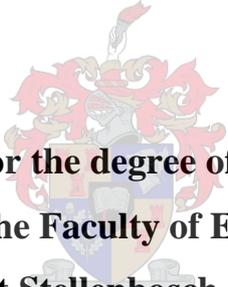# CORPORATE GOVERNANCE AND THE FINANCIAL PERFORMANCE OF SELECTED JOHANNESBURG STOCK EXCHANGE INDUSTRIES

by

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Dissertation presented for the degree of Doctor of Philosophy in Business Management in the Faculty of Economic and Management Sciences at Stellenbosch University

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December 2014

DECLARATION

By submitting this dissertation electronically, I declare that the entirety of the work contained therein is my own, original work, that I am the sole author thereof (save to the extent explicitly otherwise stated), that reproduction and publication thereof by Stellenbosch University will not infringe any third party rights and that I have not previously in its entirety or in part submitted it for obtaining any qualification.

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ABSTRACT

Mainstream investors are mostly interested in how they can benefit financially from a specific investment. Although this is the case, an increasing number of so-called responsible investors are also beginning to integrate environmental, social and corporate governance (ESG) aspects into their investment analysis and ownership practices. Corporate governance compliance is often the first level of ESG interest for these investors.

Previous researchers considered the relationship between corporate governance and various financial performance measures, but reported inconclusive evidence on the nature of the relationship. Even though the three King Reports provide a well-developed framework for corporate governance compliance in South Africa, no comprehensive academic study has previously been conducted on the above-mentioned relationship in the South African context. The primary objective of the current study was therefore to investigate the relationship between corporate governance and the financial performance of selected JSE industries. The chosen study period (2002–2010) coincided with the launch of the King II Report and included the 2007–2009 global financial crisis.

A combination of convenience and judgement sampling was used to draw a sample from six JSE industries. In an attempt to reduce survivorship bias, the sample included both listed firms and firms that had delisted during the study period. The complete sample comprised 227 companies (1 417 annual observations). When the study commenced, there was a lack of reliable, readily available ESG data for JSE-listed firms. An existing corporate governance research instrument was therefore refined to develop standardised data on the corporate governance compliance of the selected firms. An annual corporate governance score (CGS) was compiled for each of the firms by means of content analysis of its annual reports.

Five financial performance variables were considered, namely return on assets (ROA), return on equity (ROE), earnings per share (EPS), total share return (TSR) and risk-adjusted abnormal return (alpha). The selection of these measures was based on previous research. The secondary financial data were sourced from the McGregor BFA database and the Bureau for Economic Research.

The resulting panel dataset was analysed by means of various descriptive and inferential analyses. The descriptive statistics revealed an overall increasing corporate governance

compliance trend. Both the disclosure and acceptability dimensions of the sample companies' CGSs improved over time. The sample firms complied with approximately 68 per cent of the corporate governance criteria on average.

The panel regression analysis showed a significant positive relationship between CGS and the accounting-based EPS ratio. Although this result is encouraging, it should be kept in mind that managers can have an influence on both these variables. On the other hand, a significant negative relationship was observed between the market-based TSR measure and CGS.

The TSR measure is not adjusted for risk. Risk-adjusted abnormal returns were thus also estimated for four corporate governance-sorted portfolios. In a positive change of events, both the capital asset pricing model (CAPM) and the Fama−French three-factor estimations showed positive alphas for the portfolio consisting of firms with the highest CGSs. These encouraging results were observed for the overall study period and the period before May 2008. Investors could thus have benefitted, in risk-adjusted terms, by investing in the sample firms with high corporate governance compliance. In the period after May 2008, the Fama−French three-factor estimations revealed that the risk-adjusted market-based performance of almost all the sample firms were negatively affected by the global financial crisis of the late 2000s. The reported alphas for this period were, however, not significant.

Based on these results, the researcher recommends that directors, managers and shareholders should consider the valuable opportunities associated with sound corporate governance compliance, rather than merely regarding it as a "tick-box" obligation.

