the next section, the possible costs of the CG failures to the principal are calculated by applying the VaR methodology, as discussed in the methodology chapter. The VaR approach makes it possible to quantify the total monetary losses incurred by a company as a result of the agent's self-serving behaviour at 95%, 99% and 99.9% confidence levels.

The potential pecuniary consequences were calculated for the ten companies in the sample of companies that had CG events, negative coefficients and significant p-values in any of the event periods. Table 4.14 (on the next page) depicts the potential pecuniary consequences ascertained by the application of VaR methodology. Appendix 11 depicts the VaR calculations.

Research has revealed that corporate scandals have significant cost to investors and economies. Citing corporate scandals like Enron, WorldCom, Global Crossing, and Qwest (better known as the Big Four scandals), Rezaee (2009) estimated that the cost was more than US$460 billion. Mallin (2013) cited significant costs incurred by the CG failures of Barings Bank in 1995, Parmalat in 2003, Royal Bank of Scotland in 2008, Satyam in 2009, Olympus Corporation in 2011, just to mention a few prominent ones.

Mostly, the guesstimated cost is measured by the reduction in the investors' and pension portfolio values and debt obligations not being honoured. Other costs of corporate scandals and poor governance are measured by changes in the cost of capital (equity and debt), about which researchers like Padgett (2012), Nordberg (2011) and Rezaee (2009) have implied that companies with poor governance will incur higher cost of capital as investors seek a risk premium for additional risk resulting from poor governance.

As elucidated in the methodology chapter, this study applied the VaR methodology to aggregate risks into a single measure that can be used to ascertain the rand-denominated cost to the principal as tabulated in Table 4.14. That single measure that was obtained provides an idea of the magnitude of the likely losses incurred by the principal.

Table 4:14: Potential losses obtained from VaR calculations

Company Name	Name	Event Date	VaR at 95%	VaR at 99%	VaR at 99.9%	Turnover in the year of Event	95% VaR as a % of Revenue	99% VaR as a % of Revenue	99.9% VaR as a % of Revenue
Aspen Pharmacare Holdings Ltd.	4	29-Sep-16	2,746,102,852.98	3,860,388,219.47	5,109,386,649.09	37,500,000,000.00	7.32%	10.29%	13.63%
Netcare Ltd.	22	10-Mar-08	554,381,360.01	772,374,358.50	1,016,721,920.61	22,777,000,000.00	2.43%	3.39%	4.46%
MTN Group Ltd. (29 Mar 2012)	19	29-Mar-12	8,252,619,874.74	11,754,944,199.56	15,680,686,844.36	123,564,000,000.00	6.68%	9.51%	12.69%
MTN Group Ltd. (28 Nov 2013)	19	28-Nov-13	9,330,233,636.50	13,347,693,015.71	17,850,848,676.35	138,597,000,000.00	6.73%	9.63%	12.88%
MTN Group Ltd. (26 Oct 2015)	19	26-Oct-15	12,488,591,239.15	23,753,119,485.75	42,052,721,278.71	155,472,000,000.00	8.03%	15.28%	27.05%
Tiger Brands Ltd.-Albany Bakeries (14 Feb 2007)	32	14-Feb-07	632,909,722.29	914,753,700.73	1,230,671,594.90	19,816,700,000.00	3.19%	4.62%	6.21%
Tiger Brands Ltd.-Adcock Ingram Critical Care (Pty) Ltd ("AICC") (11 Feb 2008)	32	11-Feb-08	745,699,943.93	1,043,099,086.61	1,376,452,707.99	20,021,300,000.00	3.72%	5.21%	6.87%
Massmart Holdings Ltd.	44	29-Jun-09	552,141,944.84	782,880,510.71	1,041,514,533.10	47,550,600,000.00	1.16%	1.65%	2.19%
Shoprite Holdings Ltd.	29	29-Jun-09	968,560,943.07	1,379,709,268.98	1,840,563,937.66	60,335,515,000.00	1.61%	2.29%	3.05%
Woolworths Holdings Ltd.	34	29-Jun-09	362,078,407.53	517,172,992.15	691,017,950.06	22,302,300,000.00	1.62%	2.32%	3.10%
Liberty Holdings Ltd.	43	13-Mar-11	424,617,908.55	600,263,061.47	797,143,076.91	27,302,000,000.00	1.56%	2.20%	2.92%
Mediclinic (26 Feb 2013)	47	26-Feb-13	706,106,221.64	1,028,603,155.72	1,390,088,800.56				
British American Tobacco plc	7	30-Nov-15	5,728,374,201.03	7,466,684,369.92	11,258,906,519.02	260,187,145,020.00	2.20%	2.87%	4.33%

Description	VaR at 95%	VaR at 99%	VaR at 99.9%
Average Max possible losses at 95%, 99% & 99.9% respectively	3,345,570,635.10	5,170,898,878.87	7,795,132,653.02
Total possible losses at 95%, 99% & 99.9% respectively, from 2007-2016	43,492,418,256.26	67,221,685,425.28	101,336,724,489.31
Min possible losses at 95%, 99% & 99.9% respectively	362,078,407.53	517,172,992.15	691,017,950.06
Max possible losses at 95%, 99% & 99.9% respectively	12,488,591,239.15	23,753,119,485.75	42,052,721,278.71

Source: Research results

From Table 4.14, it can be seen that the total possible losses for all the companies are R43.5 billion, R67.2 billion and R101.3 billion, at 95%, 99% and 99.9% confidence levels, respectively. According to the study's VaR calculations, these total costs represent the maximum possible costs that may be ascribed to the events. The VaR calculations show the biggest cost to the principal of MTN Group Ltd. This was the event announced on 26 October 2015 (the US$5,2 billion fine imposed by the Nigeria Communications Commission (NCC) which was finally settled at US$2,573 billion). The study observed that from the previous two MTN Group Ltd's events, the cost to the principal significantly escalated. For instance, the cost to the principal increased by 13.06% from the 2012 event to the 2013 event, and by 33.85% from the 2013 event to the 2015 event. Perhaps, the substantial increase in the cost from the 2013 to 2015 events can be explained by the magnitude of the fine imposed by the NCC, coupled with the frequency with which MTN Group Ltd. has experienced CG failures.

In addition, the biggest cost presented in the table represents 8.03%, 15.28% and 27.05% of MTN Group Ltd.'s revenue at 95%, 99% and 99.9%, respectively. These costs are substantial, given that they erode revenue which is a key driver of shareholder value (Rappaport, 2005). In consequence, cost as a percentage of revenue shows how much of the shareholder value was eroded because of the MTN Group Ltd.'s events. Furthermore, at 99.9% confidence level, the cost of the MTN Group Ltd. event represented 18.02% of its market capitalisation at that stage. This is substantial, given that the MTN Group Ltd. event resulted in shareholders losing 18 cents for every rand invested in the company. It is almost impossible to imagine the compounded effect of this kind of loss, especially if one considers the impact on pensioners whose income and livelihood depend on the value of investments in such companies.

The results also show minimum losses ranging from R362 million to R691 million being experienced by Woolworths Holdings Ltd. as part of the 2009 supermarket investigation by the Competition Commission. The cost represented 6.66% of Woolworths Holdings Ltd.'s market capitalisation at that stage. This suggests that for every rand invested in Woolworths Holdings Ltd., investors potentially lost almost 7 cents in every rand due to the event. Once again, this is significant for the principal (who could be a pensioner), especially at that time when economies were struggling to recover from the 2007-2008 global financial meltdown.

From the ascertained costs, the results show that the CG events that the 10 companies experienced may have substantially eroded shareholder value to the extent of 27 cents (at 99.9% confidence level) of every R1 revenue generated by the companies. The enormity of the costs incurred by the principal because of the agent's behaviour are of similar proportions and consistent with the findings by Rezaee (2009).

The next section of the thesis attempts to explore the costs carried by the principal due to the Steinhoff case of reported accounting 'irregularities' that are mostly still to be understood as at end of February 2018.

4.4.2.1 A closer look at the Steinhoff scandal

From information in the public domain, it becomes clear that Steinhoff executives established complex off-balance companies which made the CG structures opaque so as to not easily detect the 'intended' corporate malfeasance. Schreiber and Strozyk's (2018) investigation discovered more than 2 000 companies in the network. Rose (2018) reported the admission by one of the board members that the board was 'bamboozled' by the actions of the CEO. The board did, however, raise issues of the agent lying to it, and there was mistrust due to the agent's conduct (Rose, 2018). This misconduct has resulted in the restatement of the 2015 and 2016 financial statements because they could not be trusted (Steinhoffinternational.com, 2018).

In attempting to further highlight the magnitude of the cost to the principal due to the widely media-reported CG failures at Steinhoff, this study examined five fund Factsheets of some of the investment managers who had substantial funds invested in Steinhoff.

The fund Factsheets the study examined (with their holdings in Steinhoff and fund values as at 30 September 2017 in parenthesis) were for:

- Old Mutual Top Companies Fund (5.5% of R1.8 billion),
- Coronation Houseview Equity Fund (6% of R52.5 billion),
- Truffle General Equity Fund (6.4% of R1.6 billion),
- Nedgroup Investments Value Fund (6.2% of R2.5 billion), and
- SIM Top Choice Equity Fund (6.5% of R1.5 billion).

The study first observed that all the fund Factsheets did not reflect investment holdings in Steinhoff as part of the top ten investments by 31 December 2017, as was the case on 30 September 2017, before the event was made public. This suggests that either the cited investment managers decided to take or limit the losses as they disposed of their investment holdings in the company, or they decided to take-off the Steinhoff investment from their books (that is, written off as impaired investments) until such a time when the nature of the accounting irregularities are understood. The researcher believes that both reasons are applicable, as the market capitalisation of Steinhoff reduced to about R20 billion from about R242 billion in six weeks (Sanlam Collective Investments Top Choice Equity Fund Factsheet, 2018). This suggests that investors were selling off their Steinhoff investments to limit their losses.

On the other hand, investment managers may have decided on a prudent approach to carry the Steinhoff investment as an impaired investment, given the severe reduction by 85% in its market capitalisation in six weeks (Rossouw, 2018). The decline in market capitalisation by at least R206 billion (Rose, 2018) is significant by any measure, and the pension and other institutional investors are bound to suffer severe losses, while it will also take long to recover from such losses.

The Nedgroup Investments Value Funds Factsheet (2017) divulges that the Steinhoff event cost the fund 5.1% in 'relative performance'. Furthermore, if Rossouw's (2018) assertion is accepted that Steinhoff's market capitalisation declined by about 85%, the exposures stated in the fund factsheets would result in the following losses:

- Old Mutual Top Companies Fund: $5.5\% * R1.8\ billion * 0.85 = R84\ 150\ 000$,
- Coronation Houseview Equity Fund: $6\% * R52.5\ billion * 0.85 = R2\ 677\ 500\ 000$,
- Truffle General Equity Fund: $6.4\% * R1.6\ billion * 0.85 = R87\ 040\ 000$,
- Nedgroup Investments Value Fund: $6.2\% * R2.5\ billion * 0.85 = R131\ 750\ 000$,
- SIM Top Choice Equity Fund: $6.5\% * R1.5\ billion * 0.85 = R82\ 875\ 000$,
- Total losses for these funds amount to **R3 063 315 000.**

In addition to these costs, Cranston (2018) and Rose (2018) reported that Sanlam (a sample company) had the following exposures through other financial instruments as:

- Exposure on the net investment return amounting to R175 million;

- Potential loss on collateralised loans if Steinhoff's shares decline to zero equated to R580 million;
- Foreign denominated bonds amounting to R358 million; and
- Rand-denominated (local) bonds amounting to R771 million.

An aggregation of the potential losses from the various financial instruments (totalling R1.884 billion) and investment fund exposures (totalling R3.063 billion) become enormous at R4.950 billion, however, it might take a while to fully ascertain the losses. In addition, Fin24.com (2018) reported that the Government Employees Pension Funds (GEPF) lost approximately R20 billion between November 2017 and 18 January 2018.

As a result, the study plausibly argues that the principal ultimately carries these costs. Our findings provide an idea of the magnitude and potential economic consequences. It seems the Steinhoff losses exceed the total VaR calculations of all the other companies from 2008 to 2016 which have been calculated at about R101,3 billion. This suggests that the severity of the consequences of CG failures are becoming catastrophic, especially for institutional investors like pension funds and investment managers.

The Steinhoff event also exposes another P-A relationship that has associated costs. The P-A relationship is that of the executive being an agent of NED board members (principal). Although the study does not focus on this relationship, it is alluded to for the sake of highlighting the potential costs incurred by NEDs (as principals) due to failures in governance in other parts of the company's overall governance structure.

Rose (2018) mentioned that three Steinhoff NEDs incurred personal losses worth R37 million through the ownership of shares. The losses occurred in a matter of weeks and the NEDs could not transact due to the JSE insider-trading rules. Even if the NEDs had been able to transact the shares, there was a great possibility that the share would be illiquid, given the value of the sale-side investors as they jostled to off-load the shares when the news of the event filtered into the stock market. The costs represent direct losses to the NEDs as principals, although they were wearing two hats (that is, agent for the shareholders that appointed them and principal through their own shareholding). The NEDs were paid €3.3 million in 2016 in directors' fees (Rossouw,

2018), but three directors lost R37 million in the value of their personal shareholding (Rose, 2018).

The Steinhoff event has attained classic stature, as Crotty (2018) revealed that the board chairperson, who was also the biggest shareholder, was paid €325 million a few weeks before the demise of the company's share price. This means that, while some directors lost money due to the CG event, evidence shows that others had first-mover advantages and benefited at the expense of other principals. The implications of such evidence encroaches into the issues of insider trading, which are unfortunately outside the scope of this study. Nonetheless, the €325 million additional loss that emanated from Steinhoff's P-A and CG problems was carried by other principals. Crotty (2018) raised suspicion of collusion between the agent and chairperson, who is also a principal in this case. The fact is that €325 million in wealth was extracted from other principals through this collusion.

Once again, the magnitude of the cost to the principal because of CG failures are consistent with Rezaee's (2009) and Mallin' (2013) findings. Sanlam Collective Investments Top Choice Equity Fund Factsheet (2018) lamented that the CG failures exhibited by Steinhoff are extremely concerning, given the magnitude of investor-value that was destroyed in a matter of weeks. Furthermore, Truffle General Equity Fund Factsheet (2018) and Crotty (2018) stated that there is still a greater possibility that Steinhoff will write off €6 billion worth of assets. Potentially, the asset values may be depressed, bond holders and creditors may not roll over their debts, which creates a liquidity crunch. This is what is also envisaged to bedevil Steinhoff's business operations, as highlighted by Crotty (2018) who cited the fears of the chairperson. Thus, it is credible to assert that the principal will carry the residual cost of the write-offs and potential insolvency resulting from the event.

In addressing Theme II research questions and the associated objective of ascertaining the potential costs of CG failures, the study established that the potential costs are a result of CG failures in both the formal systems, and direct and informal interactions as depicted in Figure 4.6. The study's VaR findings show that the events in the ten companies in the sample cost the principals a total of R43.5 billion, R67.2 billion and R101.3 billion, at 95%, 99% and 99.9% confidence levels, respectively. These costs represent anything from 8.03% to 27.05% of the company's

revenues (at 95%, 99% and 99.9% confidence levels, respectively). The costs erode one of the main drivers of shareholder value. It was further established that the company that had the worst loss, according to the VaR calculations, lost 18.02% of its market capitalisation, while the lowest loss was 6.66% of market capitalisation.

To add to the principals' costs, the Steinhoff event cost investors more than the combined VaR losses of all the ten companies combined from 2008 to 2016. The Steinhoff event, being the most recent, highlights that the cost-severity of the CG failures is becoming astronomical.

The costs are also attracting the attention of lawmakers, for example, in South Africa, a joint Parliamentary Inquiry was established. The joint Inquiry was composed of the Standing Committee on Finance, the Standing Committee on Public Accounts and the Standing Committee on Appropriations.

These costs are significant in a global investment market that has seemed to be struggling to offer returns that can sustain pensioners, since the 2007-2008 financial crisis. The magnitude of the potential costs established by the study give credence to the assertion it makes that CG failures present significant costs that are potentially carried by the principal. Moreover, the pecuniary consequences to the principal seem to increase with each reported CG failure. These costs are germane to the erosion of shareholder value and possibly the economy (Nordberg, 2011).

Therefore, the study answers the Theme II research questions by concluding that the potential costs of CG failures are substantial, and they are carried by the principal as the costs expropriate value from some of the main drivers of shareholder value, like revenue, as revealed in the results of the study.

Figure 4.7 is an infographic summarising the findings in this section.

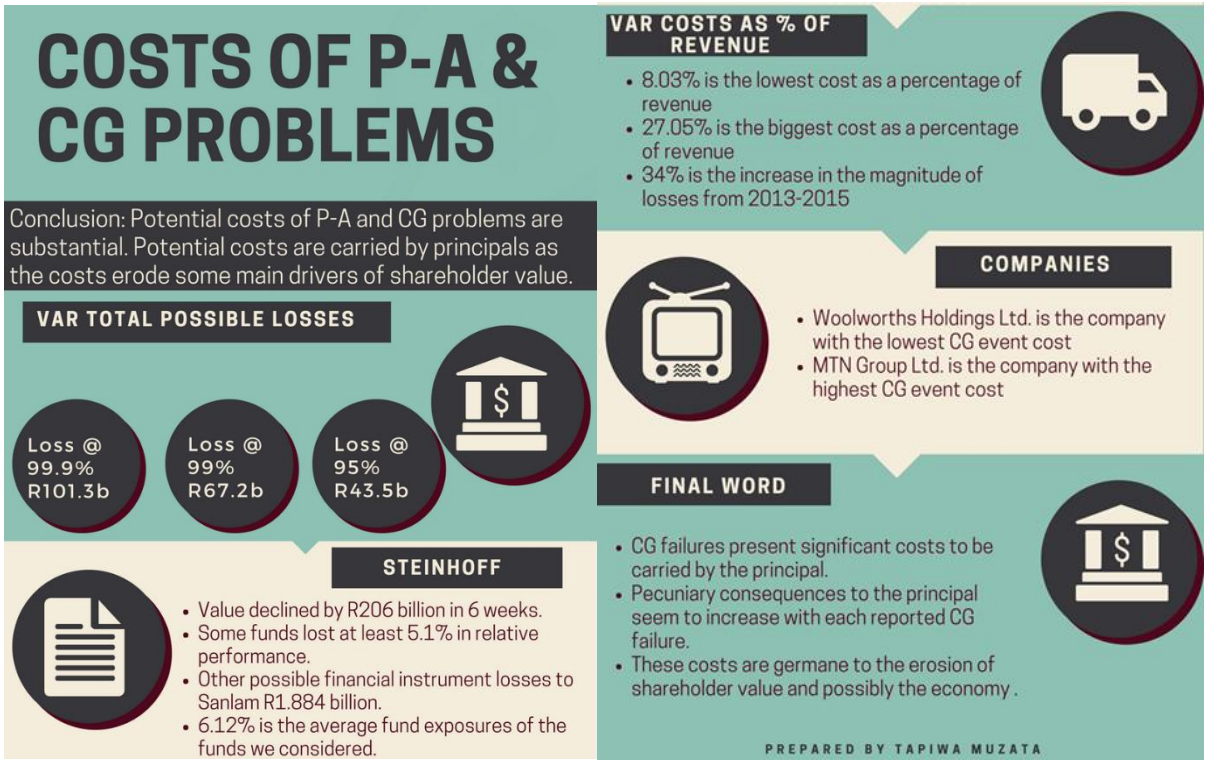


Figure 4.7: Infographic of VaR and other cost results

Source: Research results

Section 4.5 below integrates the discussion of the calculated s-Gini with the potential costs as discoursed in Section 4.4.2 to address the thematised research questions and related objective. This next section provides an idea of the possible socio-economic consequences of P-A and CG problems, given the attention currently on executive remuneration and the widening wealth gap in the face of deep poverty in South Africa.

4.5 THEME III: POTENTIAL SOCIO-ECONOMIC CONSEQUENCES

Theme III addresses the potential socio-economic consequences of P-A and CG problems. The theme's focus picks up on Rezaee's (2009) suggestion that CG should be approached as a way to address social and economic concerns. Based on the magnitude of the costs established earlier in Section 4.4.2, the study is convinced by Germain (2010) who also posited that events like the 2007-2008 financial crisis should not only be viewed as a financial event, but also encompassing social impact in the long term. Likewise, CG failures must be understood in relation to complex linkages to the socio-economic impact if appropriate solutions are to be formulated.

For this reason, the study attempts to capture the socio-economic consequences of CG failures, along the reasoning by Germain (2010) and by using the s-Gini coefficient (the study's adapted Gini coefficient) calculations. The focus is on the enormity and complexity of CG failures in both the short and long term.

As discoursed in the methodology chapter, the Gini coefficient is widely accepted as a measure of inequality, particularly wealth inequality. To the best of the researcher's knowledge, at least at the time of completing this study, there has not been a study that employed the Gini coefficient to measure salary inequality in the CG field. The coefficient is measured as a ratio which has values ranging from 0 to 1. A calculated value of 0 reveals perfect equality (that is, everyone earns the same amount), and a value of 1 shows perfect inequality (that is, people earn different incomes due to myriad reasons). Evidently, a value of 0 can only be ideal and not realistic. As a result, calculated values are expected to incline towards 1 as people earn different incomes.

4.5.1 Discussion and analysis of s-Gini calculations

From the s-Gini calculations presented in Appendix 12, both cases of near perfect and perfect inequality are observed. Of the calculated average s-Gini, the lowest is 0.94, while the highest is 1.00, and the average is 0.98. Table 4.15 presents the average s-Gini as calculated.

Table 4:15: Average s-Gini from 2008 to 2016

Company Name		Sector	Ave s-Gini per Company	Company Name		Sector	Ave s-Gini per Company
Anglo American plc	1	Mining-Metals & Minerals	**0.99**	Redefine Properties Ltd.	24	Real Estate	**0.95**
AngloGold Ashanti Ltd.	2	Mining-Gold	**0.98**	Remgro Ltd.	25	Industrial-Diversified	**0.97**
Anglo American Platinum Ltd.	3	Mining-Platinum	**0.97**	RMB Holdings Ltd.	26	Banks-Financial Services	**0.94**
Aspen Pharmacare Holdings Ltd.	4	Manufacturing-Pharmaceutical	**0.98**	Sappi Ltd.	27	Manufacturing-Paper	**0.96**
Barclays Africa Group Ltd.	5	Banks-Financial Services	**0.98**	Standard Bank Group Ltd.	28	Banks-Financial Services	**0.98**
BHP Billiton Plc	6	Mining-Metals & Minerals	**0.99**	Shoprite Holdings Ltd.	29	Retail-Food & Drug	**0.99**
British American Tobacco plc	7	Manufacturing-Tobacco	**0.99**	Sanlam Ltd.	30	Insurance-Financial Services	**0.97**
The Bidvest Group Ltd.	8	Industrial-Diversified	**0.99**	Sasol Ltd.	31	Manufacturing-Chemical Spec	**0.99**
Discovery Ltd.	9	Insurance-Financial Services	**0.98**	Tiger Brands Ltd.	32	Manufacturing-Food Processors	**0.97**
FirstRand Ltd.	10	Banks-Financial Services	**0.98**	Vodacom Group Ltd.	33	Wireless Telecom Services	**0.98**
Gold Fields Ltd.	11	Mining-Gold	**0.98**	Woolworths Holdings Ltd.	34	Retail-Multi Department	**0.99**
Growthpoint Properties Ltd.	12	Real Estate	**0.97**	African Rainbow Minerals Ltd.	35	Mining-Metals & Minerals	**0.96**
Impala Platinum Holdings Ltd.	13	Mining-Platinum	**0.96**	Assore Ltd.	36	Mining-Metals & Minerals	**0.98**
Investec Ltd.	14	Investment-Financial Services	**0.99**	Barloworld Ltd.	37	Industrial-Diversified	**0.97**
Intu Properties plc	15	Real Estate	**0.98**	Capital & Counties Properties PLC	38	Real Estate	**0.98**
Life Healthcare Group Holdings Ltd.	16	Hospital Mgt-Healthcare	**0.96**	Capitec Bank Holdings Ltd.	39	Banks-Financial Services	**0.96**
Mondi Ltd.	17	Manufacturing-Paper	**0.99**	Exxaro Resources Ltd.	40	Mining-Coal	**0.97**
Mr Price Group Ltd.	18	Retail-Soft goods	**0.98**	Imperial Holdings Ltd.	41	Transportation Services	**0.97**
MTN Group Ltd.	19	Wireless Telecom Services	**0.98**	Kumba Iron Ore Ltd.	42	Mining-Steel	**0.95**
Nedbank Group Ltd.	20	Banks-Financial Services	**0.98**	Liberty Holdings Ltd.	43	Insurance-Financial Services	**0.98**
Naspers Ltd.	21	Broadcasting Contractors	**0.95**	Massmart Holdings Ltd.	44	Retail-Multi Department	**0.98**
Netcare Ltd.	22	Hospital Mgt-Healthcare	**0.97**	Pick n Pay Stores Ltd.	45	Retail-Food & Drug	**0.98**
Old Mutual plc	23	Insurance-Financial Services	**0.99**	Truworths International Ltd.	46	Retail-Soft goods	**0.99**

1.00	**Max**
0.94	**Min**
0.98	**Average**

Source: Research results

These s-Gini coefficients are at high levels and reflect perfect inequality (with averages ranging from 0.94 to 1) in all industries. As explained in Section 3.7.2, a calculated coefficient value close to 1 or 1 shows near or perfect inequality, respectively. The high inequality depicted by the calculated coefficients (s-Gini) are corroborated by the number of times executives' income has surpassed the average income earned by workers in the industries with which the companies do business. On average, company executives in our sample earn 157 times more than the average workers' annual income for the period 2008-2016. The lowest executive's income was 12 times more, while the highest was 6 490 times more than the average annual income earned by workers.

It is important to note that the figure of 6 490 times has actually increased from the 725 times as reported in 2013 (the highest then) for the same company (Mergence Investment Managers, 2014). The 6 490 times also surpasses the ones reported in the US (419 times in 1999 as reported by Guillén, 2000) and the UK (1 374 times in 2008 as reported by Padgett, 2012). Appendix 6 shows the number of times the income earned by executives in the sample companies exceeded what an employee earned during the period 2008-2016. The South African companies' income differentials are astronomical by any measure. Padgett (2012) cites Randøy and Nielson (2002) and CFA (2008) who stated that such high salary differentials would not be permitted in Nordic countries and Japan.

The study envisages potential consequences of worsening socio-economic problems in a country that is struggling to create jobs and that has experienced massive retrenchments in industries like mining and manufacturing. To exacerbate the issue, it becomes difficult to justify the exorbitant executive salaries to the trade unions who are in alliance with the ruling political party.

Since executive compensation is part of CG (Edmans & Gabaix, 2009; Kirkpatrick, 2009), poor executive compensation structures introduce weaknesses in governance and create income inequality within the company and economy. Mallin (2013) and Nordberg (2011) posited that well governed companies are able to make significant social contributions that reduce the level of inequality through the provision of services like education (schools and bursaries), affordable houses, healthcare and other social amenities like parks. This study did not explore the social contributions made by

sample companies with different governance and compensation differentials, as the focus is on the results of the s-Gini, in general.

From the results, the closeness of the s-Gini figures suggests that there is not much inequality amongst the executives of the sample companies. Instead, the great inequality is shown between executives and the rest of the workers. The income inequality means that the ownership of companies remains in the hands of the highly compensated executives and their families, given that the workers are not able to buy shares in these companies (Padgett, 2012). This suggests that the pervasiveness of GC failures as presented in Sections 4.2.1 and 4.2.2 may enable and perpetuate the control of economic resources by the few, while it restrains the economic participation by the rest of the workers. This impacts the economic transformation of South Africa's economy.

Furthermore, both the CG failures and s-Gini as presented in the study may result in inequalities that are likely to snowball to other areas. The downstream inequality in education, health, quality of life, and social mistrust confirms suggestions by Mallin (2013) and Nordberg (2011) that companies that experience CG failures significantly contribute to societal inequality.

A combination of the costs discussed in Section 4.4.2 and the inequalities discussed above, can present a potential recipe for serious socio-economic problems. This study supports the envisioned socio-economic consequences by considering the CG failures within Steinhoff that had reported cases of accounting 'irregularities' and financial reporting manipulations that are still to be understood, at least at the time of completing this study. Steinhoff's CG failures are of such proportions that they could potentially affect 130 000 workers in 30 countries through job losses. The socio-economic consequences magnify when the following facts are considered:

- The Government Employee Pension Fund (GEPF) lost R20 billion of pension savings (Fin24.com, 2018),
- The number of people who depend on the 130 000 workers for their livelihood,
- The level of indebtedness of South Africans and their failure to manage debt, supported by a debt impairment level of 40% (Ferreira, 2017, also citing the 2014-2015 World Bank Report and Global Findex Report for 2016). Ferreira (2017) further cites statistics that show that debt levels increased at a faster pace than

employment levels (18% increase in employment against 44% increase in consumer credit from 2008 to 2016).

As can be clearly imagined, job losses due to the Steinhoff CG failures serve to worsen the social and economic circumstances of workers who are probably reeling under debt burdens, especially considering Ferreira's (2017) revelation that two out of five consumers are already debt-stressed. The potential job losses due to the executive malfeasance at Steinhoff will directly and indirectly worsen the socio-economic well-being of employees and other sectors. For example, the potential job losses and impact of the debts of employees will spill over into the banking and micro-lending sectors as bad debts are likely to worsen. The resultant bad debts will lead to job losses in the lending sectors of the economy, exacerbating the socio-economic woes of those affected. Furthermore, the worsening debt-impairments will affect access to funds or credit that might have stimulated economic development, and may increase the risk premium, thereby increasing the cost of funds and financial products. The investment market will also dry up, and the savings ratio and illiquidity in the financial markets will worsen. The result is an increase in the cost of capital which makes it expensive for small, medium and big businesses to finance operations and expansion. The likely business closures will contribute to increased unemployment, which will exacerbate the accompanying social ills.

The costs of business closures and the associated job losses are incurred by the government in efforts to bail out the ailing companies using tax-payers' money, and the quantitative easing in trying to save jobs and an economic melt-down. According to Mallin (2013), this has happened in the US, UK and other developed countries. This has not happened much in South Africa, except in 2014, when the South African Reserve Bank placed African Bank Investments Ltd. under curatorship. However, what is evident in South Africa, is the government shouldering the cost of job losses through a lower tax base (affecting government revenue) and increased social spending which directly takes care of 33% of the population (Rossouw, 2017).

On one side there are the high levels of socio-economic struggles, while on the other side the other extreme is found, the executives who are seemingly enriched by their companies that are retrenching or closing down. This situation results in a low level of social trust and a weak bond, the opposite of which is imperative for the long-term stability of companies and economies. Padgett (2012) points out that such levels of

inequality would not be permitted in Nordic countries, and Bruce *et al.* (2005) suggested that this should not be socially permissible.

To further worsen the socio-economic problems resulting from CG failures, pensioners and those who rely on share market performance for their income are affected by declines in the share prices of the companies with failed governance mechanisms. For example, the Steinhoff share price declined from R56.00 per share in December 2017 (before the resignation of the CEO) to R4.11 on Friday 3 March 2018 (Theobald, 2018). The massive decline in the share price largely represents poverty that has been induced by a CG event. The decline in the regular income for those who depend on the share-performance worsens their socio-economic position and increases their chances of seeking assistance from the government. This, in turn, increases the government's social spending. In this finding, this study accedes to the suggestions by Germain (2010) that such crises plunge hundreds of millions of poor people into worse poverty, with the accompanying ills that attend such poverty.

When the evidence from the VaR calculations and other potential costs are aggregated, and the seemingly exorbitant executive compensation and the resulting high levels of income inequality (using the s-Gini as a proxy) and the potential socio-economic consequences are revealed, it leads to the realisation of the complexities that P-A and CG problems create for companies and countries.

The researcher believes that the full extent of the long-term consequences cannot be known at the current time, although the study provides glimpses of potential pecuniary and socio-economic implications. Beginning with executive compensation, the evidence gives credence to the call by PwC (2013) who highlighted that some governments may move towards regulating salaries for executives. However, the result may be the potential loss of talent to other emerging and developed economies. The ultimate impact on South African industries may be the loss of competitiveness and possibly the loss of its place as a vibrant BRICS member.

The researcher believes that transparency and accountability regarding executive salaries need improvement in order to mitigate weaknesses in CG structures, unethical behaviour, and potential socio-economic consequences. King IV acknowledges and attempts to address the gap between executive salaries and the lowest paid workers by recommending that executives should be fairly paid in the

context of the overall remuneration of other employees, and economic, social and environmental considerations. Furthermore, King IV states that the Remuneration Report should disclose how the company tried to address the pay gap in the previous financial year.

From the presented findings, it is concluded that P-A and CG failures have potential consequences that contribute to socio-economic inequalities that snowball to other inequalities like education, healthcare and affordable housing. The study concurs with Mallin (2013), citing Charkham (1994) and Nordberg (2011), who argued that good CG can contribute to the improvement in people's standards of living and increase social cohesion. The study also accepts that the opposite is true, namely, that when CG failures occur, the failures contribute to the worsening socio-economic positions and also weakens the social cohesion of the country's citizens.

4.6 THEME IV: EFFECTIVENESS OF GOVERNANCE CODES IN SOUTH AFRICA

Theme IV evaluated the effectiveness of CG codes, specifically the King III and King IV codes, based on the findings presented in Theme I, II and III. The discussions of Theme I, II and III's findings contribute to the assessment of the effectiveness of the current CG codes.

The discussion of the findings in Theme I through to Theme III confirms the observations by McNulty *et al.* (2013) that after decades of research and reforms, P- A and CG problems still exist, even though there are increased prescriptive codes and other forms of regulations that have been implemented for better governance. The 23.91%, and Steinhoff, cases of CG failures as previously discussed, shift the focus to the effectiveness of CG codes. The cases suggest the limited effectiveness of the codes, although it is envisaged that the CG failures would have been worse had the codes been absent. Perhaps, what is needed to enhance effectiveness is improved monitoring and to provide more 'teeth' to the codes. This suggestion acquiesces with Conyon's (2006) argument that the seemingly ineffectiveness of CG codes makes it necessary to intensify monitoring by the principals and other stakeholders. Moreover, the personal liability that may be imposed on directors, under the Companies Act 71 of 2008, section 77.2, who are found to be in breach of their fiduciary duties, can enhance the effectiveness of CG codes and laws.

Failure in the oversight roles of the board and board committees erodes the effectiveness of the codes (Shah, 2014, citing Bogle & Sullivan, 2009). The study concurs with this finding as it was observed that companies that breached certain provisions of the code had decreases in governance indices (proxy of governance-oversight) from one year to another. The opposite was found to be true where there were improvements in complying with the code's provisions.

The study also noted that the high board indices, which denote greater adherence to the code's provisions, have not fully translated into the boards becoming more effective, because a number of FTSE/JSE Top40 listed companies had significant CG failures. This possibly suggests that the establishment of recommended committees and other code recommendations was a tick-box exercise that is not reflective of board practices. This is aligned to Seidl's (2007) proposition that companies would want to be seen as conforming to the code's recommendations, but it would be just words, which are divorced from actions. That seems to be the case in the 23.91% of sample companies, and Steinhoff, which exposed the limited effectiveness of the King III and King IV codes.

Furthermore, the study concurs with another of Seidl's (2007) propositions that in some cases, executives adopt governance provisions which have the least consequences to their current practices. That is, the company appears compliant on paper and to outsiders, while its practices are not transformed by the 'self-confessed adoption' of the code's provisions. This finding is supported by the fact that the study found board committees, as recommended by the King III and King IV, but the composition of those committees did not fully adhere to the provisions covering the relevant committees. This was evident in the provisions covering the nominating, remuneration and audit committees, and board independence. The study attributed the decline in governance indices to the partial adherence to the provisions covering the nominating (25%), remuneration (22%) and audit (18%), and board independence (16%). Non-adherence to the provisions covering the said committees may have reduced the effectiveness of the King III and King IV as adopted by companies.

Regarding the independence of the board appointment process, which has the potential to make the board provisions ineffectual, the study found that some companies, like Assore Limited (a FTSE/JSE Top40 listed company), clearly state that executives are responsible for board appointment and the continued eligibility to

remain on the board (Assore Limited, 2016). In the study's view, this restrains the effectiveness of the board, as the executives are responsible for appointing board members who are to exercise oversight over them. This scenario is flagged by Shleifer and Vishny (1997) as one of the ways that executives usurp power from the board and limits its voting power. Shleifer and Vishny (1997) further suggested that this situation exposes board members to being coerced to vote in a way that favours executives, if the board member is to retain his or her board seat. This scenario accentuates the weakness in the 'comply or explain' (King III) regime, of which Seidl (2007) posited that its effectiveness depends on secondary schemas that can only come from outside the company to evaluate the committees and disclosed information. The study concurs with Seidl's (2007) and Andres and Theissen's (2008) supposition that the effectiveness of the Assore Limited board can only be evaluated from outside and its disclosures would require independent testing. Seidl (2007) then suggested that to enhance the effectiveness of the codes, the codes need to have supplementary schemas that are used to evaluate the performance of committees and information disclosures.

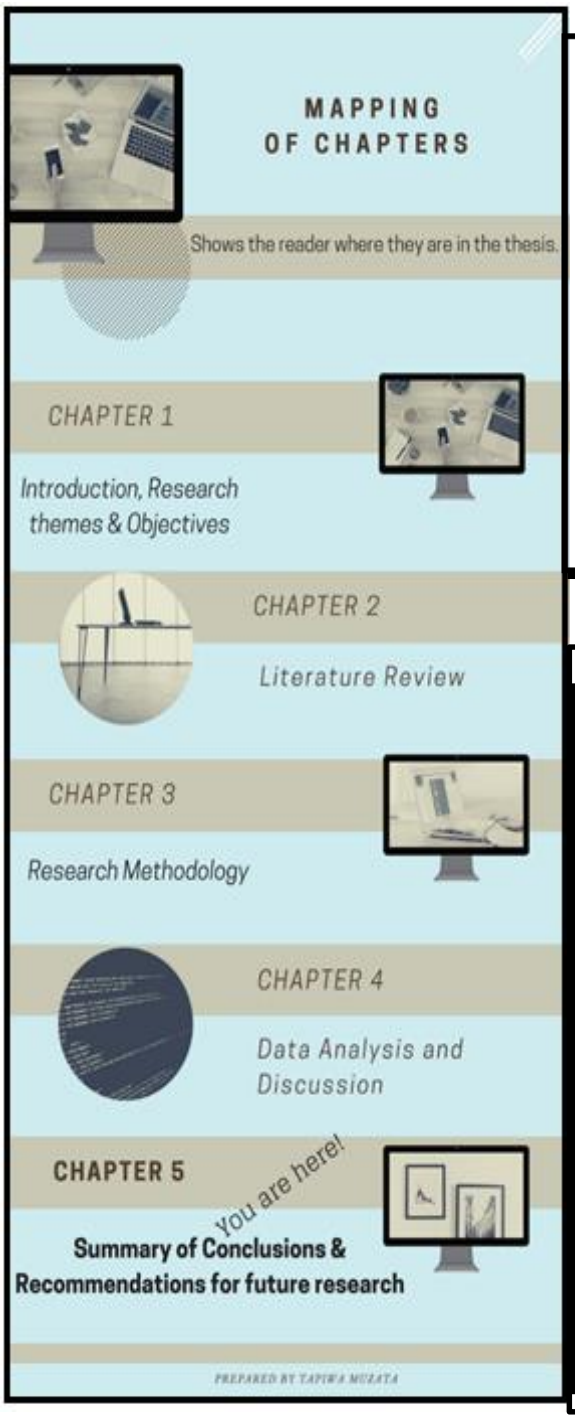
Findings related to the oversight functions of board committees have also revealed that in some instances, the qualifications of board committee members do not guarantee the effectiveness in the committees' governance. Steinhoff's board, like that of Enron, was dominated by professionals, such as chartered accountants. However, this professional composition of the board committees did not achieve robust governance, as some board members admitted to being misled and 'bamboozled' by the executive (Rose, 2018).

The ineffectiveness of the board and its committees might emanate from external networks that exist between board members and executives (Goh and Gupta, 2016) and what Gordon (2002) termed 'soft-conflicts', referring to links board members may have outside the professional circles, such as an affiliation with a social club, or the executive chairing a charity organisation owned by a board member. The study did not investigate the suggested 'soft-conflicts'. Nevertheless, the study infers that the executives' 'soft-conflicts', influence, dominance and board trust can weaken the effectiveness of the board's oversight, resulting in a lack of professional scepticism on the part of the board members. The board becomes heavily invested in trusting the executive and at this point, the board composition and competence cease to matter

as the independence of members becomes ineffective. Some directors who are compromised by ‘soft-conflicts’ lead committees and worsen the ineffectiveness of the code. In this regard, the study concurs with Shaukat and Trojanowski (2017). This was the case with Steinhoff (Theobald, 2018) and African Bank Investments Limited (Giamporcaro, 2017). African Bank Investments Limited was a FTSE/JSE Top40 company before it went under curatorship. The same fate seems to await Steinhoff given the nature and magnitude of the unfurling financial reporting fraud.

The study previously cited the conclusions by Shah (2014) that suggested that for the CG codes to be effective, the way executives are remunerated needs to change. The study’s findings support Shah’s (2014) conclusions, as cases of CG failures were discovered during the study that seem to be driven by self-dealings designed to increase the executive’s performance and ultimately compensation. A case in point is that of Steinhoff’s balance sheet manipulations as far back as 2014 (Schreiber & Strozyk, 2018). The push to achieve better performance, and the related remuneration, severely constrain the effectiveness of the code by introducing fissures in the independence of board committees and compromises disclosures that ultimately result in information asymmetry. Information asymmetry worsens and perpetuates P- A and CG problems, as the executive has the capacity to conceal losses or information for a long time, as in the cited cases of Steinhoff in South Africa, Lehman Brothers (Bris, 2010) and Olympus in Japan.

When the findings from Theme I through to Theme III were aggregated, it was concluded that the existing P-A and CG problems exposed the limited effectiveness so far of King III and King IV. However, the frequency and magnitude of the impact would be worsened if King III and King IV were absent. The study conceded that King III and King IV have recorded considerable success in constraining P-A and CG problems, although the executives still have the capacity to outwit the recommended provisions. These findings are in line with the cited literature that discusses the effectiveness of CG codes. The effectiveness of the CG codes need continuous evaluation as the study discovered that the impact of CG events can become a complex Gordian knot, as the agent is bound to continue seeking ways to expropriate wealth from the principal as well as the country.



Chapter 5: Summary of conclusions and recommendations for future research

This final chapter condensed all the conclusions reached in this study. Based on the conclusions, recommendations that may compass future CG practices and research were discussed.

Chapter 5 Contents

CHAPTER 5: SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

5.1 INTRODUCTION

The purpose of this chapter is to provide concluding remarks to the study's findings, to discuss the theoretical implications of findings, to summarise the study's contributions to the CG field, and to make recommendations and suggestions for future research. The chapter ends with a brief discussion of possible shortfalls of the study, as well as possible areas of future research to address identified limitations.

5.2 SUMMARY OF CONCLUSIONS

This study employed an archival research strategy to examine the prevalence of P-A and CG problems and to determine if these problems can explain some of the corporate failures. The researcher searched for records and documents filed with regulatory authorities, official press releases by regulatory authorities, and media reports on the FTSE/JSE Top40 listed companies. A Content Analysis (CA) was done on the Competition Commission press releases, SENS Announcements, and media reports to identify the nature of the contraventions. The findings from investigations were collated.