KEY WORDS: corporate governance; compliance; South Africa; JSE; financial performance; CAPM; Fama−French three-factor model; financial crisis

OPSOMMING

Hoofstroombeleggers is veral geïnteresseerd in hoe hulle finansieel by 'n spesifieke belegging kan baat. Alhoewel dit die geval is, begin 'n toenemende aantal sogenaamde 'verantwoordelike beleggers' ook die omgewing, sosiale en korporatiewe bestuursaspekte (ESG-aspekte) in hulle beleggingsanalise en eienaarskapspraktyke integreer. Korporatiewe bestuursnakoming is dikwels die eerste vlak van ESG-belangstelling vir hierdie beleggers.

Vorige navorsers het die verwantskap tussen korporatiewe bestuur en verskeie maatstawwe van finansiële prestasie ondersoek, maar het onbesliste resultate ten opsigte van die aard van die verhouding gerapporteer. Ongeag die drie King-verslae wat 'n goed ontwikkelde raamwerk vir die nakoming van korporatiewe bestuur in Suid-Afrika verskaf, is daar tot dusver nog geen omvattende akademiese studie oor die bogenoemde verwantskap in Suid-Afrika gedoen nie. Die primêre doelstelling van hierdie studie was dus om die verwantskap tussen korporatiewe bestuur en die finansiële prestasie van JSE-genoteerde maatskappye te ondersoek. Die geselekteerde studie tydperk (2002–2010) het die wêreldwye finansiële krisis van 2007–2009 ingesluit en het saamgeval met die bekendstelling van die King II-verslag.

'n Kombinasie van gerieflikheids- en oordeelkundige steekproefneming is gebruik om 'n steekproef vanuit ses JSE-nywerhede te selekteer. In 'n poging om oorlewingsydigheid te verminder, het dié steekproef sowel genoteerde maatskappye as maatskappye wat gedurende die studietydperk gedenoteer het, ingesluit. Die volledige steekproef het uit 227 maatskappye (1 417 jaarlikse waarnemings) bestaan. Met die aanvang van die studie was daar 'n gebrek aan betroubare, geredelik beskikbare ESG-data vir JSE-genoteerde maatskappye. 'n Bestaande navorsingsinstrument vir korporatiewe bestuursnakoming is dus verfyn om gestandaardiseerde data rakende die gekose maatskappye se korporatiewe bestuursnakoming te verkry. 'n Jaarlikse korporatiewe bestuur telling (CGS) is deur middel van inhoudsanalise van die betrokke maatskappy se jaarstate vir elk van die maatskappye saamgestel.

Vyf finansiële prestasie veranderlikes is oorweeg, naamlik ondernemingsrentabiliteit (ROA), rentabiliteit van ekwiteit (ROE), verdienste per aandeel (EPS), totale aandeelopbrengs (TSR) en risiko-aangepaste abnormale opbrengs (alfa). Die keuse van hierdie maatreëls was op vorige navorsing gegrond. Die sekondêre finansiële data was afkomstig van die McGregor BFA-databasis en die Buro vir Ekonomiese Ondersoek.

Verskeie beskrywende en inferensiële analises is gebruik om die gevolglike paneeldatastel te ontleed. Die beskrywende statistiek het gedui op 'n algeheel toenemende tendens in korporatiewe bestuursnakoming. Beide die bekendmaking- en aanvaarbaarheidsdimensies van die steekproef maatskappye se CGS's het met verloop van tyd verbeter. Die steekproef maatskappye het gemiddeld aan ongeveer 68 persent van die korporatiewe bestuurskriteria voldoen.

Die paneel regressie-analise het 'n beduidende positiewe verwantskap tussen CGS en die rekeningkundig-gebaseerde EPS-verhoudingsgetal getoon. Alhoewel die resultaat bemoedigend is, moet daar in gedagte gehou word dat bestuurders 'n invloed op beide hierdie veranderlikes kan hê. Aan die ander kant is 'n beduidende negatiewe verband tussen die markgebaseerde TSR-maatstaf en CGS waargeneem.

Die TSR-maatstaf is nie vir risiko aangepas nie. Risiko-aangepaste abnormale opbrengste is dus ook bepaal vir vier korporatiewe bestuursgesorteerde portefeuljes. In 'n positiewe wending het beide die kapitaal-bate prysmodel (CAPM) en die Fama–French drie-faktor beramings positiewe alfas vir die portefeulje bestaande uit maatskappye met die hoogste CGS's getoon. Hierdie bemoedigende resultate is vir die volle studietydperk en die tydperk voor Mei 2008 gerapporteer. Beleggers kon dus, in risiko-aangepaste terme, baat gevind het deur in die steekproef maatskappye met hoë korporatiewe bestuursnakoming te belê. In die tydperk ná Mei 2008 het die Fama–French drie-faktor beramings aangetoon dat die risiko-aangepaste markgebaseerde prestasie van byna al die maatskappye in die steekproef negatief geraak is deur die wêreldwye finansiële krisis van die laat 2000's. Die gerapporteerde alfas vir hierdie tydperk was egter nie beduidend nie.

Na aanleiding van hierdie resultate beveel die navorser aan dat direkteure, bestuurders en aandeelhouers die waardevolle geleenthede wat met standvastige korporatiewe bestuursnakoming verband hou oorweeg eerder as om dit bloot as 'n "afmerk"-verpligting te beskou.

SLEUTELWOORDE: korporatiewe bestuur; nakoming; Suid-Afrika; JSE; finansiële prestasie; CAPM; Fama–French drie-faktor model; finansiële krisis

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Ut omnia in gloriam Dei (tot eer van God)

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For my valued **friends and colleagues**, thank you for your support throughout my journey.

LIST OF ACRONYMS

AGM	–	annual general meeting
AIDS	–	Acquired Immune Deficiency Syndrome
ALSI	–	All Share Index
ANOVA	–	analysis of variance
BBBEE	–	Broad-Based Black Economic Empowerment
BE	–	Book value of ordinary shares
BER	–	Bureau for Economic Research
BRICS	–	Brazil, Russia, India, China and South Africa
BUSA	–	Business Unity South Africa
BWA	–	Businesswomen's Association
CAPM	–	capital asset pricing model
CEO	–	chief executive officer
CG	–	corporate governance
CGS	–	corporate governance score
CRISA	–	Code for Responsible Investing in South Africa
CSI	–	corporate social investment
CSR	–	corporate social responsibility
EPS	–	earnings per share
ESG	–	environmental, social and corporate governance
Eurosif	–	European Sustainable Investment Forum
FCIC	–	Financial Crisis Inquiry Commission
FE	–	fixed effects
FTSE	–	Financial Times Stock Exchange
GDP	–	gross domestic product
GEPF	–	Government Employees Pension Fund
GRI	–	Global Reporting Initiative
HEPS	–	headline earnings per share
HIV	–	Human Immunodeficiency Virus
HML	–	difference between the expected returns on portfolios of high and low BE/ME shares (high minus low)
ICB	–	Industry Classification Benchmark

IFC	–	International Finance Corporation
IFRS	–	International Financial Reporting Standards
IMF	–	International Monetary Fund
IoDSA	–	Institute of Directors in Southern Africa
IOSCO	–	International Organization of Securities Commissions
JSE	–	Johannesburg Stock Exchange
LSD	–	least significant difference
MD	–	managing director
ME	–	market value of ordinary shares/market capitalisation
NED	–	non-executive director
NPV	–	net present value
OECD	–	Organisation for Economic Co-operation and Development
OLS	–	ordinary least squares
PIC	–	Public Investment Corporation Limited
RE	–	random effects
RI	–	Responsible Investing
ROA	–	return on assets
ROE	–	return on equity
SAICA	–	South African Institute of Chartered Accountants
SARB	–	South African Reserve Bank
SMB	–	difference between the expected returns on portfolios of small and large shares (small minus big)
SML	–	security market line
SRI	–	socially responsible investment
SSR	–	sum of squared residuals
TSR	–	total share return
UK	–	United Kingdom
UN	–	United Nations
UNEP FI	–	United Nations Environment Programme Finance Initiative
UNGC	–	United Nations Global Compact
UN PRI	–	United Nations Principles for Responsible Investment
US SIF	–	United States Social Investment Forum
USA	–	United States of America
USB	–	University of Stellenbosch Business School