The study's empirical findings exemplified cases of P-A and CG problems by tabulating the FTSE/JSE Top40 companies that experienced CG failures and highlighted the nature of these CG failures. These companies represented 23.91% of the FTSE/JSE Top40 listed companies in the sample. Additionally, Steinhoff[33] was added to the list of CG failures with proportions that have effects that cut across jurisdictions (30 countries may be affected). The P-A and CG problems were also supported by findings in the attributions analysis done on the changes in the calculated

[33] As highlighted in the methodology chapter, Steinhoff was part of the FTSE/JSE Top40 listed companies but was initially excluded due to some missing data. However, Steinhoff was separately included and analysed in this study due to apparent major P-A and CG problems reported at the end of 2017 and first quarter 2018. The magnitude of ascertained potential costs (up to the finalisation of this research) warranted this inclusion and made significant contributions that address the study's thematised research questions and the achievement of the research objectives.

governance indices. Together, the findings confirmed that considerable P-A and CG problems are prevalent in the FTSE/JSE Top40 listed companies.

The study applied CA on the Integrated Annual Reports of the FTSE/JSE Top40 listed companies from 2008 to 2016 to establish their adherence to the King III and King IV recommendations. The CG provisions were then scored to construct the governance indices. The calculated indices were high, denoting a greater level of adherence to the King III and King IV. However, the 23.91% of companies that experienced CG failures, and Steinhoff, have led to a limited conviction that the codes are effective in some instances. The findings are in line with other findings cited in Section 4.3.

The study presents evidence showing that executive compensation structures in companies play a weighty role in exacerbating P-A and CG problems than what is often envisioned and reflected in CG mechanisms. This leads the study to concur with Nordberg's (2011) conclusions that executive compensation has probably become the biggest aspect of CG. Therefore, the study proposes Equation 4.1 to capture pertinent aspects of CG which have the potential to exacerbate P-A and CG problems. The variables in the proposed model may reduce or slow down the salary gap and the inequality that the s-Gini results revealed.

This study used Event Studies (ES) to test the significance of identified CG events, and to decide which of the companies to include in calculating the potential costs of the CG events. For companies that had had significant CG events, the study applied VaR procedures to quantify the potential costs to the principal and the economy. The findings regarding the calculated costs led to the conclusion that they are severe and are carried by the principals and country as a whole. The VaR calculations ascertained that at a 99.9% confidence level, the CG events from 2008 to 2016 cost the principals R101.3 billion. In addition, while the full cost of the Steinhoff CG failures is still to be fully established, it was discovered that the principal lost approximately R206 billion in six weeks.

In the socio-economic discussions, the researcher employed an interpretative enquiry to consider the practical and moral considerations that are comparable to reviewed literature. The s-Gini calculations portray a near-perfect and perfect level of income inequality. The average s-Gini was calculated at 0.98, while the highest paid executive during the study's period earned 6 490 times more that the average worker in the

industry. The study's scrutiny into such high levels of income inequality casts some light into the darkness behind the veil of executive compensation and the accompanying potential socio-economic concerns. With considerable conviction, the study concludes from the results that such high levels of income inequality are unjustifiable.

This study draws inferences from the potential costs, s-Gini and resulting inequalities. From the inferences, the study plausibly concluded that P-A and CG failures have potential consequences that contribute to income inequalities that snowball to other areas like education, healthcare and affordable housing. In other words, when CG failures occur, the failures contribute to worsening socio-economic positions and weaken social cohesion among citizens.

When the findings from Theme I through Theme III were aggregated, the study was able to make conclusions regarding the effectiveness of King III and King IV. The conclusion is that although considerable effectiveness has been recorded by the codes, there are observable limitations. The limitations erode the effectiveness of the codes as the agents are bound to continue seeking ways to enrich themselves. The study has limited conviction that the 'comply or explain' is an effective regime. It may be a passport to 'comply or breach' (Seidl, 2007, citing Coombes & Wong, 2004; Andres & Theissen, 2008; Arcot, Bruno & Faure-Grimaud, 2010), making the intended flexibility susceptible to exploitation by the agent as long as they are able to explain the breaches.

5.3 THEORETICAL IMPLICATIONS OF FINDINGS

The study's findings and conclusions have theoretical implications which are briefly discussed below.

The findings on the contraventions in Section 4.2.1 and the associated costs discussed in Sections 4.4.2 continue to confirm that P-A and CG problems exist and arise from the separation of ownership and control in companies (Berle & Means, 1932).

The agency theory propositions of Jensen and Meckling (1976) and Fama and Jensen (1983) have created unintended problems. In incentivising the agents to align their objectives with those of the principal, the results seem to show great opportunism by

the agent at the principal's expense. The implications of the study's findings are that agency theory may need an extension, as only focusing on monitoring and incentivising the agent seem to have increased the agency costs for the principal. To focus on agency costs (that is, monitoring, bonding and residual costs) seems to be inadequate, as the socio-economic costs are of a higher magnitude than the said costs. The researcher, therefore, suggests an extension to agency theory to include the broader socio-economic costs and to not only focus on the principal, because P-A and CG failures impact the broader society.

Further implications of the findings are that the role of executive compensation requires a re-thinking of the agency theory propositions. Perhaps, the dimensions in which the agent are incentivised need to change because of the societal inequalities it brings. Models that incentivise the agent in a manner that brings about social and economic egalitarianism need to be formulated. This may come from unifying agency theory and other theories from other fields of research. The challenge is to come up with a theory or theories relevant to the nature and magnitude of the P-A and CG problems of this modern era.

The directionality of the study's Model results is important. The directionality of the results necessitates more qualitative research inquiry that interrogates the agency theory assumptions. The study argues that the statistical significance of CG events does not always reveal the intricate narrative behind the facts and that should be exposed to provide more insights into the CG failures. Qualitative research, especially the content analysis of Integrated Reports, is necessary to understand and develop insightful solutions premised on reality.

Considering the study's conclusion that the codes recorded success with some limitations, the study supports Seidl's (2007) findings that there may be gaps in the way the codes are conceptualised. They are conceptualised as schemas of observations. In the observations, there is an interplay of various realities that exist in jurisdictions and companies. However, Seidl (2007) discourses on the similarities that exist in the characteristics of CG codes. These characteristics are that the provisions of the codes are not formally binding, they are regarded as 'best practices' recommended by experts, they are flexible, and deviations are expected to be explained away and they depend on capital markets for evaluation and enforcement as unjustified deviations are punished through negative share price movements. The

study's findings and similar findings cited in this research limit the effectiveness of the CG codes. This dents the efficacy of the quaint 'comply or explain' regime which is supposed to provide flexibility and is non-binding. The non-binding and flexible characteristics of the codes cannot continue to take pre-eminence over the costs and socio-economic consequences that the study tried to exemplify in this research. There is a need for another conceptual approach which considers the socio-economic consequences of the broader society and which does not only focus on shareholders and executives.

5.4 CONTRIBUTIONS OF THIS STUDY

This thesis advances the body of knowledge on CG by making the contributions discussed in this section.

Firstly, the approach to the construction of the governance indices differs from the popular constructions by GIM (2003), Bebchuk *et al.* (2004), Brown and Caylor (2006) and Maskara *et al.* (2012), however, it is similar to that of Shaukat and Trojanowski (2017). The difference is that this study used recommendations from the King III and King IV as index provisions, although the scoring is similar to the construction of other indices. The construction of the CG indices in this study is an improvement as provisions from codes are used and are more relevant to South Africa. In addition, they are internationally recognised as 'best practices', instead of MOIs which vary in provisions per company. This standardises the provisions and makes it easier to assess the quality of governance within companies. Therefore, this study compares apples with apples, as the source of provisions and benchmark are similar. A uniform assessment of the adherence to each provision and class of provisions is possible for each of the companies (regardless of company size, industry and so forth).

An attribution analysis can easily be done to establish the reasons for deterioration or improvement in indices. Also, the basis of evaluating governance-performance becomes uniform, rather than using MOI which displays weaknesses in that governance-performance is measured, based on the provisions the companies set for themselves. The aforesaid uniformity in provision measures makes it possible to evaluate the quality of governance for a portfolio of companies even if they are in different industries, of different sizes, ownership structure, and any other variation that may exist. However, what needs to be further researched is an improved formula for

the weights ascribed to each of the provisions, so that overall uniformity in the index calculation can be achieved. Currently, equal weights are ascribed to each provision included in the calculation of indices (GIM, 2003; Bebchuk *et al*., 2004; Brown & Caylor, 2006; Maskara *et al.,* 2012; Luo & Salterio, 2014 Shaukat & Trojanowski, 2017).

Secondly, the study contributes by attempting to ascertain the costs to the principal and economy brought about by the P-A and CG problems. The study noted that most research covers aspects of governance and ownership structures (Fama & Jensen, 1983), performance and share prices (GIM, 2003; Brown *et al*., 2010), valuations (Brown & Caylor, 2006), executive compensation (Bertrand & Mullainathan, 2001; Colvin, 2001; Bebchuk *et al*., 2002; Bebchuk & Fried, 2006) and financial crises arising from P-A and CG failures (Munzig, 2003; Kirkpatrick, 2009; Maskara *et al*., 2012). To the best of the researcher's knowledge, at the time this study was completed, this study was the first to apply the VaR methodology (a risk management technique) in the CG field of research to calculate the costs of CG failures. This is testimony to the multidisciplinary nature of governance as a field of research. This suggests that existing risk management and other quantitative techniques can be employed to better comprehend the magnitude of the pecuniary implications of the agent's behaviours. These techniques can provide a range of cost implications at different levels of confidence levels. In addition, the costs can uniformly be determined for companies in different industries, sizes, ownership structure, and any other variation that may exist.

Additionally, the VaR procedures yield a summarised value that exemplifies possible losses that can be incurred due to an incidence of P-A and or CG failure. Hence, VaR gives a comparable and consistent way of measuring pecuniary implications, regardless of the circumstances under which the P-A and CG problems arise. The quantification of the costs will inspire the extension of the agency theory to not only include agency costs, but to also capture the broader socio-economic costs. These socio-economic costs would capture the cost implications of P-A and CG failures to other stakeholders that include the government which would tend to bear the ultimate costs through increased social spending. The integration of socio-economic costs in understanding P-A and CG problems is in line with the triple bottom line approach that recognises that companies' operations impact the environment and society as they do business. Integrating socio-economic costs recognises that governance is the third

aspect of ESG (environment, social and governance) and its failure has huge implications on the other two. Further, higher socio-economic costs may become expensive for the company in the capital markets, as they may be used by investors to assess the quality of governance and corporate behaviour.

The third contribution made by this study is through the s-Gini adopted from the Gini coefficient which measures levels of inequality in a society or country. To the best of the researcher's knowledge, this study is the first to attempt to calculate the salary inequalities in CG research using the adapted Gini (termed s-Gini). The measured s-Gini is a proxy of the level of inequality arising from executive compensation as a component of CG. The inequality established from the s-Gini calculations portray a near-perfect and perfect level of income inequality. Taking cognisance of the undesirable implications that may arise from regulating executive compensation, the study believes that a hybrid of hard and soft-regulation on executive compensation by policy makers will constrain the gap in income inequality.

The hybrid of hard and soft regulation may not necessarily be related to the fixed component of the executive compensation but may be related to other incentives, such as share options. Although taxes have often been used to reduce inequality, that tends to result in the executive wanting more money after tax, which just increases agency costs for the principal. This study believes that the hybrid will deal with the levels of inequality exposed by the calculated s-Gini.

On the capital market side, the study advocates for the incorporation of the s-Gini in institutional investors' investment decisions as best practices to promote egalitarianism in South Africa. After all, some of the biggest investment funds are pension funds, such as the Government Employees Pension Fund, the Public Investment Corporation, and various other pension funds managed by insurance companies, that invest savings by South Africans. Levels of s-Gini may form a considerable part of the investment statement or philosophy of institutional investors. In consequence, South African savings are used to achieve some degree of equality. This is in line with the move to integrate ESG factors into the portfolio construction and investment analysis (Peiris & Evans, 2010; Kocmanová & Dočekalová, 2012). This would encourage triple bottom line reporting as well.

The fourth contribution is a remuneration model that is proposed by the study. The remuneration model states executive compensation as a function of governance, performance, GDP, inflation, ownership structure, executive net share trades, number of share trades by executives, and the number of directors on the board who trade in company shares. The remuneration model is proposed in Equation 4.1 as:

$$Rem_{it} = \alpha_{it} + \beta_{i1} Rem_{it-1} + \beta_{i2} Perf + \beta_{i3} Gov + \beta_{i4} GDP + \beta_{i5} Inf + \beta_{i6} OS + \beta_{i7} NT + \beta_{i8} TY + \beta_{i9} DTY + \varepsilon_{it}$$

The model proposes that executive compensation should reflect:

- the strength of governance by the executive using the governance index as a proxy,
- company performance measured by revenue in the case of this study, or any other performance measure as agreed by the company,
- economic performance as measured by GDP,
- inflation which impacts the value of money, and changes in compensation should consider that,
- ownership structure, as a greater concentration of share ownership leads to less capacity for the executive to extract higher compensation (Elston & Goldberg, 2003) and executive remuneration needs to be compatible with the ownership structure (Kirkpatrick, 2009),
- the executive net share trades and number of share trades increase executive compensation as it forms the greater component of the earned income (Padgett, 2012; Nordberg, 2011; Bruce *et al*., 2005; Rappaport, 2005). The compensation should factor in the trading activities of the executive in company shares. The inclusion is based on the observation that the fixed component of executive compensation is small compared to the share-based component. This is in line with other findings as previously mentioned. The inclusion of the executive's share trading activities in the compensation structure might lower the s-Gini (that is, slow down the salary differential). As a result, inequality levels between the executives and the lower income earners in the industries may be reduced. This might just be one step, among others, in addressing the income inequality.

The four contributions made by this study are expected to provide better insights and stimulate scholarly debate and more research on governance in South Africa. The study envisages stimulation of scholarly debate and research in areas covering:

- The findings of the prevalence of P-A and CG problems in some of the largest listed companies in South Africa. When the malfeasance is reported or exposed occasionally, they tend to not show their prevalence. However, the findings that have been discussed in the study have revealed their prevalence. More discourse is required to understand why such a high prevalence exists.
- The board indices calculated based on the recommendations of King III and King IV. It is generally agreeable that King III and King IV are recommendations for best practices. However, the weighting of the provisions in the construction of the governance indices needs to be settled. Currently, the weightings are equal but one can argue that there are provisions that can carry more weight than others, and that needs factoring in when constructing the indices.
- The VaR methodology employed in the study for the determination of the costs arising from P-A and CG failures is another area that may be expected to stimulate debate. Other scholars may suggest alternative models to quantify the costs.
- The proposed remuneration model which the researcher believes may be queried by the executives and human resources practitioners. However, collaborating with practitioners will provide insights that may provide solutions acceptable to all stakeholders.
- Inequalities depicted from the calculated s-Gini might also become emotionally debated because of the scale of income inequality revealed in this study. Also, this aspect has political implications that need careful management.

Once this study's contributions are aggregated, scholarly debate becomes imperative in the aforesaid areas if better solutions are to be found, given South Africa's unique circumstances in relation to past political and social injustices, and the current political system and cultural diversity. In addition, the study's contributions provide insights that inform South African regulatory authorities in setting up compliance rules that ensure that the economy is safeguarded against agency and CG problems that may have devastating consequences on the government.

5.5 SUMMARY OF RECOMMENDATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

From the findings of this study, the following recommendations are made:

5.5.1 Theme I

Even though the calculated board indices are high, denoting a greater adoption of the CG codes' recommendations, this has not mitigated incidences of corporate malfeasance, such as in the case of the 23.91% of the FTSE/JSE Top40 listed companies and Steinhoff[34]. Furthermore, from the study's findings, which concur with the observations of Shaukat and Trojanowski (2017), it is clear that a greater percentage of governance declines should be ascribed to the independence of the nominating, remuneration and audit committees.

The study recommends a hybrid regime which may also build loyalty to the company by the agent as argued by Eisenberg (1998). This hybrid regime would require making some provisions compulsory, while others might be explained to justify non-compliance. For example, the study recommends that the following provisions become compulsory: provisions that have to do with the independence of the nominating, remuneration and audit committees that may show susceptibility to executive opportunism and information asymmetry that worsen or create P-A and CG problems. This hybrid regime would deal with the voluntary aspects of the codes that are not effective as is shown by the problems in the independence of the nominating, remuneration and audit committees, thus making them compulsory.

On the other hand, the areas of governance that require flexibility in order to allow full and truthful disclosures will be accommodated by allowing directors to explain their deviation from the King recommendations. This hybrid regime is a middle-of-the-road approach that suggests that volunteerism and compulsory requirements of the law and regulation can co-exist in one code. Furthermore, the hybrid regime will curb instances where executives are able to explain their way out or abuse the flexibility of the code in cases where their actions are socially and ethically unacceptable. This restrains the executive opportunism that exacerbates P-A and CG problems.

[34] Towards the conclusion of this study, there were reported CG cases within the Resilient Group, a listed company.

Another recommendation of the study is that the CG field of study looks to the behavioural finance field of study in trying to understand why the high levels of compliance to CG codes, laws and regulations are not achieving effective results that restrain the behaviours exhibited by the 23.91% of the FTSE/JSE Top40 listed companies and Steinhoff. Behavioural finance combines theories from behavioural and cognitive psychology with economic and finance theories to provide explanations for why people seem to make irrational and unpredicted financial decisions. Behavioural finance theories might assist by providing answers to the emotional and psychological influence on the agent's seemingly irrational and unpredictable decisions.

This recommendation is in line with the multidisciplinary nature of the CG field of research. In the quest for plausible explanations to the study's findings of high adherences to good CG practices, but a high prevalence of CG problems[35], the solutions might come from the behavioural finance field of study. The study posits that transitioning CG research into the behavioural finance field and searching for CG answers with a behavioural finance lens might explain the agents' decisions that result in contraventions of the CG codes, laws and regulations. The behavioural finance lens might provide plausible explanations to the anomalies found in the study and contribute adequate theoretical extensions to the agency theory. An understanding of the agent's behaviour is critical in taking the CG field of study forward. Hence, the recommendation to transition CG research into the behavioural finance field.

5.5.2 Theme II

The study concludes that executive compensation plays a weightier role in exacerbating P-A and CG problems. The study recommends a hybrid of hard and soft regulations related to executive pay schemes when they reach certain Gazetted levels. The hybrid regulations may entail the lifting of the 'secrecy veil' on complex executive pay structures, and the current disclosure requirements that do not fully explain the widening gap between the lowest paid employees and executives. Greater transparency is still needed, especially where executives are compensated through shares that are susceptible to manipulation by the very executives who are being

[35] CG indices are used as proxies to measure CG practices. That is, a higher index means good CG practices, while a low index means poor CG practices within the company.

monitored. Furthermore, the study recommends regressing remuneration against CG index to establish if remuneration considerably influence CG. Longer vesting periods in excess of five years are recommended, or at a minimum, the vesting period should at least match the average holding period of the top ten shareholders. Matching the executives' shares vesting period to the average holding period of the top ten shareholders may bring about a better alignment of the objectives and investment period between the agent and principal. This study suggests that research be carried out to assess the impact of aligning the principal's holding period to that of the option vesting period on governance.

5.5.3 Theme III

As part of responsible investing by institutional investors, this study recommends that these investors incorporate and track the s-Gini to hold the executives and board to account as they vote on companies' remuneration policies and related performance. Consubstantial to shareholder activism, is for institutional investors to hold companies to account due to the consideration of investing in companies that have lower s-Gini (that is, better salary equality) as part of its investment process. In other words, institutional investors can build in the s-Gini into their investment decision-making to influence better levels of salary equality in companies in which they invest. This becomes part of their responsible investing philosophy.

5.5.4 Theme IV

The results of the study reveal limited success of the voluntary nature of the CG codes. The study recommends strengthened forms of external governance through effective monitoring by regulatory authorities. The study also recommends that the financial press and 'whistleblowing programmes' be strengthened or capacitated. External governance can take the form of scrutiny by the media, as its watchful eye ensures that the interests of the public and stakeholders are protected from malfeasance by executives. This recommendation is also nuanced by Kumar and Zattoni (2015). These forms of external governance would enhance the effectiveness of the overall governance structures of companies. Researchers are encouraged to examine the role of investigative journalism and 'whistleblowing programmes' in restraining corporate malfeasance and improving CG. This recommendation is informed by the

fact that the recent Steinhoff and Eskom (not part of this study) scandals were largely brought to light by investigative journalists and whistle blowers.

Figure 5.1 presents infographics that summarise the conclusions, recommendations and contributions of the study.

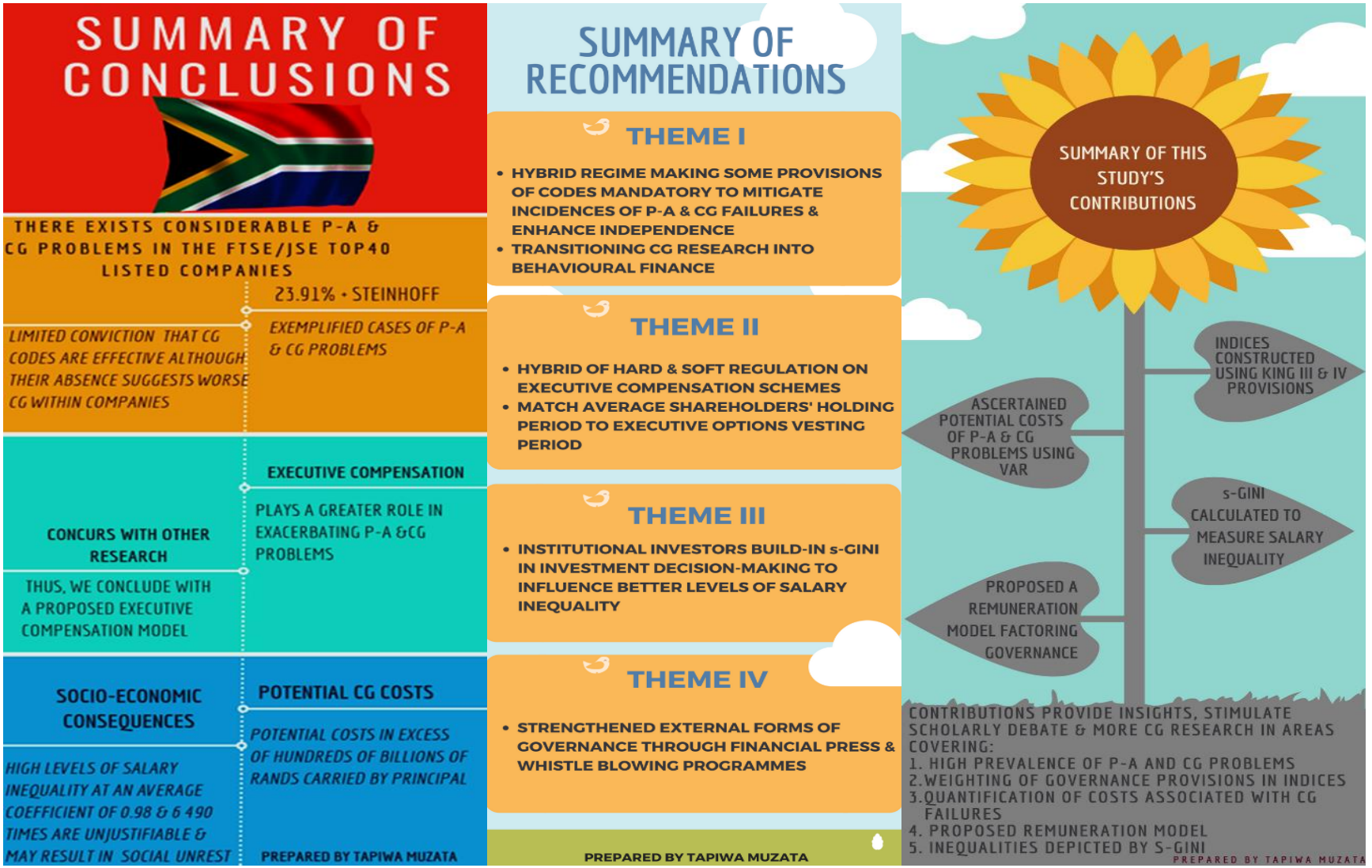


Figure 5.1: Infographics summarising conclusions, recommendations and contributions of this study

Source: Researcher's findings

5.6 POSSIBLE LIMITATIONS OF THE STUDY AND RECOMMENDATIONS FOR FUTURE RESEARCH

This study was restricted to the FTSE/JSE Top40 South African listed companies with available data from 2008 to 2016. As a result, the exclusion of small to medium JSE listed companies could not provide the perspective of the research questions in small to medium-sized listed companies. The inclusion of small to medium listed companies could have provided more insights that could be comparable to the findings in large companies. Future research could include small to medium-sized listed companies and compare those results to the findings of this study.

The study had to search for information that was fragmented and not standardised in presentation. Although the information was in the public domain as required by the South African Companies Act 71 of 2008, listing requirements and good CG practices, some of it was not fully transparent and was susceptible to manipulation to conceal what is believed were costs and economic consequences of the agency and governance problems. For example, information reported in the Integrated Reports was not standardised from one year to another, and in one year board members were highlighted as NED, while in the next year they are INED, and so forth. This clearly revealed deviations from the definitions of INED provided by the King III and King IV, and questions the independence criteria used by companies. Further research can contribute by examining the criteria being used by listed companies to determine the independence of board and committee members. This is important, given that our findings showed that the deteriorations in governance indices resulted from the independence of the nominating, remuneration and audit committees. The study also suggests that further research be carried out to come up with a standardised Integrated Reporting framework, especially after King IV in South Africa.

Aligned to the transparency of the disclosed information mentioned above, in some instances, it was difficult to ascertain the criteria used in determining the performance of executives. Also, the disclosed executive compensation schemes become complex to understand and they need to be simplified (Becht, Bolton & Röell, 2011). Sometimes, the compensation benchmarks used to peg executive salaries that justified increases in compensation seemed different. Executive compensations were benchmarked on the basis of salaries earned by industry peers, but these companies

seemed to use different measurements. Scholarly work is needed to design simplified and standardised executive compensation frameworks and benchmarks that can contribute to good governance.

Finally, the model results showed weak relationships although its directionality provided valuable insights. Screening some of the variables may provide significant statistical relationships, especially between remuneration and governance. For this reason, the researcher suggests that further economic modelling is necessary.

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APPENDICES

Appendix 1:

Mapping of King III and King IV recommendations to the governance provisions

APPENDIX 1: MAPPING SUMMARY OF GOVERNANCE PROVISIONS TO KING III & KING IV		
Mapping	**King III & IV Principle & Practice**	**Page in King**
No Chair/CEO Duality	King III, Principle 2.16 & King IV, Principle 7, Practice 34	24/53
Majority of NEDs on board are Independent	King III, Principle 2.18, Practice 2.18.1 & 2.18.2 Majority NEDs	25
Presence of Deputy Chair and or Lead INED (LID)	King III, Principle 2.22, Annex 2.1 & King IV, Principle 7, Practice 32	45,53/53
Presence of Remuneration Committee	King III, Principle 2.23, 2.25, 2.26, 2.27, Practice 2.23.6 & King IV, Principle 14, Practice 26-39	28-30/64-67
INED Chairs Remuneration Committee	King III, Principle 2.16, 2.23, 130, 131, 45.2 Chapter 2 & King IV, Principle 8, Practice 67	36/57
Remuneration Committee comprised of NEDs & majority are INEDs	King III, Principle 2.23, Practice 2.23.7 & King IV, Principle 8, Practice 66	29/57
Presence of Audit Committee	King III, Principle 3.1, Practice 3.1.1 & King IV, Principle 8, Practice 51, 56, 57	31/56
INED Chairs Audit Committee	King III, Principle 3.3, Practice 3.3.1-3.3.3 & King IV, Principle 8, Practice 57	32/56
All Audit Committee members are INEDs	King III, Principle 3.2, Practice 3.2.1 & King IV, Principle 8, Practice 56	31/56
Presence of Nominating Committee	King III, Principle 2.23, Practice 2.23.6, 130 & King IV, Principle 8, Practice 60, 61	29/57
NED or Board Chair chairs the Nominating Committee	King III, Principle 2.23, Practice 2.23.6, 40.3, 45.3, King IV, Principle 7, Practice 36 (C)	29, 34, 36/53
Nominating Committee comprised of NEDs & majority are INEDs	King III, Principle 2.23, Practice 2.23.7 & King IV, Principle 8, Practice 61	29/57
Presence of Risk Committee	King III, Principle 2.23 & 4.3, Practice 2.23.6 & 4.3.1, 4.3.2.1 & King IV, Principle 8, Practice 62	29, 36/57
NED Chairs the Risk Committee	King III, Principle 2.16, Practice 45.4 & King IV, Principle 7, Practice 36 (b) contradicts by permitting board Chair to chair Risk Committee	36/
Majority of Risk Committee members are NEDs	King III, Principle 4.3, Practice 4.3.2.2 & King IV, Principle 8, Practice 64	36/30,57
Presence of a Committee overseeing technology and information governance	King III, Principle 5.1, Practices covered in Chapter 5 & King IV, Principle 12, Practice 10-17	82/63
Presence of a Social and Ethics Committee	King III, Principle 1.1 & 2.23, Practice 9, 130 (Section 72 (4), 43 & 26 (20) of Companies Act & King IV, Principle 8, Practice 68-70	20, 46/57
NED Chairs the Social and Ethics Committee	King IV, Principle 7, Practice 36(e)	53
Majority of Social & Ethics Committee members are NEDs	King IV, Principle 8, Practice 70	57
Compliance with laws, rules, codes & standards i.e. no reported breaches	King III, Principle 6.1, Practice 6.1.6 & King IV, Principle 13, Practice 18-25	41,42/63,64

Appendix 2: Summary of non-adherences to King III and King IV provisions

APPENDIX 2: SUMMARY OF NON-ADHERENCES TO KING PROVISIONS FROM 2008 TO 2016										
Non-Adherence to King III & IV (Non-compliant companies as % of Total Sample)	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**Average**
No Chair/CEO Duality	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.13%	**0.24%**
Majority of NEDs on board are Independent	23.40%	17.02%	17.02%	19.15%	14.89%	17.02%	12.77%	12.77%	10.64%	**16.08%**
Presence of Deputy Chair and or Lead INED (LID)	36.17%	36.17%	36.17%	36.17%	36.17%	36.17%	36.17%	36.17%	36.17%	**36.17%**
Presence of Remuneration Committee	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	**0.00%**
INED Chairs Remuneration Committee	8.51%	8.51%	8.51%	6.38%	4.26%	2.13%	2.13%	4.26%	2.13%	**5.20%**
Remuneration Committee comprised of NEDs & majority are INEDs	46.81%	42.55%	46.81%	51.06%	38.30%	36.17%	31.91%	34.04%	27.66%	**39.48%**
Presence of Audit Committee	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	**0.00%**
INED Chairs Audit Committee	4.26%	4.26%	4.26%	2.13%	0.00%	0.00%	2.13%	2.13%	2.13%	**2.36%**
All Audit Committee members are INEDs	55.32%	48.94%	44.68%	48.94%	46.81%	44.68%	42.55%	44.68%	40.43%	**46.34%**
Presence of Nominating Committee	8.51%	6.38%	4.26%	6.38%	6.38%	6.38%	4.26%	4.26%	4.26%	**5.67%**
NED or Board Chair chairs the Nominating Committee	8.51%	6.38%	4.26%	6.38%	6.38%	6.38%	4.26%	6.38%	6.38%	**6.15%**
Nominating Committee comprised of NEDs & majority are INEDs	40.43%	36.17%	40.43%	44.68%	42.55%	36.17%	29.79%	38.30%	31.91%	**37.83%**
Presence of Risk Committee	2.13%	2.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	**0.47%**
NED Chairs the Risk Committee	6.38%	6.38%	2.13%	2.13%	2.13%	2.13%	2.13%	2.13%	2.13%	**3.07%**
Majority of Risk Committee members are NEDs	42.55%	42.55%	34.04%	34.04%	31.91%	31.91%	31.91%	29.79%	31.91%	**34.52%**
Presence of a Committee overseeing technology and information governance	42.55%	42.55%	40.43%	38.30%	38.30%	38.30%	38.30%	38.30%	38.30%	**39.48%**
Presence of a Social and Ethics Committee	85.11%	85.11%	85.11%	53.19%	12.77%	8.51%	8.51%	8.51%	10.64%	**39.72%**
NED Chairs the Social and Ethics Committee	87.23%	87.23%	87.23%	57.45%	14.89%	10.64%	10.64%	10.64%	12.77%	**42.08%**
Majority of Social & Ethics Committee members are NEDs	89.36%	89.36%	87.23%	68.09%	42.55%	40.43%	42.55%	42.55%	40.43%	**60.28%**
Compliance with laws, rules, codes & standards i.e. no reported breaches	6.38%	2.13%	2.13%	0.00%	4.26%	4.26%	0.00%	4.26%	2.13%	**2.84%**

Appendix 3: Attribution of changes in governance indices

APPENDIX 3: ATTRIBUTION OF CHANGES IN GOVERNANCE INDICES															
Company Name	Name	Sector	Year	**TOTAL**	**Index decrease ascribed to non-independence of:**										
					Board	No LID	RemCom Chair	RemCom	AuditCom	NomCom	RiskCom Chair	RiskCom	SocialCom Chair	SocialCom
Anglo American plc	1	Mining-Metals & Minerals	2014	**14**					√					
Anglo American plc	1	Mining-Metals & Minerals	2013	**15**										
Anglo American plc	1	Mining-Metals & Minerals	2011	**15**										
Anglo American plc	1	Mining-Metals & Minerals	2010	**14**										
AngloGold Ashanti Ltd.	2	Mining-Gold	2014	**19**					√					
AngloGold Ashanti Ltd.	2	Mining-Gold	2013	**20**										
Anglo American Platinum Ltd.	3	Mining-Platinum	2016	**16**										
Anglo American Platinum Ltd.	3	Mining-Platinum	2015	**15**				√	√	√				
Anglo American Platinum Ltd.	3	Mining-Platinum	2014	**18**										
Anglo American Platinum Ltd.	3	Mining-Platinum	2013	**17**		√								
Anglo American Platinum Ltd.	3	Mining-Platinum	2012	**18**										
Anglo American Platinum Ltd.	3	Mining-Platinum	2011	**15**										
Anglo American Platinum Ltd.	3	Mining-Platinum	2010	**14**										
Anglo American Platinum Ltd.	3	Mining-Platinum	2009	**14**				√	√					
Anglo American Platinum Ltd.	3	Mining-Platinum	2008	**16**										
Aspen Pharmacare Holdings Ltd.	4	Manufacturing-Pharmaceutical	2014	**19**										
Aspen Pharmacare Holdings Ltd.	4	Manufacturing-Pharmaceutical	2013	**18**					√					
Aspen Pharmacare Holdings Ltd.	4	Manufacturing-Pharmaceutical	2012	**19**										
Aspen Pharmacare Holdings Ltd.	4	Manufacturing-Pharmaceutical	2011	**16**	√									
Aspen Pharmacare Holdings Ltd.	4	Manufacturing-Pharmaceutical	2010	**17**										
Aspen Pharmacare Holdings Ltd.	4	Manufacturing-Pharmaceutical	2009	**16**										
Aspen Pharmacare Holdings Ltd.	4	Manufacturing-Pharmaceutical	2008	**14**										
Barclays Africa Group Ltd.	5	Banks-Financial Services	2009	**16**										
Barclays Africa Group Ltd.	5	Banks-Financial Services	2008	**15**										
The Bidvest Group Ltd.	8	Industrial-Diversified	2014	**16**										
The Bidvest Group Ltd.	8	Industrial-Diversified	2009	**14**										
The Bidvest Group Ltd.	8	Industrial-Diversified	2008	**12**										
Discovery Ltd.	9	Insurance-Financial Services	2012	**13**										
Discovery Ltd.	9	Insurance-Financial Services	2011	**12**										

APPENDIX 3: ATTRIBUTION OF CHANGES IN GOVERNANCE INDICES (CONTINUED)

			Year	**TOTAL**	Board	No LID	RemCom Chair	RemCom	AuditCom	NomCom	RiskCom Chair	RiskCom	SocialCom Chair	SocialCom
FirstRand Ltd.	10	Banks-Financial Services	2016	**18**										
FirstRand Ltd.	10	Banks-Financial Services	2015	**16**				√						
FirstRand Ltd.	10	Banks-Financial Services	2014	**17**										
FirstRand Ltd.	10	Banks-Financial Services	2013	**15**										
FirstRand Ltd.	10	Banks-Financial Services	2012	**15**										
FirstRand Ltd.	10	Banks-Financial Services	2011	**11**					√	√				
FirstRand Ltd.	10	Banks-Financial Services	2010	**15**										
Gold Fields Ltd.	11	Mining-Gold	2016	**18**										
Gold Fields Ltd.	11	Mining-Gold	2015	**17**										
Growthpoint Properties Ltd.	12	Real Estate	2012	**17**										
Growthpoint Properties Ltd.	12	Real Estate	2011	**13**										
Impala Platinum Holdings Ltd.	13	Mining-Platinum	2016	**18**										
Impala Platinum Holdings Ltd.	13	Mining-Platinum	2015	**15**			√							
Impala Platinum Holdings Ltd.	13	Mining-Platinum	2014	**16**										
Impala Platinum Holdings Ltd.	13	Mining-Platinum	2012	**16**					√	√				
Impala Platinum Holdings Ltd.	13	Mining-Platinum	2011	**18**										
Investec Ltd.	14	Investment-Financial Services	2015	**19**										
Investec Ltd.	14	Investment-Financial Services	2014	**18**										
Investec Ltd.	14	Investment-Financial Services	2012	**18**										
Investec Ltd.	14	Investment-Financial Services	2011	**14**										
Intu Properties plc	15	Real Estate	2009	**16**	√									
Intu Properties plc	15	Real Estate	2008	**15**										
Life Healthcare Group Holdings Ltd.	16	Hospital Mgt-Healthcare	2015	**19**										
Life Healthcare Group Holdings Ltd.	16	Hospital Mgt-Healthcare	2014	**18**										√
Life Healthcare Group Holdings Ltd.	16	Hospital Mgt-Healthcare	2013	**19**										
Life Healthcare Group Holdings Ltd.	16	Hospital Mgt-Healthcare	2011	**19**										
Life Healthcare Group Holdings Ltd.	16	Hospital Mgt-Healthcare	2010	**15**										
Mondi Ltd.	17	Manufacturing-Paper	2012	**17**										
Mondi Ltd.	17	Manufacturing-Paper	2011	**14**										
Mr Price Group Ltd.	18	Retail-Soft goods	2016	**19**										
Mr Price Group Ltd.	18	Retail-Soft goods	2015	**18**										
Mr Price Group Ltd.	18	Retail-Soft goods	2014	**18**										
Mr Price Group Ltd.	18	Retail-Soft goods	2013	**17**										
Mr Price Group Ltd.	18	Retail-Soft goods	2012	**17**										
Mr Price Group Ltd.	18	Retail-Soft goods	2011	**15**										
Mr Price Group Ltd.	18	Retail-Soft goods	2010	**15**								√		
Mr Price Group Ltd.	18	Retail-Soft goods	2009	**16**										

APPENDIX 3: ATTRIBUTION OF CHANGES IN GOVERNANCE INDICES (CONTINUED)

			Year	TOTAL	Board	No LID	RemCom Chair	RemCom	AuditCom	NomCom	RiskCom Chair	RiskCom	SocialCom Chair	SocialCom
MTN Group Ltd.	19	Wireless Telecom Services	2015	**16**				√		√				
MTN Group Ltd.	19	Wireless Telecom Services	2014	**20**										
MTN Group Ltd.	19	Wireless Telecom Services	2013	**18**										
MTN Group Ltd.	19	Wireless Telecom Services	2012	**17**										
MTN Group Ltd.	19	Wireless Telecom Services	2011	**18**										
MTN Group Ltd.	19	Wireless Telecom Services	2010	**14**				√						
MTN Group Ltd.	19	Wireless Telecom Services	2009	**15**										
MTN Group Ltd.	19	Wireless Telecom Services	2008	**14**										
Nedbank Group Ltd.	20	Banks-Financial Services	2011	**20**										
Nedbank Group Ltd.	20	Banks-Financial Services	2010	**16**										
Naspers Ltd.	21	Broadcasting Contractors	2013	**19**										
Naspers Ltd.	21	Broadcasting Contractors	2012	**13**										
Naspers Ltd.	21	Broadcasting Contractors	2011	**13**				√	√	√				
Naspers Ltd.	21	Broadcasting Contractors	2010	**16**										
Naspers Ltd.	21	Broadcasting Contractors	2009	**16**										
Naspers Ltd.	21	Broadcasting Contractors	2008	**13**										
Netcare Ltd.	22	Hospital Mgt-Healthcare	2016	**18**										
Netcare Ltd.	22	Hospital Mgt-Healthcare	2015	**16**										
Netcare Ltd.	22	Hospital Mgt-Healthcare	2014	**15**										
Netcare Ltd.	22	Hospital Mgt-Healthcare	2012	**15**										
Netcare Ltd.	22	Hospital Mgt-Healthcare	2011	**12**										
Netcare Ltd.	22	Hospital Mgt-Healthcare	2010	**12**				√						
Netcare Ltd.	22	Hospital Mgt-Healthcare	2009	**13**										
Netcare Ltd.	22	Hospital Mgt-Healthcare	2008	**12**										
Old Mutual plc	23	Insurance-Financial Services	2015	**16**										
Old Mutual plc	23	Insurance-Financial Services	2014	**15**										
Redefine Properties Ltd.	24	Real Estate	2015	**15**										
Redefine Properties Ltd.	24	Real Estate	2014	**14**	√									
Redefine Properties Ltd.	24	Real Estate	2013	**15**										
Redefine Properties Ltd.	24	Real Estate	2009	**13**										
Redefine Properties Ltd.	24	Real Estate	2008	**11**										
Remgro Ltd.	25	Industrial-Diversified	2012	**19**										
Remgro Ltd.	25	Industrial-Diversified	2011	**17**										
RMB Holdings Ltd.	26	Banks-Financial Services	2015	**17**						√				
RMB Holdings Ltd.	26	Banks-Financial Services	2014	**18**										
RMB Holdings Ltd.	26	Banks-Financial Services	2013	**17**			√							
RMB Holdings Ltd.	26	Banks-Financial Services	2012	**18**										
RMB Holdings Ltd.	26	Banks-Financial Services	2011	**17**										
RMB Holdings Ltd.	26	Banks-Financial Services	2010	**14**										
RMB Holdings Ltd.	26	Banks-Financial Services	2009	**13**										
RMB Holdings Ltd.	26	Banks-Financial Services	2008	**14**										

APPENDIX 3: ATTRIBUTION OF CHANGES IN GOVERNANCE INDICES (CONTINUED)