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CHAPTER 1

INTRODUCTION TO THE STUDY

1.1 Introduction

"There are three steps in the revelation of any truth: 'firstly, it is ridiculed; secondly, it is resisted and thirdly, it is considered self-evident'."

This quote by the German philosopher Arthur Schopenhauer (1788–1860) (in Viviers, Bosch, Smit & Buijs, 2009: 3) is especially appropriate in the light of increasing numbers of responsible investors who actively integrate environmental, social and corporate governance (ESG) considerations into investment analysis and ownership practices (Roy & Gitman, 2012). These investors are recognising the possible effect of ESG risk management on corporate financial performance (UNEP FI & Mercer, 2007).

All investors, including responsible investors, need data to make scrupulous investment decisions. Corporate role players should hence acknowledge the importance of responsible business practices and the reporting thereof (Kaptein, 2004: 13). One of the main sources of financial and ESG data is the annual reports published by firms (Jeffrey, 2010: 43). Given environmental and social data constraints, focus was placed on corporate governance compliance in the current study. The term compliance was based on the "comply or explain" approach as discussed in the King II Report on corporate governance in South Africa. According to this approach, firms listed on the Johannesburg Stock Exchange (JSE) have to report on their compliance with the King II guidelines or explain non-compliance. Consideration was given to both disclosure and acceptability compliance criteria.

The rest of this chapter is structured as follows. Firstly, a background to the study is provided. This is followed by the problem statement and research objectives. Thereafter, the research methodology, prior academic research on the topic, the contribution and limitations of the study as well as the key concepts are presented. Finally, the structure of the dissertation is provided.

1.2   Background to the study

In the current study, the researcher reflected on the concept of 'responsible investing'. This phenomenon has several names, such as 'ethical investing' and 'sustainability investing'. For the purpose of this study, reference is made to responsible investing (RI). The term RI has been widely used in academic literature in response to the launch of the United Nations Principles for Responsible Investment (UN PRI) in 2006 (Eccles & Viviers, 2011).

As mentioned previously, all investors need data to make scrupulous investment decisions. However, a report by the United States Social Investment Forum (US SIF, 2009) indicates that few firms in emerging countries published comprehensive ESG reports in 2008. South Africa was noted as an exception, since the considered JSE-listed firms exhibited the most transparent non-financial reporting compared to the other companies. According to the US SIF (2009) report, South African firms focused on issues related to corporate governance. This finding could be attributed to the fact that many of the South African firms in the study have adopted the guidelines of the first two King Reports (published in 1994 and 2002).

The need for sound corporate governance was highlighted during the global financial crisis which began in 2007. This crisis had a serious adverse effect on financial markets worldwide (UN, 2010). Based on the notion that ESG factors might influence financial performance (UNEP FI & Mercer, 2007), the question could be asked whether there was a relationship between corporate governance and the financial performance of JSE-listed firms during the 2002–2010 period. Note that this period includes the 2007–2009 global financial crisis.

A background sketch of RI is provided to explain ESG engagement. Based on the above-mentioned question, three main constructs of this study will then be considered, namely corporate governance, financial performance and the 2007–2009 global financial crisis.

1.2.1   Responsible investing

Since the inception of modern RI in 1928, three prominent strategies had been developed by responsible investors, namely screening, shareholder activism and impact investing (Schwartz, 2003). Screening entails the exclusion of securities of firms that are observed to operate in an undesirable manner from an investor's portfolio or the inclusion of securities of firms that operate in a desirable manner. Shareholder activism involves that shareholders actively engage with boards on a variety of ethical and ESG issues. Shareholders can engage

companies through private negotiations, voting at annual general meetings (AGMs) and divesting from firms that fail to transform. Impact investing entails that investors support particular causes by investing directly in these, such as social infrastructure development (Viviers, Bosch, Smit & Buijs, 2008: 39).

Irrespective of the chosen strategy, responsible and conventional investors need ESG data to make informed decisions. The growing RI market globally and in South Africa has emphasised the importance of ESG considerations. As ethical and ESG considerations might have an impact on financial performance, specific attention should be given to the phenomenon. Shareholders, who do not have adequate ESG information, might be exposed to financial risks that could lead to lower returns on their investments (Hummels & Timmer, 2004: 73). The availability of ESG data is thus not only relevant to responsible investors, but to all investors.

Due to the lack of standardised environmental and social data, the focus in the current study was on corporate governance data. Corporate governance is typically the first level of ESG engagement for investors (World Federation of Exchanges, 2010: 2). In addition, research has shown that many investors regard ESG risk management to be narrowly concerned with corporate governance considerations (World Business Council for Sustainable Development & UNEP FI, 2010: 7). In the current study, the corporate governance compliance of JSE-listed companies was considered.

1.2.2   Corporate governance

Different definitions exist for 'corporate governance'. In this study, the definition of corporate governance as formulated in the first King Report was used, namely "the system by which firms are directed and controlled" (IoDSA, 1994). From the early 1990s, an increasing number of corporate governance guidelines and codes were published globally to safeguard the interests of stakeholders, and particularly those of shareholders (Bjuggren & Mueller, 2009: 361; Demirag, Sudarsanam & Wright, 2000: 341; Fombrun, 2006).

Amongst all emerging countries, South Africa pioneered the way with the publication of corporate governance guidelines when the first King Report was published in 1994 (Armstrong, Segal & Davis, 2005). The focus of this report was on issues relating to the board of directors and shareholder protection (West, 2009: 11). Due to changes in legislation and the

global corporate governance environment, the King II Report was published in 2002. This report provided guidelines on how JSE-listed firms could, amongst others, voluntarily comply with recommendations on the remuneration and structure of their boards and board committees (IoDSA, 2002; Mallin, 2007: 248).

In 2009, the third King Report was published. This report was based on international corporate governance trends, as well as changes in the South African corporate environment. The King III Report focused on sustainability and integrated reporting (IoDSA, 2009). As in 1994 and 2002, the JSE adapted its listing requirements accordingly. Since 2011, JSE-listed firms have been required to publish integrated reports that encapsulate both financial and non-financial (ESG) data (Pretorius, 2011). As the need for non-financial data increased over the past few years, companies increasingly started to report on these considerations in addition to their financial performance (Epstein & Buhovac, 2014). However, as previously mentioned, firms mainly reported on corporate governance compliance.

After a thorough literature review was conducted, it became evident that the majority of empirical research on corporate governance had been conducted in developed countries. Researchers have reported inconclusive evidence on the nature (positive or negative) of the relationship between corporate governance and financial performance (Haniffa & Hudaib, 2006; Judge, Naoumova & Koutzevol, 2003; Omran, Bolbol & Fatheldin, 2008). In addition, previous African researchers mainly concentrated on board-specific corporate governance variables (such as Babatunde & Olaniran, 2009; Ehikioya, 2009; Kajola, 2008; Kyereboah-Coleman, 2007; Mangena & Chamisa, 2008; Sanda, Mikailu & Garba, 2005).

Specific attention was given to three South African studies. For each of these studies, the researcher will explain how the study differed from the current research. Moloi (2008) assessed the corporate governance reporting of the Top 40 JSE-listed firms in 2006. He used a corporate governance checklist based on specific King II recommendations. Moloi reported that the majority of the firms adhered to good corporate governance practices. Two limitations of his study were that only the 40 largest listed firms were examined for only one year. In contrast, small, medium and large firms (based on market capitalisation) were considered over a longer study period (nine years) for this PhD project.