			Year	TOTAL	Board	No LID	RemCom Chair	RemCom	AuditCom	NomCom	RiskCom Chair	RiskCom	SocialCom Chair	SocialCom
Sappi Ltd.	27	Manufacturing-Paper	2016	**19**										
Sappi Ltd.	27	Manufacturing-Paper	2015	**18**										
Sappi Ltd.	27	Manufacturing-Paper	2013	**18**										
Sappi Ltd.	27	Manufacturing-Paper	2012	**15**										
Standard Bank Group Ltd.	28	Banks-Financial Services	2016	**15**									√	√
Standard Bank Group Ltd.	28	Banks-Financial Services	2015	**17**						√				
Standard Bank Group Ltd.	28	Banks-Financial Services	2014	**18**										
Standard Bank Group Ltd.	28	Banks-Financial Services	2013	**18**										
Standard Bank Group Ltd.	28	Banks-Financial Services	2012	**17**										
Standard Bank Group Ltd.	28	Banks-Financial Services	2011	**17**										
Standard Bank Group Ltd.	28	Banks-Financial Services	2010	**13**										
Shoprite Holdings Ltd.	29	Retail-Food & Drug	2014	**18**										
Shoprite Holdings Ltd.	29	Retail-Food & Drug	2013	**17**										
Shoprite Holdings Ltd.	29	Retail-Food & Drug	2012	**16**										
Shoprite Holdings Ltd.	29	Retail-Food & Drug	2011	**9**										
Shoprite Holdings Ltd.	29	Retail-Food & Drug	2010	**10**	√									
Shoprite Holdings Ltd.	29	Retail-Food & Drug	2009	**9**										
Sanlam Ltd.	30	Insurance-Financial Services	2015	**14**										√
Sanlam Ltd.	30	Insurance-Financial Services	2014	**15**										
Sanlam Ltd.	30	Insurance-Financial Services	2011	**15**										
Sanlam Ltd.	30	Insurance-Financial Services	2010	**12**										
Sasol Ltd.	31	Manufacturing-Chemical Speialit	2012	**20**										
Sasol Ltd.	31	Manufacturing-Chemical Speialit	2011	**18**										
Tiger Brands Ltd.	32	Manufacturing-Food Processors	2013	**15**				√		√				
Tiger Brands Ltd.	32	Manufacturing-Food Processors	2012	**17**										
Tiger Brands Ltd.	32	Manufacturing-Food Processors	2011	**12**										
Tiger Brands Ltd.	32	Manufacturing-Food Processors	2010	**12**				√		√				
Tiger Brands Ltd.	32	Manufacturing-Food Processors	2009	**14**										
Vodacom Group Ltd.	33	Wireless Telecom Services	2011	**13**										
Vodacom Group Ltd.	33	Wireless Telecom Services	2010	**11**										
Vodacom Group Ltd.	33	Wireless Telecom Services	2009	**9**										
Woolworths Holdings Ltd.	34	Retail-Multi Department	2012	**19**										
Woolworths Holdings Ltd.	34	Retail-Multi Department	2011	**15**										
Woolworths Holdings Ltd.	34	Retail-Multi Department	2010	**15**										
Woolworths Holdings Ltd.	34	Retail-Multi Department	2009	**14**										
African Rainbow Minerals Ltd.	35	Mining-Metals & Minerals	2011	**15**										
African Rainbow Minerals Ltd.	35	Mining-Metals & Minerals	2010	**13**										
Assore Ltd.	36	Mining-Metals & Minerals	2012	**12**										
Assore Ltd.	36	Mining-Metals & Minerals	2011	**10**										

APPENDIX 3: ATTRIBUTION OF CHANGES IN GOVERNANCE INDICES (CONTINUED)

			Year	**TOTAL**	Board	No LID	RemCom Chair	RemCom	AuditCom	NomCom	RiskCom Chair	RiskCom	SocialCom Chair	SocialCom
Barloworld Ltd.	37	Industrial-Diversified	2014	**18**										
Barloworld Ltd.	37	Industrial-Diversified	2013	**17**	√									
Barloworld Ltd.	37	Industrial-Diversified	2012	**18**										
Barloworld Ltd.	37	Industrial-Diversified	2011	**18**										
Barloworld Ltd.	37	Industrial-Diversified	2010	**15**										
Barloworld Ltd.	37	Industrial-Diversified	2009	**14**										
Capitec Bank Holdings Ltd.	39	Banks-Financial Services	2013	**16**	√									
Capitec Bank Holdings Ltd.	39	Banks-Financial Services	2012	**15**										
Capitec Bank Holdings Ltd.	39	Banks-Financial Services	2011	**13**										
Capitec Bank Holdings Ltd.	39	Banks-Financial Services	2010	**13**	√									
Capitec Bank Holdings Ltd.	39	Banks-Financial Services	2009	**14**										
Exxaro Resources Ltd.	40	Mining-Coal	2013	**19**										
Exxaro Resources Ltd.	40	Mining-Coal	2012	**18**										
Exxaro Resources Ltd.	40	Mining-Coal	2011	**14**										
Exxaro Resources Ltd.	40	Mining-Coal	2010	**14**										
Exxaro Resources Ltd.	40	Mining-Coal	2009	**13**				√						
Exxaro Resources Ltd.	40	Mining-Coal	2008	**14**										
Imperial Holdings Ltd.	41	Transportation Services	2013	**18**										
Imperial Holdings Ltd.	41	Transportation Services	2012	**17**										
Imperial Holdings Ltd.	41	Transportation Services	2011	**17**										
Imperial Holdings Ltd.	41	Transportation Services	2010	**15**										
Imperial Holdings Ltd.	41	Transportation Services	2009	**14**										
Kumba Iron Ore Ltd.	42	Mining-Steel	2015	**19**										
Kumba Iron Ore Ltd.	42	Mining-Steel	2014	**18**										
Kumba Iron Ore Ltd.	42	Mining-Steel	2013	**17**										
Kumba Iron Ore Ltd.	42	Mining-Steel	2012	**16**						√				
Kumba Iron Ore Ltd.	42	Mining-Steel	2011	**17**										
Kumba Iron Ore Ltd.	42	Mining-Steel	2010	**13**										
Liberty Holdings Ltd.	43	Insurance-Financial Services	2013	**19**										
Liberty Holdings Ltd.	43	Insurance-Financial Services	2012	**18**										
Liberty Holdings Ltd.	43	Insurance-Financial Services	2011	**18**										
Liberty Holdings Ltd.	43	Insurance-Financial Services	2010	**15**										
Massmart Holdings Ltd.	44	Retail-Multi Department	2011	**15**				√	√	√		√		
Massmart Holdings Ltd.	44	Retail-Multi Department	2010	**17**										
Massmart Holdings Ltd.	44	Retail-Multi Department	2009	**16**										

APPENDIX 3: ATTRIBUTION OF CHANGES IN GOVERNANCE INDICES (CONTINUED)

			Year	TOTAL	Board	No LID	RemCom Chair	RemCom	AuditCom	NomCom	RiskCom Chair	RiskCom	SocialCom Chair	SocialCom
Pick n Pay Stores Ltd.	45	Retail-Food & Drug	2015	**16**						√				
Pick n Pay Stores Ltd.	45	Retail-Food & Drug	2014	**17**										
Pick n Pay Stores Ltd.	45	Retail-Food & Drug	2013	**16**	√									
Pick n Pay Stores Ltd.	45	Retail-Food & Drug	2012	**17**										
Pick n Pay Stores Ltd.	45	Retail-Food & Drug	2011	**16**										
Pick n Pay Stores Ltd.	45	Retail-Food & Drug	2009	**16**										
Pick n Pay Stores Ltd.	45	Retail-Food & Drug	2008	**14**										
Truworths International Ltd.	46	Retail-Soft goods	2016	**16**										
Truworths International Ltd.	46	Retail-Soft goods	2015	**14**						√	√			
Truworths International Ltd.	46	Retail-Soft goods	2014	**16**										
Truworths International Ltd.	46	Retail-Soft goods	2013	**15**										
Truworths International Ltd.	46	Retail-Soft goods	2012	**15**										
Truworths International Ltd.	46	Retail-Soft goods	2011	**13**										
Total changes ascribed to each provision					**8**	**1**	**2**	**11**	**9**	**13**	**1**	**2**	**1**	**3**

APPENDIX 3: ATTRIBUTION OF CHANGES IN GOVERNANCE INDICES

Company Name	Name	Sector	Year	TOTAL	Index increase ascribed to independence of:									
					Board	LID	RemCom Chair	RemCom	AuditCom	NomCom	RiskCom Chair	RiskCom	SocialCom Chair	SocialCom
Anglo American plc	1	Mining-Metals & Minerals	2014	**14**										
Anglo American plc	1	Mining-Metals & Minerals	2013	**15**										
Anglo American plc	1	Mining-Metals & Minerals	2011	**15**			√							
Anglo American plc	1	Mining-Metals & Minerals	2010	**14**										
AngloGold Ashanti Ltd.	2	Mining-Gold	2014	**19**										
AngloGold Ashanti Ltd.	2	Mining-Gold	2013	**20**										
Anglo American Platinum Ltd.	3	Mining-Platinum	2016	**16**	√									
Anglo American Platinum Ltd.	3	Mining-Platinum	2015	**15**										
Anglo American Platinum Ltd.	3	Mining-Platinum	2014	**18**		√								
Anglo American Platinum Ltd.	3	Mining-Platinum	2013	**17**										
Anglo American Platinum Ltd.	3	Mining-Platinum	2012	**18**									√	√
Anglo American Platinum Ltd.	3	Mining-Platinum	2011	**15**	√									
Anglo American Platinum Ltd.	3	Mining-Platinum	2010	**14**										
Anglo American Platinum Ltd.	3	Mining-Platinum	2009	**14**										
Anglo American Platinum Ltd.	3	Mining-Platinum	2008	**16**										
Aspen Pharmacare Holdings Ltd.	4	Manufacturing-Pharmaceutical	2014	**19**	√									
Aspen Pharmacare Holdings Ltd.	4	Manufacturing-Pharmaceutical	2013	**18**										
Aspen Pharmacare Holdings Ltd.	4	Manufacturing-Pharmaceutical	2012	**19**									√	√
Aspen Pharmacare Holdings Ltd.	4	Manufacturing-Pharmaceutical	2011	**16**										
Aspen Pharmacare Holdings Ltd.	4	Manufacturing-Pharmaceutical	2010	**17**					√					
Aspen Pharmacare Holdings Ltd.	4	Manufacturing-Pharmaceutical	2009	**16**	√			√						
Aspen Pharmacare Holdings Ltd.	4	Manufacturing-Pharmaceutical	2008	**14**										
Barclays Africa Group Ltd.	5	Banks-Financial Services	2009	**16**					√					
Barclays Africa Group Ltd.	5	Banks-Financial Services	2008	**15**										
The Bidvest Group Ltd.	8	Industrial-Diversified	2014	**16**						√				
The Bidvest Group Ltd.	8	Industrial-Diversified	2009	**14**				√	√					
The Bidvest Group Ltd.	8	Industrial-Diversified	2008	**12**										
Discovery Ltd.	9	Insurance-Financial Services	2012	**13**				√						
Discovery Ltd.	9	Insurance-Financial Services	2011	**12**										

APPENDIX 3: ATTRIBUTION OF CHANGES IN GOVERNANCE INDICES (CONTINUED)

			Year	**TOTAL**	Board	No LID	RemCom Chair	RemCom	AuditCom	NomCom	RiskCom Chair	RiskCom	SocialCom Chair	SocialCom
FirstRand Ltd.	10	Banks-Financial Services	2016	**18**				√		√				
FirstRand Ltd.	10	Banks-Financial Services	2015	**16**										
FirstRand Ltd.	10	Banks-Financial Services	2014	**17**						√				
FirstRand Ltd.	10	Banks-Financial Services	2013	**15**										
FirstRand Ltd.	10	Banks-Financial Services	2012	**15**				√					√	√
FirstRand Ltd.	10	Banks-Financial Services	2011	**11**										
FirstRand Ltd.	10	Banks-Financial Services	2010	**15**										
Gold Fields Ltd.	11	Mining-Gold	2016	**18**					√					
Gold Fields Ltd.	11	Mining-Gold	2015	**17**										
Growthpoint Properties Ltd.	12	Real Estate	2012	**17**			√						√	√
Growthpoint Properties Ltd.	12	Real Estate	2011	**13**										
Impala Platinum Holdings Ltd.	13	Mining-Platinum	2016	**18**			√		√	√				
Impala Platinum Holdings Ltd.	13	Mining-Platinum	2015	**15**										
Impala Platinum Holdings Ltd.	13	Mining-Platinum	2014	**16**										
Impala Platinum Holdings Ltd.	13	Mining-Platinum	2012	**16**										
Impala Platinum Holdings Ltd.	13	Mining-Platinum	2011	**18**										
Investec Ltd.	14	Investment-Financial Services	2015	**19**							√			
Investec Ltd.	14	Investment-Financial Services	2014	**18**										
Investec Ltd.	14	Investment-Financial Services	2012	**18**					√				√	√
Investec Ltd.	14	Investment-Financial Services	2011	**14**										
Intu Properties plc	15	Real Estate	2009	**16**										
Intu Properties plc	15	Real Estate	2008	**15**										
Life Healthcare Group Holdings Ltd.	16	Hospital Mgt-Healthcare	2015	**19**										√
Life Healthcare Group Holdings Ltd.	16	Hospital Mgt-Healthcare	2014	**18**										
Life Healthcare Group Holdings Ltd.	16	Hospital Mgt-Healthcare	2013	**19**										
Life Healthcare Group Holdings Ltd.	16	Hospital Mgt-Healthcare	2011	**19**								√	√	√
Life Healthcare Group Holdings Ltd.	16	Hospital Mgt-Healthcare	2010	**15**										
Mondi Ltd.	17	Manufacturing-Paper	2012	**17**									√	√
Mondi Ltd.	17	Manufacturing-Paper	2011	**14**										
Mr Price Group Ltd.	18	Retail-Soft goods	2016	**19**										√
Mr Price Group Ltd.	18	Retail-Soft goods	2015	**18**										
Mr Price Group Ltd.	18	Retail-Soft goods	2014	**18**								√		
Mr Price Group Ltd.	18	Retail-Soft goods	2013	**17**										
Mr Price Group Ltd.	18	Retail-Soft goods	2012	**17**									√	
Mr Price Group Ltd.	18	Retail-Soft goods	2011	**15**										
Mr Price Group Ltd.	18	Retail-Soft goods	2010	**15**										
Mr Price Group Ltd.	18	Retail-Soft goods	2009	**16**										

APPENDIX 3: ATTRIBUTION OF CHANGES IN GOVERNANCE INDICES (CONTINUED)

			Year	**TOTAL**	Board	No LID	RemCom Chair	RemCom	AuditCom	NomCom	RiskCom Chair	RiskCom	SocialCom Chair	SocialCom
MTN Group Ltd.	19	Wireless Telecom Services	2015	**16**										
MTN Group Ltd.	19	Wireless Telecom Services	2014	**20**				√						
MTN Group Ltd.	19	Wireless Telecom Services	2013	**18**					√					
MTN Group Ltd.	19	Wireless Telecom Services	2012	**17**										
MTN Group Ltd.	19	Wireless Telecom Services	2011	**18**						√			√	√
MTN Group Ltd.	19	Wireless Telecom Services	2010	**14**										
MTN Group Ltd.	19	Wireless Telecom Services	2009	**15**										
MTN Group Ltd.	19	Wireless Telecom Services	2008	**14**				√						
Nedbank Group Ltd.	20	Banks-Financial Services	2011	**20**									√	√
Nedbank Group Ltd.	20	Banks-Financial Services	2010	**16**										
Naspers Ltd.	21	Broadcasting Contractors	2013	**19**				√	√	√			√	√
Naspers Ltd.	21	Broadcasting Contractors	2012	**13**										
Naspers Ltd.	21	Broadcasting Contractors	2011	**13**										
Naspers Ltd.	21	Broadcasting Contractors	2010	**16**										
Naspers Ltd.	21	Broadcasting Contractors	2009	**16**				√	√	√				
Naspers Ltd.	21	Broadcasting Contractors	2008	**13**										
Netcare Ltd.	22	Hospital Mgt-Healthcare	2016	**18**				√	√					
Netcare Ltd.	22	Hospital Mgt-Healthcare	2015	**16**						√				
Netcare Ltd.	22	Hospital Mgt-Healthcare	2014	**15**										
Netcare Ltd.	22	Hospital Mgt-Healthcare	2012	**15**									√	√
Netcare Ltd.	22	Hospital Mgt-Healthcare	2011	**12**										
Netcare Ltd.	22	Hospital Mgt-Healthcare	2010	**12**										
Netcare Ltd.	22	Hospital Mgt-Healthcare	2009	**13**										
Netcare Ltd.	22	Hospital Mgt-Healthcare	2008	**12**										
Old Mutual plc	23	Insurance-Financial Services	2015	**16**						√				
Old Mutual plc	23	Insurance-Financial Services	2014	**15**										
Redefine Properties Ltd.	24	Real Estate	2015	**15**	√									
Redefine Properties Ltd.	24	Real Estate	2014	**14**										
Redefine Properties Ltd.	24	Real Estate	2013	**15**										
Redefine Properties Ltd.	24	Real Estate	2009	**13**						√				
Redefine Properties Ltd.	24	Real Estate	2008	**11**										
Remgro Ltd.	25	Industrial-Diversified	2012	**19**									√	
Remgro Ltd.	25	Industrial-Diversified	2011	**17**										
RMB Holdings Ltd.	26	Banks-Financial Services	2015	**17**										
RMB Holdings Ltd.	26	Banks-Financial Services	2014	**18**						√				
RMB Holdings Ltd.	26	Banks-Financial Services	2013	**17**										
RMB Holdings Ltd.	26	Banks-Financial Services	2012	**18**				√						
RMB Holdings Ltd.	26	Banks-Financial Services	2011	**17**									√	√
RMB Holdings Ltd.	26	Banks-Financial Services	2010	**14**										
RMB Holdings Ltd.	26	Banks-Financial Services	2009	**13**										
RMB Holdings Ltd.	26	Banks-Financial Services	2008	**14**										

APPENDIX 3: ATTRIBUTION OF CHANGES IN GOVERNANCE INDICES (CONTINUED)

			Year	**TOTAL**	Board	No LID	RemCom Chair	RemCom	AuditCom	NomCom	RiskCom Chair	RiskCom	SocialCom Chair	SocialCom
Sappi Ltd.	27	Manufacturing-Paper	2016	**19**				√						
Sappi Ltd.	27	Manufacturing-Paper	2015	**18**										
Sappi Ltd.	27	Manufacturing-Paper	2013	**18**									√	√
Sappi Ltd.	27	Manufacturing-Paper	2012	**15**										
Standard Bank Group Ltd.	28	Banks-Financial Services	2016	**15**										
Standard Bank Group Ltd.	28	Banks-Financial Services	2015	**17**										
Standard Bank Group Ltd.	28	Banks-Financial Services	2014	**18**										
Standard Bank Group Ltd.	28	Banks-Financial Services	2013	**18**			√	√						
Standard Bank Group Ltd.	28	Banks-Financial Services	2012	**17**										
Standard Bank Group Ltd.	28	Banks-Financial Services	2011	**17**					√				√	
Standard Bank Group Ltd.	28	Banks-Financial Services	2010	**13**										
Shoprite Holdings Ltd.	29	Retail-Food & Drug	2014	**18**					√					
Shoprite Holdings Ltd.	29	Retail-Food & Drug	2013	**17**			√	√						
Shoprite Holdings Ltd.	29	Retail-Food & Drug	2012	**16**										
Shoprite Holdings Ltd.	29	Retail-Food & Drug	2011	**9**	√									
Shoprite Holdings Ltd.	29	Retail-Food & Drug	2010	**10**										
Shoprite Holdings Ltd.	29	Retail-Food & Drug	2009	**9**										
Sanlam Ltd.	30	Insurance-Financial Services	2015	**14**										
Sanlam Ltd.	30	Insurance-Financial Services	2014	**15**										
Sanlam Ltd.	30	Insurance-Financial Services	2011	**15**									√	√
Sanlam Ltd.	30	Insurance-Financial Services	2010	**12**										
Sasol Ltd.	31	Manufacturing-Chemical Speialit	2012	**20**				√	√					
Sasol Ltd.	31	Manufacturing-Chemical Speialit	2011	**18**										
Tiger Brands Ltd.	32	Manufacturing-Food Processors	2013	**15**										
Tiger Brands Ltd.	32	Manufacturing-Food Processors	2012	**17**										
Tiger Brands Ltd.	32	Manufacturing-Food Processors	2011	**12**				√		√			√	√
Tiger Brands Ltd.	32	Manufacturing-Food Processors	2010	**12**										
Tiger Brands Ltd.	32	Manufacturing-Food Processors	2009	**14**										
Vodacom Group Ltd.	33	Wireless Telecom Services	2011	**13**									√	
Vodacom Group Ltd.	33	Wireless Telecom Services	2010	**11**						√				
Vodacom Group Ltd.	33	Wireless Telecom Services	2009	**9**										
Woolworths Holdings Ltd.	34	Retail-Multi Department	2012	**19**				√					√	√
Woolworths Holdings Ltd.	34	Retail-Multi Department	2011	**15**										
Woolworths Holdings Ltd.	34	Retail-Multi Department	2010	**15**								√		
Woolworths Holdings Ltd.	34	Retail-Multi Department	2009	**14**										
African Rainbow Minerals Ltd.	35	Mining-Metals & Minerals	2011	**15**									√	
African Rainbow Minerals Ltd.	35	Mining-Metals & Minerals	2010	**13**										
Assore Ltd.	36	Mining-Metals & Minerals	2012	**12**									√	
Assore Ltd.	36	Mining-Metals & Minerals	2011	**10**										

APPENDIX 3: ATTRIBUTION OF CHANGES IN GOVERNANCE INDICES (CONTINUED)

			Year	**TOTAL**	Board	No LID	RemCom Chair	RemCom	AuditCom	NomCom	RiskCom Chair	RiskCom	SocialCom Chair	SocialCom
Barloworld Ltd.	37	Industrial-Diversified	2014	**18**	√									
Barloworld Ltd.	37	Industrial-Diversified	2013	**17**										
Barloworld Ltd.	37	Industrial-Diversified	2012	**18**										
Barloworld Ltd.	37	Industrial-Diversified	2011	**18**									√	√
Barloworld Ltd.	37	Industrial-Diversified	2010	**15**							√			
Barloworld Ltd.	37	Industrial-Diversified	2009	**14**										
Capitec Bank Holdings Ltd.	39	Banks-Financial Services	2013	**16**										
Capitec Bank Holdings Ltd.	39	Banks-Financial Services	2012	**15**									√	
Capitec Bank Holdings Ltd.	39	Banks-Financial Services	2011	**13**										
Capitec Bank Holdings Ltd.	39	Banks-Financial Services	2010	**13**										
Capitec Bank Holdings Ltd.	39	Banks-Financial Services	2009	**14**										
Exxaro Resources Ltd.	40	Mining-Coal	2013	**19**					√					
Exxaro Resources Ltd.	40	Mining-Coal	2012	**18**	√								√	√
Exxaro Resources Ltd.	40	Mining-Coal	2011	**14**										
Exxaro Resources Ltd.	40	Mining-Coal	2010	**14**				√						
Exxaro Resources Ltd.	40	Mining-Coal	2009	**13**										
Exxaro Resources Ltd.	40	Mining-Coal	2008	**14**										
Imperial Holdings Ltd.	41	Transportation Services	2013	**18**			√							
Imperial Holdings Ltd.	41	Transportation Services	2012	**17**										
Imperial Holdings Ltd.	41	Transportation Services	2011	**17**									√	
Imperial Holdings Ltd.	41	Transportation Services	2010	**15**					√					
Imperial Holdings Ltd.	41	Transportation Services	2009	**14**										
Kumba Iron Ore Ltd.	42	Mining-Steel	2015	**19**				√						
Kumba Iron Ore Ltd.	42	Mining-Steel	2014	**18**										
Kumba Iron Ore Ltd.	42	Mining-Steel	2013	**17**					√					
Kumba Iron Ore Ltd.	42	Mining-Steel	2012	**16**										
Kumba Iron Ore Ltd.	42	Mining-Steel	2011	**17**						√			√	√
Kumba Iron Ore Ltd.	42	Mining-Steel	2010	**13**										
Liberty Holdings Ltd.	43	Insurance-Financial Services	2013	**19**						√				
Liberty Holdings Ltd.	43	Insurance-Financial Services	2012	**18**										
Liberty Holdings Ltd.	43	Insurance-Financial Services	2011	**18**									√	√
Liberty Holdings Ltd.	43	Insurance-Financial Services	2010	**15**										
Massmart Holdings Ltd.	44	Retail-Multi Department	2011	**15**									√	
Massmart Holdings Ltd.	44	Retail-Multi Department	2010	**17**										
Massmart Holdings Ltd.	44	Retail-Multi Department	2009	**16**								√		

APPENDIX 3: ATTRIBUTION OF CHANGES IN GOVERNANCE INDICES (CONTINUED)

			Year	**TOTAL**	Board	No LID	RemCom Chair	RemCom	AuditCom	NomCom	RiskCom Chair	RiskCom	SocialCom Chair	SocialCom
Pick n Pay Stores Ltd.	45	Retail-Food & Drug	2015	**16**										
Pick n Pay Stores Ltd.	45	Retail-Food & Drug	2014	**17**	√									
Pick n Pay Stores Ltd.	45	Retail-Food & Drug	2013	**16**										
Pick n Pay Stores Ltd.	45	Retail-Food & Drug	2012	**17**						√				
Pick n Pay Stores Ltd.	45	Retail-Food & Drug	2011	**16**										
Pick n Pay Stores Ltd.	45	Retail-Food & Drug	2009	**16**					√	√				
Pick n Pay Stores Ltd.	45	Retail-Food & Drug	2008	**14**										
Truworths International Ltd.	46	Retail-Soft goods	2016	**16**					√	√				
Truworths International Ltd.	46	Retail-Soft goods	2015	**14**										
Truworths International Ltd.	46	Retail-Soft goods	2014	**16**										√
Truworths International Ltd.	46	Retail-Soft goods	2013	**15**										
Truworths International Ltd.	46	Retail-Soft goods	2012	**15**									√	
Truworths International Ltd.	46	Retail-Soft goods	2011	**13**										
Total changes ascribed to each provision					**9**	**1**	**6**	**19**	**18**	**18**	**2**	**4**	**30**	**23**

Appendix 4: Summary of identified CG events and event window dates

APPENDIX 4: SUMMARY OF IDENTIFIED CG EVENTS AND DATES USED IN EVENT STUDY											
Company Name	Name	Sector	Nature of Identified CG Event	Event date	Start of Estimation Window	Event Window	End of Event Window	Post-event Window	Estimation Period	Event Window Period	Post-Event Window Period
Aspen Pharmacare Holdings Ltd.	4	Manufacturing-Pharmaceutical	The Italian Competition Authority (ICA) charged and found Aspen guilty of infringing Article 102 of the Treaty on the Functioning of the European Union by setting excessive prices for life-saving and irreplaceable drugs in the treatment of oncohematological patients.	29-Sep-16	11-May-16	14-Sep-16	13-Oct-16	12-Dec-16	126	29	60
Netcare Ltd.	22	Hospital Mgt-Healthcare	The Competition Commission alleged and Netcare accepted that it implemented a merger with Community Hospital Group (Pty) Ltd without the Commission's approval thus contravening section 13 A(3) of the Act. In addition, Netcare contravened section 4(1)(b) of the Act by having a similar pricing structure for tariffs it charged in its hospitals with those charged by Community Hospital Group (Pty) Ltd before the unauthorised merger.	10-Mar-08	21-Oct-07	24-Feb-08	24-Mar-08	23-May-08	126	29	60
MTN Group Ltd.	19	Wireless Telecom Services	Commission investigated MTN for price discrimination in contravention of section 9(1) of the Competition Act. The Commission alleged that MTN's conduct substantially reduced competition between telecommunication network operators.	30-Jul-07	11-Mar-07	15-Jul-07	13-Aug-07	12-Oct-07	126	29	60
MTN Group Ltd.	19	Wireless Telecom Services	Contraventions and non-compliance by MTN Nigeria (a subsidiary of the group) in 2015 culminated with a fine of US$5 200 000 000.00 imposed by Nigeria Communications Commission (NCC).	26-Oct-15	07-Jun-15	11-Oct-15	09-Nov-15	08-Jan-16	126	29	60
MTN Group Ltd.	19	Wireless Telecom Services	Turkcell (a Turkish telecommunications operator), a competitor in Iran accused MTN of bribing Iranian officials in 2012. The case between Turkcell and MTN continued in 2017 with the South Gauteng High Court (South Africa) granting Turkcell a go ahead with a US$4 200 000 000.00 lawsuit against MTN (van Zyl, 2017).	29-Mar-12	09-Nov-11	14-Mar-12	12-Apr-12	11-Jun-12	126	29	60
MTN Group Ltd.	19	Wireless Telecom Services		28-Nov-13	10-Jul-13	13-Nov-13	12-Dec-13	10-Feb-14	126	29	60

APPENDIX 4: SUMMARY OF IDENTIFIED CG EVENTS AND DATES USED IN EVENT STUDY (CONTINUED)

Company Name	Name	Sector	Nature of Identified CG Event	Event date	Start of Estimation Window	Event Window	End of Event Window	Post-event Window	Estimation Period	Event Window Period	Post-Event Window Period
RMB Holdings Ltd.	26	Banks-Financial Services	Charged by the Competition Commission for dividing the grain trade market in which they compete by allocating territories and customers.	17-Mar-09	27-Oct-08	02-Mar-09	31-Mar-09	30-May-09	126	29	60
Sasol Ltd.-SCI	31	Manufacturing-Chemical Speiality	Fined for abusing fertiliser market dominance by charging excessive prices and collusion to fix prices of certain fertilisers with its competitors such as Kynoch and Omnia.	03-May-05	13-Dec-04	18-Apr-05	17-May-05	16-Jul-05	126	29	60
Sasol Ltd.-SCI	31	Manufacturing-Chemical Speiality	Sasol engaged in collusive conduct as a result of the implementation of the supply agreement including the operation of the pricing formula and the exchange of information relating to the pricing of polypropylene.	12-Aug-10	24-Mar-10	28-Jul-10	26-Aug-10	25-Oct-10	126	29	60
Tiger Brands Ltd.-Albany Bakeries	32	Manufacturing-Food Processors	Price fixing for bread, the implementation date for these prices and dividing markets. All are contraventions of Chapter 2 of the Competition Act	14-Feb-07	26-Sep-06	30-Jan-07	28-Feb-07	29-Apr-07	126	29	60
Tiger Brands Ltd.-Adcock Ingram Critical Care (Pty) Ltd ("AICC")	32	Manufacturing-Pharmaceutical	Collusive tendering and market allocation, both of which are contraventions of section 4 of the Competition Act.	11-Feb-08	23-Sep-07	27-Jan-08	25-Feb-08	25-Apr-08	126	29	60
Vodacom Group Ltd.	33	Wireless Telecom Services	The Competition Commission laid criminal charges against a Vodacom Executive Director in terms of section 73 of the Competition Act.	24-Jul-08	05-Mar-08	09-Jul-08	07-Aug-08	06-Oct-08	126	29	60
			Supermarkets								
Massmart Holdings Ltd.	44	Retail-Multi Department	The Commission's investigations focussed on abuse of buyer power, category management, exclusive long-term leases and information exchange with regards to staple foods.								
Pick n Pay Stores Ltd.	45	Retail-Food & Drug									
Shoprite Holdings Ltd.	29	Retail-Food & Drug									
Woolworths Holdings Ltd.	34	Retail-Multi Department		29-Jun-09	08-Feb-09	14-Jun-09	13-Jul-09	11-Sep-09	126	29	60
Liberty Holdings Ltd.	43	Insurance-Financial Services	Liberty colluded to divide markets by allocating customers and territories through two deeds of restraint.	13-Mar-11	23-Oct-10	26-Feb-11	27-Mar-11	26-May-11	126	29	60
Mediclinic	47	Hospital Mgt-Healthcare	Investigated for alleged price fixing and another based on the relationship that Mediclinic had with Victoria Hospital Proprietary Limited, Newcastle Private Hospital Proprietary Limited, Howick Private Hospital Holdings Proprietary Limited, Mediclinic Tzaneen Proprietary Limited, Mediclinic Hermanus Proprietary Limited and Mediclinic Upington Proprietary Limited.	10-Feb-12	22-Sep-11	26-Jan-12	24-Feb-12	24-Apr-12	126	29	60
Mediclinic	47	Hospital Mgt-Healthcare		26-Feb-13	08-Oct-12	11-Feb-13	12-Mar-13	11-May-13	126	29	60
British American Tobacco plc	7	Manufacturing-Tobacco	Investigation into alleged bribes paid by BAT employees to politicians, public officials and people working for competitors to damage competitors' reputation.	30-Nov-15	12-Jul-15	15-Nov-15	14-Dec-15	12-Feb-16	126	29	60

Appendix 5: Summary of Event Study results

APPENDIX 5: SUMMARY OF EVENT STUDY RESULTS

Estimation window				**Aspen**				
SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.264337388							
R Square	0.069874255							
Adjusted R Square	0.059304644							
Standard Error	0.017554615							
Observations	90							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	0.002037234	0.002037234	6.610863573	0.011814957			
Residual	88	0.027118478	0.000308165					
Total	89	0.029155712						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.000672637	0.001850741	0.363442024	0.717146353	-0.003005322	0.0043506	-0.00300532	0.004350597
X Variable 1	0.471620624	0.183427181	2.571159966	0.011814957	0.107097647	0.8361436	0.10709765	0.836143601
Event window								
SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.11934857							
R Square	0.014244081							
Adjusted R Square	-0.03504371							
Standard Error	0.016628441							
Observations	22							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	0.000079909	0.0000799094	0.288998136	0.596794841			
Residual	20	0.005530101	0.000276505					
Total	21	0.00561001						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.00396743	0.003610677	-1.098805744	0.284904824	-0.011499174	0.0035643	-0.01149917	0.003564308
X Variable 1	0.165979484	0.308749946	0.537585468	0.596794841	-0.478061618	0.8100206	-0.47806162	0.810020586
Post-event window								
SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.491885145							
R Square	0.241950996							
Adjusted R Square	0.234519143							
Standard Error	0.012229705							
Observations	104							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	0.004869253	0.004869253	32.55594482	0.0000001140			
Residual	102	0.015255701	0.000149566					
Total	103	0.020124954						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.00098101	0.001199312	-0.817976055	0.415277606	-0.003359837	0.0013978	-0.00335984	0.001397821
X Variable 1	0.766546263	0.134345529	5.705781701	0.000000114	0.500072543	1.03302	0.50007254	1.033019984

APPENDIX 5: SUMMARY OF EVENT STUDY RESULTS (CONTINUED)

Estimation window			**30 July 2007 Event**		**MTN**			
SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.515175766							
R Square	0.26540607							
Adjusted R Square	0.257243915							
Standard Error	0.016051793							
Observations	92							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	0.008378246	0.008378246	32.51666715	0.00000014844			
Residual	90	0.023189405	0.00025766					
Total	91	0.031567651						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.000119861	0.001703622	0.070356751	0.944065812	-0.003264682	0.0035044	-0.00326468	0.003504405
X Variable 1	0.999460427	0.175272019	5.702338744	0.000000148	0.651251969	1.3476689	0.65125197	1.347668886
Event window								
SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.868850389							
R Square	0.754900999							
Adjusted R Square	0.743229618							
Standard Error	0.011805704							
Observations	23							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	0.009014705	0.009014705	64.6796637	0.0000000757			
Residual	21	0.002926868	0.000139375					
Total	22	0.011941573						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.001621209	0.002568148	0.631275496	0.534671929	-0.003719547	0.006962	-0.00371955	0.006961965
X Variable 1	0.960411876	0.119419059	8.042366797	0.000000076	0.712066347	1.2087574	0.71206635	1.208757404
Post Event window								
SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.548494533							
R Square	0.300846252							
Adjusted R Square	0.293784093							
Standard Error	0.021887341							
Observations	101							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	0.020407655	0.020407655	42.5997559	0.00000000289			
Residual	99	0.047426513	0.000479056					
Total	100	0.067834168						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.002223134	0.002187684	1.016204101	0.312009283	-0.002117707	0.006564	-0.00211771	0.006563974
X Variable 1	1.090815312	0.167127405	6.526848849	0.000000003	0.759198281	1.4224323	0.75919828	1.422432342

APPENDIX 5: SUMMARY OF EVENT STUDY RESULTS (CONTINUED)

Estimation window			**29 March 2012 Event**		**MTN**			
SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.566546288							
R Square	0.320974697							
Adjusted R Square	0.3132585							
Standard Error	0.013951809							
Observations	90							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	0.008097083	0.008097083	41.59752693	0.00000000587			
Residual	88	0.017129462	0.000194653					
Total	89	0.025226545						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	- 0.00001344	0.001471904	-0.009133519	0.992733282	-0.002938544	0.0029117	-0.00293854	0.002911657
X Variable 1	0.940048996	0.145752742	6.449614479	0.000000006	0.650396049	1.2297019	0.65039605	1.229701943
Event window								
SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.17374007							
R Square	0.030185612							
Adjusted R Square	-0.01599603							
Standard Error	0.016580409							
Observations	23							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	0.000179689	0.000179689	0.653628013	0.427883052			
Residual	21	0.005773109	0.00027491					
Total	22	0.005952798						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.00323711	0.003473377	-0.93197654	0.361940506	-0.010460389	0.0039862	-0.01046039	0.003986177
X Variable 1	0.334885672	0.414220166	0.808472642	0.427883052	-0.52653232	1.1963037	-0.52653232	1.196303665
Post Event window								
SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.568502204							
R Square	0.323194756							
Adjusted R Square	0.316493714							
Standard Error	0.011304658							
Observations	103							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	0.006163633	0.006163633	48.23052228	0.00000000037			
Residual	101	0.012907324	0.000127795					
Total	102	0.019070957						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.001354637	0.001115058	1.214858014	0.227252758	-0.000857338	0.0035666	-0.00085734	0.003566612
X Variable 1	0.937062992	0.134929777	6.944819816	0.000000000	0.669398609	1.2047274	0.66939861	1.204727375

APPENDIX 5: SUMMARY OF EVENT STUDY RESULTS (CONTINUED)

Estimation window			**28 Nov 2013 Event**		**MTN**			
SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.547821126							
R Square	0.300107986							
Adjusted R Square	0.29224403							
Standard Error	0.013257765							
Observations	91							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	0.006707755	0.006707755	38.16247389	0.000000019			
Residual	89	0.015643383	0.000175768					
Total	90	0.022351138						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.00028932	0.001407695	-0.205524551	0.837631684	-0.003086375	0.0025077	-0.00308638	0.002507744
X Variable 1	0.998704976	0.161666097	6.177578319	0.00000002	0.677477885	1.3199321	0.67747788	1.319932067
Event window								
SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.756714829							
R Square	0.572617332							
Adjusted R Square	0.551248198							
Standard Error	0.013563506							
Observations	22							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	0.004929712	0.004929712	26.7964695	0.00004587			
Residual	20	0.003679374	0.000183969					
Total	21	0.008609086						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.00180548	0.002924414	0.617381862	0.543948721	-0.00429474	0.0079057	-0.00429474	0.0079057
X Variable 1	1.474859751	0.284912783	5.176530644	0.00004587	0.8805421	2.0691774	0.8805421	2.069177
Post Event window								
SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.338132168							
R Square	0.114333363							
Adjusted R Square	0.105564387							
Standard Error	0.012758775							
Observations	103							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	0.002122472	0.002122472	13.03839302	0.000477143			
Residual	101	0.01644142	0.000162786					
Total	102	0.018563892						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.000282689	0.001277821	0.221227541	0.825361906	-0.002252165	0.0028175	-0.00225216	0.002817543
X Variable 1	0.646271846	0.178979464	3.610871504	0.000477143	0.291224735	1.001319	0.29122473	1.001318958

APPENDIX 5: SUMMARY OF EVENT STUDY RESULTS (CONTINUED)

Estimation window			**26 Oct 2015 Event**		**MTN**			
SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.69478851							
R Square	0.482731074							
Adjusted R Square	0.476919063							
Standard Error	0.016228728							
Observations	91							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	0.021874989	0.021874989	83.05750331	0.000000000000			
Residual	89	0.023440074	0.000263372					
Total	90	0.045315063						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.00173694	0.001702939	-1.019967741	0.310508362	-0.005120647	0.0016468	-0.00512065	0.001646761
X Variable 1	1.121380204	0.123044852	9.113588937	0.000000000	0.876892704	1.3658677	0.8768927	1.365867705
Event window								
SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.54369029							
R Square	0.295599131							
Adjusted R Square	0.262056233							
Standard Error	0.032299452							
Observations	23							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	0.009193754	0.009193754	8.8125697	0.007328682			
Residual	21	0.021908347	0.001043255					
Total	22	0.031102101						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.00791843	0.006743198	-1.174283684	0.253426625	-0.021941676	0.0061048	-0.02194168	0.006104821
X Variable 1	2.180035686	0.734365592	2.968597261	0.007328682	0.652838833	3.7072325	0.65283883	3.707232538
Post Event window								
SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.580577319							
R Square	0.337070024							
Adjusted R Square	0.330440724							
Standard Error	0.031162893							
Observations	102							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	0.049377377	0.049377377	50.84549431	0.0000000002			
Residual	100	0.09711259	0.000971126					
Total	101	0.146489967						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.00023378	0.003086325	-0.075748395	0.939770608	-0.006356965	0.0058894	-0.00635697	0.005889397
X Variable 1	1.665384442	0.233554514	7.130602661	0.000000000	1.202018938	2.1287499	1.20201894	2.128749947

APPENDIX 5: SUMMARY OF EVENT STUDY RESULTS (CONTINUED)

Estimation window				**RMB**				
SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.549276593							
R Square	0.301704776							
Adjusted R Square	0.293769603							
Standard Error	0.034198663							
Observations	90							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	0.044467635	0.044467635	38.02119705	0.0000000207			
Residual	88	0.10292027	0.001169549					
Total	89	0.147387905						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.000233963	0.003605026	0.064899082	0.948401555	-0.006930269	0.0073982	-0.00693027	0.007398195
X Variable 1	0.757382427	0.1228294	6.166133071	0.000000021	0.513284805	1.00148	0.5132848	1.00148005
Event window								
SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.491116909							
R Square	0.241195818							
Adjusted R Square	0.205062285							
Standard Error	0.029562883							
Observations	23							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	0.005833819	0.005833819	6.675124221	0.017325636			
Residual	21	0.018353245	0.000873964					
Total	22	0.024187064						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.003898916	0.006460236	0.603525336	0.552623078	-0.00953588	0.0173337	-0.00953588	0.017333712
X Variable 1	0.656352906	0.254043295	2.583626177	0.017325636	0.128040953	1.1846649	0.12804095	1.184664859
Post Event window								
SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.574244626							
R Square	0.32975689							
Adjusted R Square	0.322986758							
Standard Error	0.017385892							
Observations	101							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	0.014722808	0.014722808	48.70759822	0.00000000034			
Residual	99	0.029924654	0.000302269					
Total	100	0.044647462						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.000535694	0.001737884	0.308244785	0.758543713	-0.002912645	0.003984	-0.00291265	0.003984033
X Variable 1	0.743112772	0.106477138	6.979082907	0.000000000	0.53183903	0.9543865	0.53183903	0.954386514

APPENDIX 5: SUMMARY OF EVENT STUDY RESULTS (CONTINUED)

Estimation window | **03 May 2005 Event** | **Sasol**

SUMMARY OUTPUT

Regression Statistics

Multiple R	0.55404626
R Square	0.306967259
Adjusted R Square	0.299180374
Standard Error	0.014997713
Observations	91

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.008867034	0.008867034	39.42106107	0.0000000122
Residual	89	0.020018893	0.000224931		
Total	90	0.028885927			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.001503048	0.001583938	0.948930808	0.345225437	-0.001644203	0.0046503	-0.0016442	0.004650298
X Variable 1	1.569363047	0.249953526	6.27861936	0.000000012	1.072710715	2.0660154	1.07271072	2.066015379

Event window

SUMMARY OUTPUT

Regression Statistics

Multiple R	0.787407166
R Square	0.620010046
Adjusted R Square	0.601915286
Standard Error	0.010394011
Observations	23