South African researchers Ntim, Opong and Danbolt (2012) examined the relationship between corporate governance disclosure practices (based on 50 King II provisions) and firm

value (measured by total share return [TSR] and Tobin's Q) for the period 2002–2007. These authors reported a positive association between firm value and corporate governance disclosure practices. However, they only focused on disclosure and did not assign an acceptability score. In the current study, both the disclosure and acceptability dimensions of the corporate governance practices of a sample of JSE-listed firms were considered over the period 2002–2010.

Abdo and Fisher (2007: 46) considered the impact of reported corporate governance disclosure on the financial performance of 97 companies listed in nine sectors of the JSE over a three-year period (June 2003–June 2006). Their corporate governance measure consisted of 29 corporate governance considerations, based on the King II Report and the Standard and Poor's International CGS Index. Financial performance was measured in terms of only market-based measures (TSR, market-to-book ratio and price–earnings ratio). Corporate governance was found to be positively correlated with TSR.

In the current study, a more extensive corporate governance research instrument was used. As will be pointed out in Chapter 4, this research instrument consisted of nine categories and 39 corporate governance factors, based on recommendations of the King II Report (IoDSA, 2002) and the Public Investment Corporation Limited (PIC, 2011). Abdo and Fisher (2007) excluded firms that delisted during the study period and ignored accounting-based performance measures. In contrast, the sample for the current study included both listed and delisted firms. Accounting-based and market-based performance measures were employed. Risk-adjusted abnormal returns, incorporating risk, size and value/growth considerations were furthermore taken into account.

The reference for the King II Report is the Institute of Directors in Southern Africa (IoDSA, 2002). This reference was not repeated for further referrals to the King II Report in this dissertation. The only exception was when some of the King guidelines were considered, but the report's name was not explicitly mentioned.

1.2.3   Financial performance

Inconclusive empirical evidence exists on the nature (positive or negative) of the relationship between corporate governance and financial performance. Depending on the selected financial performance measure(s), previous researchers reported a positive, negative or no

significant relationship between the above-mentioned variables. See Section 3.4 for a comprehensive discussion on previous corporate governance and financial performance studies. It was thus challenging to decide on the appropriate financial performance measures to use in this study.

The researcher had to decide between accounting-based and/or market-based performance measures. Accounting-based performance measures (such as return on assets [ROA]) reflect on a firm's past performance. Market-based performance measures (for example TSR and risk-adjusted abnormal return), on the other hand, evaluate the market's perceptions of a firm's current and anticipated performance and risk (Verweire & Van den Berghe, 2004: 20). Since specific performance aspects can be evaluated by using accounting-based and market-based measures respectively, a combination of these measures were used in the current study.

Classic management theorists consider profit maximisation as a legitimate objective of profit-orientated firms (Verweire & Berghe, 2004: 20–21). The first King Report also indicated that profitability is amongst the most important drivers of corporate governance compliance. Without profitability, none of the stakeholders will have any enduring interest in a firm (IoDSA, 1994).

In line with previous corporate governance research, the accounting-based profitability measures ROA, return on equity (ROE) and earnings per share (EPS) were used in the current study. The researcher realises that the selected accounting-based measures have possible limitations, including artificial manipulation by managers and distortion due to inflation (Haberberg & Rieple, 2008; Venanzi, 2012; Whittington, 2007). The ROA, ROE and EPS accounting-based performance measures were nonetheless used for comparative purposes to previous research findings.

The market-based TSR measure was also used in the current study. This measure includes share price changes and dividend income over a specific period (Megginson, Smart & Lucey, 2008: 194). The TSR measure is not adjusted for risk. Both the single-factor capital asset pricing model (CAPM) and the multi-factor Fama–French three-factor model were hence employed to estimate risk-adjusted abnormal returns for four corporate governance portfolios (Fama & French, 1992; Kürschner, 2008: 7). The portfolios were compiled based on the sample firms' CGSs. See Sections 2.4.3 and 2.4.5 for detailed discussions on these two models.

The 2007−2009 global financial crisis had an effect on the financial performance of firms worldwide, including South Africa. This crisis period was hence deliberately included as a third construct in the current study.

1.2.4   The 2007−2009 global financial crisis

The early and mid-2000s were marked by economic growth, followed by the 2007−2009 global financial crisis. Previous researchers noted that monetary excesses could lead to a period of prosperity followed by a financial collapse (Kamin, 1999; Kindleberger 1978; Taylor, 2009). Refer to Section 2.6 for a detailed discussion on the causes and consequences of the 2007−2009 crisis. For the purpose of the current study, a financial crisis was defined as a disruption to financial markets (Portes & Swoboda, 1987: 10).

With regard to corporate governance compliance during a crisis period, Mitton (2002) indicates that weak corporate governance compliance could aggravate a crisis once it has started. The 2007−2009 crisis period had a considerable effect on the South African economy and hence the share market (Madubeko, 2010). However, to the best of the researcher's knowledge, none of the previous South African corporate governance researchers had included the 2007−2009 crisis period as part of their considered study period.

1.3   Problem statement

Initial empirical research on corporate governance and financial performance was mainly conducted in developed countries. Relatively fewer corporate governance studies have been conducted in emerging countries. In addition, previous researchers (such as Abdo & Fisher, 2007; Babatunde & Olaniran, 2009; Klapper & Love, 2004) reported inconclusive evidence on the nature of the relationship between corporate governance and financial performance.

The main motivation for conducting corporate governance research in South Africa, an emerging country, was that a gap in the literature would be addressed. Secondly, South Africa is a global corporate governance pioneer and thus provides a suitable corporate governance research environment (Armstrong et al., 2005: 7).

Since 1994, JSE-listed firms operate within a well-developed corporate governance framework provided by the King Reports (Armstrong et al., 2005: 7). However, only a few

corporate governance studies have so far been conducted in the country. The main reason for the paucity of research is a lack of readily available corporate governance data. Corporate governance compliance (or the lack thereof) is typically a sensitive matter, since it can harm a firm's reputation. Corporate governance rating agencies therefore rarely make firm-specific corporate governance data publicly available.

In this study, an existing corporate governance research instrument was refined. This instrument was used to compile annual corporate governance scores (CGSs) for each of the JSE-listed firms in the sample by means of content analysis. Since the data constraint was dealt with, the researcher could turn her attention to corporate governance compliance in South Africa.

The current study was hence undertaken to investigate the relationship between corporate governance and the financial performance of selected JSE industries for the period 2002–2010. A justification for this period is provided in Section 1.5.2.

1.4   Research objectives and hypotheses

In the following section, details are provided on the primary and secondary research objectives, as well as the research questions and hypotheses.

1.4.1   Primary research objective

In line with the problem statement, the primary research objective of this study was to investigate the relationship between corporate governance and the financial performance of selected JSE industries.

1.4.2   Secondary research objectives

To give effect to the primary research objectives of this study, the following secondary research objectives have been formulated:

- to conduct a thorough review of the literature on corporate governance, financial performance and financial crises;

- to select the most appropriate research design and methodology for this study based on the primary research objective;

- to formulate research hypotheses;

- to refine the PIC Corporate Governance Rating Matrix (initially designed by the Centre for Corporate Governance in Africa at the University of Stellenbosch Business School (USB) on behalf of the PIC). To use this instrument to compile annual CGSs for each of the sample companies by means of content analysis;

- to collect and analyse the secondary data for this study; and

- to provide pertinent conclusions and recommendations based on the literature review and empirical findings.

1.4.3   Research questions

Given the purpose of the research and the stated research objectives, a number of research questions were formulated:

- What does 'RI' entail?

- What is meant by 'corporate governance'?

- How can corporate governance be measured?