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.003701794	0.003701794	34.26461888	0.000008244
Residual	21	0.002268745	0.000108035		
Total	22	0.005970539			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.002106357	0.002177684	0.96724609	0.344429375	-0.002422386	0.0066351	-0.00242239	0.006635099
X Variable 1	1.249242578	0.213414452	5.853598797	0.00000824	0.805422929	1.6930622	0.80542293	1.693062226

Post Event window

SUMMARY OUTPUT

Regression Statistics

Multiple R	0.573024513
R Square	0.328357092
Adjusted R Square	0.321640663
Standard Error	0.017381614
Observations	102

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.014770261	0.014770261	48.88864139	0.00000000031
Residual	100	0.030212051	0.000302121		
Total	101	0.044982312			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.000757561	0.001776103	0.426529896	0.670638575	-0.002766176	0.0042813	-0.00276618	0.004281298
X Variable 1	1.530653087	0.218913622	6.992041289	0.000000000	1.096334695	1.9649715	1.09633469	1.964971479

APPENDIX 5: SUMMARY OF EVENT STUDY RESULTS (CONTINUED)

Estimation window | | | **12 Aug 2010 Event** | | **Sasol**

SUMMARY OUTPUT

Regression Statistics

Multiple R	0.776585706
R Square	0.603085359
Adjusted R Square	0.598625644
Standard Error	0.009671052
Observations	91

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.01264792	0.01264792	135.2295717	0.0000000000
Residual	89	0.008324103	0.00009353		
Total	90	0.020972023			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.000477142	0.001013843	0.47062737	0.639058237	-0.001537343	0.0024916	-0.00153734	0.002491628
X Variable 1	0.810706516	0.069715256	11.62882503	0.000000000	0.672183787	0.9492292	0.67218379	0.949229245

Event window

SUMMARY OUTPUT

Regression Statistics

Multiple R	0.8308714
R Square	0.690347284
Adjusted R Square	0.675601916
Standard Error	0.008543043
Observations	23

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.003416939	0.003416939	46.81790985	0.00000091662
Residual	21	0.001532655	0.000072984		
Total	22	0.004949594			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.001881659	0.001877415	1.002260853	0.327627311	-0.002022639	0.005786	-0.00202264	0.005785958
X Variable 1	1.201808203	0.175642315	6.842361423	0.000000917	0.836540012	1.5670764	0.83654001	1.567076394

Post Event window

SUMMARY OUTPUT

Regression Statistics

Multiple R	0.620555785
R Square	0.385089482
Adjusted R Square	0.378940377
Standard Error	0.00973581
Observations	102

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.005936001	0.005936001	62.62528796	0.000000000
Residual	100	0.0094786	0.00009479		
Total	101	0.015414601			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.000533412	0.00099754	0.534726869	0.594025713	-0.00144568	0.0025125	-0.00144568	0.002512503
X Variable 1	0.917555959	0.115946513	7.91361409	0.00000000	0.687521379	1.1475905	0.68752138	1.147590538

APPENDIX 5: SUMMARY OF EVENT STUDY RESULTS (CONTINUED)

Estimation window — **BAT**

SUMMARY OUTPUT

Regression Statistics

Multiple R	0.633434721
R Square	0.401239546
Adjusted R Square	0.3945119
Standard Error	0.009092866
Observations	91

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.004931081	0.004931081	59.64041102	0.0000000000
Residual	89	0.007358538	0.00008268		
Total	90	0.01228962			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.001841851	0.000953227	1.932227281	0.056512131	-5.21905E-05	0.0037359	- 0.000052	0.003735893
X Variable 1	0.544602744	0.070519547	7.722720442	0.000000000	0.404481907	0.6847236	0.40448191	0.68472358

Event window

SUMMARY OUTPUT

Regression Statistics

Multiple R	0.271456028
R Square	0.073688375
Adjusted R Square	0.031583301
Standard Error	0.014364601
Observations	24

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.00036112	0.00036112	1.750106776	0.199450078
Residual	22	0.004539519	0.000206342		
Total	23	0.004900639			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.002243633	0.002942301	0.762543681	0.453834493	-0.003858326	0.0083456	-0.00385833	0.008345592
X Variable 1	0.356698814	0.269630733	1.322916012	0.199450078	-0.202481101	0.9158787	-0.2024811	0.915878729

Post Event window

SUMMARY OUTPUT

Regression Statistics

Multiple R	0.332360935
R Square	0.110463791
Adjusted R Square	0.101478577
Standard Error	0.012227955
Observations	101

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.001838227	0.001838227	12.29395187	0.000684583
Residual	99	0.014802765	0.000149523		
Total	100	0.016640992			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.000669664	0.00121678	0.550357529	0.58331385	-0.001744692	0.003084	-0.00174469	0.00308402
X Variable 1	0.337701611	0.096313547	3.506273217	0.000684583	0.146594638	0.5288086	0.14659464	0.528808584

APPENDIX 5: SUMMARY OF EVENT STUDY RESULTS (CONTINUED)

Estimation window — **Woolworths**

SUMMARY OUTPUT

Regression Statistics

Multiple R	0.580285632
R Square	0.336731414
Adjusted R Square	0.329278958
Standard Error	0.021683886
Observations	91

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.021245083	0.021245083	45.18395193	0.00000000165
Residual	89	0.041846991	0.000470191		
Total	90	0.063092074			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.0012311	0.00227463	-0.541231904	0.589699971	-0.005750744	0.0032885	-0.00575074	0.003288539
X Variable 1	0.773102478	0.115012478	6.721900917	0.000000002	0.544575135	1.0016298	0.54457514	1.001629821

Event window

SUMMARY OUTPUT

Regression Statistics

Multiple R	0.448414383
R Square	0.201075458
Adjusted R Square	0.163031433
Standard Error	0.014467177
Observations	23

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.001106217	0.001106217	5.285335985	0.031869886
Residual	21	0.004395283	0.000209299		
Total	22	0.0055015			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.006692099	0.003033264	2.206237149	0.038640719	0.000384082	0.0130001	0.00038408	0.013000116
X Variable 1	0.39491352	0.171777272	2.29898586	0.031869886	0.037683126	0.7521439	0.03768313	0.752143914

Post Event window

SUMMARY OUTPUT

Regression Statistics

Multiple R	0.400902171
R Square	0.160722551
Adjusted R Square	0.152329776
Standard Error	0.016808624
Observations	102

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.005410477	0.005410477	19.15010952	0.0000297256
Residual	100	0.028252985	0.00028253		
Total	101	0.033663462			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.000379157	0.00168137	0.225504743	0.822046855	-0.002956633	0.0037149	-0.00295663	0.003714947
X Variable 1	0.684687136	0.156461157	4.376083811	0.000029726	0.374272657	0.9951016	0.37427266	0.995101615

APPENDIX 5: SUMMARY OF EVENT STUDY RESULTS (CONTINUED)

Estimation window				**Netcare**				
SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.333846605							
R Square	0.111453556							
Adjusted R Square	0.101469888							
Standard Error	0.01660677							
Observations	91							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	0.003078748	0.003078748	11.16358804	0.001220766			
Residual	89	0.024544849	0.000275785					
Total	90	0.027623597						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.0040533	0.001740863	-2.328330612	0.022161047	-0.007512363	-0.000594	-0.00751236	-0.000594247
X Variable 1	0.321432493	0.096202836	3.3411956	0.001220766	0.130279507	0.5125855	0.13027951	0.51258548
Event window								
SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.462853539							
R Square	0.214233398							
Adjusted R Square	0.176815941							
Standard Error	0.024914135							
Observations	23							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	0.003553894	0.003553894	5.725493231	0.026145933			
Residual	21	0.013034996	0.000620714					
Total	22	0.016588891						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.001639565	0.005199968	0.315302996	0.755643473	-0.009174359	0.0124535	-0.00917436	0.01245349
X Variable 1	0.731703341	0.305793736	2.392800291	0.026145933	0.095770453	1.3676362	0.09577045	1.367636228
Post Event window								
SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.41738988							
R Square	0.174214312							
Adjusted R Square	0.165956455							
Standard Error	0.020006809							
Observations	102							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	0.008444465	0.008444465	21.09679476	0.0000127468			
Residual	100	0.040027242	0.000400272					
Total	101	0.048471708						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.000075240	0.001986787	-0.037870321	0.969866575	-0.004016969	0.0038665	-0.00401697	0.003866489
X Variable 1	0.636747122	0.138630488	4.593124727	0.000012747	0.361708183	0.9117861	0.36170818	0.911786062

APPENDIX 5: SUMMARY OF EVENT STUDY RESULTS (CONTINUED)

Estimation window				**Liberty**				
SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.37311789							
R Square	0.13921696							
Adjusted R Square	0.12954524							
Standard Error	0.010897819							
Observations	91							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	0.001709494	0.001709494	14.39423039	0.000269913			
Residual	89	0.010569858	0.000118762					
Total	90	0.012279352						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	6.88323E-05	0.00114591	0.060067822	0.952236295	-0.002208066	0.0023457	-0.00220807	0.00234573
X Variable 1	0.472714483	0.124596167	3.793972903	0.000269913	0.225144552	0.7202844	0.22514455	0.720284414
Event window								
SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.327679364							
R Square	0.107373766							
Adjusted R Square	0.064867755							
Standard Error	0.01518361							
Observations	23							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	0.000582369	0.000582369	2.526084265	0.12692072			
Residual	21	0.004841382	0.000230542					
Total	22	0.005423751						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.00450421	0.003169388	-1.421162197	0.16994998	-0.011095316	0.0020869	-0.01109532	0.002086889
X Variable 1	0.401316444	0.252500963	1.589365995	0.12692072	-0.123788054	0.9264209	-0.12378805	0.926420943
Post Event window								
SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.277405983							
R Square	0.07695408							
Adjusted R Square	0.06772362							
Standard Error	0.009332116							
Observations	102							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	0.000726053	0.000726053	8.336971969	0.004761259			
Residual	100	0.008708839	0.000087088					
Total	101	0.009434893						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.000768757	0.000927554	0.828800238	0.409191316	-0.001071484	0.002609	-0.00107148	0.002608998
X Variable 1	0.234423472	0.08118895	2.887381507	0.004761259	0.073346908	0.3955	0.07334691	0.395500036

APPENDIX 5: SUMMARY OF EVENT STUDY RESULTS (CONTINUED)

Estimation window — **Pick n Pay**

SUMMARY OUTPUT

Regression Statistics

Multiple R	0.426225619
R Square	0.181668279
Adjusted R Square	0.17247354
Standard Error	0.023039921
Observations	91

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.010488218	0.010488218	19.75785171	0.0000252567
Residual	89	0.04724458	0.000530838		
Total	90	0.057732798			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.000406443	0.002416878	0.168168784	0.866832069	-0.004395841	0.0052087	-0.00439584	0.005208728
X Variable 1	0.543198673	0.122204962	4.444980508	0.00002526	0.300380017	0.7860173	0.30038002	0.786017329

Event window

SUMMARY OUTPUT

Regression Statistics

Multiple R	0.567935923
R Square	0.322551213
Adjusted R Square	0.290291747
Standard Error	0.017488911
Observations	23

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.003058208	0.003058208	9.998653192	0.004698953
Residual	21	0.006423102	0.000305862		
Total	22	0.00948131			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.001905545	0.003666816	0.519672918	0.608726335	-0.005720017	0.0095311	-0.00572002	0.009531107
X Variable 1	0.656622019	0.207656098	3.162064704	0.004698953	0.224777522	1.0884665	0.22477752	1.088466517

Post Event window

SUMMARY OUTPUT

Regression Statistics

Multiple R	0.200075967
R Square	0.040030392
Adjusted R Square	0.030430696
Standard Error	0.01435104
Observations	102

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.000858814	0.000858814	4.169964556	0.043779145
Residual	100	0.020595236	0.000205952		
Total	101	0.02145405			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.000575836	0.001435537	0.401129475	0.689180647	-0.002272229	0.0034239	-0.00227223	0.003423901
X Variable 1	0.272787168	0.133585019	2.042049107	0.043779145	0.007758296	0.537816	0.0077583	0.537816041

APPENDIX 5: SUMMARY OF EVENT STUDY RESULTS (CONTINUED)

Estimation window — **Massmart**

SUMMARY OUTPUT

Regression Statistics

Multiple R	0.311092138
R Square	0.096778318
Adjusted R Square	0.08662976
Standard Error	0.025381155
Observations	91

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.006143226	0.006143226	9.536164281	0.002686904
Residual	89	0.05733407	0.000644203		
Total	90	0.063477296			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.00003667	0.002662472	0.0137717	0.989042945	-0.005253609	0.0053269	-0.00525361	0.005326942
X Variable 1	0.415724952	0.134622989	3.08806805	0.002686904	0.14823194	0.683218	0.14823194	0.683217964

Event window

SUMMARY OUTPUT

Regression Statistics

Multiple R	0.736816959
R Square	0.542899232
Adjusted R Square	0.521132529
Standard Error	0.010516029
Observations	23

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.002758227	0.002758227	24.94172983	0.0000607686
Residual	21	0.002322324	0.000110587		
Total	22	0.005080551			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.00162844	0.002204845	-0.738572786	0.46834126	-0.006213666	0.0029568	-0.00621367	0.002956788
X Variable 1	0.623586867	0.124862974	4.994169584	0.00006077	0.363920098	0.8832536	0.3639201	0.883253637

Post Event window

SUMMARY OUTPUT

Regression Statistics

Multiple R	0.292510241
R Square	0.085562241
Adjusted R Square	0.076417864
Standard Error	0.015554999
Observations	102

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.002263956	0.002263956	9.356814104	0.002851222
Residual	100	0.0241958	0.000241958		
Total	101	0.026459756			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.00024472	0.001555969	-0.157280448	0.875340958	-0.003331723	0.0028423	-0.00333172	0.002842276
X Variable 1	0.442902734	0.144791931	3.058890993	0.002851222	0.155639667	0.7301658	0.15563967	0.730165802

APPENDIX 5: SUMMARY OF EVENT STUDY RESULTS (CONTINUED)

Estimation window — **Shoprite**

SUMMARY OUTPUT

Regression Statistics

Multiple R	0.403386064
R Square	0.162720317
Adjusted R Square	0.15331268
Standard Error	0.017194992
Observations	91

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.005114053	0.005114053	17.29661963	0.000073486
Residual	89	0.026314431	0.000295668		
Total	90	0.031428483			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	- 0.00002641	0.001803747	-0.014639607	0.988352468	-0.003610413	0.0035576	-0.00361041	0.003557601
X Variable 1	0.379306643	0.091203149	4.158920489	0.000073486	0.19808793	0.5605254	0.19808793	0.560525357

Event window

SUMMARY OUTPUT

Regression Statistics

Multiple R	0.237832998
R Square	0.056564535
Adjusted R Square	0.011639037
Standard Error	0.018492505
Observations	23

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.000430569	0.000430569	1.259074181	0.274492913
Residual	21	0.007181428	0.000341973		
Total	22	0.007611997			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.001935315	0.003877235	0.499148173	0.622863846	-0.006127837	0.0099985	-0.00612784	0.009998467
X Variable 1	0.246378797	0.21957236	1.122084748	0.274492913	-0.210246924	0.7030045	-0.21024692	0.703004517

Post Event window

SUMMARY OUTPUT

Regression Statistics

Multiple R	0.216801039
R Square	0.047002691
Adjusted R Square	0.037472718
Standard Error	0.014856555
Observations	102

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.001088597	0.001088597	4.932090596	0.028618691
Residual	100	0.022071723	0.000220717		
Total	101	0.02316032			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.000190178	0.001486104	0.127970702	0.898429159	-0.00275821	0.0031386	-0.00275821	0.003138566
X Variable 1	0.307119939	0.138290545	2.22083106	0.028618691	0.032755435	0.5814844	0.03275544	0.581484442

APPENDIX 5: SUMMARY OF EVENT STUDY RESULTS (CONTINUED)

Estimation window			**10 Feb 2012 Event**		**Mediclinic**			
SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.269589169							
R Square	0.07267832							
Adjusted R Square	0.062258975							
Standard Error	0.00956308							
Observations	91							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	0.000637911	0.000637911	6.975325416	0.009760515			
Residual	89	0.008139273	0.000091453					
Total	90	0.008777184						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	5.31514E-05	0.001005439	0.052863898	0.957958827	-0.001944634	0.0020509	-0.00194463	0.002050937
X Variable 1	0.196498238	0.074400598	2.641084136	0.009760515	0.048665835	0.3443306	0.04866584	0.344330641
Event window								
SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.093641419							
R Square	0.008768715							
Adjusted R Square	-0.04079285							
Standard Error	0.009665102							
Observations	22							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	0.000016527	0.0000165274	0.176925718	0.678513801			
Residual	20	0.001868284	0.0000934142					
Total	21	0.001884811						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.001407286	0.002065293	0.68139784	0.503434223	-0.00290084	0.0057154	-0.00290084	0.005715412
X Variable 1	-0.11810398	0.28078186	-0.42062539	0.678513801	-0.703804675	0.4675967	-0.70380467	0.467596717
Post Event window								
SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.045859781							
R Square	0.002103119							
Adjusted R Square	-0.00777705							
Standard Error	0.010140001							
Observations	103							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	0.00002189	0.00002189	0.212862742	0.645524894			
Residual	101	0.010384781	0.00010282					
Total	102	0.010406667						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.000748647	0.000999134	0.749295547	0.455420734	-0.001233367	0.0027307	-0.00123337	0.002730661
X Variable 1	0.053057505	0.114999776	0.461370504	0.645524894	-0.175071116	0.2811861	-0.17507112	0.281186126

APPENDIX 5: SUMMARY OF EVENT STUDY RESULTS (CONTINUED)

Estimation window			**26 Feb 2013 Event**		**Mediclinic**			
SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.04820864							
R Square	0.002324073							
Adjusted R Square	-0.00888577							
Standard Error	0.010119032							
Observations	91							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	0.000021229	0.0000212289	0.207324329	0.649981582			
Residual	89	0.009113138	0.000102395					
Total	90	0.009134367						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.003407985	0.001089716	3.127405734	0.002383288	0.001242742	0.0055732	0.00124274	0.005573228
X Variable 1	0.086616596	0.190228673	0.455328814	0.649981582	-0.291363725	0.4645969	-0.29136373	0.464596918
Event window								
SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.502525402							
R Square	0.25253178							
Adjusted R Square	0.216938055							
Standard Error	0.012874256							
Observations	23							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	0.001175945	0.001175945	7.094839928	0.014534005			
Residual	21	0.003480676	0.000165746					
Total	22	0.00465662						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.001809002	0.002684471	0.673876527	0.507740048	-0.003773662	0.0073917	-0.00377366	0.007391666
X Variable 1	0.878838178	0.329942009	2.663614073	0.014534005	0.192686208	1.5649901	0.19268621	1.564990148
Post Event window								
SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.579137001							
R Square	0.335399666							
Adjusted R Square	0.328753663							
Standard Error	0.015190939							
Observations	102							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	0.011645853	0.011645853	50.46637035	0.00000000018			
Residual	100	0.023076463	0.000230765					
Total	101	0.034722317						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.00103274	0.001504682	0.686351026	0.494080152	-0.001952506	0.004018	-0.00195251	0.004017986
X Variable 1	0.87826016	0.12362951	7.103968634	0.000000000	0.632982733	1.1235376	0.63298273	1.123537586

APPENDIX 5: SUMMARY OF EVENT STUDY RESULTS (CONTINUED)

Estimation window			**14 Feb 2007 Event**		**Tiger Brands**			
SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.310674341							
R Square	0.096518546							
Adjusted R Square	0.086367069							
Standard Error	0.014012457							
Observations	91							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	0.001866853	0.001866853	9.507832812	0.002724588			
Residual	89	0.017475058	0.000196349					
Total	90	0.019341911						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.001282233	0.001488692	0.861315458	0.391378935	-0.001675765	0.0042402	-0.00167577	0.004240232
X Variable 1	0.527006753	0.170913124	3.08347739	0.002724588	0.187406016	0.8666075	0.18740602	0.866607489
Event window								
SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.540698232							
R Square	0.292354578							
Adjusted R Square	0.258657177							
Standard Error	0.011010293							
Observations	23							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	0.001051747	0.001051747	8.675879104	0.00772466			
Residual	21	0.002545758	0.000121227					
Total	22	0.003597505						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.00041267	0.00229585	-0.179745451	0.859075511	-0.00518715	0.0043618	-0.00518715	0.004361813
X Variable 1	0.568732473	0.19308622	2.945484528	0.00772466	0.167187697	0.9702772	0.1671877	0.970277249
Post Event window								
SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.352831367							
R Square	0.124489973							
Adjusted R Square	0.115734873							
Standard Error	0.013788524							
Observations	102							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	0.002703391	0.002703391	14.21913737	0.000275607			
Residual	100	0.01901234	0.000190123					
Total	101	0.02171573						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.00095558	0.001382341	0.691276705	0.49099336	-0.001786946	0.0036981	-0.00178695	0.003698106
X Variable 1	0.525386058	0.139329128	3.770827146	0.000275607	0.248961036	0.8018111	0.24896104	0.80181108

APPENDIX 5: SUMMARY OF EVENT STUDY RESULTS (CONTINUED)

Estimation window			**11 Feb 2008 Event**		**Tiger Brands**			
SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.329352487							
R Square	0.108473061							
Adjusted R Square	0.098455904							
Standard Error	0.012289735							
Observations	91							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	0.001635545	0.001635545	10.82872764	0.001433457			
Residual	89	0.013442345	0.000151038					
Total	90	0.01507789						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.00224112	0.001292519	-1.733914864	0.086395862	-0.004809325	0.0003271	-0.00480933	0.00032709
X Variable 1	0.293479793	0.089184522	3.290703213	0.001433457	0.116272048	0.4706875	0.11627205	0.470687538
Event window								
SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.10981046							
R Square	0.012058337							
Adjusted R Square	-0.0349865							
Standard Error	0.018808566							
Observations	23							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	0.000090675	0.000090675	0.256315821	0.617936569			
Residual	21	0.007429005	0.000353762					
Total	22	0.00751968						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.00404207	0.004075418	-0.991816439	0.332578429	-0.012517363	0.0044332	-0.01251736	0.004433229
X Variable 1	0.090937551	0.179620355	0.506276428	0.617936569	-0.282603425	0.4644785	-0.28260342	0.464478528
Post Event window								
SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.405225406							
R Square	0.164207629							
Adjusted R Square	0.155849706							
Standard Error	0.01910916							
Observations	102							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	0.007174277	0.007174277	19.64694046	0.0000239097			
Residual	100	0.036516	0.00036516					
Total	101	0.043690277						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.001074391	0.00189396	0.567271955	0.571800694	-0.002683173	0.004832	-0.00268317	0.004831954
X Variable 1	0.602686624	0.13597031	4.432486938	0.000023910	0.332925401	0.8724478	0.3329254	0.872447847

Appendix 6: Average times executives earned more income than an industry worker from 2008 to 2016

APPENDIX 6: AVERAGE TIMES EXECUTIVES EARNED MORE INCOME THAN AN INDUSTRY WORKER FROM 2008 TO 2016							
Company Name	**Name**	**Sector**	**Ave. Times Exec Salary exceeds Ave. Worker**	**Company Name**	**Name**	**Sector**	**Ave. Times Exec Salary exceeds Ave. Worker**
Anglo American plc	1	Mining-Metals & Minerals	227	Redefine Properties Ltd.	24	Real Estate	45
AngloGold Ashanti Ltd.	2	Mining-Gold	188	Remgro Ltd.	25	Industrial-Diversified	61
Anglo American Platinum Ltd.	3	Mining-Platinum	85	RMB Holdings Ltd.	26	Banks-Financial Services	39
Aspen Pharmacare Holdings Ltd.	4	Manufacturing-Pharmaceutical	84	Sappi Ltd.	27	Manufacturing-Paper	57
Barclays Africa Group Ltd.	5	Banks-Financial Services	112	Standard Bank Group Ltd.	28	Banks-Financial Services	123
BHP Billiton Plc	6	Mining-Metals & Minerals	405	Shoprite Holdings Ltd.	29	Retail-Food & Drug	1063
British American Tobacco plc	7	Manufacturing-Tobacco	433	Sanlam Ltd.	30	Insurance-Financial Services	80
The Bidvest Group Ltd.	8	Industrial-Diversified	175	Sasol Ltd.	31	Manufacturing-Chemical Speiality	199
Discovery Ltd.	9	Insurance-Financial Services	143	Tiger Brands Ltd.	32	Manufacturing-Food Processors	90
FirstRand Ltd.	10	Banks-Financial Services	119	Vodacom Group Ltd.	33	Wireless Telecom Services	84
Gold Fields Ltd.	11	Mining-Gold	126	Woolworths Holdings Ltd.	34	Retail-Multi Department	214
Growthpoint Properties Ltd.	12	Real Estate	71	African Rainbow Minerals Ltd.	35	Mining-Metals & Minerals	56
Impala Platinum Holdings Ltd.	13	Mining-Platinum	65	Assore Ltd.	36	Mining-Metals & Minerals	112
Investec Ltd.	14	Investment-Financial Services	390	Barloworld Ltd.	37	Industrial-Diversified	80
Intu Properties plc	15	Real Estate	94	Capital & Counties Properties PLC	38	Real Estate	148
Life Healthcare Group Holdings Ltd.	16	Hospital Mgt-Healthcare	48	Capitec Bank Holdings Ltd.	39	Banks-Financial Services	51
Mondi Ltd.	17	Manufacturing-Paper	363	Exxaro Resources Ltd.	40	Mining-Coal	85
Mr Price Group Ltd.	18	Retail-Soft goods	100	Imperial Holdings Ltd.	41	Transportation Services	67
MTN Group Ltd.	19	Wireless Telecom Services	126	Kumba Iron Ore Ltd.	42	Mining-Steel	59
Nedbank Group Ltd.	20	Banks-Financial Services	134	Liberty Holdings Ltd.	43	Insurance-Financial Services	109
Naspers Ltd.	21	Broadcasting Contractors	48	Massmart Holdings Ltd.	44	Retail-Multi Department	208
Netcare Ltd.	22	Hospital Mgt-Healthcare	58	Pick n Pay Stores Ltd.	45	Retail-Food & Drug	114
Old Mutual plc	23	Insurance-Financial Services	316	Truworths International Ltd.	46	Retail-Soft goods	157
			1063	**Max**	**NB: Shoprite had the highest of 6 490 times**		
			39	**Min**			
			157	**Average**			

Appendix 7: Percentage of revenue and executive remuneration changes from 2008 - 2016

APPENDIX 7: PERCENTAGE OF REVENUE AND EXECUTIVE REMUNERATION CHANGES FROM 2008 TO 2016										
COMPANY NAME	**2016**	**2015**	**2014**	**2013**	**2012**	**2011**	**2010**	**2009**	**2008**	**Average**
Anglo American Plc (in th US$)-Revenues	4.51%	-24.45%	-7.73%	2.31%	-6.21%	9.37%	34.05%	-24.25%	-8.97%	**-2.37%**
Anglo Plc Directors' Remuneration	***19.60%***	***-8.63%***	***-7.16%***	***120.78%***	***-18.21%***	***27.96%***	***23.32%***	***-11.99%***	***-42.92%***	**11.42%**
Anglogold Ashanti (in th US$)-Revenues	-1.94%	-20.18%	-6.40%	-12.19%	-3.09%	23.17%	19.65%	38.01%	4.11%	**4.57%**
Anglo Gold Directors' Remuneration	***14.60%***	***92.99%***	***-55.07%***	***-17.64%***	***-69.72%***	***3348.55%***	***-88.15%***	***28.51%***	***10.20%***	**362.70%**
Anglo American Platinum-Revenues	3.67%	7.72%	4.99%	23.34%	-16.29%	0.05%	28.38%	-23.05%	10.61%	**4.38%**
Anglo Platinum Directors' Remuneration	***10.90%***	***68.22%***	***-25.74%***	***46.84%***	***-44.71%***	***21.74%***	***92.67%***	***150.80%***	***-63.36%***	**28.60%**
Aspen Pharmacare Holdings-Revenues	2.27%	21.39%	55.61%	23.18%	20.58%	23.95%	24.83%	77.02%	18.13%	**29.66%**
Aspen Directors' Remuneration	***10.15%***	***3.50%***	***5.18%***	***-0.57%***	***14.28%***	***26.83%***	***15.64%***	***18.42%***	***8.95%***	**11.38%**
Barclays Africa Group Ltd-Revenues	7.69%	6.48%	6.19%	7.81%	20.39%	27.31%	1.54%	14.53%	8.97%	**11.21%**
Barclays Directors' Remuneration	***1.97%***	***-9.52%***	***58.25%***	***-27.62%***	***80.04%***	***-3.00%***	***9.41%***	***-37.44%***	***14.86%***	**9.66%**
BHP Billiton (in th UK£ conv from US$ at 1.32)-Revenues	-18.73%	-27.44%	-14.51%	-1.75%	5.33%	28.03%	14.86%	1.80%	26.31%	**1.55%**
BHP Directors' Remuneration	***-13.42%***	***-8.24%***	***16.16%***	***6.89%***	***-38.22%***	***9.74%***	***-0.64%***	***41.42%***	***48.60%***	**6.92%**
British American Tobacco PLC (in th UK£)-Revenues	11.99%	-5.80%	-9.08%	0.82%	-1.26%	3.59%	4.76%	17.47%	20.83%	**4.81%**
BAT Directors' Remuneration	***50.50%***	***21.84%***	***-41.66%***	***42.03%***	***-2.79%***	***-16.14%***	***31.39%***	***2.17%***	***0.00%***	**9.71%**
Bidvest Group-Revenues	7.67%	12.39%	5.36%	14.92%	12.82%	7.91%	-2.14%	1.70%	15.27%	**8.43%**
Bidvest Directors' Remuneration	***-16.80%***	***13.31%***	***-18.60%***	***1.82%***	***-5.08%***	***-16.43%***	***55.24%***	***1.22%***	***21.91%***	**4.06%**
Discovery Ltd-Revenues	19.43%	19.94%	30.43%	20.50%	17.66%	28.39%	87.52%	20.80%	15.71%	**28.93%**
Discovery Directors' Remuneration	***25.01%***	***-22.89%***	***48.18%***	***28.77%***	***21.54%***	***21.99%***	***134.29%***	***59.57%***	***-5.55%***	**34.55%**
Firstrand Limited-Revenues	7.29%	11.34%	18.76%	7.34%	10.72%	26.15%	5.48%	-10.23%	3.70%	**8.95%**
FirstRand Directors' Remuneration	***4.58%***	***4.35%***	***29.71%***	***294.86%***	***-65.73%***	***30.61%***	***-1.17%***	***0.00%***	***0.00%***	**33.02%**
Gold Fields (in th US$)-Revenues	8.02%	-11.42%	-10.68%	-39.85%	3.92%	24.57%	8.66%	20.13%	17.26%	**2.29%**
Goldfields Directors' Remuneration	***-23.00%***	***5.35%***	***-3.19%***	***-43.95%***	***36.32%***	***250.96%***	***-5.72%***	***85.25%***	***-56.37%***	**27.30%**
Growthpoint Prop Ltd-Revenues	30.28%	19.15%	14.23%	9.30%	14.63%	5.56%	27.46%	16.55%	24.60%	**17.97%**
Growthpoint Directors' Remuneration	***-44.45%***	***20.02%***	***87.51%***	***24.16%***	***-13.95%***	***26.33%***	***12.57%***	***455.48%***	***52.21%***	**68.87%**
Impala Platinum Hlds-Revenues	9.95%	13.78%	-3.43%	9.50%	-16.68%	30.00%	-2.43%	-38.47%	34.84%	**4.12%**
Impala Directors' Remuneration	***-0.77%***	***3.05%***	***6.25%***	***-5.89%***	***-32.08%***	***-20.24%***	***-6.89%***	***-0.37%***	***35.13%***	**-2.42%**
Investec Ltd-Revenues	5.69%	14.95%	18.18%	13.57%	13.13%	-9.27%	0.00%	0.00%	0.00%	**6.25%**
Investec Ltd. Directors' Remuneration	***-7.06%***	***54.07%***	***11.08%***	***61.50%***	***-51.02%***	***60.88%***	***34.88%***	***-33.99%***	***-3.02%***	**14.15%**
Intu Properties Plc (in th UK£)-Revenues	6.39%	5.86%	2.80%	-32.74%	1.86%	22.79%	-28.08%	-5.54%	7.30%	**-2.15%**
Intu Prop Directors' Remuneration	***10.58%***	***27.49%***	***22.51%***	***-22.68%***	***52.00%***	***-13.79%***	***-34.50%***	***40.31%***	***-15.72%***	**7.35%**
Life Healthcare Group Holdings-Revenues	12.12%	12.25%	10.15%	7.41%	12.16%	10.27%	12.10%	4.41%	15.29%	**10.68%**
Life Health Directors' Remuneration	***4.86%***	***6.61%***	***0.90%***	***-16.68%***	***19.98%***	***10.79%***	***47.19%***	***0.00%***	***0.00%***	**8.18%**
Mondi Ltd-Revenues	10.26%	9.96%	11.28%	11.40%	6.18%	3.33%	9.68%	-17.15%	1.21%	**5.13%**
Mondi Ltd. Directors' Remuneration	***-18.54%***	***-9.50%***	***29.78%***	***-4.23%***	***123.01%***	***-1.76%***	***2.87%***	***51.38%***	***-93.26%***	**8.86%**
Mr Price Group-Revenues	-1.08%	10.66%	13.78%	15.09%	13.63%	10.38%	12.93%	9.91%	17.83%	**11.46%**
Mr Price Directors' Remuneration	***-10.93%***	***-3.30%***	***13.56%***	***9.34%***	***-16.23%***	***-7.52%***	***9.80%***	***40.40%***	***-22.98%***	**1.35%**
MTN Group-Revenues	-4.82%	3.27%	8.62%	12.17%	0.00%	5.62%	4.51%	9.19%	40.17%	**8.75%**
MTN Directors' Remuneration	***179.57%***	***-41.67%***	***-19.00%***	***36.95%***	***-1.47%***	***83.83%***	***-26.11%***	***-37.50%***	***-4.98%***	**18.85%**
Nedbank Group-Revenues	7.19%	6.75%	7.04%	9.71%	10.54%	41.72%	9.53%	-2.26%	-1.57%	**9.85%**
Nedbank Directors' Remuneration	***7.31%***	***-0.81%***	***10.66%***	***12.18%***	***69.62%***	***17.23%***	***4.13%***	***53.44%***	***-18.24%***	**17.28%**
Naspers (in th US$)-Revenues	6.69%	-9.74%	9.51%	10.67%	4.88%	1.24%	32.56%	36.28%	7.00%	**11.01%**
Naspers Directors' Remuneration	***-89.12%***	***208.94%***	***12.60%***	***-7.15%***	***25.85%***	***6.44%***	***15.25%***	***18.71%***	***12.68%***	**22.69%**
Netcare-Revenues	11.82%	6.46%	3.84%	18.72%	10.08%	3.96%	-4.10%	5.30%	16.76%	**8.09%**
Netcare Directors' Remuneration	***11.97%***	***2.97%***	***5.12%***	***2.24%***	***30.75%***	***-34.66%***	***28.94%***	***24.93%***	***-32.89%***	**4.37%**
Old Mutual (in th UK£)-Revenues	7.77%	11.84%	-13.29%	-0.64%	3.93%	3.58%	14.57%	-41.43%	-7.37%	**-2.34%**
Old Mutual Directors' Remuneration	***-17.21%***	***-18.86%***	***64.29%***	***-58.72%***	***169.20%***	***-30.85%***	***75.49%***	***64.25%***	***-44.21%***	**22.60%**

APPENDIX 7: PERCENTAGE OF REVENUE AND EXECUTIVE REMUNERATION CHANGES FROM 2008 TO 2016 (CONTINUED)										
COMPANY NAME	**2016**	**2015**	**2014**	**2013**	**2012**	**2011**	**2010**	**2009**	**2008**	**Average**
Redefine Properties-Revenues	3.86%	12.70%	54.35%	-11.49%	1.63%	-10.39%	473.21%	38.39%	-70.71%	**54.62%**
Redefine Prop Directors' Remuneration	***25.20%***	***26.33%***	***56.85%***	***34.65%***	***36.62%***	***-15.26%***	***109.94%***	***320.82%***	***-53.18%***	**60.22%**
Remgro-Revenues	8.23%	3.94%	47.77%	23.13%	-10.19%	3.41%	22.96%	3.44%	21.00%	**13.74%**
Remgro Directors' Remuneration	***-21.87%***	***12.77%***	***5.61%***	***0.13%***	***-47.58%***	***37.50%***	***-31.51%***	***116.86%***	***0.14%***	**8.01%**
RMB Holdings-Revenues	-2.93%	22.59%	25.63%	10.25%	9.17%	-26.99%	22.17%	-19.81%	0.00%	**4.45%**
RMB Hldngs Directors' Remuneration	***-50.41%***	***-6.78%***	***7.30%***	***19.34%***	***6.79%***	***-10.19%***	***11.67%***	***-9.45%***	***2.50%***	**-3.25%**
Sappi (in th US$)-Revenues	-5.22%	-10.49%	2.30%	-7.25%	-12.33%	10.86%	22.41%	-8.43%	10.08%	**0.22%**
Sappi Directors' Remuneration	***-10.40%***	***6.29%***	***63.91%***	***-38.43%***	***-28.44%***	***279.62%***	***-61.28%***	***152.08%***	***532.15%***	**99.50%**
Standard Bank Group-Revenues	5.51%	-7.07%	10.48%	9.24%	19.01%	10.01%	8.20%	1.10%	10.83%	**7.48%**
Standard Bank Directors' Remuneration	***9.14%***	***10.17%***	***-19.76%***	***27.57%***	***162.09%***	***3.56%***	***-15.67%***	***-9.97%***	***-0.95%***	**18.47%**
Shoprite-Revenues	13.85%	11.49%	10.50%	12.15%	14.65%	7.56%	13.93%	23.93%	22.49%	**14.50%**
Shoprite Directors' Remuneration	***26.78%***	***-4.47%***	***-6.85%***	***49.21%***	***-37.48%***	***-80.71%***	***447.58%***	***108.07%***	***59.86%***	**62.44%**
Sanlam-Revenues	21.05%	16.56%	10.33%	11.42%	9.75%	10.47%	8.03%	8.81%	12.49%	**12.10%**
Sanlam Directors' Remuneration	***-14.54%***	***57.08%***	***10.58%***	***49.50%***	***-5.72%***	***-11.65%***	***32.13%***	***5.67%***	***-5.87%***	**13.02%**
Sasol-Revenues	-7.54%	-8.85%	20.59%	6.94%	11.84%	16.58%	-11.34%	6.34%	31.67%	**7.36%**
Sasol Directors' Remuneration	***2.55%***	***-6.21%***	***17.43%***	***21.17%***	***109.23%***	***-36.92%***	***74.72%***	***-33.85%***	***25.74%***	**19.32%**
Tiger Brands-Revenues	5.46%	4.34%	7.72%	23.85%	10.18%	6.57%	-9.66%	6.80%	1.03%	**6.25%**
Tiger Brands Directors' Remuneration	***178.17%***	***-61.71%***	***44.79%***	***7.28%***	***30.22%***	***2.73%***	***6.26%***	***22.17%***	***21.81%***	**27.97%**
Vodacom Group-Revenues	1.50%	7.42%	-1.54%	8.29%	4.46%	9.37%	4.55%	5.58%	14.71%	**6.04%**
Vodacom Directors' Remuneration	***75.91%***	***-34.04%***	***27.40%***	***-38.61%***	***23.65%***	***-30.13%***	***16.43%***	***0.00%***	***0.00%***	**4.51%**
Woolworths Holdings-Revenues	15.49%	45.49%	12.68%	23.21%	11.60%	9.46%	5.32%	2.53%	16.69%	**15.83%**
Woolworths Directors' Remuneration	***19.93%***	***40.41%***	***10.67%***	***22.97%***	***-15.73%***	***14.96%***	***73.58%***	***25.21%***	***-22.03%***	**18.89%**
African Rainbow Minerals-Revenues	-6.20%	-6.16%	31.99%	-54.71%	18.52%	35.73%	-0.48%	-13.23%	104.29%	**12.19%**
African Rainbow Directors' Remuneration	***40.05%***	***-23.14%***	***-2.89%***	***14.50%***	***-20.64%***	***-8.10%***	***99.27%***	***-16.21%***	***7.72%***	**10.06%**
Assore Ltd-Revenues	-13.99%	15.67%	44.28%	-86.15%	24.10%	47.04%	-21.58%	-1.10%	113.84%	**13.57%**
Assore Ltd Directors' Remuneration	***-30.26%***	***0.05%***	***4.16%***	***8.10%***	***-24.37%***	***38.05%***	***-1.12%***	***-8.35%***	***64.33%***	**5.62%**
Barloworld Ltd.-Revenues	6.10%	-4.20%	0.01%	11.41%	17.31%	18.10%	-6.49%	-9.72%	1251.57%	**142.68%**
Barloworld Directors' Remuneration	***-3.25%***	***2.22%***	***-15.81%***	***14.10%***	***10.10%***	***5.94%***	***49.10%***	***-3.21%***	***56.94%***	**12.90%**
Capitec Bank Hldgs Ltd-Revenues	21.66%	16.03%	15.46%	22.98%	39.39%	111.23%	36.76%	85.29%	27.85%	**41.85%**
Capitec Bank Directors' Remuneration	***38.25%***	***-1.30%***	***7.05%***	***8.54%***	***-2.60%***	***18.16%***	***49.18%***	***8.88%***	***23.40%***	**16.62%**
Capital & Counties Properties PLC (in th UK£)-Revenues	4.73%	-2.08%	16.63%	-12.36%	-5.13%	-4.55%	-11.59%	-12.63%	48.99%	**2.45%**
Capital & Counties Directors' Remuneration	***-2.52%***	***-18.81%***	***288.08%***	***5.06%***	***266.77%***	***-74.56%***	***32.06%***	***37.60%***	***0.00%***	**59.30%**
Exxaro Resources-Revenues	17.65%	-1.18%	21.07%	-24.00%	-3.84%	107.19%	-38.50%	12.39%	31.99%	**13.64%**
Exxaro Directors' Remuneration	***43.03%***	***-54.71%***	***-29.91%***	***4.95%***	***26.70%***	***43.72%***	***51.47%***	***-54.35%***	***84.29%***	**12.80%**
Imperial Holdings-Revenues	6.01%	6.91%	10.69%	17.00%	25.20%	20.66%	2.26%	-7.43%	-13.83%	**7.50%**
Imperial Hldngs Directors' Remuneration	***-4.99%***	***-31.63%***	***25.46%***	***-12.22%***	***19.49%***	***7.84%***	***31.06%***	***50.82%***	***-22.28%***	**7.06%**
Kumba Iron Ore-Revenues	12.78%	-24.07%	-12.59%	19.91%	-6.41%	25.44%	65.32%	9.59%	85.74%	**19.53%**
Kumba Iron Directors' Remuneration	***-73.35%***	***5.99%***	***6.62%***	***73.21%***	***-2.88%***	***30.12%***	***21.51%***	***51.62%***	***-5.64%***	**11.91%**
Liberty Hldgs.-Revenues	5.21%	-6.87%	17.77%	16.48%	12.52%	19.68%	0.80%	-1.55%	-3.05%	**6.78%**
Liberty Hldngs Directors' Remuneration	***-31.06%***	***-12.77%***	***-38.60%***	***241.59%***	***11.17%***	***86.17%***	***-9.73%***	***13.08%***	***501.04%***	**84.54%**
Massmart Holdings-Revenues	7.92%	8.30%	8.09%	99.90%	-40.95%	15.58%	11.65%	9.99%	8.23%	**14.30%**
Massmart Directors' Remuneration	***9.25%***	***86.32%***	***15.27%***	***-63.89%***	***-75.80%***	***619.42%***	***-37.84%***	***26.36%***	***-43.21%***	**59.54%**
Pick N Pay Stores-Revenues	7.01%	8.41%	6.45%	6.40%	0.53%	13.99%	5.93%	-1.62%	17.30%	**7.16%**
Pick n Pay Directors' Remuneration	***21.09%***	***22.78%***	***84.44%***	***35.27%***	***-27.59%***	***78.83%***	***-38.88%***	***22.42%***	***-15.29%***	**20.34%**
Truworths International-Revenues	47.11%	8.26%	7.03%	10.54%	12.32%	13.35%	10.92%	10.40%	17.04%	**15.22%**
Truworths Directors' Remuneration	***57.57%***	***53.01%***	***-30.33%***	***-13.36%***	***14.02%***	***23.24%***	***-8.66%***	***2.73%***	***10.28%***	**12.06%**
Highest Revenue % Changes	**47.11%**	**45.49%**	**55.61%**	**99.90%**	**39.39%**	**111.23%**	**473.21%**	**85.29%**	**1251.57%**	**142.68%**
Lowest Revenue % Changes	**-18.73%**	**-27.44%**	**-14.51%**	**-86.15%**	**-40.95%**	**-26.99%**	**-38.50%**	**-41.43%**	**-70.71%**	**-2.37%**
Highest Director's % Changes	**179.57%**	**208.94%**	**288.08%**	**294.86%**	**266.77%**	**3348.55%**	**447.58%**	**455.48%**	**532.15%**	**362.70%**
Lowest Directr's % Changes	**-89.12%**	**-61.71%**	**-55.07%**	**-63.89%**	**-75.80%**	**-80.71%**	**-88.15%**	**-54.35%**	**-93.26%**	**-3.25%**

Appendix 8: Summary of model data input into STATA

APPENDIX 8: SUMMARY OF DATA INPUT INTO STATA													
Name	Year	dty	ty	bt	st	nt	os	rev	gdp	inf	dual	rem	gov
1.00	2,016	6.00	29.00	6,647,776.71	(649,023.14)	5,998,753.57	1.00	0.05	(0.01)	0.06	1.00	0.00	14
1.00	2,015	8.00	36.00	2,623,879.51	(14,083,936.00)	(11,460,056.49)	1.00	(0.24)	-	0.06	1.00	0.00	14
1.00	2,014	9.00	45.00	2,949,774.67	(11,731,325.17)	(8,781,550.50)	1.00	(0.08)	0.00	0.06	1.00	0.00	14
1.00	2,013	10.00	32.00	3,742,071.19	-	3,742,071.19	1.00	0.02	0.01	0.05	1.00	0.00	15
1.00	2,012	9.00	36.00	2,601,194.32	-	2,601,194.32	1.00	(0.06)	0.01	0.05	1.00	0.00	15
1.00	2,011	6.00	37.00	4,956,453.38	(15,676,390.47)	(10,719,937.09)	1.00	0.09	0.02	0.04	1.00	0.00	15
1.00	2,010	9.00	42.00	16,274,173.81	(3,079,712.06)	13,194,461.75	1.00	0.34	0.02	0.05	1.00	0.00	14
1.00	2,009	10.00	37.00	8,768,331.99	(25,691,424.44)	(16,923,092.45)	1.00	(0.24)	(0.03)	0.08	1.00	0.00	14
1.00	2,008	9.00	37.00	4,005,001.77	(22,698,357.38)	(18,693,355.61)	1.00	(0.09)	0.02	0.07	1.00	0.00	14
2.00	2,016	4.00	19.00	6,573,795.65	(14,201,367.11)	(7,627,571.46)	1.00	(0.02)	(0.01)	0.06	1.00	0.01	19
2.00	2,015	6.00	20.00	75,455,019.28	(403,722.76)	75,051,296.52	1.00	(0.20)	-	0.06	1.00	0.02	19
2.00	2,014	6.00	9.00	8,885,405.92	-	8,885,405.92	1.00	(0.06)	0.00	0.06	1.00	0.01	19
2.00	2,013	6.00	9.00	5,363,545.26	(7,748,256.60)	(2,384,711.34)	1.00	(0.12)	0.01	0.05	1.00	0.01	20
2.00	2,012	3.00	5.00	-	(30,767,639.92)	(30,767,639.92)	1.00	(0.03)	0.01	0.05	1.00	0.01	20
2.00	2,011	1.00	4.00	299,500.00	(1,702,641.24)	(1,403,141.24)	1.00	0.23	0.02	0.04	1.00	0.03	20
2.00	2,010	1.00	2.00	290,928.00	(842,160.00)	(551,232.00)	1.00	0.20	0.02	0.05	1.00	0.00	20
2.00	2,009	4.00	9.00	2,289.20	(26,205.84)	(23,916.64)	1.00	0.38	(0.03)	0.08	1.00	0.01	16
2.00	2,008	6.00	10.00	3,337,857.00	(1,837,118.75)	1,500,738.25	1.00	0.04	0.02	0.07	1.00	0.01	16
3.00	2,016	9.00	44.00	49,383,365.58	(30,487,267.57)	18,896,098.01	1.00	0.04	(0.01)	0.06	1.00	0.00	16
3.00	2,015	10.00	34.00	992,702.00	(101,346,641.48)	(100,353,939.48)	1.00	0.08	-	0.06	1.00	0.00	15
3.00	2,014	9.00	63.00	34,900,772.99	(165,639,721.49)	(130,738,948.50)	1.00	0.05	0.00	0.06	1.00	0.00	18
3.00	2,013	5.00	18.00	-	(3,775,081.03)	(3,775,081.03)	1.00	0.23	0.01	0.05	1.00	0.00	17
3.00	2,012	11.00	48.00	31,382,869.06	(8,063,396.66)	23,319,472.40	1.00	(0.16)	0.01	0.05	1.00	0.00	18
3.00	2,011	12.00	29.00	30,433,490.83	(3,009,220.56)	27,424,270.27	1.00	0.00	0.02	0.04	1.00	0.00	15
3.00	2,010	8.00	12.00	1,261,124.37	(215,040.00)	1,046,084.37	1.00	0.28	0.02	0.05	1.00	0.00	14
3.00	2,009	3.00	8.00	504,001.01	(2,904,862.77)	(2,400,861.76)	1.00	(0.23)	(0.03)	0.08	1.00	0.00	14
3.00	2,008	4.00	9.00	14,764,514.20	(5,221,956.02)	9,542,558.18	1.00	0.11	0.02	0.07	1.00	0.00	16
4.00	2,016	5.00	11.00	919,200.00	(420,274.80)	498,925.20	-	0.02	(0.01)	0.06	-	0.00	18
4.00	2,015	14.00	22.00	9,423,325.50	(2,439,748.00)	6,983,577.50	-	0.21	-	0.06	-	0.00	19
4.00	2,014	11.00	21.00	10,076,858.13	(38,921,349.51)	(28,844,491.38)	-	0.56	0.00	0.06	-	0.00	19
4.00	2,013	14.00	20.00	13,503,607.05	(40,457,817.65)	(26,954,210.60)	-	0.23	0.01	0.05	-	0.00	18
4.00	2,012	20.00	35.00	45,173,703.31	(47,711,480.21)	(2,537,776.90)	-	0.21	0.01	0.05	-	0.00	19
4.00	2,011	10.00	12.00	19,680,771.52	(24,124,149.80)	(4,443,378.28)	1.00	0.24	0.02	0.04	-	0.00	16
4.00	2,010	6.00	7.00	7,723,809.30	(2,335,407.98)	5,388,401.32	1.00	0.25	0.02	0.05	-	0.00	17
4.00	2,009	6.00	9.00	30,633,335.52	(3,719,168.41)	26,914,167.11	1.00	0.77	(0.03)	0.08	-	0.00	16
4.00	2,008	8.00	13.00	18,924,421.29	(2,031,806.56)	16,892,614.73	1.00	0.18	0.02	0.07	-	0.00	14
5.00	2,016	5.00	10.00	-	(2,139,230.00)	(2,139,230.00)	1.00	0.08	(0.01)	0.06	1.00	0.00	19
5.00	2,015	3.00	8.00	-	(1,908,998.00)	(1,908,998.00)	1.00	0.06	-	0.06	1.00	0.00	19
5.00	2,014	2.00	7.00	2,923,593.50	(2,206,686.74)	716,906.76	1.00	0.06	0.00	0.06	1.00	0.00	18
5.00	2,013	5.00	12.00	16,435,325.03	(20,975,270.60)	(4,539,945.57)	1.00	0.08	0.01	0.05	1.00	0.00	19
5.00	2,012	-	-	-	-	-	1.00	0.20	0.01	0.05	1.00	0.00	19
5.00	2,011	2.00	6.00	21,889,427.29	(11,415,659.34)	10,473,767.95	1.00	0.27	0.02	0.04	1.00	0.00	19
5.00	2,010	1.00	1.00	254,220.00	-	254,220.00	1.00	0.02	0.02	0.05	1.00	0.00	16
5.00	2,009	8.00	10.00	9,632,019.10	(8,574,000.00)	1,058,019.10	1.00	0.15	(0.03)	0.08	1.00	0.00	16
5.00	2,008	8.00	10.00	8,597,894.48	-	8,597,894.48	1.00	0.09	0.02	0.07	1.00	0.00	15
6.00	2,016	3.00	4.00	3,053,393.78	-	3,053,393.78	1.00	(0.19)	(0.01)	0.06	1.00	0.00	16
6.00	2,015	1.00	3.00	-	(14,986,049.67)	(14,986,049.67)	1.00	(0.27)	-	0.06	1.00	0.00	16
6.00	2,014	3.00	3.00	9,710,032.12	-	9,710,032.12	1.00	(0.15)	0.00	0.06	1.00	0.00	16
6.00	2,013	1.00	4.00	4,546,844.09	(39,028,147.09)	(34,481,303.01)	1.00	(0.02)	0.01	0.05	1.00	0.00	16
6.00	2,012	2.00	6.00	849,511.78	(14,922,994.99)	(14,073,483.21)	1.00	0.05	0.01	0.05	1.00	0.00	16
6.00	2,011	3.00	3.00	6,579,710.64	-	6,579,710.64	1.00	0.28	0.02	0.04	1.00	0.00	16
6.00	2,010	3.00	4.00	1,938,532.10	(35,617,057.25)	(33,678,525.15)	1.00	0.15	0.02	0.05	1.00	0.00	16
6.00	2,009	2.00	6.00	1,480,153.40	(8,820,043.91)	(7,339,890.51)	1.00	0.02	(0.03)	0.08	1.00	0.00	16
6.00	2,008	2.00	2.00	797,857.42	-	797,857.42	1.00	0.26	0.02	0.07	1.00	0.00	16

NB: The (-) are not missing data but the calculated values are 0 and or assigned dummy variables of 0. The study had all the data for this calculation.

APPENDIX 8: SUMMARY OF DATA INPUT INTO STATA (CONTINUED)													
Name	Year	dty	ty	bt	st	nt	os	rev	gdp	inf	dual	rem	gov
7.00	2,016	3.00	38.00	40,432,071.56	(46,271,964.89)	(5,839,893.32)	1.00	0.12	(0.01)	0.06	1.00	0.00	19
7.00	2,015	4.00	11.00	4,503,504.01	-	4,503,504.01	1.00	(0.06)	-	0.06	1.00	0.00	18
7.00	2,014	4.00	24.00	734,496.34	(32,877,634.44)	(32,143,138.10)	1.00	(0.09)	0.00	0.06	1.00	0.00	19
7.00	2,013	3.00	28.00	149,263.60	(101,968,247.25)	(101,818,983.65)	1.00	0.01	0.01	0.05	1.00	0.00	19
7.00	2,012	5.00	26.00	547,020.61	(16,877,175.40)	(16,330,154.79)	1.00	(0.01)	0.01	0.05	1.00	0.00	19
7.00	2,011	5.00	18.00	16,953.49	(4,812,754.54)	(4,795,801.05)	1.00	0.04	0.02	0.04	1.00	0.00	19
7.00	2,010	4.00	28.00	8,549,966.26	(3,991,100.81)	4,558,865.45	1.00	0.05	0.02	0.05	1.00	0.00	19
7.00	2,009	5.00	29.00	155,795,282.95	-	155,795,282.95	1.00	0.17	(0.03)	0.08	1.00	0.00	19
7.00	2,008	4.00	6.00	5,595.94	-	5,595.94	1.00	0.21	0.02	0.07	1.00	0.00	19
8.00	2,016	7.00	23.00	18,197,105.22	(153,878,473.99)	(135,681,368.77)	1.00	0.08	(0.01)	0.06	-	0.00	16
8.00	2,015	10.00	25.00	6,249,393.96	(120,763,359.39)	(114,513,965.43)	1.00	0.12	-	0.06	-	0.00	16
8.00	2,014	7.00	28.00	12,334,228.34	(329,366,036.86)	(317,031,808.52)	1.00	0.05	0.00	0.06	-	0.00	16
8.00	2,013	8.00	21.00	32,430,393.48	(167,597,305.69)	(135,166,912.21)	1.00	0.15	0.01	0.05	-	0.00	15
8.00	2,012	12.00	30.00	13,262,624.34	(415,435,869.30)	(402,173,244.96)	1.00	0.13	0.01	0.05	-	0.00	16
8.00	2,011	9.00	27.00	16,880,920.00	(86,168,314.00)	(69,287,394.00)	1.00	0.08	0.02	0.04	-	0.00	14
8.00	2,010	9.00	39.00	39,242,403.60	(104,977,780.35)	(65,735,376.75)	1.00	(0.02)	0.02	0.05	-	0.00	14
8.00	2,009	10.00	43.00	24,454,632.50	(71,734,792.41)	(47,280,159.91)	1.00	0.02	(0.03)	0.08	-	0.00	14
8.00	2,008	6.00	13.00	19,716,079.55	(22,350,735.00)	(2,634,655.45)	1.00	0.15	0.02	0.07	-	0.00	12
9.00	2,016	9.00	21.00	780,828,821.48	(1,803,048,185.50)	(1,022,219,364.02)	-	0.19	(0.01)	0.06	-	0.01	12
9.00	2,015	17.00	65.00	717,328,413.28	(191,808,165.82)	525,520,247.46	-	0.20	-	0.06	-	0.01	13
9.00	2,014	3.00	3.00	1,064,699.57	(782,100.00)	282,599.57	-	0.30	0.00	0.06	-	0.01	13
9.00	2,013	8.00	34.00	842,836,806.55	(509,616,120.08)	333,220,686.47	-	0.21	0.01	0.05	-	0.01	13
9.00	2,012	12.00	31.00	2,764,310.14	(175,529,805.56)	(172,765,495.42)	-	0.18	0.01	0.05	-	0.01	13
9.00	2,011	8.00	28.00	1,989,929.70	(107,577,038.66)	(105,587,108.96)	-	0.28	0.02	0.04	-	0.01	12
9.00	2,010	8.00	17.00	10,652,442.40	(45,840,305.81)	(35,187,863.41)	-	0.88	0.02	0.05	-	0.01	12
9.00	2,009	9.00	34.00	51,724,460.99	(60,194,871.00)	(8,470,410.01)	-	0.21	(0.03)	0.08	-	0.01	12
9.00	2,008	12.00	55.00	167,553,721.07	(21,946,861.02)	145,606,860.05	-	0.16	0.02	0.07	-	0.00	12
10.00	2,016	3.00	5.00	15,315,910.03	(10,773,157.44)	4,542,752.59	1.00	0.07	(0.01)	0.06	-	0.00	18
10.00	2,015	12.00	21.00	9,413,214.23	(333,926,221.31)	(324,513,007.08)	1.00	0.11	-	0.06	-	0.00	16
10.00	2,014	7.00	18.00	271,282,915.85	(64,289,758.52)	206,993,157.33	1.00	0.19	0.00	0.06	-	0.00	17
10.00	2,013	7.00	18.00	41,832,021.61	(279,576,784.58)	(237,744,762.98)	1.00	0.07	0.01	0.05	-	0.00	15
10.00	2,012	3.00	7.00	30,433,091.40	(29,499,075.79)	934,015.61	1.00	0.11	0.01	0.05	-	0.00	15
10.00	2,011	4.00	12.00	312,756,506.37	(39,611,398.82)	273,145,107.55	1.00	0.26	0.02	0.04	-	0.00	11
10.00	2,010	2.00	5.00	7,971,032.79	(8,030,181.81)	(59,149.02)	1.00	0.05	0.02	0.05	-	0.00	15
10.00	2,009	3.00	10.00	155,531,913.60	(29,650,450.54)	125,881,463.06	1.00	(0.10)	(0.03)	0.08	-	0.00	15
10.00	2,008	4.00	8.00	1,800,117.76	(2,856,075.90)	(1,055,958.14)	1.00	0.04	0.02	0.07	-	-	15
11.00	2,016	11.00	27.00	16,250,677.38	(29,568,236.98)	(13,317,559.60)	1.00	0.08	(0.01)	0.06	1.00	0.00	18
11.00	2,015	15.00	32.00	18,676,352.67	(21,645,119.01)	(2,968,766.35)	1.00	(0.11)	-	0.06	1.00	0.00	17
11.00	2,014	12.00	31.00	6,377,592.02	(13,944,851.15)	(7,567,259.14)	1.00	(0.11)	0.00	0.06	1.00	0.00	17
11.00	2,013	12.00	42.00	17,399,243.97	(11,280,790.88)	6,118,453.09	1.00	(0.40)	0.01	0.05	1.00	0.00	17
11.00	2,012	18.00	83.00	8,681,951.86	(69,921,814.24)	(61,239,862.38)	1.00	0.04	0.01	0.05	1.00	0.00	17
11.00	2,011	18.00	102.00	19,116,980.21	(61,776,762.53)	(42,659,782.32)	1.00	0.25	0.02	0.04	1.00	0.00	15
11.00	2,010	5.00	5.00	201,021.80	(302,050.00)	(101,028.20)	1.00	0.09	0.02	0.05	1.00	0.00	15
11.00	2,009	6.00	7.00	5,367,520.90	(366,325.00)	5,001,195.90	1.00	0.20	(0.03)	0.08	1.00	0.00	15
11.00	2,008	12.00	32.00	9,323,850.00	(1,021,777.00)	8,302,073.00	1.00	0.17	0.02	0.07	1.00	0.00	15

APPENDIX 8: SUMMARY OF DATA INPUT INTO STATA (CONTINUED)													
Name	**Year**	**dty**	**ty**	**bt**	**st**	**nt**	**os**	**rev**	**gdp**	**inf**	**dual**	**rem**	**gov**
12.00	2,016	26.00	73.00	19,857,405.95	(40,445,748.32)	(20,588,342.37)	1.00	0.30	(0.01)	0.06	-	0.00	17
12.00	2,015	20.00	64.00	49,266,224.47	(53,621,482.17)	(4,355,257.70)	1.00	0.19	-	0.06	-	0.01	17
12.00	2,014	22.00	63.00	226,150,820.27	(693,037,730.50)	(466,886,910.22)	1.00	0.14	0.00	0.06	-	0.01	17
12.00	2,013	20.00	80.00	615,986,456.65	(750,616,715.80)	(134,630,259.15)	1.00	0.09	0.01	0.05	-	0.00	17
12.00	2,012	18.00	41.00	35,930,918.80	(2,611,087.23)	33,319,831.57	1.00	0.15	0.01	0.05	-	0.00	17
12.00	2,011	12.00	47.00	9,943,799.60	(13,969,490.48)	(4,025,690.88)	1.00	0.06	0.02	0.04	-	0.01	13
12.00	2,010	9.00	23.00	398,322.50	(11,957,553.96)	(11,559,231.46)	1.00	0.27	0.02	0.05	-	0.00	13
12.00	2,009	12.00	41.00	14,169,162.65	(20,989,690.18)	(6,820,527.53)	1.00	0.17	(0.03)	0.08	-	0.00	13
12.00	2,008	8.00	22.00	17,172,282.98	(237,288.77)	16,934,994.21	1.00	0.25	0.02	0.07	-	0.00	13
13.00	2,016	11.00	21.00	-	(8,810,324.95)	(8,810,324.95)	1.00	0.10	(0.01)	0.06	1.00	0.00	18
13.00	2,015	5.00	10.00	1,947,782.26	(201,247.08)	1,746,535.18	1.00	0.14	-	0.06	1.00	0.00	15
13.00	2,014	1.00	2.00	167,249.00	-	167,249.00	1.00	(0.03)	0.00	0.06	1.00	0.00	16
13.00	2,013	1.00	1.00	206,280.00	-	206,280.00	1.00	0.10	0.01	0.05	1.00	0.00	16
13.00	2,012	-	-	-	-	-	1.00	(0.17)	0.01	0.05	1.00	0.00	16
13.00	2,011	-	-	-	-	-	1.00	0.30	0.02	0.04	1.00	0.00	18
13.00	2,010	1.00	1.00	197,100.00	-	197,100.00	1.00	(0.02)	0.02	0.05	1.00	0.00	18
13.00	2,009	2.00	2.00	57,774.08	(149,504.00)	(91,729.92)	1.00	(0.38)	(0.03)	0.08	1.00	0.00	17
13.00	2,008	3.00	9.00	1,284,361.68	(7,259,522.56)	(5,975,160.88)	1.00	0.35	0.02	0.07	1.00	0.00	17
14.00	2,016	2.00	3.00	-	(22,466,750.00)	(22,466,750.00)	1.00	0.06	(0.01)	0.06	1.00	0.00	19
14.00	2,015	4.00	7.00	4,861,747.50	(117,268,502.50)	(112,406,755.00)	1.00	0.15	-	0.06	1.00	0.00	19
14.00	2,014	2.00	5.00	-	(34,336,782.50)	(34,336,782.50)	1.00	0.18	0.00	0.06	1.00	0.00	18
14.00	2,013	4.00	7.00	7,438,000.00	(26,369,062.50)	(18,931,062.50)	1.00	0.14	0.01	0.05	1.00	0.00	18
14.00	2,012	4.00	9.00	22,037,525.00	(7,600,242.44)	14,437,282.56	1.00	0.13	0.01	0.05	1.00	0.00	18
14.00	2,011	7.00	10.00	34,713,311.36	(211,533,152.14)	(176,819,840.78)	1.00	(0.09)	0.02	0.04	1.00	0.00	14
14.00	2,010	5.00	8.00	-	(198,286,550.64)	(198,286,550.64)	1.00	0.11	0.02	0.05	1.00	0.00	14
14.00	2,009	8.00	18.00	30,983,850.00	(91,465,182.45)	(60,481,332.45)	1.00	0.00	(0.03)	0.08	1.00	0.00	14
14.00	2,008	9.00	22.00	113,768,563.87	(143,471,420.10)	(29,702,856.23)	1.00	0.26	0.02	0.07	1.00	0.01	14
15.00	2,016	13.00	25.00	1,301,307,383.23	(6,602,949.03)	1,294,704,434.20	-	0.06	(0.01)	0.06	1.00	0.01	16
15.00	2,015	11.00	40.00	2,872,763,660.05	(123,547,380.00)	2,749,216,280.06	-	0.06	-	0.06	1.00	0.01	16
15.00	2,014	15.00	35.00	1,940,783,684.52	(7,644,845.28)	1,933,138,839.24	-	0.03	0.00	0.06	1.00	0.01	16
15.00	2,013	10.00	38.00	901,178,302.20	(17,611,247.08)	883,567,055.12	-	(0.33)	0.01	0.05	1.00	0.01	16
15.00	2,012	4.00	12.00	61,529,162.26	-	61,529,162.26	-	0.02	0.01	0.05	1.00	0.01	16
15.00	2,011	5.00	15.00	104,014,008.58	(2,467,926.57)	101,546,082.01	-	0.23	0.02	0.04	1.00	0.00	16
15.00	2,010	6.00	17.00	2,368,972.89	(8,529,648.82)	(6,160,675.93)	-	(0.28)	0.02	0.05	1.00	0.01	16
15.00	2,009	8.00	10.00	35,712,119.72	(126,957.90)	35,585,161.82	-	(0.06)	(0.03)	0.08	1.00	0.01	16
15.00	2,008	8.00	18.00	19,242,726.95	(16,549,554.14)	2,693,172.81	-	0.07	0.02	0.07	1.00	0.00	15
16.00	2,016	12.00	32.00	2,848,281.27	(14,052,617.98)	(11,204,336.71)	1.00	0.12	(0.01)	0.06	-	0.00	19
16.00	2,015	12.00	25.00	11,041,043.26	(6,087,078.41)	4,953,964.85	1.00	0.12	-	0.06	-	0.00	19
16.00	2,014	3.00	59.00	744,660.86	(1,766,000.00)	(1,021,339.14)	1.00	0.10	0.00	0.06	-	0.00	18
16.00	2,013	3.00	4.00	8,911,495.11	(26,392,590.00)	(17,481,094.89)	1.00	0.07	0.01	0.05	-	0.00	19
16.00	2,012	3.00	21.00	-	(96,880,903.34)	(96,880,903.34)	1.00	0.12	0.01	0.05	-	0.00	19
16.00	2,011	3.00	6.00	1,472,195.49	-	1,472,195.49	1.00	0.10	0.02	0.04	-	0.00	19
16.00	2,010	2.00	2.00	1,794,080.00	-	1,794,080.00	1.00	0.12	0.02	0.05	-	0.00	15
16.00	2,009	-	-	-	-	-	1.00	0.04	(0.03)	0.08	-	0.00	15
16.00	2,008	-	-	-	-	-	1.00	0.15	0.02	0.07	-	-	15

APPENDIX 8: SUMMARY OF DATA INPUT INTO STATA (CONTINUED)													
Name	**Year**	**dty**	**ty**	**bt**	**st**	**nt**	**os**	**rev**	**gdp**	**inf**	**dual**	**rem**	**gov**
17.00	2,016	3.00	12.00	-	(35,947,624.01)	(35,947,624.01)	1.00	0.10	(0.01)	0.06	1.00	0.00	17
17.00	2,015	3.00	15.00	450.12	(40,655,657.17)	(40,655,207.05)	1.00	0.10	-	0.06	1.00	0.00	17
17.00	2,014	3.00	12.00	-	(31,339,011.31)	(31,339,011.31)	1.00	0.11	0.00	0.06	1.00	0.00	17
17.00	2,013	4.00	14.00	824,350.50	(31,003,015.02)	(30,178,664.52)	1.00	0.11	0.01	0.05	1.00	0.00	17
17.00	2,012	3.00	12.00	-	(28,851,858.10)	(28,851,858.10)	1.00	0.06	0.01	0.05	1.00	0.00	17
17.00	2,011	3.00	10.00	-	(9,624,936.15)	(9,624,936.15)	1.00	0.03	0.02	0.04	1.00	0.00	14
17.00	2,010	3.00	10.00	4,276.27	(11,126,530.94)	(11,122,254.67)	1.00	0.10	0.02	0.05	1.00	0.00	14
17.00	2,009	6.00	16.00	1,070,765.35	(5,834,171.58)	(4,763,406.23)	1.00	(0.17)	(0.03)	0.08	1.00	0.00	14
17.00	2,008	7.00	12.00	1,291,318.72	(26,552.50)	1,264,766.22	1.00	0.01	0.02	0.07	1.00	0.00	14
18.00	2,016	4.00	31.00	51,163,818.49	(230,506,637.42)	(179,342,818.93)	1.00	(0.01)	(0.01)	0.06	-	0.00	19
18.00	2,015	6.00	36.00	28,166,079.12	(447,395,790.56)	(419,229,711.44)	1.00	0.11	-	0.06	-	0.00	18
18.00	2,014	7.00	17.00	6,986,082.67	(227,130,305.40)	(220,144,222.73)	1.00	0.14	0.00	0.06	-	0.00	18
18.00	2,013	6.00	23.00	7,041,082.96	(95,378,798.11)	(88,337,715.15)	1.00	0.15	0.01	0.05	-	0.00	17
18.00	2,012	6.00	22.00	5,346,319.21	(210,757,775.31)	(205,411,456.10)	1.00	0.14	0.01	0.05	-	0.00	17
18.00	2,011	6.00	20.00	43,544,719.00	(135,406,982.12)	(91,862,263.12)	1.00	0.10	0.02	0.04	-	0.00	15
18.00	2,010	2.00	2.00	18,400,000.00	(4,639,320.63)	13,760,679.37	1.00	0.13	0.02	0.05	-	0.00	15
18.00	2,009	7.00	18.00	16,158,600.00	(37,481,704.63)	(21,323,104.63)	1.00	0.10	(0.03)	0.08	-	0.00	16
18.00	2,008	2.00	4.00	6,643,164.00	(138,960.00)	6,504,204.00	1.00	0.18	0.02	0.07	-	0.00	16
19.00	2,016	4.00	14.00	845,440.27	(123,465,703.81)	(122,620,263.54)	1.00	(0.05)	(0.01)	0.06	-	0.00	16
19.00	2,015	13.00	22.00	15,458,362.63	(7,061,153.78)	8,397,208.86	1.00	0.03	-	0.06	-	0.00	16
19.00	2,014	3.00	4.00	276,828,109.53	(391,334,869.05)	(114,506,759.52)	1.00	0.09	0.00	0.06	-	0.00	20
19.00	2,013	5.00	12.00	7,661,374.45	(45,715,308.65)	(38,053,934.21)	1.00	0.12	0.01	0.05	-	0.00	18
19.00	2,012	2.00	3.00	318,773.70	(3,743,308.80)	(3,424,535.10)	1.00	(0.00)	0.01	0.05	-	0.00	17
19.00	2,011	1.00	3.00	1,372,950.00	(9,831,339.00)	(8,458,389.00)	1.00	0.06	0.02	0.04	-	0.00	18
19.00	2,010	9.00	26.00	24,049,524.89	(481,197,576.35)	(457,148,051.46)	1.00	0.05	0.02	0.05	-	0.00	14
19.00	2,009	10.00	40.00	399,523,618.06	(612,966,885.99)	(213,443,267.93)	1.00	0.09	(0.03)	0.08	-	0.00	15
19.00	2,008	5.00	15.00	339,611,884.66	(108,524,302.52)	231,087,582.14	1.00	0.40	0.02	0.07	-	0.00	14
20.00	2,016	5.00	36.00	44,612,764.00	(16,744,918.14)	27,867,845.86	1.00	0.07	(0.01)	0.06	-	0.00	20
20.00	2,015	9.00	56.00	77,437,415.64	(40,388,356.43)	37,049,059.21	1.00	0.07	-	0.06	-	0.00	20
20.00	2,014	6.00	33.00	7,506,180.82	(29,810,215.05)	(22,304,034.23)	1.00	0.07	0.00	0.06	-	0.00	20
20.00	2,013	6.00	24.00	42,058,652.37	(40,188,688.07)	1,869,964.30	1.00	0.10	0.01	0.05	-	0.00	20
20.00	2,012	6.00	14.00	11,937,972.06	(25,865,895.37)	(13,927,923.31)	1.00	0.11	0.01	0.05	-	0.00	20
20.00	2,011	11.00	27.00	16,072,646.92	(111,685,656.48)	(95,613,009.56)	1.00	0.42	0.02	0.04	-	0.00	20
20.00	2,010	8.00	29.00	32,687,494.84	(48,461,869.13)	(15,774,374.29)	1.00	0.10	0.02	0.05	-	0.00	16
20.00	2,009	13.00	28.00	39,359,244.14	(22,074,220.00)	17,285,024.14	1.00	(0.02)	(0.03)	0.08	-	0.00	16
20.00	2,008	12.00	29.00	19,655,935.23	(10,696,000.00)	8,959,935.23	1.00	(0.02)	0.02	0.07	-	0.00	16
21.00	2,016	4.00	11.00	330,716,490.00	(177,460,555.20)	153,255,934.80	1.00	0.07	(0.01)	0.06	1.00	0.02	19
21.00	2,015	3.00	16.00	-	(1,079,297,778.58)	(1,079,297,778.58)	1.00	(0.10)	-	0.06	1.00	0.01	19
21.00	2,014	3.00	11.00	-	(704,344,049.66)	(704,344,049.66)	1.00	0.10	0.00	0.06	1.00	0.00	19
21.00	2,013	2.00	5.00	4,500,000.00	(22,786,320.05)	(18,286,320.05)	1.00	0.11	0.01	0.05	1.00	0.00	19
21.00	2,012	4.00	8.00	2,702,500.00	(30,766,567.84)	(28,064,067.84)	1.00	0.05	0.01	0.05	1.00	0.00	13
21.00	2,011	6.00	13.00	215,967.00	(12,519,222.88)	(12,303,255.88)	1.00	0.01	0.02	0.04	1.00	0.00	13
21.00	2,010	6.00	13.00	3,155,375.52	(24,007,182.28)	(20,851,806.77)	1.00	0.33	0.02	0.05	1.00	0.00	16
21.00	2,009	4.00	14.00	1,464,572.94	(30,240,115.66)	(28,775,542.72)	1.00	0.36	(0.03)	0.08	1.00	0.00	16
21.00	2,008	8.00	15.00	47,472,729.24	(120,790,969.47)	(73,318,240.23)	1.00	0.07	0.02	0.07	1.00	0.00	13

APPENDIX 8: SUMMARY OF DATA INPUT INTO STATA (CONTINUED)													
Name	Year	dty	ty	bt	st	nt	os	rev	gdp	inf	dual	rem	gov
22.00	2,016	7.00	49.00	1,392,486.12	(78,876,160.49)	(77,483,674.36)	1.00	0.12	(0.01)	0.06	-	0.00	18
22.00	2,015	9.00	29.00	18,644,094.08	(21,973,147.76)	(3,329,053.68)	1.00	0.06	-	0.06	-	0.00	16
22.00	2,014	3.00	8.00	11,732,000.00	(41,157,002.40)	(29,425,002.40)	1.00	0.04	0.00	0.06	-	0.00	15
22.00	2,013	5.00	21.00	23,111,750.20	(53,178,419.31)	(30,066,669.11)	1.00	0.19	0.01	0.05	-	0.00	15
22.00	2,012	6.00	32.00	7,973,613.56	(54,790,457.32)	(46,816,843.76)	1.00	0.10	0.01	0.05	-	0.00	15
22.00	2,011	4.00	13.00	76,019,000.00	(170,356,577.60)	(94,337,577.60)	1.00	0.04	0.02	0.04	-	0.00	12
22.00	2,010	6.00	26.00	7,031,468.90	(153,423,091.67)	(146,391,622.77)	1.00	(0.04)	0.02	0.05	-	0.00	12
22.00	2,009	7.00	40.00	10,204,300.00	(68,267,004.32)	(58,062,704.32)	1.00	0.05	(0.03)	0.08	-	0.00	13
22.00	2,008	9.00	24.00	2,327,372.00	(6,640,975.00)	(4,313,603.00)	1.00	0.17	0.02	0.07	-	0.00	12
23.00	2,016	2.00	3.00	219,146.03	(5,141,181.18)	(4,922,035.15)	1.00	0.08	(0.01)	0.06	1.00	0.00	16
23.00	2,015	5.00	7.00	264,228.58	(43,532,229.72)	(43,268,001.14)	1.00	0.12	-	0.06	1.00	0.00	16
23.00	2,014	8.00	24.00	6,655,135.22	(162,061,653.30)	(155,406,518.08)	1.00	(0.13)	0.00	0.06	1.00	0.00	15
23.00	2,013	3.00	10.00	-	(75,830,648.80)	(75,830,648.80)	1.00	(0.01)	0.01	0.05	1.00	0.00	15
23.00	2,012	3.00	11.00	50,312,497.45	(130,601,571.20)	(80,289,073.75)	1.00	0.04	0.01	0.05	1.00	0.00	15
23.00	2,011	3.00	7.00	9,673,757.52	(21,875,297.04)	(12,201,539.52)	1.00	0.04	0.02	0.04	1.00	0.00	15
23.00	2,010	4.00	6.00	6,169,278.87	-	6,169,278.87	1.00	0.15	0.02	0.05	1.00	0.00	15
23.00	2,009	-	-	-	-	-	1.00	(0.41)	(0.03)	0.08	1.00	0.00	15
23.00	2,008	4.00	8.00	9,149,497.09	(8,706,804.11)	442,692.99	1.00	(0.07)	0.02	0.07	1.00	0.00	15
24.00	2,016	7.00	63.00	210,629,486.58	(146,348,451.60)	64,281,034.98	1.00	0.04	(0.01)	0.06	1.00	0.01	15
24.00	2,015	14.00	57.00	182,844,502.48	(405,050.00)	182,439,452.48	1.00	0.13	-	0.06	1.00	0.01	15
24.00	2,014	12.00	48.00	27,717,752.89	(4,352,341.82)	23,365,411.07	1.00	0.54	0.00	0.06	1.00	0.01	14
24.00	2,013	4.00	13.00	84,137,961.75	-	84,137,961.75	1.00	(0.11)	0.01	0.05	1.00	0.01	15
24.00	2,012	1.00	7.00	-	(3,912,880.46)	(3,912,880.46)	1.00	0.02	0.01	0.05	1.00	0.00	15
24.00	2,011	4.00	14.00	1,492,657.77	(4,342,515.34)	(2,849,857.57)	1.00	(0.10)	0.02	0.04	1.00	0.00	13
24.00	2,010	3.00	13.00	489,900.00	(3,403,173.47)	(2,913,273.47)	1.00	4.73	0.02	0.05	1.00	0.00	13
24.00	2,009	3.00	33.00	6,913,900.00	(53,568,195.26)	(46,654,295.26)	1.00	0.38	(0.03)	0.08	1.00	0.01	13
24.00	2,008	1.00	5.00	-	(6,806,625.00)	(6,806,625.00)	1.00	(0.71)	0.02	0.07	1.00	0.00	11
25.00	2,016	27.00	49.00	260,281,825.79	(10,730,645.55)	249,551,180.24	1.00	0.08	(0.01)	0.06	-	0.00	19
25.00	2,015	7.00	21.00	3,618,337.14	(6,356,666.46)	(2,738,329.32)	1.00	0.04	-	0.06	-	0.00	19
25.00	2,014	5.00	15.00	84,777,717.18	(62,896,563.47)	21,881,153.71	1.00	0.48	0.00	0.06	-	0.00	19
25.00	2,013	5.00	18.00	24,562,639.84	(36,291,935.08)	(11,729,295.24)	1.00	0.23	0.01	0.05	-	0.00	19
25.00	2,012	9.00	18.00	12,004,950.96	(26,364,689.21)	(14,359,738.25)	1.00	(0.10)	0.01	0.05	-	0.00	19
25.00	2,011	5.00	15.00	72,221,494.38	(33,569,660.74)	38,651,833.64	1.00	0.03	0.02	0.04	-	0.00	16
25.00	2,010	3.00	6.00	-	(5,248,307.00)	(5,248,307.00)	1.00	0.23	0.02	0.05	-	0.00	16
25.00	2,009	9.00	16.00	70,009,151.79	(76,274,701.20)	(6,265,549.41)	1.00	0.03	(0.03)	0.08	-	0.00	16
25.00	2,008	9.00	10.00	132,442,894.00	-	132,442,894.00	1.00	0.21	0.02	0.07	-	0.00	16
26.00	2,016	1.00	4.00	-	(114,279,960.13)	(114,279,960.13)	1.00	(0.03)	(0.01)	0.06	-	0.00	17
26.00	2,015	2.00	3.00	6,910,400.90	(214,831,500.00)	(207,921,099.10)	1.00	0.23	-	0.06	-	0.00	17
26.00	2,014	1.00	1.00	1,258,161.40	-	1,258,161.40	1.00	0.26	0.00	0.06	-	0.00	18
26.00	2,013	4.00	10.00	15,222,660.35	(118,134,675.12)	(102,912,014.77)	1.00	0.10	0.01	0.05	-	0.00	17
26.00	2,012	1.00	1.00	1,022,408.05	-	1,022,408.05	1.00	0.09	0.01	0.05	-	0.00	18
26.00	2,011	5.00	11.00	32,208,000.00	(2,014,049,420.92)	(1,981,841,420.92)	1.00	(0.27)	0.02	0.04	-	0.00	17
26.00	2,010	-	-	-	-	-	1.00	0.22	0.02	0.05	-	0.00	14
26.00	2,009	-	-	-	-	-	1.00	(0.20)	(0.03)	0.08	-	0.00	14
26.00	2,008	-	-	-	-	-	1.00	0.04	0.02	0.07	-	0.00	14
27.00	2,016	19.00	47.00	41,378,344.54	(34,321,496.15)	7,056,848.38	1.00	(0.05)	(0.01)	0.06	1.00	0.00	19
27.00	2,015	19.00	65.00	6,380,650.88	(25,029,937.67)	(18,649,286.79)	1.00	(0.10)	-	0.06	1.00	0.00	18
27.00	2,014	19.00	53.00	5,620,925.66	(10,870,555.60)	(5,249,629.93)	1.00	0.02	0.00	0.06	1.00	0.00	18
27.00	2,013	13.00	36.00	885,003.48	(7,367,718.70)	(6,482,715.22)	1.00	(0.07)	0.01	0.05	1.00	0.00	18
27.00	2,012	12.00	28.00	1,048,763.00	(3,144,770.51)	(2,096,007.51)	1.00	(0.12)	0.01	0.05	1.00	0.00	15
27.00	2,011	18.00	23.00	-	(6,287,510.25)	(6,287,510.25)	1.00	0.11	0.02	0.04	1.00	0.00	15
27.00	2,010	2.00	9.00	175,254.42	(572,524.60)	(397,270.18)	1.00	0.22	0.02	0.05	1.00	0.00	15
27.00	2,009	5.00	7.00	217,640.00	(776,018.21)	(558,378.21)	1.00	(0.08)	(0.03)	0.08	1.00	0.00	15
27.00	2,008	12.00	41.00	6,144,265.63	(5,745,484.71)	398,780.92	1.00	0.10	0.02	0.07	1.00	0.00	15

APPENDIX 8: SUMMARY OF DATA INPUT INTO STATA (CONTINUED)														
Name	**Year**	**dty**	**ty**	**bt**	**st**	**nt**	**os**	**rev**	**gdp**	**inf**	**dual**	**rem**	**gov**	
28.00	2,016	7.00	39.00	39,552,012.27	(67,642,971.23)	(28,090,958.96)	1.00	0.06	(0.01)	0.06	1.00	0.00	15	
28.00	2,015	7.00	29.00	10,030,795.00	(75,698,865.77)	(65,668,070.77)	1.00	(0.07)	-	0.06	1.00	0.00	17	
28.00	2,014	5.00	22.00	25,870,170.45	(11,970,207.54)	13,899,962.91	1.00	0.10	0.00	0.06	1.00	0.00	18	
28.00	2,013	7.00	20.00	13,180,881.29	(8,039,925.17)	5,140,956.12	1.00	0.09	0.01	0.05	1.00	0.00	18	
28.00	2,012	4.00	13.00	9,938,570.52	(36,343,564.45)	(26,404,993.93)	1.00	0.19	0.01	0.05	1.00	0.00	17	
28.00	2,011	5.00	9.00	5,386,701.12	(18,315,178.31)	(12,928,477.19)	1.00	0.10	0.02	0.04	1.00	0.00	17	
28.00	2,010	3.00	7.00	59,385.00	(5,684,638.70)	(5,625,253.70)	1.00	0.08	0.02	0.05	1.00	0.00	13	
28.00	2,009	9.00	12.00	1,392,529.84	(4,684,700.00)	(3,292,170.16)	1.00	0.01	(0.03)	0.08	1.00	0.00	13	
28.00	2,008	12.00	28.00	15,198,454.40	(207,561,092.98)	(192,362,638.58)	1.00	0.11	0.02	0.07	1.00	0.00	13	
29.00	2,016	12.00	18.00	-	(39,649,293.51)	(39,649,293.51)	-	0.14	(0.01)	0.06	-	0.00	18	
29.00	2,015	20.00	49.00	1,154,938,797.14	(33,276,969.35)	1,121,661,827.79	-	0.11	-	0.06	-	0.00	18	
29.00	2,014	20.00	74.00	689,735,340.40	(542,410,083.52)	147,325,256.88	-	0.11	0.00	0.06	-	0.00	18	
29.00	2,013	9.00	30.00	271,085,052.00	(615,278,857.71)	(344,193,805.71)	-	0.12	0.01	0.05	-	0.00	17	
29.00	2,012	31.00	74.00	616,874,427.09	(538,141,684.68)	78,732,742.41	-	0.15	0.01	0.05	-	0.00	16	
29.00	2,011	27.00	67.00	269,409,151.60	(47,745,168.31)	221,663,983.29	-	0.08	0.02	0.04	-	0.00	9	
29.00	2,010	29.00	71.00	252,651,477.63	(51,689,081.42)	200,962,396.21	-	0.14	0.02	0.05	-	0.01	10	
29.00	2,009	19.00	79.00	565,499,610.37	(455,033,300.36)	110,466,310.01	1.00	0.24	(0.03)	0.08	-	0.00	9	
29.00	2,008	20.00	71.00	62,783,277.53	(128,747,807.80)	(65,964,530.27)	1.00	0.22	0.02	0.07	-	0.00	9	
30.00	2,016	6.00	15.00	128,630,000.00	(5,388,049.44)	123,241,950.56	1.00	0.21	(0.01)	0.06	1.00	0.00	14	
30.00	2,015	4.00	15.00	11,202,100.64	(10,717,573.20)	484,527.44	1.00	0.17	-	0.06	1.00	0.00	14	
30.00	2,014	5.00	19.00	-	(40,152,796.18)	(40,152,796.18)	1.00	0.10	0.00	0.06	1.00	0.00	15	
30.00	2,013	5.00	16.00	22,457,173.94	(39,223,403.44)	(16,766,229.50)	1.00	0.11	0.01	0.05	1.00	0.00	15	
30.00	2,012	5.00	22.00	12,682,935.00	(77,340,143.03)	(64,657,208.03)	1.00	0.10	0.01	0.05	1.00	0.00	15	
30.00	2,011	5.00	14.00	1,262,326.04	(8,077,826.50)	(6,815,500.46)	1.00	0.10	0.02	0.04	1.00	0.00	15	
30.00	2,010	7.00	19.00	1,413,943.04	(31,228,123.10)	(29,814,180.06)	1.00	0.08	0.02	0.05	1.00	0.00	12	
30.00	2,009	3.00	8.00	6,011,427.28	(18,933,730.60)	(12,922,303.32)	1.00	0.09	(0.03)	0.08	1.00	0.00	12	
30.00	2,008	5.00	11.00	10,672,382.06	(11,076,165.72)	(403,783.66)	1.00	0.12	0.02	0.07	1.00	0.00	12	
31.00	2,016	-	-	-	-	-	1.00	(0.08)	(0.01)	0.06	1.00	0.00	20	
31.00	2,015	3.00	6.00	2,138,227.26	(1,668,697.00)	469,530.26	1.00	(0.09)	-	0.06	1.00	0.00	20	
31.00	2,014	3.00	11.00	5,546,096.00	(12,360,296.00)	(6,814,200.00)	1.00	0.21	0.00	0.06	1.00	0.00	20	
31.00	2,013	13.00	53.00	51,206,126.24	(110,333,907.63)	(59,127,781.39)	1.00	0.07	0.01	0.05	1.00	0.00	20	
31.00	2,012	5.00	16.00	18,925,778.00	(15,287,176.00)	3,638,602.00	1.00	0.12	0.01	0.05	1.00	0.00	20	
31.00	2,011	5.00	13.00	68,828,540.00	(18,595,741.00)	50,232,799.00	1.00	0.17	0.02	0.04	1.00	0.00	18	
31.00	2,010	9.00	32.00	13,484,313.00	(24,152,925.00)	(10,668,612.00)	1.00	(0.11)	0.02	0.05	1.00	0.00	17	
31.00	2,009	2.00	12.00	1,066,650.00	(7,172,738.00)	(6,106,088.00)	1.00	0.06	(0.03)	0.08	1.00	0.00	18	
31.00	2,008	14.00	47.00	34,097,122.00	(50,880,454.00)	(16,783,332.00)	1.00	0.32	0.02	0.07	1.00	0.00	18	
32.00	2,016	6.00	27.00	-	(231,208.00)	(231,208.00)	1.00	0.05	(0.01)	0.06	-	0.00	15	
32.00	2,015	-	-	-	-	-	1.00	0.04	-	0.06	-	0.00	15	
32.00	2,014	3.00	6.00	2,028,584.79	(8,173,560.00)	(6,144,975.21)	1.00	0.08	0.00	0.06	-	0.00	15	
32.00	2,013	3.00	5.00	666,176.97	(3,833,241.00)	(3,167,064.03)	1.00	0.24	0.01	0.05	-	0.00	15	
32.00	2,012	4.00	9.00	1,361,931.91	(15,477,461.00)	(14,115,529.09)	1.00	0.10	0.01	0.05	-	0.00	17	
32.00	2,011	1.00	1.00	431,655.00	-	431,655.00	1.00	0.07	0.02	0.04	-	0.00	12	
32.00	2,010	2.00	4.00	4,649,432.00	(13,540,201.00)	(8,890,769.00)	1.00	(0.10)	0.02	0.05	-	0.00	12	
32.00	2,009	2.00	3.00	798,400.00	(1,387,172.00)	(588,772.00)	1.00	0.07	(0.03)	0.08	-	0.00	14	
32.00	2,008	2.00	3.00	4,614,779.00	(853,078.34)	3,761,700.66	1.00	0.01	0.02	0.07	-	0.00	14	

APPENDIX 8: SUMMARY OF DATA INPUT INTO STATA (CONTINUED)													
Name	Year	dty	ty	bt	st	nt	os	rev	gdp	inf	dual	rem	gov
33.00	2,016	6.00	9.00	-	(2,949,689.71)	(2,949,689.71)	1.00	0.01	(0.01)	0.06	-	0.00	13
33.00	2,015	11.00	22.00	36,749,989.82	(9,533,500.71)	27,216,489.12	1.00	0.07	-	0.06	-	0.00	13
33.00	2,014	7.00	16.00	11,183,019.05	(12,704,230.95)	(1,521,211.90)	1.00	(0.02)	0.00	0.06	-	0.00	13
33.00	2,013	6.00	15.00	41,455,221.87	(12,006,356.82)	29,448,865.05	1.00	0.08	0.01	0.05	-	0.00	13
33.00	2,012	6.00	8.00	-	(24,602,128.66)	(24,602,128.66)	1.00	0.04	0.01	0.05	-	0.00	13
33.00	2,011	2.00	2.00	6,800,198.04	-	6,800,198.04	1.00	0.09	0.02	0.04	-	0.00	13
33.00	2,010	-	-	-	-	-	1.00	0.05	0.02	0.05	-	0.00	11
33.00	2,009	6.00	19.00	64,257,160.78	-	64,257,160.78	1.00	0.06	(0.03)	0.08	-	0.00	9
33.00	2,008	-	-	-	-	-	1.00	0.15	0.02	0.07	-	-	8
34.00	2,016	13.00	57.00	30,138,155.62	(137,651,806.77)	(107,513,651.15)	1.00	0.15	(0.01)	0.06	-	0.00	19
34.00	2,015	11.00	53.00	41,811,962.47	(381,627,528.26)	(339,815,565.79)	1.00	0.45	-	0.06	-	0.00	19
34.00	2,014	11.00	46.00	176,631,178.68	(72,793,602.54)	103,837,576.13	1.00	0.13	0.00	0.06	-	0.00	19
34.00	2,013	7.00	26.00	2,045,099.69	(210,133,535.63)	(208,088,435.93)	1.00	0.23	0.01	0.05	-	0.00	19
34.00	2,012	6.00	33.00	6,701,820.22	(254,315,813.58)	(247,613,993.37)	1.00	0.12	0.01	0.05	-	0.00	19
34.00	2,011	7.00	43.00	70,865,296.22	(78,960,358.66)	(8,095,062.44)	1.00	0.09	0.02	0.04	-	0.00	15
34.00	2,010	8.00	29.00	13,232,538.35	(69,094,176.02)	(55,861,637.67)	1.00	0.05	0.02	0.05	-	0.00	15
34.00	2,009	6.00	19.00	3,654,885.03	(14,000.04)	3,640,884.99	1.00	0.03	(0.03)	0.08	-	0.00	14
34.00	2,008	8.00	33.00	27,437,658.28	(13,786,587.19)	13,651,071.09	1.00	0.17	0.02	0.07	-	0.00	14
35.00	2,016	6.00	34.00	1,715,301.25	(100,618.10)	1,614,683.15	1.00	(0.06)	(0.01)	0.06	-	0.01	15
35.00	2,015	7.00	26.00	54,670.95	(48,389.00)	6,281.95	1.00	(0.06)	-	0.06	-	0.00	15
35.00	2,014	9.00	42.00	24,964,662.65	(30,252,261.28)	(5,287,598.63)	1.00	0.32	0.00	0.06	-	0.00	15
35.00	2,013	7.00	64.00	18,437,876.56	(51,905,636.98)	(33,467,760.42)	1.00	(0.55)	0.01	0.05	-	0.01	15
35.00	2,012	9.00	41.00	62,780,151.34	(121,431,815.27)	(58,651,663.93)	1.00	0.19	0.01	0.05	-	0.00	15
35.00	2,011	10.00	62.00	79,266,323.15	(62,538,631.17)	16,727,691.98	1.00	0.36	0.02	0.04	-	0.00	15
35.00	2,010	9.00	30.00	18,130,055.08	(68,447,527.61)	(50,317,472.53)	1.00	(0.00)	0.02	0.05	-	0.01	13
35.00	2,009	10.00	29.00	16,160,602.50	(18,897,669.40)	(2,737,066.90)	1.00	(0.13)	(0.03)	0.08	-	0.00	13
35.00	2,008	8.00	48.00	21,396,687.30	(98,460,591.47)	(77,063,904.17)	1.00	1.04	0.02	0.07	-	0.00	13
36.00	2,016	1.00	1.00	-	(15,839.55)	(15,839.55)	1.00	(0.14)	(0.01)	0.06	-	0.02	12
36.00	2,015	3.00	6.00	3,352,018.29	-	3,352,018.29	1.00	0.16	-	0.06	-	0.02	12
36.00	2,014	2.00	4.00	6,918,925.92	(8,627,314.00)	(1,708,388.08)	1.00	0.44	0.00	0.06	-	0.02	12
36.00	2,013	1.00	3.00	11,701,479.30	-	11,701,479.30	1.00	(0.86)	0.01	0.05	-	0.03	12
36.00	2,012	2.00	4.00	291,525.00	(25,544,585.80)	(25,253,060.80)	1.00	0.24	0.01	0.05	-	0.00	12
36.00	2,011	2.00	2.00	4,045,000.00	-	4,045,000.00	1.00	0.47	0.02	0.04	-	0.01	10
36.00	2,010	-	-	-	-	-	1.00	(0.22)	0.02	0.05	-	0.01	10
36.00	2,009	1.00	17.00	2,185,237.67	-	2,185,237.67	1.00	(0.01)	(0.03)	0.08	-	0.01	10
36.00	2,008	3.00	9.00	50,799,000.00	(110,000.00)	50,689,000.00	1.00	1.14	0.02	0.07	-	0.01	10
37.00	2,016	11.00	37.00	3,242,386.79	(47,479,201.05)	(44,236,814.26)	1.00	0.06	(0.01)	0.06	1.00	0.00	18
37.00	2,015	10.00	16.00	787,589.01	(8,537,703.42)	(7,750,114.41)	1.00	(0.04)	-	0.06	1.00	0.00	18
37.00	2,014	8.00	29.00	637,657.76	(19,354,761.07)	(18,717,103.31)	1.00	0.00	0.00	0.06	1.00	0.00	18
37.00	2,013	9.00	17.00	510,510.01	(19,472,471.08)	(18,961,961.07)	1.00	0.11	0.01	0.05	1.00	0.00	17
37.00	2,012	5.00	5.00	11,124,147.10	-	11,124,147.10	1.00	0.17	0.01	0.05	1.00	0.00	18
37.00	2,011	1.00	2.00	-	(4,190,376.38)	(4,190,376.38)	1.00	0.18	0.02	0.04	1.00	0.00	18
37.00	2,010	3.00	7.00	1,006,056.80	(1,311,285.70)	(305,228.90)	1.00	(0.06)	0.02	0.05	1.00	0.00	15
37.00	2,009	3.00	3.00	98,691.50	-	98,691.50	1.00	(0.10)	(0.03)	0.08	1.00	0.00	14
37.00	2,008	13.00	20.00	3,227,628.70	(3,713,800.00)	(486,171.30)	1.00	12.52	0.02	0.07	1.00	0.00	14
38.00	2,016	3.00	17.00	7,046,775.34	(145,586,502.29)	(138,539,726.95)	1.00	0.22	(0.01)	0.06	1.00	0.00	16
38.00	2,015	3.00	15.00	24,415,310.67	(318,188,290.31)	(293,772,979.64)	1.00	0.16	-	0.06	1.00	0.00	16
38.00	2,014	3.00	20.00	31,189,483.24	(76,534,960.28)	(45,345,477.05)	1.00	0.15	0.00	0.06	1.00	0.00	16
38.00	2,013	5.00	19.00	45,928,678.67	(113,118,239.11)	(67,189,560.44)	1.00	0.23	0.01	0.05	1.00	0.00	16
38.00	2,012	1.00	2.00	2,492,132.77	-	2,492,132.77	1.00	0.39	0.01	0.05	1.00	0.00	16
38.00	2,011	5.00	13.00	11,328,932.97	(1,709,108.75)	9,619,824.22	1.00	1.11	0.02	0.04	1.00	0.00	16
38.00	2,010	6.00	12.00	36,599,690.06	-	36,599,690.06	1.00	0.37	0.02	0.05	1.00	0.01	16
38.00	2,009	-	-	-	-	-	1.00	0.85	(0.03)	0.08	1.00	0.01	16
38.00	2,008	-	-	-	-	-	1.00	0.28	0.02	0.07	1.00	0.01	16

APPENDIX 8: SUMMARY OF DATA INPUT INTO STATA (CONTINUED)													
Name	Year	dty	ty	bt	st	nt	os	rev	gdp	inf	dual	rem	gov
39.00	2,016	12.00	40.00	35,034,980.92	(123,147,729.11)	(88,112,748.19)	1.00	0.05	(0.01)	0.06	-	0.08	16
39.00	2,015	8.00	39.00	23,245,697.83	(228,965,781.92)	(205,720,084.09)	1.00	(0.02)	-	0.06	-	0.09	16
39.00	2,014	17.00	62.00	33,100,870.47	(654,261,598.23)	(621,160,727.76)	1.00	0.17	0.00	0.06	-	0.11	16
39.00	2,013	9.00	30.00	14,082,112.03	(86,446,117.14)	(72,364,005.11)	1.00	(0.12)	0.01	0.05	-	0.03	16
39.00	2,012	17.00	75.00	246,569,803.48	(292,516,085.47)	(45,946,281.99)	1.00	(0.05)	0.01	0.05	-	0.03	15
39.00	2,011	13.00	75.00	675,244,442.59	(545,614,773.94)	129,629,668.66	1.00	(0.05)	0.02	0.04	-	0.01	13
39.00	2,010	6.00	41.00	11,477,374.97	(31,289,647.06)	(19,812,272.09)	1.00	(0.12)	0.02	0.05	-	0.03	13
39.00	2,009	5.00	41.00	43,460,351.35	(13,181,761.37)	30,278,589.98	1.00	(0.13)	(0.03)	0.08	-	0.02	14
39.00	2,008	6.00	26.00	13,942,961.96	(2,198,444.02)	11,744,517.94	1.00	0.49	0.02	0.07	-	0.01	14
40.00	2,016	13.00	95.00	11,883,489.22	(523,125,093.65)	(511,241,604.43)	1.00	0.18	(0.01)	0.06	-	0.00	19
40.00	2,015	8.00	73.00	209,796.55	(14,345,700.31)	(14,135,903.76)	1.00	(0.01)	-	0.06	-	0.00	19
40.00	2,014	11.00	66.00	271,563.36	(15,157,756.10)	(14,886,192.74)	1.00	0.21	0.00	0.06	-	0.00	19
40.00	2,013	5.00	59.00	9,262,035.68	(21,060,666.11)	(11,798,630.43)	1.00	(0.24)	0.01	0.05	-	0.00	19
40.00	2,012	7.00	62.00	42,687,898.71	(18,602,736.90)	24,085,161.81	1.00	(0.04)	0.01	0.05	-	0.00	18
40.00	2,011	9.00	84.00	10,709,684.41	(17,541,396.11)	(6,831,711.70)	1.00	1.07	0.02	0.04	-	0.00	14
40.00	2,010	10.00	35.00	1,219,790.01	(2,359,967.22)	(1,140,177.21)	1.00	(0.38)	0.02	0.05	-	0.00	14
40.00	2,009	2.00	13.00	1,369,352.01	(2,739,832.70)	(1,370,480.69)	1.00	0.12	(0.03)	0.08	-	0.00	13
40.00	2,008	10.00	38.00	11,236,929.04	(8,102,098.50)	3,134,830.54	1.00	0.32	0.02	0.07	-	0.00	14
41.00	2,016	2.00	5.00	7,473,620.48	-	7,473,620.48	1.00	0.06	(0.01)	0.06	-	0.00	18
41.00	2,015	8.00	35.00	153,999,750.98	(11,469,071.19)	142,530,679.79	1.00	0.07	-	0.06	-	0.00	18
41.00	2,014	13.00	72.00	145,744,600.18	(29,421,514.09)	116,323,086.09	1.00	0.11	0.00	0.06	-	0.00	18
41.00	2,013	8.00	34.00	58,383,264.09	(58,659,170.33)	(275,906.24)	-	0.17	0.01	0.05	-	0.00	18
41.00	2,012	8.00	45.00	137,218,540.94	(129,633,523.74)	7,585,017.20	-	0.25	0.01	0.05	-	0.00	17
41.00	2,011	10.00	35.00	122,614,997.62	(52,291,932.35)	70,323,065.27	-	0.21	0.02	0.04	-	0.00	17
41.00	2,010	2.00	6.00	7,930,100.00	(5,078,489.20)	2,851,610.80	-	0.02	0.02	0.05	-	0.00	15
41.00	2,009	8.00	29.00	74,705,098.20	(17,217,607.50)	57,487,490.70	1.00	(0.07)	(0.03)	0.08	-	0.00	14
41.00	2,008	3.00	35.00	22,778,367.55	(13,655,454.67)	9,122,912.88	1.00	(0.14)	0.02	0.07	-	0.00	14
42.00	2,016	8.00	30.00	-	(2,582,598.01)	(2,582,598.01)	1.00	0.13	(0.01)	0.06	-	0.00	19
42.00	2,015	3.00	9.00	-	-	-	1.00	(0.24)	-	0.06	-	0.00	19
42.00	2,014	6.00	17.00	-	(3,942,086.77)	(3,942,086.77)	1.00	(0.13)	0.00	0.06	-	0.00	18
42.00	2,013	6.00	17.00	6,177,837.60	(6,740,637.65)	(562,800.05)	1.00	0.20	0.01	0.05	-	0.00	17
42.00	2,012	7.00	26.00	11,441,628.87	(29,913,758.31)	(18,472,129.44)	1.00	(0.06)	0.01	0.05	-	0.00	16
42.00	2,011	8.00	57.00	11,775,683.46	(26,937,356.71)	(15,161,673.25)	1.00	0.25	0.02	0.04	-	0.00	17
42.00	2,010	5.00	13.00	1,931,279.60	(8,536,435.86)	(6,605,156.26)	1.00	0.65	0.02	0.05	-	0.00	13
42.00	2,009	5.00	15.00	15,282,249.34	(3,914,750.00)	11,367,499.34	1.00	0.10	(0.03)	0.08	-	0.00	13
42.00	2,008	6.00	26.00	2,628,301.50	(10,417,154.20)	(7,788,852.70)	1.00	0.86	0.02	0.07	-	0.00	13
43.00	2,016	6.00	35.00	2,510,468.00	(10,917,765.73)	(8,407,297.73)	1.00	0.05	(0.01)	0.06	-	0.00	19
43.00	2,015	7.00	44.00	15,857,329.51	(51,802,996.27)	(35,945,666.76)	1.00	(0.07)	-	0.06	-	0.00	19
43.00	2,014	6.00	38.00	1,197,899.20	(14,100,648.21)	(12,902,749.01)	1.00	0.18	0.00	0.06	-	0.00	19
43.00	2,013	3.00	12.00	-	(4,109,905.61)	(4,109,905.61)	1.00	0.16	0.01	0.05	-	0.00	19
43.00	2,012	3.00	4.00	359,893.49	(733,645.15)	(373,751.66)	1.00	0.13	0.01	0.05	-	0.00	18
43.00	2,011	3.00	6.00	346,023.67	(133,405.13)	212,618.54	1.00	0.20	0.02	0.04	-	0.00	18
43.00	2,010	2.00	9.00	6,314,934.40	(11,133,981.04)	(4,819,046.64)	1.00	0.01	0.02	0.05	-	0.00	15
43.00	2,009	2.00	3.00	27,156.00	(13,623.51)	13,532.49	1.00	(0.02)	(0.03)	0.08	-	0.00	15
43.00	2,008	1.00	1.00	-	(21,925.00)	(21,925.00)	1.00	(0.03)	0.02	0.07	-	0.00	15

APPENDIX 8: SUMMARY OF DATA INPUT INTO STATA (CONTINUED)													
Name	**Year**	**dty**	**ty**	**bt**	**st**	**nt**	**os**	**rev**	**gdp**	**inf**	**dual**	**rem**	**gov**
44.00	2,016	4.00	12.00	-	(1,654,703.53)	(1,654,703.53)	1.00	0.08	(0.01)	0.06	-	0.00	15
44.00	2,015	4.00	9.00	-	-	-	1.00	0.08	-	0.06	-	0.00	15
44.00	2,014	5.00	10.00	2,260,970.51	(593,104.25)	1,667,866.26	1.00	0.08	0.00	0.06	-	0.00	15
44.00	2,013	2.00	8.00	45,790,660.26	(21,765,292.14)	24,025,368.11	1.00	1.00	0.01	0.05	-	0.00	15
44.00	2,012	20.00	75.00	144,219,935.55	(181,336,633.92)	(37,116,698.37)	1.00	(0.41)	0.01	0.05	-	0.00	15
44.00	2,011	21.00	55.00	138,198,646.90	(368,413,487.46)	(230,214,840.56)	1.00	0.16	0.02	0.04	-	0.00	15
44.00	2,010	21.00	72.00	36,525,325.00	(125,044,990.39)	(88,519,665.39)	1.00	0.12	0.02	0.05	-	0.00	17
44.00	2,009	16.00	72.00	71,918,520.96	(107,482,445.15)	(35,563,924.19)	1.00	0.10	(0.03)	0.08	-	0.00	16
44.00	2,008	30.00	105.00	40,678,447.94	(81,027,432.56)	(40,348,984.62)	1.00	0.08	0.02	0.07	-	0.00	16
45.00	2,016	4.00	5.00	1,637,910.61	(1,275,200.58)	362,710.03	1.00	0.07	(0.01)	0.06	-	0.00	16
45.00	2,015	2.00	4.00	5,870,416.60	(11,872,864.59)	(6,002,447.99)	1.00	0.08	-	0.06	-	0.00	16
45.00	2,014	2.00	3.00	6,184,554.00	-	6,184,554.00	1.00	0.06	0.00	0.06	-	0.00	17
45.00	2,013	-	-	-	-	-	1.00	0.06	0.01	0.05	-	0.00	16
45.00	2,012	1.00	2.00	-	(12,017,524.84)	(12,017,524.84)	1.00	0.01	0.01	0.05	-	0.00	17
45.00	2,011	4.00	10.00	6,697,882.20	(44,308,269.52)	(37,610,387.32)	1.00	0.14	0.02	0.04	-	0.00	16
45.00	2,010	6.00	17.00	15,717,792.95	(37,969,147.14)	(22,251,354.19)	1.00	0.06	0.02	0.05	-	0.00	16
45.00	2,009	2.00	2.00	2,774,339.12	-	2,774,339.12	1.00	(0.02)	(0.03)	0.08	-	0.00	16
45.00	2,008	3.00	6.00	1,800,000.00	(2,063,904.30)	(263,904.30)	1.00	0.17	0.02	0.07	-	0.00	14
46.00	2,016	5.00	22.00	-	(1,620,855.63)	(1,620,855.63)	1.00	0.47	(0.01)	0.06	1.00	0.00	16
46.00	2,015	2.00	5.00	-	(90,540,994.48)	(90,540,994.48)	1.00	0.08	-	0.06	1.00	0.00	14
46.00	2,014	7.00	39.00	23,552,526.97	(301,755,575.12)	(278,203,048.15)	1.00	0.07	0.00	0.06	1.00	0.00	16
46.00	2,013	8.00	23.00	7,186,070.92	(97,394,940.21)	(90,208,869.29)	1.00	0.11	0.01	0.05	1.00	0.00	15
46.00	2,012	6.00	17.00	1,851,114.68	(100,518,090.69)	(98,666,976.01)	1.00	0.12	0.01	0.05	1.00	0.00	15
46.00	2,011	6.00	10.00	4,008,000.00	(122,907,121.76)	(118,899,121.76)	1.00	0.13	0.02	0.04	1.00	0.00	13
46.00	2,010	6.00	20.00	56,458,120.04	(41,313,884.41)	15,144,235.63	1.00	0.11	0.02	0.05	1.00	0.00	13
46.00	2,009	9.00	14.00	14,902,286.20	(47,686,852.00)	(32,784,565.80)	1.00	0.10	(0.03)	0.08	1.00	0.00	13
46.00	2,008	9.00	29.00	15,550,555.16	(44,991,180.64)	(29,440,625.48)	1.00	0.17	0.02	0.07	1.00	0.00	13

Appendix 9: Summary of directors' share trades-dually listed vs single listed

APPENDIX 9: SUMMARY OF DIRECTORS' SHARE TRADES-DUALLY LISTED VS SINGLE LISTED						
Dually Listed Company Name	**No. of Directors who traded/year**	**Ave. No. of Trades by Directors /year**		**Single Listed Company Name**	**No. of Directors who traded/year**	**Ave. No. of Trades by Directors /year**
Anglo American plc	9	38		AngloGold Ashanti Ltd.	4	10
BHP Billiton Plc	2	4		Anglo American Platinum Ltd.	8	29
British American Tobacco plc	4	23		Aspen Pharmacare Holdings Ltd.	9	16
Investec Ltd.	5	11		Barclays Africa Group Ltd.	5	9
Intu Properties plc	8	26		The Bidvest Group Ltd.	8	27
Mediclinic International plc	5	10		Discovery Ltd.	10	31
Mondi Ltd.	4	13		FirstRand Ltd.	5	14
Old Mutual plc	4	9		Gold Fields Ltd.	11	36
Redefine Properties Ltd.	5	24		Growthpoint Properties Ltd.	16	46
Capital & Counties Properties PLC	5	15		Impala Platinum Holdings Ltd.	5	8
				Life Healthcare Group Holdings Ltd.	7	26
Highest	**9**	**38**		Mr Price Group Ltd.	5	17
Lowest	**2**	**4**		MTN Group Ltd.	5	14
Average	**5.1**	**17.3**		Nedbank Group Ltd.	8	29
				Naspers Ltd.	4	12
				Netcare Ltd.	7	27
				Remgro Ltd.	7	17
				RMB Holdings Ltd.	4	5
				Sappi Ltd.	12	33
				Standard Bank Group Ltd.	7	20
				Shoprite Holdings Ltd.	19	56
				Sanlam Ltd.	5	14
				Sasol Ltd.	7	24
				Tiger Brands Ltd.	3	9
				Vodacom Group Ltd.	5	14
				Woolworths Holdings Ltd.	8	32
				African Rainbow Minerals Ltd.	8	45
				Assore Ltd.	4	6
				Barloworld Ltd.	8	18
				Capitec Bank Holdings Ltd.	10	46
				Exxaro Resources Ltd.	8	52
				Imperial Holdings Ltd.	7	30
				Kumba Iron Ore Ltd.	5	21
				Liberty Holdings Ltd.	4	16
				Massmart Holdings Ltd.	12	49
				Pick n Pay Stores Ltd.	4	7
				Truworths International Ltd.	6	19
				Highest	**19.00**	**56.00**
				Lowest	**3.00**	**5.00**
				Average	**7.30**	**23.89**

Appendix 10: Directors' net trades of shares

APPENDIX 10: DIRECTORS' NET TRADES OF SHARES							
Company Name	**Year**	***Average No.of Directors who trade/year***	***Average No.of Trades by Directors/year***	**Buy Trans. Value**	**Sell Trans. Value**	**Net Trades (Buy/Sell)**	**Currency**
				converted to £/€/R	*converted to £/€/R*		
Anglo American plc	2008-2016	8	37	3,879,533.30	- 6,493,676.41	- 2,614,143.12	GBP
AngloGold Ashanti Ltd.	2008-2016	4	10	100,208,340.31	- 57,529,112.23	42,679,228.08	ZAR
Anglo American Platinum Ltd.	2008-2016	8	29	197,498,286.80	- 348,693,896.49	- 151,195,609.69	ZAR
Aspen Pharmacare Holdings Ltd.	2008-2016	10	17	156,059,031.62	- 162,161,202.92	- 6,102,171.29	ZAR
Barclays Africa Group Ltd.	2008-2016	4	8	59,732,479.40	- 47,219,844.68	12,512,634.72	ZAR
BHP Billiton Plc	2008-2016	2	4	1,966,070.90	- 8,321,832.00	- 6,355,761.10	GBP
British American Tobacco plc	2008-2016	4	23	15,001,774.11	- 12,971,173.28	2,030,600.83	GBP
Bidvest Group Ltd.	2008-2016	9	28	182,767,780.99	- 1,472,272,667.00	- 1,289,504,886.01	ZAR
Discovery Ltd.	2008-2016	10	32	2,576,743,605.19	- 2,916,343,453.45	- 339,599,848.26	ZAR
FirstRand Ltd.	2008-2016	5	12	846,336,723.65	- 798,213,104.72	48,123,618.93	ZAR
Gold Fields Ltd.	2008-2016	12	40	101,395,190.80	- 209,827,726.80	- 108,432,535.99	ZAR
Growthpoint Properties Ltd.	2008-2016	16	50	988,875,393.88	- 1,587,486,787.40	- 598,611,393.52	ZAR
Impala Platinum Holdings Ltd.	2008-2016	3	7	3,860,547.02	- 16,420,598.59	- 12,560,051.57	ZAR
Investec Ltd.	2008-2016	5	10	213,802,997.73	- 852,797,645.27	- 638,994,647.54	ZAR
Intu Properties plc	2008-2016	9	23	398,500,692.41	- 10,323,584.92	388,177,107.49	GBP
Life Healthcare Group Holdings Ltd.	2008-2016	5	21	26,811,755.99	- 145,179,189.73	- 118,367,433.74	ZAR
Mondi Ltd.	2008-2016	4	13	3,191,160.96	- 194,409,356.77	- 191,218,195.81	ZAR
Mr Price Group Ltd.	2008-2016	5	19	183,449,865.45	- 1,388,836,274.18	- 1,205,386,408.73	ZAR
MTN Group Ltd.	2008-2016	6	15	1,065,670,038.19	- 1,783,840,447.95	- 718,170,409.76	ZAR
Nedbank Group Ltd.	2008-2016	8	31	291,328,306.02	- 345,915,818.67	- 54,587,512.65	ZAR
Naspers Ltd.	2008-2016	4	12	390,227,634.70	- 2,202,212,761.62	- 1,811,985,126.92	ZAR
Netcare Ltd.	2008-2016	6	27	158,436,084.86	- 648,662,835.86	- 490,226,751.00	ZAR
Old Mutual plc	2008-2016	4	10	6,243,686.11	- 29,073,000.06	- 22,829,313.94	GBP
Redefine Properties Ltd.	2008-2016	5	28	514,226,161.46	- 223,139,232.95	291,086,928.51	ZAR
Remgro Ltd.	2008-2016	9	19	659,919,011.08	- 257,733,168.70	402,185,842.38	ZAR
RMB Holdings Ltd.	2008-2016	2	5	56,621,630.70	- 2,461,295,556.16	- 2,404,673,925.47	ZAR
Sappi Ltd.	2008-2016	13	34	61,850,847.61	- 94,116,016.39	- 32,265,168.79	ZAR
Standard Bank Group Ltd.	2008-2016	7	20	120,609,499.89	- 435,941,144.15	- 315,331,644.26	ZAR
Shoprite Holdings Ltd.	2008-2016	21	59	3,882,977,133.76	- 2,451,972,246.65	1,431,004,887.10	ZAR
Sanlam Ltd.	2008-2016	5	15	194,332,288.00	- 242,137,811.21	- 47,805,523.21	ZAR
Sasol Ltd.	2008-2016	7	24	195,292,852.50	- 240,451,934.63	- 45,159,082.13	ZAR
Tiger Brands Ltd.	2008-2016	3	7	14,550,959.67	- 43,495,921.34	- 28,944,961.67	ZAR
Vodacom Group Ltd.	2008-2016	6	13	160,445,589.56	- 61,795,906.84	98,649,682.72	ZAR
Woolworths Holdings Ltd.	2008-2016	9	38	372,518,594.56	- 1,218,377,408.69	- 845,858,814.13	ZAR
African Rainbow Minerals Ltd.	2008-2016	8	42	242,906,330.78	- 452,083,140.28	- 209,176,809.50	ZAR
Assore Ltd.	2008-2016	2	6	79,293,186.18	- 34,297,739.34	44,995,446.84	ZAR
Barloworld Ltd.	2008-2016	7	15	20,634,667.67	- 104,059,598.70	- 83,424,931.03	ZAR
Capital & Counties Properties PLC	2008-2016	4	14	10,794,190.38	- 35,505,474.91	- 24,711,284.53	GBP
Capitec Bank Holdings Ltd.	2008-2016	10	48	1,096,158,595.59	- 1,977,621,938.27	- 881,463,342.67	ZAR
Exxaro Resources Ltd.	2008-2016	8	58	88,850,538.99	- 623,035,247.60	- 534,184,708.61	ZAR
Imperial Holdings Ltd.	2008-2016	7	33	730,848,340.04	- 317,426,763.07	413,421,576.97	ZAR
Kumba Iron Ore Ltd.	2008-2016	6	23	49,236,980.37	- 92,984,777.51	- 43,747,797.14	ZAR
Liberty Holdings Ltd.	2008-2016	4	17	26,613,704.27	- 92,967,895.65	- 66,354,191.38	ZAR
Massmart Holdings Ltd.	2008-2016	14	46	479,592,507.12	- 887,318,089.39	- 407,725,582.28	ZAR
Pick n Pay Stores Ltd.	2008-2016	3	6	40,682,895.48	- 109,506,910.97	- 68,824,015.49	ZAR
Truworths International Ltd.	2008-2016	6	20	123,508,673.97	- 848,729,494.94	- 725,220,820.97	ZAR

Appendix 11: VaR calculations

APPENDIX 11: VaR CALCULATIONS			
Aspen Pharmacare Holdings Ltd. Parameters			
Market Capitalisation	101,883,423,148.69	101,883,423,148.69	101,883,423,148.69
Average Return	-0.000556176	-0.000556176	-0.000556176
Standard Deviation	0.016048362	0.016048362	0.016048362
Confidence Level	0.95	0.99	0.999
Calculations			
Min Return with 95% prob	-0.026953382	-0.037890248	-0.050149342
Market Cap after event	99,137,320,295.71	98,023,034,929.22	96,774,036,499.60
Value at Risk	**2,746,102,852.98**	**3,860,388,219.47**	**5,109,386,649.09**
Netcare Ltd. Parameters			
Market Capitalisation	15,329,000,000.00	15,329,000,000.00	15,329,000,000.00
Average Return	-0.001841852	-0.001841852	-0.001841852
Standard Deviation	0.020867313	0.020867313	0.020867313
Confidence Level	0.95	0.99	0.999
Calculations			
Min Return with 95% prob	-0.036165527	-0.05038648	-0.066326696
Market Cap after event	14,774,618,639.99	14,556,625,641.50	14,312,278,079.39
Value at Risk	**554,381,360.01**	**772,374,358.50**	**1,016,721,920.61**
MTN Group Ltd. Parameters: Event 29 March 2012			
Market Capitalisation	334,434,449,803.20	334,434,449,803.20	334,434,449,803.20
Average Return	0.000599775	0.000599775	0.000599775
Standard Deviation	0.01536679	0.01536679	0.01536679
Confidence Level	0.95	0.99	0.999
Calculations			
Min Return with 95% prob	-0.024676345	-0.035148724	-0.046887176
Market Cap after event	326,181,829,928.46	322,679,505,603.64	318,753,762,958.84
Value at Risk	**8,252,619,874.74**	**11,754,944,199.56**	**15,680,686,844.36**

APPENDIX 11: VaR CALCULATIONS			
MTN Group Ltd. Parameters: Event 28 November 2013			
Market Capitalisation	388,232,072,530.83	388,232,072,530.83	388,232,072,530.83
Average Return	0.000943511	0.000943511	0.000943511
Standard Deviation	0.015184409	0.015184409	0.015184409
Confidence Level	0.95	0.99	0.999
Calculations			
Min Return with 95% prob	-0.024032619	-0.034380707	-0.04597984
Market Cap after event	378,901,838,894.33	374,884,379,515.13	370,381,223,854.48
Value at Risk	**9,330,233,636.50**	**13,347,693,015.71**	**17,850,848,676.35**
MTN Group Ltd. Parameters: Event 26 October 2015			
Market Capitalisation	233,339,467,889.45	233,339,467,889.45	233,339,467,889.45
Average Return	-0.001725817	-0.018258174	-0.001725817
Standard Deviation	0.03229524	0.03229524	0.03229524
Confidence Level	0.95	0.99	0.999
Calculations			
Min Return with 95% prob	-0.054846761	-0.076855781	-0.101525612
Market Cap after event	220,541,553,959.72	215,405,980,828.79	209,649,535,515.38
Value at Risk	**12,488,591,239.15**	**23,753,119,485.75**	**42,052,721,278.71**
Tiger Brands Ltd.-Albany Bakeries Parameters: Event 14 Feb 2007			
Market Capitalisation	28,661,805,648.00	28,661,805,648.00	28,661,805,648.00
Average Return	0.001651973	0.001651973	0.001651973
Standard Deviation	0.014429225	0.014429225	0.014429225
Confidence Level	0.95	0.99	0.999
Calculations			
Min Return with 95% prob	-0.022081991	-0.031915425	-0.042937685
Market Cap after event	28,028,895,925.71	27,747,051,947.27	27,431,134,053.10
Value at Risk	**632,909,722.29**	**914,753,700.73**	**1,230,671,594.90**

APPENDIX 11: VaR CALCULATIONS			
Tiger Brands Ltd.-Adcock Ingram Critical Care (Pty) Ltd ("AICC") Parameters: Event 11 Feb 2008			
Market Capitalisation	24,729,959,098.24	24,729,959,098.24	24,729,959,098.24
Average Return	-0.001128096	-0.001128096	-0.001128096
Standard Deviation	0.017646319	0.017646319	0.017646319
Confidence Level	0.95	0.99	0.999
Calculations			
Min Return with 95% prob	-0.030153707	-0.042179572	-0.05565932
Market Cap after event	23,984,259,154.31	23,686,860,011.63	23,353,506,390.25
Value at Risk	**745,699,943.93**	**1,043,099,086.61**	**1,376,452,707.99**
Massmart Holdings Ltd. Parameters			
Market Capitalisation	16,104,200,000.00	16,104,200,000.00	16,104,200,000.00
Average Return	0.000296094	0.000296094	0.000296094
Standard Deviation	0.021024169	0.021024169	0.021024169
Confidence Level	0.95	0.99	0.999
Calculations			
Min Return with 95% prob	-0.034285587	-0.048613437	-0.064673472
Market Cap after event	15,552,058,055.16	15,321,319,489.29	15,062,685,466.90
Value at Risk	**552,141,944.84**	**782,880,510.71**	**1,041,514,533.10**
Shoprite Holdings Ltd. Parameters			
Market Capitalisation	35,445,730,381.20	35,445,730,381.20	35,445,730,381.20
Average Return	0.000671057	0.000671057	0.000671057
Standard Deviation	0.017020503	0.017020503	0.017020503
Confidence Level	0.95	0.99	0.999
Calculations			
Min Return with 95% prob	-0.027325179	-0.038924555	-0.051926252
Market Cap after event	34,477,169,438.13	34,066,021,112.22	33,605,166,443.54
Value at Risk	**968,560,943.07**	**1,379,709,268.98**	**1,840,563,937.66**
Woolworths Holdings Ltd. Parameters			
Market Capitalisation	10,374,000,000.00	10,374,000,000.00	10,374,000,000.00
Average Return	0.001181577	0.001181577	0.001181577
Standard Deviation	0.021937554	0.021937554	0.021937554
Confidence Level	0.95	0.99	0.999
Calculations			
Min Return with 95% prob	-0.034902488	-0.049852804	-0.06661056
Market Cap after event	10,011,921,592.47	9,856,827,007.85	9,682,982,049.94
Value at Risk	**362,078,407.53**	**517,172,992.15**	**691,017,950.06**

APPENDIX 11: VaR CALCULATIONS			
Liberty Holdings Ltd. Parameters			
Market Capitalisation	22,747,000,000.00	22,747,000,000.00	22,747,000,000.00
Average Return	-0.00002994	-0.00002994	-0.00002994
Standard Deviation	0.01133052	0.01133052	0.01133052
Confidence Level	0.95	0.99	0.999
Calculations			
Min Return with 95% prob	-0.018666985	-0.026388669	-0.035043877
Market Cap after event	22,322,382,091.45	22,146,736,938.53	21,949,856,923.09
Value at Risk	**424,617,908.55**	**600,263,061.47**	**797,143,076.91**
Mediclinic Parameters: Event 26 Feb 2013			
Market Capitalisation	31,425,713,974.00	31,425,713,974.00	31,425,713,974.00
Average Return	0.00229977	0.00229977	0.00229977
Standard Deviation	0.01505838	0.01505838	0.01505838
Confidence Level	0.95	0.99	0.999
Calculations			
Min Return with 95% prob	-0.022469059	-0.032731258	-0.04423412
Market Cap after event	30,719,607,752.36	30,397,110,818.28	30,035,625,173.44
Value at Risk	**706,106,221.64**	**1,028,603,155.72**	**1,390,088,800.56**
British American Tobacco plc			
Market Capitalisation	265,342,319,525.84	265,342,319,525.84	265,342,319,525.84
Average Return	0.00134803	0.00134803	0.00134803
Standard Deviation	0.012558437	0.012558437	0.012558437
Confidence Level	0.95	0.99	0.999
Calculations			
Min Return with 95% prob	-0.019308758	-0.02786726	-0.037460454
Market Cap after event	260,218,888,941.66	257,947,956,094.34	255,402,475,694.64
Value at Risk	**5,728,374,201.03**	**7,466,684,369.92**	**11,258,906,519.02**

Appendix 12: s-Gini calculations

APPENDIX 12: s-GINI CALCULATIONS														
Company Name	Name	Sector	Year	Ave. Wages/m (R)	Ave. Emp.Wages/y (R)	No. of Emp/industry	Exec. Packages/y (R)	Times		Yi-Yj	μ	N	N-1	GINI
Anglo American plc	1	Mining-Metals & Minerals	2016	22,141	265,692	460,000	79,924,132	301		79,658,440	40,094,912	460,000	459,999	0.99
Anglo American plc	1	Mining-Metals & Minerals	2015	21,009	252,108	459,000	66,662,098	264		66,409,990	33,457,103	459,000	458,999	0.99
Anglo American plc	1	Mining-Metals & Minerals	2014	15,332	183,984	486,000	66,510,918	362		66,326,934	33,347,451	486,000	485,999	0.99
Anglo American plc	1	Mining-Metals & Minerals	2013	17,631	211,572	499,000	80,108,842	379		79,897,270	40,160,207	499,000	498,999	0.99
Anglo American plc	1	Mining-Metals & Minerals	2012	15,837	190,044	515,000	26,353,026	139		26,162,982	13,271,535	515,000	514,999	0.99
Anglo American plc	1	Mining-Metals & Minerals	2011	13,994	167,928	518,000	25,272,120	150		25,104,192	12,720,024	518,000	517,999	0.99
Anglo American plc	1	Mining-Metals & Minerals	2010	12,944	155,328	504,000	17,786,713	115		17,631,385	8,971,021	504,000	503,999	0.98
Anglo American plc	1	Mining-Metals & Minerals	2009	12,035	144,420	488,000	21,199,461	147		21,055,041	10,671,941	488,000	487,999	0.99
Anglo American plc	1	Mining-Metals & Minerals	2008	10,453	125,436	518,000	23,716,232	189		23,590,796	11,920,834	518,000	517,999	0.99
AngloGold Ashanti Ltd.	2	Mining-Gold	2016	22,141	265,692	460,000	26,901,000	101		26,635,308	13,583,346	460,000	459,999	0.98
AngloGold Ashanti Ltd.	2	Mining-Gold	2015	21,009	252,108	459,000	24,333,000	97		24,080,892	12,292,554	459,000	458,999	0.98
AngloGold Ashanti Ltd.	2	Mining-Gold	2014	15,332	183,984	486,000	16,119,000	88		15,935,016	8,151,492	486,000	485,999	0.98
AngloGold Ashanti Ltd.	2	Mining-Gold	2013	17,631	211,572	499,000	17,956,000	85		17,744,428	9,083,786	499,000	498,999	0.98
AngloGold Ashanti Ltd.	2	Mining-Gold	2012	15,837	190,044	515,000	43,271,000	228		43,080,956	21,730,522	515,000	514,999	0.99
AngloGold Ashanti Ltd.	2	Mining-Gold	2011	13,994	167,928	518,000	112,183,000	668		112,015,072	56,175,464	518,000	517,999	1.00
AngloGold Ashanti Ltd.	2	Mining-Gold	2010	12,944	155,328	504,000	22,424,000	144		22,268,672	11,289,664	504,000	503,999	0.99
AngloGold Ashanti Ltd.	2	Mining-Gold	2009	12,035	144,420	488,000	20,981,000	145		20,836,580	10,562,710	488,000	487,999	0.99
AngloGold Ashanti Ltd.	2	Mining-Gold	2008	10,453	125,436	518,000	16,891,000	135		16,765,564	8,508,218	518,000	517,999	0.99
Anglo American Platinum Ltd.	3	Mining-Platinum	2016	22,141	265,692	460,000	23,855,404	90		23,589,712	12,060,548	460,000	459,999	0.98
Anglo American Platinum Ltd.	3	Mining-Platinum	2015	21,009	252,108	459,000	24,326,626	96		24,074,518	12,289,367	459,000	458,999	0.98
Anglo American Platinum Ltd.	3	Mining-Platinum	2014	15,332	183,984	486,000	18,492,937	101		18,308,953	9,338,461	486,000	485,999	0.98
Anglo American Platinum Ltd.	3	Mining-Platinum	2013	17,631	211,572	499,000	17,564,638	83		17,353,066	8,888,105	499,000	498,999	0.98
Anglo American Platinum Ltd.	3	Mining-Platinum	2012	15,837	190,044	515,000	8,389,285	44		8,199,241	4,289,665	515,000	514,999	0.96
Anglo American Platinum Ltd.	3	Mining-Platinum	2011	13,994	167,928	518,000	21,534,951	128		21,367,023	10,851,440	518,000	517,999	0.98
Anglo American Platinum Ltd.	3	Mining-Platinum	2010	12,944	155,328	504,000	19,850,607	128		19,695,279	10,002,968	504,000	503,999	0.98
Anglo American Platinum Ltd.	3	Mining-Platinum	2009	12,035	144,420	488,000	8,829,567	61		8,685,147	4,486,994	488,000	487,999	0.97
Anglo American Platinum Ltd.	3	Mining-Platinum	2008	10,453	125,436	518,000	3,685,302	29		3,559,866	1,905,369	518,000	517,999	0.93
Aspen Pharmacare Holdings Ltd.	4	Manufacturing-Pharmaceutical	2016	16,376	196,512	1,130,000	17,496,000	89		17,299,488	8,846,256	1,130,000	1,129,999	0.98
Aspen Pharmacare Holdings Ltd.	4	Manufacturing-Pharmaceutical	2015	15,692	188,304	1,149,000	16,387,000	87		16,198,696	8,287,652	1,149,000	1,148,999	0.98
Aspen Pharmacare Holdings Ltd.	4	Manufacturing-Pharmaceutical	2014	13,636	163,632	1,146,000	15,340,000	94		15,176,368	7,751,816	1,146,000	1,145,999	0.98
Aspen Pharmacare Holdings Ltd.	4	Manufacturing-Pharmaceutical	2013	13,926	167,112	1,149,000	14,563,000	87		14,395,888	7,365,056	1,149,000	1,148,999	0.98
Aspen Pharmacare Holdings Ltd.	4	Manufacturing-Pharmaceutical	2012	13,024	156,288	1,149,000	14,979,000	96		14,822,712	7,567,644	1,149,000	1,148,999	0.98
Aspen Pharmacare Holdings Ltd.	4	Manufacturing-Pharmaceutical	2011	12,214	146,568	1,158,000	13,100,000	89		12,953,432	6,623,284	1,158,000	1,157,999	0.98
Aspen Pharmacare Holdings Ltd.	4	Manufacturing-Pharmaceutical	2010	11,017	132,204	1,164,000	9,929,000	75		9,796,796	5,030,602	1,164,000	1,163,999	0.97
Aspen Pharmacare Holdings Ltd.	4	Manufacturing-Pharmaceutical	2009	9,870	118,440	1,185,000	8,500,000	72		8,381,560	4,309,220	1,185,000	1,184,999	0.97
Aspen Pharmacare Holdings Ltd.	4	Manufacturing-Pharmaceutical	2008	8,711	104,532	1,275,000	7,300,000	70		7,195,468	3,702,266	1,275,000	1,274,999	0.97
Barclays Africa Group Ltd.	5	Banks-Financial Services	2016	19,302	231,624	2,105,000	29,509,312	127		29,277,688	14,870,468	2,105,000	2,104,999	0.98
Barclays Africa Group Ltd.	5	Banks-Financial Services	2015	18,485	221,820	2,125,000	28,209,313	127		27,987,493	14,215,567	2,125,000	2,124,999	0.98
Barclays Africa Group Ltd.	5	Banks-Financial Services	2014	15,543	186,516	1,854,000	28,571,213	153		28,384,697	14,378,865	1,854,000	1,853,999	0.99
Barclays Africa Group Ltd.	5	Banks-Financial Services	2013	15,475	185,700	1,847,000	28,658,220	154		28,472,520	14,421,960	1,847,000	1,846,999	0.99
Barclays Africa Group Ltd.	5	Banks-Financial Services	2012	15,097	181,164	1,843,000	16,657,681	92		16,476,517	8,419,423	1,843,000	1,842,999	0.98
Barclays Africa Group Ltd.	5	Banks-Financial Services	2011	13,952	167,424	1,831,000	20,657,293	123		20,489,869	10,412,359	1,831,000	1,830,999	0.98
Barclays Africa Group Ltd.	5	Banks-Financial Services	2010	13,098	157,176	1,812,000	11,107,779	71		10,950,603	5,632,478	1,812,000	1,811,999	0.97
Barclays Africa Group Ltd.	5	Banks-Financial Services	2009	11,940	143,280	1,796,000	9,177,244	64		9,033,964	4,660,262	1,796,000	1,795,999	0.97
Barclays Africa Group Ltd.	5	Banks-Financial Services	2008	10,483	125,796	1,914,000	11,880,533	94		11,754,737	6,003,165	1,914,000	1,913,999	0.98
BHP Billiton Plc	6	Mining-Metals & Minerals	2016	22,141	265,692	460,000	86,883,476	327		86,617,784	43,574,584	460,000	459,999	0.99
BHP Billiton Plc	6	Mining-Metals & Minerals	2015	21,009	252,108	459,000	88,574,590	351		88,322,482	44,413,349	459,000	458,999	0.99
BHP Billiton Plc	6	Mining-Metals & Minerals	2014	15,332	183,984	486,000	77,237,075	420		77,053,091	38,710,530	486,000	485,999	1.00
BHP Billiton Plc	6	Mining-Metals & Minerals	2013	17,631	211,572	499,000	49,193,519	233		48,981,947	24,702,545	499,000	498,999	0.99
BHP Billiton Plc	6	Mining-Metals & Minerals	2012	15,837	190,044	515,000	41,125,585	216		40,935,541	20,657,815	515,000	514,999	0.99
BHP Billiton Plc	6	Mining-Metals & Minerals	2011	13,994	167,928	518,000	84,418,277	503		84,250,349	42,293,102	518,000	517,999	1.00
BHP Billiton Plc	6	Mining-Metals & Minerals	2010	12,944	155,328	504,000	82,922,497	534		82,767,169	41,538,913	504,000	503,999	1.00
BHP Billiton Plc	6	Mining-Metals & Minerals	2009	12,035	144,420	488,000	87,549,283	606		87,404,863	43,846,852	488,000	487,999	1.00
BHP Billiton Plc	6	Mining-Metals & Minerals	2008	10,453	125,436	518,000	56,682,904	452		56,557,468	28,404,170	518,000	517,999	1.00

APPENDIX 12: s-GINI CALCULATIONS (CONTINUED)														
Company Name	Name	Sector	Year	Ave. Wages/m (R)	Ave. Emp.Wages/y (R)	No. of Emp/industry	Exec. Packages/y (R)	Times		Yi-Yj	μ	N	N-1	GINI
British American Tobacco plc	7	Manufacturing-Tobacco	2016	16,376	196,512	1,130,000	152,569,709	776		152,373,197	76,383,111	1,130,000	1,129,999	1.00
British American Tobacco plc	7	Manufacturing-Tobacco	2015	15,692	188,304	1,149,000	88,290,679	469		88,102,375	44,239,491	1,149,000	1,148,999	1.00
British American Tobacco plc	7	Manufacturing-Tobacco	2014	13,636	163,632	1,146,000	64,582,548	395		64,418,916	32,373,090	1,146,000	1,145,999	0.99
British American Tobacco plc	7	Manufacturing-Tobacco	2013	13,926	167,112	1,149,000	100,781,605	603		100,614,493	50,474,358	1,149,000	1,148,999	1.00
British American Tobacco plc	7	Manufacturing-Tobacco	2012	13,024	156,288	1,149,000	44,086,686	282		43,930,398	22,121,487	1,149,000	1,148,999	0.99
British American Tobacco plc	7	Manufacturing-Tobacco	2011	12,214	146,568	1,158,000	41,831,810	285		41,685,242	20,989,189	1,158,000	1,157,999	0.99
British American Tobacco plc	7	Manufacturing-Tobacco	2010	11,017	132,204	1,164,000	27,232,849	206		27,100,645	13,682,526	1,164,000	1,163,999	0.99
British American Tobacco plc	7	Manufacturing-Tobacco	2009	9,870	118,440	1,185,000	43,430,062	367		43,311,622	21,774,251	1,185,000	1,184,999	0.99
British American Tobacco plc	7	Manufacturing-Tobacco	2008	8,711	104,532	1,275,000	54,161,224	518		54,056,692	27,132,878	1,275,000	1,274,999	1.00
The Bidvest Group Ltd.	8	Industrial-Diversified	2016	19,302	231,624	2,105,000	36,565,000	158		36,333,376	18,398,312	2,105,000	2,104,999	0.99
The Bidvest Group Ltd.	8	Industrial-Diversified	2015	18,485	221,820	2,125,000	32,744,000	148		32,522,180	16,482,910	2,125,000	2,124,999	0.99
The Bidvest Group Ltd.	8	Industrial-Diversified	2014	15,543	186,516	1,854,000	27,953,000	150		27,766,484	14,069,758	1,854,000	1,853,999	0.99
The Bidvest Group Ltd.	8	Industrial-Diversified	2013	15,475	185,700	1,847,000	37,267,000	201		37,081,300	18,726,350	1,847,000	1,846,999	0.99
The Bidvest Group Ltd.	8	Industrial-Diversified	2012	15,097	181,164	1,843,000	38,218,000	211		38,036,836	19,199,582	1,843,000	1,842,999	0.99
The Bidvest Group Ltd.	8	Industrial-Diversified	2011	13,952	167,424	1,831,000	27,965,000	167		27,797,576	14,066,212	1,831,000	1,830,999	0.99
The Bidvest Group Ltd.	8	Industrial-Diversified	2010	13,098	157,176	1,812,000	43,382,000	276		43,224,824	21,769,588	1,812,000	1,811,999	0.99
The Bidvest Group Ltd.	8	Industrial-Diversified	2009	11,940	143,280	1,796,000	17,154,000	120		17,010,720	8,648,640	1,796,000	1,795,999	0.98
The Bidvest Group Ltd.	8	Industrial-Diversified	2008	10,483	125,796	1,914,000	18,456,000	147		18,330,204	9,290,898	1,914,000	1,913,999	0.99
Discovery Ltd.	9	Insurance-Financial Services	2016	19,302	231,624	2,105,000	63,632,000	275		63,400,376	31,931,812	2,105,000	2,104,999	0.99
Discovery Ltd.	9	Insurance-Financial Services	2015	18,485	221,820	2,125,000	40,975,000	185		40,753,180	20,598,410	2,125,000	2,124,999	0.99
Discovery Ltd.	9	Insurance-Financial Services	2014	15,543	186,516	1,854,000	43,078,000	231		42,891,484	21,632,258	1,854,000	1,853,999	0.99
Discovery Ltd.	9	Insurance-Financial Services	2013	15,475	185,700	1,847,000	22,495,000	121		22,309,300	11,340,350	1,847,000	1,846,999	0.98
Discovery Ltd.	9	Insurance-Financial Services	2012	15,097	181,164	1,843,000	16,944,000	94		16,762,836	8,562,582	1,843,000	1,842,999	0.98
Discovery Ltd.	9	Insurance-Financial Services	2011	13,952	167,424	1,831,000	26,414,000	158		26,246,576	13,290,712	1,831,000	1,830,999	0.99
Discovery Ltd.	9	Insurance-Financial Services	2010	13,098	157,176	1,812,000	25,375,000	161		25,217,824	12,766,088	1,812,000	1,811,999	0.99
Discovery Ltd.	9	Insurance-Financial Services	2009	11,940	143,280	1,796,000	5,752,000	40		5,608,720	2,947,640	1,796,000	1,795,999	0.95
Discovery Ltd.	9	Insurance-Financial Services	2008	10,483	125,796	1,914,000	2,906,000	23		2,780,204	1,515,898	1,914,000	1,913,999	0.92
FirstRand Ltd.	10	Banks-Financial Services	2016	19,302	231,624	2,105,000	33,947,000	147		33,715,376	17,089,312	2,105,000	2,104,999	0.99
FirstRand Ltd.	10	Banks-Financial Services	2015	18,485	221,820	2,125,000	30,255,000	136		30,033,180	15,238,410	2,125,000	2,124,999	0.99
FirstRand Ltd.	10	Banks-Financial Services	2014	15,543	186,516	1,854,000	26,743,000	143		26,556,484	13,464,758	1,854,000	1,853,999	0.99
FirstRand Ltd.	10	Banks-Financial Services	2013	15,475	185,700	1,847,000	23,574,000	127		23,388,300	11,879,850	1,847,000	1,846,999	0.98
FirstRand Ltd.	10	Banks-Financial Services	2012	15,097	181,164	1,843,000	22,481,000	124		22,299,836	11,331,082	1,843,000	1,842,999	0.98
FirstRand Ltd.	10	Banks-Financial Services	2011	13,952	167,424	1,831,000	16,811,000	100		16,643,576	8,489,212	1,831,000	1,830,999	0.98
FirstRand Ltd.	10	Banks-Financial Services	2010	13,098	157,176	1,812,000	13,855,000	88		13,697,824	7,006,088	1,812,000	1,811,999	0.98
FirstRand Ltd.	10	Banks-Financial Services	2009	11,940	143,280	1,796,000	11,497,000	80		11,353,720	5,820,140	1,796,000	1,795,999	0.98
FirstRand Ltd.	10	Banks-Financial Services	2008	10,483	125,796	1,914,000	15,400,000	122		15,274,204	7,762,898	1,914,000	1,913,999	0.98
Gold Fields Ltd.	11	Mining-Gold	2016	22,141	265,692	460,000	25,984,146	98		25,718,454	13,124,919	460,000	459,999	0.98
Gold Fields Ltd.	11	Mining-Gold	2015	21,009	252,108	459,000	36,180,944	144		35,928,836	18,216,526	459,000	458,999	0.99
Gold Fields Ltd.	11	Mining-Gold	2014	15,332	183,984	486,000	28,169,400	153		27,985,416	14,176,692	486,000	485,999	0.99
Gold Fields Ltd.	11	Mining-Gold	2013	17,631	211,572	499,000	24,946,000	118		24,734,428	12,578,786	499,000	498,999	0.98
Gold Fields Ltd.	11	Mining-Gold	2012	15,837	190,044	515,000	45,332,000	239		45,141,956	22,761,022	515,000	514,999	0.99
Gold Fields Ltd.	11	Mining-Gold	2011	13,994	167,928	518,000	32,698,609	195		32,530,681	16,433,269	518,000	517,999	0.99
Gold Fields Ltd.	11	Mining-Gold	2010	12,944	155,328	504,000	9,002,889	58		8,847,561	4,579,108	504,000	503,999	0.97
Gold Fields Ltd.	11	Mining-Gold	2009	12,035	144,420	488,000	11,735,340	81		11,590,920	5,939,880	488,000	487,999	0.98
Gold Fields Ltd.	11	Mining-Gold	2008	10,453	125,436	518,000	6,427,035	51		6,301,599	3,276,236	518,000	517,999	0.96
Growthpoint Properties Ltd.	12	Real Estate	2016	19,302	231,624	2,105,000	11,311,450	49		11,079,826	5,771,537	2,105,000	2,104,999	0.96
Growthpoint Properties Ltd.	12	Real Estate	2015	18,485	221,820	2,125,000	27,405,432	124		27,183,612	13,813,626	2,125,000	2,124,999	0.98
Growthpoint Properties Ltd.	12	Real Estate	2014	15,543	186,516	1,854,000	22,856,589	123		22,670,073	11,521,553	1,854,000	1,853,999	0.98
Growthpoint Properties Ltd.	12	Real Estate	2013	15,475	185,700	1,847,000	9,600,000	52		9,414,300	4,892,850	1,847,000	1,846,999	0.96
Growthpoint Properties Ltd.	12	Real Estate	2012	15,097	181,164	1,843,000	9,240,401	51		9,059,237	4,710,783	1,843,000	1,842,999	0.96
Growthpoint Properties Ltd.	12	Real Estate	2011	13,952	167,424	1,831,000	8,370,000	50		8,202,576	4,268,712	1,831,000	1,830,999	0.96
Growthpoint Properties Ltd.	12	Real Estate	2010	13,098	157,176	1,812,000	7,761,622	49		7,604,446	3,959,399	1,812,000	1,811,999	0.96
Growthpoint Properties Ltd.	12	Real Estate	2009	11,940	143,280	1,796,000	7,161,410	50		7,018,130	3,652,345	1,796,000	1,795,999	0.96
Growthpoint Properties Ltd.	12	Real Estate	2008	10,483	125,796	1,914,000	11,708,961	93		11,583,165	5,917,379	1,914,000	1,913,999	0.98

APPENDIX 12: s-GINI CALCULATIONS (CONTINUED)														
Company Name	Name	Sector	Year	Ave. Wages/m (R)	Ave. Emp.Wages/y (R)	No. of Emp/industry	Exec. Packages/y (R)	Times		Yi-Yj	μ	N	N-1	GINI
Impala Platinum Holdings Ltd.	13	Mining-Platinum	2016	22,141	265,692	460,000	7,466,000	28		7,200,308	3,865,846	460,000	459,999	0.93
Impala Platinum Holdings Ltd.	13	Mining-Platinum	2015	21,009	252,108	459,000	7,494,000	30		7,241,892	3,873,054	459,000	458,999	0.93
Impala Platinum Holdings Ltd.	13	Mining-Platinum	2014	15,332	183,984	486,000	7,484,000	41		7,300,016	3,833,992	486,000	485,999	0.95
Impala Platinum Holdings Ltd.	13	Mining-Platinum	2013	17,631	211,572	499,000	7,549,000	36		7,337,428	3,880,286	499,000	498,999	0.95
Impala Platinum Holdings Ltd.	13	Mining-Platinum	2012	15,837	190,044	515,000	7,059,000	37		6,868,956	3,624,522	515,000	514,999	0.95
Impala Platinum Holdings Ltd.	13	Mining-Platinum	2011	13,994	167,928	518,000	14,361,000	86		14,193,072	7,264,464	518,000	517,999	0.98
Impala Platinum Holdings Ltd.	13	Mining-Platinum	2010	12,944	155,328	504,000	14,244,000	92		14,088,672	7,199,664	504,000	503,999	0.98
Impala Platinum Holdings Ltd.	13	Mining-Platinum	2009	12,035	144,420	488,000	14,675,000	102		14,530,580	7,409,710	488,000	487,999	0.98
Impala Platinum Holdings Ltd.	13	Mining-Platinum	2008	10,453	125,436	518,000	16,696,000	133		16,570,564	8,410,718	518,000	517,999	0.99
Investec Ltd.	14	Investment-Financial Services	2016	19,302	231,624	2,105,000	109,258,788	472		109,027,164	54,745,206	2,105,000	2,104,999	1.00
Investec Ltd.	14	Investment-Financial Services	2015	18,485	221,820	2,125,000	158,704,379	715		158,482,559	79,463,099	2,125,000	2,124,999	1.00
Investec Ltd.	14	Investment-Financial Services	2014	15,543	186,516	1,854,000	100,161,800	537		99,975,284	50,174,158	1,854,000	1,853,999	1.00
Investec Ltd.	14	Investment-Financial Services	2013	15,475	185,700	1,847,000	72,647,817	391		72,462,117	36,416,759	1,847,000	1,846,999	0.99
Investec Ltd.	14	Investment-Financial Services	2012	15,097	181,164	1,843,000	62,095,985	343		61,914,821	31,138,575	1,843,000	1,842,999	0.99
Investec Ltd.	14	Investment-Financial Services	2011	13,952	167,424	1,831,000	51,532,351	308		51,364,927	25,849,888	1,831,000	1,830,999	0.99
Investec Ltd.	14	Investment-Financial Services	2010	13,098	157,176	1,812,000	30,077,977	191		29,920,801	15,117,576	1,812,000	1,811,999	0.99
Investec Ltd.	14	Investment-Financial Services	2009	11,940	143,280	1,796,000	21,736,322	152		21,593,042	10,939,801	1,796,000	1,795,999	0.99
Investec Ltd.	14	Investment-Financial Services	2008	10,483	125,796	1,914,000	50,065,298	398		49,939,502	25,095,547	1,914,000	1,913,999	0.99
Intu Properties plc	15	Real Estate	2016	19,302	231,624	2,105,000	35,892,874	155		35,661,250	18,062,249	2,105,000	2,104,999	0.99
Intu Properties plc	15	Real Estate	2015	18,485	221,820	2,125,000	31,642,536	143		31,420,716	15,932,178	2,125,000	2,124,999	0.99
Intu Properties plc	15	Real Estate	2014	15,543	186,516	1,854,000	20,604,993	110		20,418,477	10,395,755	1,854,000	1,853,999	0.98
Intu Properties plc	15	Real Estate	2013	15,475	185,700	1,847,000	16,323,781	88		16,138,081	8,254,741	1,847,000	1,846,999	0.98
Intu Properties plc	15	Real Estate	2012	15,097	181,164	1,843,000	16,058,563	89		15,877,399	8,119,864	1,843,000	1,842,999	0.98
Intu Properties plc	15	Real Estate	2011	13,952	167,424	1,831,000	8,781,876	52		8,614,452	4,474,650	1,831,000	1,830,999	0.96
Intu Properties plc	15	Real Estate	2010	13,098	157,176	1,812,000	8,281,225	53		8,124,049	4,219,200	1,812,000	1,811,999	0.96
Intu Properties plc	15	Real Estate	2009	11,940	143,280	1,796,000	11,697,703	82		11,554,423	5,920,491	1,796,000	1,795,999	0.98
Intu Properties plc	15	Real Estate	2008	10,483	125,796	1,914,000	9,767,773	78		9,641,977	4,946,784	1,914,000	1,913,999	0.97
Life Healthcare Group Holdings Ltd.	16	Hospital Mgt-Healthcare	2016	21,118	253,416	2,625,000	9,171,000	36		8,917,584	4,712,208	2,625,000	2,624,999	0.95
Life Healthcare Group Holdings Ltd.	16	Hospital Mgt-Healthcare	2015	20,777	249,324	2,547,000	7,794,000	31		7,544,676	4,021,662	2,547,000	2,546,999	0.94
Life Healthcare Group Holdings Ltd.	16	Hospital Mgt-Healthcare	2014	17,343	208,116	2,463,000	9,374,000	45		9,165,884	4,791,058	2,463,000	2,462,999	0.96
Life Healthcare Group Holdings Ltd.	16	Hospital Mgt-Healthcare	2013	17,465	209,580	2,413,000	13,352,000	64		13,142,420	6,780,790	2,413,000	2,412,999	0.97
Life Healthcare Group Holdings Ltd.	16	Hospital Mgt-Healthcare	2012	17,151	205,812	2,367,000	11,569,000	56		11,363,188	5,887,406	2,367,000	2,366,999	0.97
Life Healthcare Group Holdings Ltd.	16	Hospital Mgt-Healthcare	2011	16,042	192,504	2,318,000	9,268,000	48		9,075,496	4,730,252	2,318,000	2,317,999	0.96
Life Healthcare Group Holdings Ltd.	16	Hospital Mgt-Healthcare	2010	14,840	178,080	2,266,000	9,859,000	55		9,680,920	5,018,540	2,266,000	2,265,999	0.96
Life Healthcare Group Holdings Ltd.	16	Hospital Mgt-Healthcare	2009	13,268	159,216	2,199,000	7,048,000	44		6,888,784	3,603,608	2,199,000	2,198,999	0.96
Life Healthcare Group Holdings Ltd.	16	Hospital Mgt-Healthcare	2008	11,222	134,664	2,159,000	6,394,272	52		6,259,608	3,264,468	2,159,000	2,158,999	0.96
Mondi Ltd.	17	Manufacturing-Paper	2016	16,376	196,512	1,130,000	88,333,696	450		88,137,184	44,265,104	1,130,000	1,129,999	1.00
Mondi Ltd.	17	Manufacturing-Paper	2015	15,692	188,304	1,149,000	99,389,181	528		99,200,877	49,788,742	1,149,000	1,148,999	1.00
Mondi Ltd.	17	Manufacturing-Paper	2014	13,636	163,632	1,146,000	111,796,781	683		111,633,149	55,980,207	1,146,000	1,145,999	1.00
Mondi Ltd.	17	Manufacturing-Paper	2013	13,926	167,112	1,149,000	75,652,539	453		75,485,427	37,909,826	1,149,000	1,148,999	1.00
Mondi Ltd.	17	Manufacturing-Paper	2012	13,024	156,288	1,149,000	66,559,295	426		66,403,007	33,357,792	1,149,000	1,148,999	1.00
Mondi Ltd.	17	Manufacturing-Paper	2011	12,214	146,568	1,158,000	23,353,196	159		23,206,628	11,749,882	1,158,000	1,157,999	0.99
Mondi Ltd.	17	Manufacturing-Paper	2010	11,017	132,204	1,164,000	23,569,724	178		23,437,520	11,850,964	1,164,000	1,163,999	0.99
Mondi Ltd.	17	Manufacturing-Paper	2009	9,870	118,440	1,185,000	26,278,890	222		26,160,450	13,198,665	1,185,000	1,184,999	0.99
Mondi Ltd.	17	Manufacturing-Paper	2008	8,711	104,532	1,275,000	17,915,257	171		17,810,725	9,009,894	1,275,000	1,274,999	0.99
Mr Price Group Ltd.	18	Retail-Soft goods	2016	12,305	147,660	1,914,000	15,270,000	103		15,122,340	7,708,830	1,914,000	1,913,999	0.98
Mr Price Group Ltd.	18	Retail-Soft goods	2015	11,591	139,092	1,954,000	16,112,000	116		15,972,908	8,125,546	1,954,000	1,953,999	0.98
Mr Price Group Ltd.	18	Retail-Soft goods	2014	10,115	121,380	1,699,000	15,406,000	127		15,284,620	7,763,690	1,699,000	1,698,999	0.98
Mr Price Group Ltd.	18	Retail-Soft goods	2013	10,055	120,660	1,733,000	11,522,000	95		11,401,340	5,821,330	1,733,000	1,732,999	0.98
Mr Price Group Ltd.	18	Retail-Soft goods	2012	9,313	111,756	1,710,000	10,783,000	96		10,671,244	5,447,378	1,710,000	1,709,999	0.98
Mr Price Group Ltd.	18	Retail-Soft goods	2011	8,546	102,552	1,700,000	9,693,000	95		9,590,448	4,897,776	1,700,000	1,699,999	0.98
Mr Price Group Ltd.	18	Retail-Soft goods	2010	8,057	96,684	1,687,000	9,167,000	95		9,070,316	4,631,842	1,687,000	1,686,999	0.98
Mr Price Group Ltd.	18	Retail-Soft goods	2009	7,210	86,520	1,665,000	8,231,000	95		8,144,480	4,158,760	1,665,000	1,664,999	0.98
Mr Price Group Ltd.	18	Retail-Soft goods	2008	6,501	78,012	1,747,000	6,243,000	80		6,164,988	3,160,506	1,747,000	1,746,999	0.98

APPENDIX 12: s-GINI CALCULATIONS (CONTINUED)														
Company Name	**Name**	**Sector**	**Year**	**Ave. Wages/m (R)**	**Ave. Emp.Wages/y (R)**	**No. of Emp/industry**	**Exec. Packages/y (R)**	**Times**		**Yi-Yj**	**μ**	**N**	**N-1**	**GINI**
MTN Group Ltd.	19	Wireless Telecom Services	2016	22,475	269,700	442,000	72,168,000	268		71,898,300	36,218,850	442,000	441,999	0.99
MTN Group Ltd.	19	Wireless Telecom Services	2015	21,355	256,260	461,000	9,256,000	36		8,999,740	4,756,130	461,000	460,999	0.95
MTN Group Ltd.	19	Wireless Telecom Services	2014	18,449	221,388	373,000	28,128,000	127		27,906,612	14,174,694	373,000	372,999	0.98
MTN Group Ltd.	19	Wireless Telecom Services	2013	19,029	228,348	376,000	48,077,000	211		47,848,652	24,152,674	376,000	375,999	0.99
MTN Group Ltd.	19	Wireless Telecom Services	2012	17,631	211,572	383,000	23,539,000	111		23,327,428	11,875,286	383,000	382,999	0.98
MTN Group Ltd.	19	Wireless Telecom Services	2011	16,827	201,924	369,000	22,528,000	112		22,326,076	11,364,962	369,000	368,999	0.98
MTN Group Ltd.	19	Wireless Telecom Services	2010	15,714	188,568	361,000	8,063,000	43		7,874,432	4,125,784	361,000	360,999	0.95
MTN Group Ltd.	19	Wireless Telecom Services	2009	13,850	166,200	359,000	15,694,000	94		15,527,800	7,930,100	359,000	358,999	0.98
MTN Group Ltd.	19	Wireless Telecom Services	2008	12,679	152,148	366,000	19,958,000	131		19,805,852	10,055,074	366,000	365,999	0.98
Nedbank Group Ltd.	20	Banks-Financial Services	2016	19,302	231,624	2,105,000	36,781,000	159		36,549,376	18,506,312	2,105,000	2,104,999	0.99
Nedbank Group Ltd.	20	Banks-Financial Services	2015	18,485	221,820	2,125,000	36,425,000	164		36,203,180	18,323,410	2,125,000	2,124,999	0.99
Nedbank Group Ltd.	20	Banks-Financial Services	2014	15,543	186,516	1,854,000	35,050,000	188		34,863,484	17,618,258	1,854,000	1,853,999	0.99
Nedbank Group Ltd.	20	Banks-Financial Services	2013	15,475	185,700	1,847,000	32,532,000	175		32,346,300	16,358,850	1,847,000	1,846,999	0.99
Nedbank Group Ltd.	20	Banks-Financial Services	2012	15,097	181,164	1,843,000	28,747,000	159		28,565,836	14,464,082	1,843,000	1,842,999	0.99
Nedbank Group Ltd.	20	Banks-Financial Services	2011	13,952	167,424	1,831,000	15,683,000	94		15,515,576	7,925,212	1,831,000	1,830,999	0.98
Nedbank Group Ltd.	20	Banks-Financial Services	2010	13,098	157,176	1,812,000	12,459,000	79		12,301,824	6,308,088	1,812,000	1,811,999	0.98
Nedbank Group Ltd.	20	Banks-Financial Services	2009	11,940	143,280	1,796,000	14,551,000	102		14,407,720	7,347,140	1,796,000	1,795,999	0.98
Nedbank Group Ltd.	20	Banks-Financial Services	2008	10,483	125,796	1,914,000	10,413,000	83		10,287,204	5,269,398	1,914,000	1,913,999	0.98
Naspers Ltd.	21	Broadcasting Contractors	2016	22,475	269,700	442,000	30,579,100	113		30,309,400	15,424,400	442,000	441,999	0.98
Naspers Ltd.	21	Broadcasting Contractors	2015	21,355	256,260	461,000	23,105,000	90		22,848,740	11,680,630	461,000	460,999	0.98
Naspers Ltd.	21	Broadcasting Contractors	2014	18,449	221,388	373,000	7,518,000	34		7,296,612	3,869,694	373,000	372,999	0.94
Naspers Ltd.	21	Broadcasting Contractors	2013	19,029	228,348	376,000	7,392,000	32		7,163,652	3,810,174	376,000	375,999	0.94
Naspers Ltd.	21	Broadcasting Contractors	2012	17,631	211,572	383,000	7,200,000	34		6,988,428	3,705,786	383,000	382,999	0.94
Naspers Ltd.	21	Broadcasting Contractors	2011	16,827	201,924	369,000	6,154,000	30		5,952,076	3,177,962	369,000	368,999	0.94
Naspers Ltd.	21	Broadcasting Contractors	2010	15,714	188,568	361,000	6,235,000	33		6,046,432	3,211,784	361,000	360,999	0.94
Naspers Ltd.	21	Broadcasting Contractors	2009	13,850	166,200	359,000	5,325,000	32		5,158,800	2,745,600	359,000	358,999	0.94
Naspers Ltd.	21	Broadcasting Contractors	2008	12,679	152,148	366,000	4,977,000	33		4,824,852	2,564,574	366,000	365,999	0.94
Netcare Ltd.	22	Hospital Mgt-Healthcare	2016	21,118	253,416	2,625,000	14,288,000	56		14,034,584	7,270,708	2,625,000	2,624,999	0.97
Netcare Ltd.	22	Hospital Mgt-Healthcare	2015	20,777	249,324	2,547,000	14,052,000	56		13,802,676	7,150,662	2,547,000	2,546,999	0.97
Netcare Ltd.	22	Hospital Mgt-Healthcare	2014	17,343	208,116	2,463,000	13,123,000	63		12,914,884	6,665,558	2,463,000	2,462,999	0.97
Netcare Ltd.	22	Hospital Mgt-Healthcare	2013	17,465	209,580	2,413,000	12,399,000	59		12,189,420	6,304,290	2,413,000	2,412,999	0.97
Netcare Ltd.	22	Hospital Mgt-Healthcare	2012	17,151	205,812	2,367,000	11,798,000	57		11,592,188	6,001,906	2,367,000	2,366,999	0.97
Netcare Ltd.	22	Hospital Mgt-Healthcare	2011	16,042	192,504	2,318,000	12,757,000	66		12,564,496	6,474,752	2,318,000	2,317,999	0.97
Netcare Ltd.	22	Hospital Mgt-Healthcare	2010	14,840	178,080	2,266,000	11,092,000	62		10,913,920	5,635,040	2,266,000	2,265,999	0.97
Netcare Ltd.	22	Hospital Mgt-Healthcare	2009	13,268	159,216	2,199,000	8,295,000	52		8,135,784	4,227,108	2,199,000	2,198,999	0.96
Netcare Ltd.	22	Hospital Mgt-Healthcare	2008	11,222	134,664	2,159,000	7,016,000	52		6,881,336	3,575,332	2,159,000	2,158,999	0.96
Old Mutual plc	23	Insurance-Financial Services	2016	19,302	231,624	2,105,000	51,669,742	223		51,438,118	25,950,683	2,105,000	2,104,999	0.99
Old Mutual plc	23	Insurance-Financial Services	2015	18,485	221,820	2,125,000	93,912,548	423		93,690,728	47,067,184	2,125,000	2,124,999	1.00
Old Mutual plc	23	Insurance-Financial Services	2014	15,543	186,516	1,854,000	79,348,864	425		79,162,348	39,767,690	1,854,000	1,853,999	1.00
Old Mutual plc	23	Insurance-Financial Services	2013	15,475	185,700	1,847,000	72,739,735	392		72,554,035	36,462,717	1,847,000	1,846,999	0.99
Old Mutual plc	23	Insurance-Financial Services	2012	15,097	181,164	1,843,000	102,612,748	566		102,431,584	51,396,956	1,843,000	1,842,999	1.00
Old Mutual plc	23	Insurance-Financial Services	2011	13,952	167,424	1,831,000	27,550,563	165		27,383,139	13,858,993	1,831,000	1,830,999	0.99
Old Mutual plc	23	Insurance-Financial Services	2010	13,098	157,176	1,812,000	46,508,535	296		46,351,359	23,332,855	1,812,000	1,811,999	0.99
Old Mutual plc	23	Insurance-Financial Services	2009	11,940	143,280	1,796,000	27,563,228	192		27,419,948	13,853,254	1,796,000	1,795,999	0.99
Old Mutual plc	23	Insurance-Financial Services	2008	10,483	125,796	1,914,000	20,008,206	159		19,882,410	10,067,001	1,914,000	1,913,999	0.99
Redefine Properties Ltd.	24	Real Estate	2016	19,302	231,624	2,105,000	15,905,000	69		15,673,376	8,068,312	2,105,000	2,104,999	0.97
Redefine Properties Ltd.	24	Real Estate	2015	18,485	221,820	2,125,000	12,201,000	55		11,979,180	6,211,410	2,125,000	2,124,999	0.96
Redefine Properties Ltd.	24	Real Estate	2014	15,543	186,516	1,854,000	11,747,000	63		11,560,484	5,966,758	1,854,000	1,853,999	0.97
Redefine Properties Ltd.	24	Real Estate	2013	15,475	185,700	1,847,000	7,984,000	43		7,798,300	4,084,850	1,847,000	1,846,999	0.95
Redefine Properties Ltd.	24	Real Estate	2012	15,097	181,164	1,843,000	5,667,000	31		5,485,836	2,924,082	1,843,000	1,842,999	0.94
Redefine Properties Ltd.	24	Real Estate	2011	13,952	167,424	1,831,000	4,240,000	25		4,072,576	2,203,712	1,831,000	1,830,999	0.92
Redefine Properties Ltd.	24	Real Estate	2010	13,098	157,176	1,812,000	5,388,000	34		5,230,824	2,772,588	1,812,000	1,811,999	0.94
Redefine Properties Ltd.	24	Real Estate	2009	11,940	143,280	1,796,000	5,442,000	38		5,298,720	2,792,640	1,796,000	1,795,999	0.95
Redefine Properties Ltd.	24	Real Estate	2008	10,483	125,796	1,914,000	5,476,000	44		5,350,204	2,800,898	1,914,000	1,913,999	0.96

APPENDIX 12: s-GINI CALCULATIONS (CONTINUED)														
Company Name	**Name**	**Sector**	**Year**	**Ave. Wages/m (R)**	**Ave. Emp.Wages/y (R)**	**No. of Emp/industry**	**Exec. Packages/y (R)**	**Times**		**Yi-Yj**	**μ**	**N**	**N-1**	**GINI**
Remgro Ltd.	25	Industrial-Diversified	2016	19,302	231,624	2,105,000	12,443,000	54		12,211,376	6,337,312	2,105,000	2,104,999	0.96
Remgro Ltd.	25	Industrial-Diversified	2015	18,485	221,820	2,125,000	11,625,000	52		11,403,180	5,923,410	2,125,000	2,124,999	0.96
Remgro Ltd.	25	Industrial-Diversified	2014	15,543	186,516	1,854,000	9,684,000	52		9,497,484	4,935,258	1,854,000	1,853,999	0.96
Remgro Ltd.	25	Industrial-Diversified	2013	15,475	185,700	1,847,000	9,005,000	48		8,819,300	4,595,350	1,847,000	1,846,999	0.96
Remgro Ltd.	25	Industrial-Diversified	2012	15,097	181,164	1,843,000	6,514,000	36		6,332,836	3,347,582	1,843,000	1,842,999	0.95
Remgro Ltd.	25	Industrial-Diversified	2011	13,952	167,424	1,831,000	14,093,000	84		13,925,576	7,130,212	1,831,000	1,830,999	0.98
Remgro Ltd.	25	Industrial-Diversified	2010	13,098	157,176	1,812,000	10,191,000	65		10,033,824	5,174,088	1,812,000	1,811,999	0.97
Remgro Ltd.	25	Industrial-Diversified	2009	11,940	143,280	1,796,000	13,939,000	97		13,795,720	7,041,140	1,796,000	1,795,999	0.98
Remgro Ltd.	25	Industrial-Diversified	2008	10,483	125,796	1,914,000	7,904,000	63		7,778,204	4,014,898	1,914,000	1,913,999	0.97
RMB Holdings Ltd.	26	Banks-Financial Services	2016	19,302	231,624	2,105,000	2,893,000	12		2,661,376	1,562,312	2,105,000	2,104,999	0.85
RMB Holdings Ltd.	26	Banks-Financial Services	2015	18,485	221,820	2,125,000	4,672,000	21		4,450,180	2,446,910	2,125,000	2,124,999	0.91
RMB Holdings Ltd.	26	Banks-Financial Services	2014	15,543	186,516	1,854,000	9,065,000	49		8,878,484	4,625,758	1,854,000	1,853,999	0.96
RMB Holdings Ltd.	26	Banks-Financial Services	2013	15,475	185,700	1,847,000	8,500,000	46		8,314,300	4,342,850	1,847,000	1,846,999	0.96
RMB Holdings Ltd.	26	Banks-Financial Services	2012	15,097	181,164	1,843,000	7,256,000	40		7,074,836	3,718,582	1,843,000	1,842,999	0.95
RMB Holdings Ltd.	26	Banks-Financial Services	2011	13,952	167,424	1,831,000	6,257,000	37		6,089,576	3,212,212	1,831,000	1,830,999	0.95
RMB Holdings Ltd.	26	Banks-Financial Services	2010	13,098	157,176	1,812,000	7,220,000	46		7,062,824	3,688,588	1,812,000	1,811,999	0.96
RMB Holdings Ltd.	26	Banks-Financial Services	2009	11,940	143,280	1,796,000	6,301,000	44		6,157,720	3,222,140	1,796,000	1,795,999	0.96
RMB Holdings Ltd.	26	Banks-Financial Services	2008	10,483	125,796	1,914,000	7,454,000	59		7,328,204	3,789,898	1,914,000	1,913,999	0.97
Sappi Ltd.	27	Manufacturing-Paper	2016	16,376	196,512	1,130,000	13,072,466	67		12,875,954	6,634,489	1,130,000	1,129,999	0.97
Sappi Ltd.	27	Manufacturing-Paper	2015	15,692	188,304	1,149,000	11,821,706	63		11,633,402	6,005,005	1,149,000	1,148,999	0.97
Sappi Ltd.	27	Manufacturing-Paper	2014	13,636	163,632	1,146,000	9,112,088	56		8,948,456	4,637,860	1,146,000	1,145,999	0.96
Sappi Ltd.	27	Manufacturing-Paper	2013	13,926	167,112	1,149,000	4,348,366	26		4,181,254	2,257,739	1,149,000	1,148,999	0.93
Sappi Ltd.	27	Manufacturing-Paper	2012	13,024	156,288	1,149,000	12,074,634	77		11,918,346	6,115,461	1,149,000	1,148,999	0.97
Sappi Ltd.	27	Manufacturing-Paper	2011	12,214	146,568	1,158,000	7,275,213	50		7,128,645	3,710,891	1,158,000	1,157,999	0.96
Sappi Ltd.	27	Manufacturing-Paper	2010	11,017	132,204	1,164,000	6,763,348	51		6,631,144	3,447,776	1,164,000	1,163,999	0.96
Sappi Ltd.	27	Manufacturing-Paper	2009	9,870	118,440	1,185,000	9,010,213	76		8,891,773	4,564,326	1,185,000	1,184,999	0.97
Sappi Ltd.	27	Manufacturing-Paper	2008	8,711	104,532	1,275,000	4,781,156	46		4,676,624	2,442,844	1,275,000	1,274,999	0.96
Standard Bank Group Ltd.	28	Banks-Financial Services	2016	19,302	231,624	2,105,000	32,078,000	138		31,846,376	16,154,812	2,105,000	2,104,999	0.99
Standard Bank Group Ltd.	28	Banks-Financial Services	2015	18,485	221,820	2,125,000	30,989,000	140		30,767,180	15,605,410	2,125,000	2,124,999	0.99
Standard Bank Group Ltd.	28	Banks-Financial Services	2014	15,543	186,516	1,854,000	24,278,000	130		24,091,484	12,232,258	1,854,000	1,853,999	0.98
Standard Bank Group Ltd.	28	Banks-Financial Services	2013	15,475	185,700	1,847,000	28,462,000	153		28,276,300	14,323,850	1,847,000	1,846,999	0.99
Standard Bank Group Ltd.	28	Banks-Financial Services	2012	15,097	181,164	1,843,000	21,550,000	119		21,368,836	10,865,582	1,843,000	1,842,999	0.98
Standard Bank Group Ltd.	28	Banks-Financial Services	2011	13,952	167,424	1,831,000	27,242,000	163		27,074,576	13,704,712	1,831,000	1,830,999	0.99
Standard Bank Group Ltd.	28	Banks-Financial Services	2010	13,098	157,176	1,812,000	14,970,000	95		14,812,824	7,563,588	1,812,000	1,811,999	0.98
Standard Bank Group Ltd.	28	Banks-Financial Services	2009	11,940	143,280	1,796,000	8,504,000	59		8,360,720	4,323,640	1,796,000	1,795,999	0.97
Standard Bank Group Ltd.	28	Banks-Financial Services	2008	10,483	125,796	1,914,000	14,081,000	112		13,955,204	7,103,398	1,914,000	1,913,999	0.98
Shoprite Holdings Ltd.	29	Retail-Food & Drug	2016	12,305	147,660	1,914,000	100,100,000	678		99,952,340	50,123,830	1,914,000	1,913,999	1.00
Shoprite Holdings Ltd.	29	Retail-Food & Drug	2015	11,591	139,092	1,954,000	50,092,000	360		49,952,908	25,115,546	1,954,000	1,953,999	0.99
Shoprite Holdings Ltd.	29	Retail-Food & Drug	2014	10,115	121,380	1,699,000	49,972,000	412		49,850,620	25,046,690	1,699,000	1,698,999	1.00
Shoprite Holdings Ltd.	29	Retail-Food & Drug	2013	10,055	120,660	1,733,000	50,001,000	414		49,880,340	25,060,830	1,733,000	1,732,999	1.00
Shoprite Holdings Ltd.	29	Retail-Food & Drug	2012	9,313	111,756	1,710,000	40,964,000	367		40,852,244	20,537,878	1,710,000	1,709,999	0.99
Shoprite Holdings Ltd.	29	Retail-Food & Drug	2011	8,546	102,552	1,700,000	36,475,000	356		36,372,448	18,288,776	1,700,000	1,699,999	0.99
Shoprite Holdings Ltd.	29	Retail-Food & Drug	2010	8,057	96,684	1,687,000	627,526,000	6490		627,429,316	313,811,342	1,687,000	1,686,999	1.00
Shoprite Holdings Ltd.	29	Retail-Food & Drug	2009	7,210	86,520	1,665,000	24,128,000	279		24,041,480	12,107,260	1,665,000	1,664,999	0.99
Shoprite Holdings Ltd.	29	Retail-Food & Drug	2008	6,501	78,012	1,747,000	16,640,000	213		16,561,988	8,359,006	1,747,000	1,746,999	0.99
Sanlam Ltd.	30	Insurance-Financial Services	2016	19,302	231,624	2,105,000	22,521,000	97		22,289,376	11,376,312	2,105,000	2,104,999	0.98
Sanlam Ltd.	30	Insurance-Financial Services	2015	18,485	221,820	2,125,000	28,730,000	130		28,508,180	14,475,910	2,125,000	2,124,999	0.98
Sanlam Ltd.	30	Insurance-Financial Services	2014	15,543	186,516	1,854,000	15,229,000	82		15,042,484	7,707,758	1,854,000	1,853,999	0.98
Sanlam Ltd.	30	Insurance-Financial Services	2013	15,475	185,700	1,847,000	12,782,000	69		12,596,300	6,483,850	1,847,000	1,846,999	0.97
Sanlam Ltd.	30	Insurance-Financial Services	2012	15,097	181,164	1,843,000	7,575,000	42		7,393,836	3,878,082	1,843,000	1,842,999	0.95
Sanlam Ltd.	30	Insurance-Financial Services	2011	13,952	167,424	1,831,000	6,787,000	41		6,619,576	3,477,212	1,831,000	1,830,999	0.95
Sanlam Ltd.	30	Insurance-Financial Services	2010	13,098	157,176	1,812,000	13,032,000	83		12,874,824	6,594,588	1,812,000	1,811,999	0.98
Sanlam Ltd.	30	Insurance-Financial Services	2009	11,940	143,280	1,796,000	10,774,000	75		10,630,720	5,458,640	1,796,000	1,795,999	0.97
Sanlam Ltd.	30	Insurance-Financial Services	2008	10,483	125,796	1,914,000	12,676,000	101		12,550,204	6,400,898	1,914,000	1,913,999	0.98

APPENDIX 12: s-GINI CALCULATIONS (CONTINUED)														
Company Name	Name	Sector	Year	Ave. Wages/m (R)	Ave. Emp.Wages/y (R)	No. of Emp/industry	Exec. Packages/y (R)	Times		Yi-Yj	μ	N	N-1	GINI
Sasol Ltd.	31	Manufacturing-Chemical Speiality	2016	16,376	196,512	1,130,000	32,045,000	163		31,848,488	16,120,756	1,130,000	1,129,999	0.99
Sasol Ltd.	31	Manufacturing-Chemical Speiality	2015	15,692	188,304	1,149,000	47,011,000	250		46,822,696	23,599,652	1,149,000	1,148,999	0.99
Sasol Ltd.	31	Manufacturing-Chemical Speiality	2014	13,636	163,632	1,146,000	51,962,000	318		51,798,368	26,062,816	1,146,000	1,145,999	0.99
Sasol Ltd.	31	Manufacturing-Chemical Speiality	2013	13,926	167,112	1,149,000	53,668,000	321		53,500,888	26,917,556	1,149,000	1,148,999	0.99
Sasol Ltd.	31	Manufacturing-Chemical Speiality	2012	13,024	156,288	1,149,000	31,881,000	204		31,724,712	16,018,644	1,149,000	1,148,999	0.99
Sasol Ltd.	31	Manufacturing-Chemical Speiality	2011	12,214	146,568	1,158,000	24,456,000	167		24,309,432	12,301,284	1,158,000	1,157,999	0.99
Sasol Ltd.	31	Manufacturing-Chemical Speiality	2010	11,017	132,204	1,164,000	20,568,000	156		20,435,796	10,350,102	1,164,000	1,163,999	0.99
Sasol Ltd.	31	Manufacturing-Chemical Speiality	2009	9,870	118,440	1,185,000	10,280,000	87		10,161,560	5,199,220	1,185,000	1,184,999	0.98
Sasol Ltd.	31	Manufacturing-Chemical Speiality	2008	8,711	104,532	1,275,000	13,629,000	130		13,524,468	6,866,766	1,275,000	1,274,999	0.98
Tiger Brands Ltd.	32	Manufacturing-Food Processors	2016	16,376	196,512	1,130,000	23,782,000	121		23,585,488	11,989,256	1,130,000	1,129,999	0.98
Tiger Brands Ltd.	32	Manufacturing-Food Processors	2015	15,692	188,304	1,149,000	12,974,000	69		12,785,696	6,581,152	1,149,000	1,148,999	0.97
Tiger Brands Ltd.	32	Manufacturing-Food Processors	2014	13,636	163,632	1,146,000	30,480,000	186		30,316,368	15,321,816	1,146,000	1,145,999	0.99
Tiger Brands Ltd.	32	Manufacturing-Food Processors	2013	13,926	167,112	1,149,000	17,661,000	106		17,493,888	8,914,056	1,149,000	1,148,999	0.98
Tiger Brands Ltd.	32	Manufacturing-Food Processors	2012	13,024	156,288	1,149,000	12,967,000	83		12,810,712	6,561,644	1,149,000	1,148,999	0.98
Tiger Brands Ltd.	32	Manufacturing-Food Processors	2011	12,214	146,568	1,158,000	12,679,000	87		12,532,432	6,412,784	1,158,000	1,157,999	0.98
Tiger Brands Ltd.	32	Manufacturing-Food Processors	2010	11,017	132,204	1,164,000	6,478,000	49		6,345,796	3,305,102	1,164,000	1,163,999	0.96
Tiger Brands Ltd.	32	Manufacturing-Food Processors	2009	9,870	118,440	1,185,000	7,538,000	64		7,419,560	3,828,220	1,185,000	1,184,999	0.97
Tiger Brands Ltd.	32	Manufacturing-Food Processors	2008	8,711	104,532	1,275,000	4,972,000	48		4,867,468	2,538,266	1,275,000	1,274,999	0.96
Vodacom Group Ltd.	33	Wireless Telecom Services	2016	22,475	269,700	442,000	21,796,600	81		21,526,900	11,033,150	442,000	441,999	0.98
Vodacom Group Ltd.	33	Wireless Telecom Services	2015	21,355	256,260	461,000	23,430,601	91		23,174,341	11,843,431	461,000	460,999	0.98
Vodacom Group Ltd.	33	Wireless Telecom Services	2014	18,449	221,388	373,000	18,042,472	81		17,821,084	9,131,930	373,000	372,999	0.98
Vodacom Group Ltd.	33	Wireless Telecom Services	2013	19,029	228,348	376,000	15,772,684	69		15,544,336	8,000,516	376,000	375,999	0.97
Vodacom Group Ltd.	33	Wireless Telecom Services	2012	17,631	211,572	383,000	16,523,664	78		16,312,092	8,367,618	383,000	382,999	0.97
Vodacom Group Ltd.	33	Wireless Telecom Services	2011	16,827	201,924	369,000	13,190,826	65		12,988,902	6,696,375	369,000	368,999	0.97
Vodacom Group Ltd.	33	Wireless Telecom Services	2010	15,714	188,568	361,000	14,205,882	75		14,017,314	7,197,225	361,000	360,999	0.97
Vodacom Group Ltd.	33	Wireless Telecom Services	2009	13,850	166,200	359,000	22,276,840	134		22,110,640	11,221,520	359,000	358,999	0.99
Vodacom Group Ltd.	33	Wireless Telecom Services	2008	12,679	152,148	366,000	11,955,261	79		11,803,113	6,053,705	366,000	365,999	0.97
Woolworths Holdings Ltd.	34	Retail-Multi Department	2016	12,305	147,660	1,914,000	53,748,000	364		53,600,340	26,947,830	1,914,000	1,913,999	0.99
Woolworths Holdings Ltd.	34	Retail-Multi Department	2015	11,591	139,092	1,954,000	49,177,000	354		49,037,908	24,658,046	1,954,000	1,953,999	0.99
Woolworths Holdings Ltd.	34	Retail-Multi Department	2014	10,115	121,380	1,699,000	27,527,000	227		27,405,620	13,824,190	1,699,000	1,698,999	0.99
Woolworths Holdings Ltd.	34	Retail-Multi Department	2013	10,055	120,660	1,733,000	27,094,000	225		26,973,340	13,607,330	1,733,000	1,732,999	0.99
Woolworths Holdings Ltd.	34	Retail-Multi Department	2012	9,313	111,756	1,710,000	19,542,000	175		19,430,244	9,826,878	1,710,000	1,709,999	0.99
Woolworths Holdings Ltd.	34	Retail-Multi Department	2011	8,546	102,552	1,700,000	19,791,000	193		19,688,448	9,946,776	1,700,000	1,699,999	0.99
Woolworths Holdings Ltd.	34	Retail-Multi Department	2010	8,057	96,684	1,687,000	16,430,000	170		16,333,316	8,263,342	1,687,000	1,686,999	0.99
Woolworths Holdings Ltd.	34	Retail-Multi Department	2009	7,210	86,520	1,665,000	9,598,000	111		9,511,480	4,842,260	1,665,000	1,664,999	0.98
Woolworths Holdings Ltd.	34	Retail-Multi Department	2008	6,501	78,012	1,747,000	8,121,000	104		8,042,988	4,099,506	1,747,000	1,746,999	0.98
African Rainbow Minerals Ltd.	35	Mining-Metals & Minerals	2016	22,141	265,692	460,000	10,918,000	41		10,652,308	5,591,846	460,000	459,999	0.95
African Rainbow Minerals Ltd.	35	Mining-Metals & Minerals	2015	21,009	252,108	459,000	8,320,000	33		8,067,892	4,286,054	459,000	458,999	0.94
African Rainbow Minerals Ltd.	35	Mining-Metals & Minerals	2014	15,332	183,984	486,000	10,769,000	59		10,585,016	5,476,492	486,000	485,999	0.97
African Rainbow Minerals Ltd.	35	Mining-Metals & Minerals	2013	17,631	211,572	499,000	12,006,000	57		11,794,428	6,108,786	499,000	498,999	0.97
African Rainbow Minerals Ltd.	35	Mining-Metals & Minerals	2012	15,837	190,044	515,000	9,613,000	51		9,422,956	4,901,522	515,000	514,999	0.96
African Rainbow Minerals Ltd.	35	Mining-Metals & Minerals	2011	13,994	167,928	518,000	10,230,000	61		10,062,072	5,198,964	518,000	517,999	0.97
African Rainbow Minerals Ltd.	35	Mining-Metals & Minerals	2010	12,944	155,328	504,000	12,961,000	83		12,805,672	6,558,164	504,000	503,999	0.98
African Rainbow Minerals Ltd.	35	Mining-Metals & Minerals	2009	12,035	144,420	488,000	6,977,000	48		6,832,580	3,560,710	488,000	487,999	0.96
African Rainbow Minerals Ltd.	35	Mining-Metals & Minerals	2008	10,453	125,436	518,000	8,683,000	69		8,557,564	4,404,218	518,000	517,999	0.97
Assore Ltd.	36	Mining-Metals & Minerals	2016	22,141	265,692	460,000	17,914,000	67		17,648,308	9,089,846	460,000	459,999	0.97
Assore Ltd.	36	Mining-Metals & Minerals	2015	21,009	252,108	459,000	20,888,000	83		20,635,892	10,570,054	459,000	458,999	0.98
Assore Ltd.	36	Mining-Metals & Minerals	2014	15,332	183,984	486,000	21,570,000	117		21,386,016	10,876,992	486,000	485,999	0.98
Assore Ltd.	36	Mining-Metals & Minerals	2013	17,631	211,572	499,000	20,363,000	96		20,151,428	10,287,286	499,000	498,999	0.98
Assore Ltd.	36	Mining-Metals & Minerals	2012	15,837	190,044	515,000	20,623,000	109		20,432,956	10,406,522	515,000	514,999	0.98
Assore Ltd.	36	Mining-Metals & Minerals	2011	13,994	167,928	518,000	32,081,000	191		31,913,072	16,124,464	518,000	517,999	0.99
Assore Ltd.	36	Mining-Metals & Minerals	2010	12,944	155,328	504,000	16,350,000	105		16,194,672	8,252,664	504,000	503,999	0.98
Assore Ltd.	36	Mining-Metals & Minerals	2009	12,035	144,420	488,000	16,406,000	114		16,261,580	8,275,210	488,000	487,999	0.98
Assore Ltd.	36	Mining-Metals & Minerals	2008	10,453	125,436	518,000	16,148,000	129		16,022,564	8,136,718	518,000	517,999	0.98

APPENDIX 12: s-GINI CALCULATIONS (CONTINUED)														
Company Name	Name	Sector	Year	Ave. Wages/m (R)	Ave. Emp.Wages/y (R)	No. of Emp/industry	Exec. Packages/y (R)	Times		Yi-Yj	μ	N	N-1	GINI
Barloworld Ltd.	37	Industrial-Diversified	2016	19,302	231,624	2,105,000	16,425,000	71		16,193,376	8,328,312	2,105,000	2,104,999	0.97
Barloworld Ltd.	37	Industrial-Diversified	2015	18,485	221,820	2,125,000	14,881,000	67		14,659,180	7,551,410	2,125,000	2,124,999	0.97
Barloworld Ltd.	37	Industrial-Diversified	2014	15,543	186,516	1,854,000	15,627,000	84		15,440,484	7,906,758	1,854,000	1,853,999	0.98
Barloworld Ltd.	37	Industrial-Diversified	2013	15,475	185,700	1,847,000	18,116,000	98		17,930,300	9,150,850	1,847,000	1,846,999	0.98
Barloworld Ltd.	37	Industrial-Diversified	2012	15,097	181,164	1,843,000	15,557,000	86		15,375,836	7,869,082	1,843,000	1,842,999	0.98
Barloworld Ltd.	37	Industrial-Diversified	2011	13,952	167,424	1,831,000	14,966,000	89		14,798,576	7,566,712	1,831,000	1,830,999	0.98
Barloworld Ltd.	37	Industrial-Diversified	2010	13,098	157,176	1,812,000	13,887,000	88		13,729,824	7,022,088	1,812,000	1,811,999	0.98
Barloworld Ltd.	37	Industrial-Diversified	2009	11,940	143,280	1,796,000	9,458,000	66		9,314,720	4,800,640	1,796,000	1,795,999	0.97
Barloworld Ltd.	37	Industrial-Diversified	2008	10,483	125,796	1,914,000	9,009,000	72		8,883,204	4,567,398	1,914,000	1,913,999	0.97
Capital & Counties Properties PLC	38	Real Estate	2016	19,302	231,624	2,105,000	17,919,709	77		17,688,085	9,075,666	2,105,000	2,104,999	0.97
Capital & Counties Properties PLC	38	Real Estate	2015	18,485	221,820	2,125,000	63,930,513	288		63,708,693	32,076,167	2,125,000	2,124,999	0.99
Capital & Counties Properties PLC	38	Real Estate	2014	15,543	186,516	1,854,000	60,643,530	325		60,457,014	30,415,023	1,854,000	1,853,999	0.99
Capital & Counties Properties PLC	38	Real Estate	2013	15,475	185,700	1,847,000	53,298,489	287		53,112,789	26,742,095	1,847,000	1,846,999	0.99
Capital & Counties Properties PLC	38	Real Estate	2012	15,097	181,164	1,843,000	11,718,712	65		11,537,548	5,949,938	1,843,000	1,842,999	0.97
Capital & Counties Properties PLC	38	Real Estate	2011	13,952	167,424	1,831,000	10,331,287	62		10,163,863	5,249,355	1,831,000	1,830,999	0.97
Capital & Counties Properties PLC	38	Real Estate	2010	13,098	157,176	1,812,000	9,668,136	62		9,510,960	4,912,656	1,812,000	1,811,999	0.97
Capital & Counties Properties PLC	38	Real Estate	2009	11,940	143,280	1,796,000	12,674,790	88		12,531,510	6,409,035	1,796,000	1,795,999	0.98
Capital & Counties Properties PLC	38	Real Estate	2008	10,483	125,796	1,914,000	9,767,773	78		9,641,977	4,946,784	1,914,000	1,913,999	0.97
Capitec Bank Holdings Ltd.	39	Banks-Financial Services	2016	19,302	231,624	2,105,000	12,913,000	56		12,681,376	6,572,312	2,105,000	2,104,999	0.96
Capitec Bank Holdings Ltd.	39	Banks-Financial Services	2015	18,485	221,820	2,125,000	8,740,000	39		8,518,180	4,480,910	2,125,000	2,124,999	0.95
Capitec Bank Holdings Ltd.	39	Banks-Financial Services	2014	15,543	186,516	1,854,000	9,092,000	49		8,905,484	4,639,258	1,854,000	1,853,999	0.96
Capitec Bank Holdings Ltd.	39	Banks-Financial Services	2013	15,475	185,700	1,847,000	10,799,000	58		10,613,300	5,492,350	1,847,000	1,846,999	0.97
Capitec Bank Holdings Ltd.	39	Banks-Financial Services	2012	15,097	181,164	1,843,000	10,519,000	58		10,337,836	5,350,082	1,843,000	1,842,999	0.97
Capitec Bank Holdings Ltd.	39	Banks-Financial Services	2011	13,952	167,424	1,831,000	11,162,000	67		10,994,576	5,664,712	1,831,000	1,830,999	0.97
Capitec Bank Holdings Ltd.	39	Banks-Financial Services	2010	13,098	157,176	1,812,000	8,947,000	57		8,789,824	4,552,088	1,812,000	1,811,999	0.97
Capitec Bank Holdings Ltd.	39	Banks-Financial Services	2009	11,940	143,280	1,796,000	5,079,000	35		4,935,720	2,611,140	1,796,000	1,795,999	0.95
Capitec Bank Holdings Ltd.	39	Banks-Financial Services	2008	10,483	125,796	1,914,000	4,960,000	39		4,834,204	2,542,898	1,914,000	1,913,999	0.95
Exxaro Resources Ltd.	40	Mining-Coal	2016	22,141	265,692	460,000	9,962,330	37		9,696,638	5,114,011	460,000	459,999	0.95
Exxaro Resources Ltd.	40	Mining-Coal	2015	21,009	252,108	459,000	9,327,498	37		9,075,390	4,789,803	459,000	458,999	0.95
Exxaro Resources Ltd.	40	Mining-Coal	2014	15,332	183,984	486,000	16,847,295	92		16,663,311	8,515,640	486,000	485,999	0.98
Exxaro Resources Ltd.	40	Mining-Coal	2013	17,631	211,572	499,000	23,495,457	111		23,283,885	11,853,515	499,000	498,999	0.98
Exxaro Resources Ltd.	40	Mining-Coal	2012	15,837	190,044	515,000	25,241,573	133		25,051,529	12,715,809	515,000	514,999	0.99
Exxaro Resources Ltd.	40	Mining-Coal	2011	13,994	167,928	518,000	17,064,525	102		16,896,597	8,616,227	518,000	517,999	0.98
Exxaro Resources Ltd.	40	Mining-Coal	2010	12,944	155,328	504,000	13,402,265	86		13,246,937	6,778,797	504,000	503,999	0.98
Exxaro Resources Ltd.	40	Mining-Coal	2009	12,035	144,420	488,000	6,933,493	48		6,789,073	3,538,957	488,000	487,999	0.96
Exxaro Resources Ltd.	40	Mining-Coal	2008	10,453	125,436	518,000	14,719,290	117		14,593,854	7,422,363	518,000	517,999	0.98
Imperial Holdings Ltd.	41	Transportation Services	2016	22,475	269,700	442,000	15,124,000	56		14,854,300	7,696,850	442,000	441,999	0.96
Imperial Holdings Ltd.	41	Transportation Services	2015	21,355	256,260	461,000	13,196,000	51		12,939,740	6,726,130	461,000	460,999	0.96
Imperial Holdings Ltd.	41	Transportation Services	2014	18,449	221,388	373,000	20,027,000	90		19,805,612	10,124,194	373,000	372,999	0.98
Imperial Holdings Ltd.	41	Transportation Services	2013	19,029	228,348	376,000	20,912,000	92		20,683,652	10,570,174	376,000	375,999	0.98
Imperial Holdings Ltd.	41	Transportation Services	2012	17,631	211,572	383,000	16,353,000	77		16,141,428	8,282,286	383,000	382,999	0.97
Imperial Holdings Ltd.	41	Transportation Services	2011	16,827	201,924	369,000	12,532,000	62		12,330,076	6,366,962	369,000	368,999	0.97
Imperial Holdings Ltd.	41	Transportation Services	2010	15,714	188,568	361,000	12,810,000	68		12,621,432	6,499,284	361,000	360,999	0.97
Imperial Holdings Ltd.	41	Transportation Services	2009	13,850	166,200	359,000	11,329,000	68		11,162,800	5,747,600	359,000	358,999	0.97
Imperial Holdings Ltd.	41	Transportation Services	2008	12,679	152,148	366,000	5,850,000	38		5,697,852	3,001,074	366,000	365,999	0.95

APPENDIX 12: s-GINI CALCULATIONS (CONTINUED)														
Company Name	**Name**	**Sector**	**Year**	**Ave. Wages/m (R)**	**Ave. Emp.Wages/y (R)**	**No. of Emp/industry**	**Exec. Packages/y (R)**	**Times**		**Yi-Yj**	**μ**	**N**	**N-1**	**GINI**
Kumba Iron Ore Ltd.	42	Mining-Steel	2016	22,141	265,692	460,000	5,329,000	20		5,063,308	2,797,346	460,000	459,999	0.91
Kumba Iron Ore Ltd.	42	Mining-Steel	2015	21,009	252,108	459,000	21,014,000	83		20,761,892	10,633,054	459,000	458,999	0.98
Kumba Iron Ore Ltd.	42	Mining-Steel	2014	15,332	183,984	486,000	19,765,000	107		19,581,016	9,974,492	486,000	485,999	0.98
Kumba Iron Ore Ltd.	42	Mining-Steel	2013	17,631	211,572	499,000	18,742,000	89		18,530,428	9,476,786	499,000	498,999	0.98
Kumba Iron Ore Ltd.	42	Mining-Steel	2012	15,837	190,044	515,000	7,773,000	41		7,582,956	3,981,522	515,000	514,999	0.95
Kumba Iron Ore Ltd.	42	Mining-Steel	2011	13,994	167,928	518,000	14,793,000	88		14,625,072	7,480,464	518,000	517,999	0.98
Kumba Iron Ore Ltd.	42	Mining-Steel	2010	12,944	155,328	504,000	6,495,000	42		6,339,672	3,325,164	504,000	503,999	0.95
Kumba Iron Ore Ltd.	42	Mining-Steel	2009	12,035	144,420	488,000	4,531,000	31		4,386,580	2,337,710	488,000	487,999	0.94
Kumba Iron Ore Ltd.	42	Mining-Steel	2008	10,453	125,436	518,000	3,574,000	28		3,448,564	1,849,718	518,000	517,999	0.93
Liberty Holdings Ltd.	43	Insurance-Financial Services	2016	19,302	231,624	2,105,000	19,341,000	84		19,109,376	9,786,312	2,105,000	2,104,999	0.98
Liberty Holdings Ltd.	43	Insurance-Financial Services	2015	18,485	221,820	2,125,000	24,290,000	110		24,068,180	12,255,910	2,125,000	2,124,999	0.98
Liberty Holdings Ltd.	43	Insurance-Financial Services	2014	15,543	186,516	1,854,000	24,052,000	129		23,865,484	12,119,258	1,854,000	1,853,999	0.98
Liberty Holdings Ltd.	43	Insurance-Financial Services	2013	15,475	185,700	1,847,000	32,971,000	178		32,785,300	16,578,350	1,847,000	1,846,999	0.99
Liberty Holdings Ltd.	43	Insurance-Financial Services	2012	15,097	181,164	1,843,000	23,693,000	131		23,511,836	11,937,082	1,843,000	1,842,999	0.98
Liberty Holdings Ltd.	43	Insurance-Financial Services	2011	13,952	167,424	1,831,000	20,758,000	124		20,590,576	10,462,712	1,831,000	1,830,999	0.98
Liberty Holdings Ltd.	43	Insurance-Financial Services	2010	13,098	157,176	1,812,000	14,468,000	92		14,310,824	7,312,588	1,812,000	1,811,999	0.98
Liberty Holdings Ltd.	43	Insurance-Financial Services	2009	11,940	143,280	1,796,000	8,350,000	58		8,206,720	4,246,640	1,796,000	1,795,999	0.97
Liberty Holdings Ltd.	43	Insurance-Financial Services	2008	10,483	125,796	1,914,000	9,164,000	73		9,038,204	4,644,898	1,914,000	1,913,999	0.97
Massmart Holdings Ltd.	44	Retail-Multi Department	2016	12,305	147,660	1,914,000	13,839,000	94		13,691,340	6,993,330	1,914,000	1,913,999	0.98
Massmart Holdings Ltd.	44	Retail-Multi Department	2015	11,591	139,092	1,954,000	12,790,000	92		12,650,908	6,464,546	1,954,000	1,953,999	0.98
Massmart Holdings Ltd.	44	Retail-Multi Department	2014	10,115	121,380	1,699,000	12,207,000	101		12,085,620	6,164,190	1,699,000	1,698,999	0.98
Massmart Holdings Ltd.	44	Retail-Multi Department	2013	10,055	120,660	1,733,000	9,069,000	75		8,948,340	4,594,830	1,733,000	1,732,999	0.97
Massmart Holdings Ltd.	44	Retail-Multi Department	2012	9,313	111,756	1,710,000	23,481,000	210		23,369,244	11,796,378	1,710,000	1,709,999	0.99
Massmart Holdings Ltd.	44	Retail-Multi Department	2011	8,546	102,552	1,700,000	90,056,000	878		89,953,448	45,079,276	1,700,000	1,699,999	1.00
Massmart Holdings Ltd.	44	Retail-Multi Department	2010	8,057	96,684	1,687,000	9,172,000	95		9,075,316	4,634,342	1,687,000	1,686,999	0.98
Massmart Holdings Ltd.	44	Retail-Multi Department	2009	7,210	86,520	1,665,000	14,152,000	164		14,065,480	7,119,260	1,665,000	1,664,999	0.99
Massmart Holdings Ltd.	44	Retail-Multi Department	2008	6,501	78,012	1,747,000	13,000,000	167		12,921,988	6,539,006	1,747,000	1,746,999	0.99
Pick n Pay Stores Ltd.	45	Retail-Food & Drug	2016	12,305	147,660	1,914,000	24,455,400	166		24,307,740	12,301,530	1,914,000	1,913,999	0.99
Pick n Pay Stores Ltd.	45	Retail-Food & Drug	2015	11,591	139,092	1,954,000	18,732,200	135		18,593,108	9,435,646	1,954,000	1,953,999	0.99
Pick n Pay Stores Ltd.	45	Retail-Food & Drug	2014	10,115	121,380	1,699,000	15,169,400	125		15,048,020	7,645,390	1,699,000	1,698,999	0.98
Pick n Pay Stores Ltd.	45	Retail-Food & Drug	2013	10,055	120,660	1,733,000	5,727,800	47		5,607,140	2,924,230	1,733,000	1,732,999	0.96
Pick n Pay Stores Ltd.	45	Retail-Food & Drug	2012	9,313	111,756	1,710,000	18,643,400	167		18,531,644	9,377,578	1,710,000	1,709,999	0.99
Pick n Pay Stores Ltd.	45	Retail-Food & Drug	2011	8,546	102,552	1,700,000	8,528,400	83		8,425,848	4,315,476	1,700,000	1,699,999	0.98
Pick n Pay Stores Ltd.	45	Retail-Food & Drug	2010	8,057	96,684	1,687,000	8,160,000	84		8,063,316	4,128,342	1,687,000	1,686,999	0.98
Pick n Pay Stores Ltd.	45	Retail-Food & Drug	2009	7,210	86,520	1,665,000	10,771,600	124		10,685,080	5,429,060	1,665,000	1,664,999	0.98
Pick n Pay Stores Ltd.	45	Retail-Food & Drug	2008	6,501	78,012	1,747,000	7,115,300	91		7,037,288	3,596,656	1,747,000	1,746,999	0.98
Truworths International Ltd.	46	Retail-Soft goods	2016	12,305	147,660	1,914,000	26,575,000	180		26,427,340	13,361,330	1,914,000	1,913,999	0.99
Truworths International Ltd.	46	Retail-Soft goods	2015	11,591	139,092	1,954,000	15,261,000	110		15,121,908	7,700,046	1,954,000	1,953,999	0.98
Truworths International Ltd.	46	Retail-Soft goods	2014	10,115	121,380	1,699,000	13,501,000	111		13,379,620	6,811,190	1,699,000	1,698,999	0.98
Truworths International Ltd.	46	Retail-Soft goods	2013	10,055	120,660	1,733,000	17,953,000	149		17,832,340	9,036,830	1,733,000	1,732,999	0.99
Truworths International Ltd.	46	Retail-Soft goods	2012	9,313	111,756	1,710,000	20,713,000	185		20,601,244	10,412,378	1,710,000	1,709,999	0.99
Truworths International Ltd.	46	Retail-Soft goods	2011	8,546	102,552	1,700,000	19,317,000	188		19,214,448	9,709,776	1,700,000	1,699,999	0.99
Truworths International Ltd.	46	Retail-Soft goods	2010	8,057	96,684	1,687,000	15,574,000	161		15,477,316	7,835,342	1,687,000	1,686,999	0.99
Truworths International Ltd.	46	Retail-Soft goods	2009	7,210	86,520	1,665,000	14,416,000	167		14,329,480	7,251,260	1,665,000	1,664,999	0.99
Truworths International Ltd.	46	Retail-Soft goods	2008	6,501	78,012	1,747,000	12,964,000	166		12,885,988	6,521,006	1,747,000	1,746,999	0.99
Statistics South Africa: Quarterly Employment Statistics								**6490**	**Max**				**Max**	**1.00**
Estimates of average monthly earnings, including bonuses and overtime payments, at current prices, by industry within 95% confidence limits								**12**	**Min**				**Min**	**0.85**
								157	**Average**				**Average**	**0.98**
NB: The Bidvest Group's wages were classified under Financial intemediation, insurance, real estate and Business Services Industry as classified by Statistics South Africa														

Appendix 13: Justification of governance provisions included in the board index calculations

Provision	Inclusion justification
1. No Chair/CEO Duality	To promote independence, objectivity and have an arm's length relationship in the management of the board's activities. Further, the separation of duties ensures that power is not vested in one individual thus introducing checks and balances.
2. Majority of NEDs on board are Independent	This minimises the possibility of conflicts of interest and promotes objectivity in the execution of duties for the greater good of shareholders and other stakeholders..
3. Presence of Deputy Chair and or Lead INED (LID)	He/she is responsible for the performance evaluation of the Chair. He also manages actual and perceived conflict of interests of the Chair and any other board member. LID also supports the Chair in all his/her roles.
4. Presence of Remuneration Committee	Its governance ensures that remuneration structure aligns the executives' contribution to company performance, while retaining talent within the company. This aspect of governance has the potential to weaken existing governance systems and thus warrants inclusion in the index calculation.
5. INED Chairs Remuneration Committee	To enhance the monitoring capacity of the board, the remuneration committee should be chaired by an INED. The provision encourages independent judgement with respect to executive remuneration and balances power as well as align principal's and agent's interests.
6. Remuneration Committee comprised of NEDs & majority are INEDs	To ensure the independence of the remuneration committee and eliminate the influence of executives in determining their own compensation. Further,

Provision	Inclusion justification
	the independence of the committee should ensure socially acceptable and responsible executive compensation structures.
7. Presence of Audit Committee	This is a statutory requirement for listed companies and is part of the overall governance system. The audit committee provides independent oversight, combined assurance and integrity to financial reports it publishes. This committee is a key pillar in governance as investors depend on the integrity of the audit committee.
8. INED Chairs Audit Committee	Independent and objective leadership of this committee bolsters integrity of integrated annual reports and internal controls. Investors and regulatory authorities need to trust the independence and leadership of this committee. Weaknesses in the independence and leadership of this committee may make the company susceptible to financial reporting fraud.
9. All Audit Committee members are INEDs	Strength in the independence of this committee improves the trustworthiness of the committee's oversight and integrated reports published by the company. This committee needs to be free from internal influences and lack of independence. Hence, this is a key provision if the oversight of the board is to be effective. This provision is also a key consideration in due diligence carried out during mergers and acquisitions.
10. Presence of Nominating Committee	This provision addresses how directors are appointed to the board, continuity through succession planning and performance evaluation of directors. The functioning of this committee is vital in the overall governance of the company as it influences other aspects like independence, objectivity and competence of directors. Strength and or weaknesses in the functioning of this committee impacts the effectiveness of the governing body. Hence, inclusion as an index provision.

Provision	Inclusion justification
11. NED or Board Chair chairs the Nominating Committee	Independent leadership and nomination is critical and a fundamental building block in governance. Thus, inclusion as part of a governance proxy calculation.
12. Nominating Committee comprised of NEDs & majority are INEDs	This committee ensures that the board is comprised of members who have appropriate competences, independence, diversity and can discharge their responsibilities effectively. The committee's functioning contributes to the robustness or poor overall oversight. For this reason, this provision was included as part of the index calculation.
13. Presence of Risk Committee	This provision is included in the index calculation because risk can expose the company to bankruptcy. Also, risk governance needs effective oversight to align to the risk appetite of the principal.
14. NED Chairs the Risk Committee	Independent leadership of this committee ensures that the business is not exposed to unnecessary risk which the company may be exposed to because the agent aspires to achieve profit targets that determine his/her compensation. For this reason, this provision was included in the index calculation.
15. Majority of Risk Committee members are NEDs	This provision is included because an objective oversight of risk is necessary to ensure that the company is not exposed to undue risk. Board members who are not involved in the day-to-day running of the business are positioned to evaluate the level of risk the business is exposed to.
16. Presence of a Committee overseeing technology and information governance	Technology has become a strategic pillar in the way most companies conduct their businesses. However, technology exposes companies to relatively high risks which need to be controlled. A board committee is recommended to be established and hence our inclusion in the index calculation.

Provision	Inclusion justification
17. Presence of a Social and Ethics Committee	The inclusion of this requirement is based on the reason that the setting up of this committee is a statutory requirement.
18. NED Chairs the Social and Ethics Committee	This provision reinforces the independence and governance of the committee.
19. Majority of Social & Ethics Committee members are NEDs	The independence of this statutory committee or function enhances its objectivity. It should be free from internal influences from those who run the day-to-day affairs of the company. This provision is a governance pillar focussing on the company's ethics, corporate citizenry, sustainability and relationship with stakeholders. Thus, an important component of the overall governance of companies.
20. Compliance with laws, rules, codes & standards i.e. no reported breaches	This provision encapsulates the functioning and efficacy of all the provisions. If all the provisions were adhered to and effective, the company would comply with the recommendations from King III and King IV. Failures to adhere to any provision suggest weaknesses in governance.

Appendix 14: Ethical clearance certificate

UNISA university of south africa

FINANCE, RISK MANAGEMENT & BANKING RESEARCH ETHICS REVIEW COMMITTEE

24 JANUARY 2017

Ref #: 2017/CEMS/DFRB/002
Name of applicant: Mr T Muzata
Student #: 55764487
Supervisor: Prof T Mpofu
Staff #: 1115707

Dear Mr T Muzata

Decision: Ethics Approval

Name: Mr T Muzata, 55764487@mylife.unisa.ac.za

Supervisor: Prof T mpofu, mpofurt@unisa.ac.za, 012 429 4808

Proposal: Examining consequences of principal-agent and corporate governance interactions in South Africa. A study of FTSE/JSE Top40 companies

Qualification: DCOMM

Thank you for the application for research ethics clearance by the Department of Finance, Risk Management and Banking Research Ethics Review Committee for the above mentioned research. Final approval is granted for the duration of the project.

For full approval: The application was reviewed in compliance with the Unisa Policy on Research Ethics by the DFRB RERC 24 January 2017.

The proposed research may now commence with the proviso that:

1) The researcher/s will ensure that the research project adheres to the values and principles expressed in the UNISA Policy on Research Ethics.
2) Any adverse circumstance arising in the undertaking of the research project that is relevant to the ethicality of the study, as well as changes in the methodology, should be communicated in writing to the department of Finance, Risk Management and Banking Ethics Review Committee. An amended application

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could be requested if there are substantial changes from the existing proposal, especially if those changes affect any of the study-related risks for the research participants.

3) The researcher will ensure that the research project adheres to any applicable national legislation, professional codes of conduct, institutional guidelines and scientific standards relevant to the specific field of study.

Note:

The reference number 2017/CEMS/DFRB/002 should be clearly indicated on all forms of communication [e.g. Webmail, E-mail messages, letters] with the intended research participants, as well as with the [DFRB] RERC.

Kind regards,

Mr Gerhard Grebe
Chairperson: DFRB Research Ethics Review Committee
0124296723/grebegpm@unisa.ac.za

Prof Thomas Mogale
Executive Dean: CEMS

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Appendix 15: Declaration of professional edit

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Independent Skills Development Facilitator

Dear Mr Muzata

This letter is to record that I have completed a language edit of your thesis entitled "Examining consequences of principal-agent and corporate governance interactions in South Africa. A study of FTSE/JSE Top40 companies".

The edit that I carried out included the following:

-Spelling
-Grammar
-Vocabulary
-Punctuation
-Pronoun matches
-Word usage
-Sentence structure
-Correct acronyms (matching your supplied list)
-Formatting
-Captions and labels for figures and tables
-Spot checking of ten in-text references
-Generation of Table of Contents, Lists of Figures and Tables

The edit that I carried out excluded the following:

-Content
-Correctness or truth of information (unless obvious)
-Correctness/spelling of specific technical terms and words (unless obvious)
-Correctness/spelling of unfamiliar names and proper nouns (unless obvious)
-Correctness of specific formulae or symbols, or illustrations.

Yours sincerely

Retha Burger

24 May 2018