- How important was sound corporate governance compliance for the sample firms?

- What was the corporate governance compliance trend in the sample of JSE-listed companies over the research period?

- What was the trend in the disclosure and acceptability dimensions of the CGSs over the research period?

- Are there differences between the corporate governance compliance of JSE-listed companies and that of delisted companies?

- Are there differences between the corporate governance compliance of companies listed in different JSE industries?

- Which measures can be used to evaluate financial performance?

- Was the relationship between corporate governance and financial performance noticeable immediately (in the given year) or only after a period of time?

- Was there an association between the corporate governance compliance of the top CGS firms in the sample and their risk-adjusted financial performance?

- What is meant by a financial crisis?

- Does 2008, the midpoint of the 2007–2009 global financial crisis, represent a structural break in the financial dataset?

- What was the effect of the 2007–2009 global financial crisis on the financial performance of JSE-listed companies included in the sample?

- Which stakeholders could benefit from corporate governance compliance globally and in South Africa?

1.4.4   Research hypotheses

Based on the primary research objective, the following research hypotheses were formulated:

H_{01}:   There is no relationship between corporate governance and the accounting-based performance of JSE-listed companies.

H_{02}:   There is no relationship between corporate governance and the market-based performance of JSE-listed companies.

In Section 1.5, this study's research design and methodology is explained.

1.5   Research design and methodology

Business research is a practical, systematic activity to observe aspects about business matters to solve problems in a timely manner (Coldwell & Herbst, 2004). A nine-step research process was followed in this study (Cant, Gerber-Nel, Nel & Kotzé, 2003). Firstly, the research problem and research objectives were defined, as reported in Sections 1.3 and 1.4. Thereafter, the research design was developed.

1.5.1   Development of a research design

As indicated in Section 5.3, various research types can be used to investigate the research problem. The current study was descriptive in nature in that it provided a description of the characteristics of the observed phenomena (Struwig & Stead, 2013). A process of deduction

was used to formulate and test a number of hypotheses on the relationship between corporate governance and financial performance.

Both positivistic and phenomenological research paradigms can be used by researchers. A positivistic paradigm is followed when quantitative data are considered. A quantitative research method infers, describes and resolves problems by using numbers (Coldwell & Herbst, 2004). On the other hand, a phenomenological paradigm is employed to study qualitative data if information cannot be analysed in numerical terms (Coldwell & Herbst, 2004; Remenyi, Williams, Money & Swartz, 1998). In the current study, a positivistic paradigm was adopted, which called for the collection and analysis of quantitative data.

As explained in Section 5.4, time measurement was of specific concern to the research design, due to the panel nature of the data. An unbalanced panel design was used by making annual corporate governance observations for each of the sample firms for the years that they were listed over the period 2002–2010.

1.5.2   Secondary research

Researchers can collect both secondary and primary data. Secondary data are already in existence, whereas primary data are collected for the first time (Zikmund & Babin, 2010: 163). In this study, no primary research was conducted. Two sets of secondary data were collected. Firstly, a number of international and national journal articles, books and websites were considered in a thorough analysis of the existing literature. Secondly, the corporate governance and financial data were sourced.

The corporate governance data were not available in a usable format. The corporate governance research instrument of the Centre for Corporate Governance in Africa at the USB and the PIC (2011) was consequently refined by the researcher for the purpose of the current study. This instrument was used to compile a CGS for each of the sample firms by means of content analysis. See Section 5.9.3 for more detail on the coding of the corporate governance data. For this purpose, annual reports were sourced from the McGregor BFA (2013) database. Following the acquisition of I-Net Bridge by McGregor BFA, the database is now known as INET BFA (Bowie, 2014). In this dissertation, reference is still made to McGregor BFA.

To collect comparative corporate governance data, the period 2002, the year that the King II Report became effective, to 2010 was considered. Although the King III Report became

effective from 1 March 2010, it only became mandatory for JSE-listed firms to incorporate ESG analysis in their annual reports from 2011 onward (Pretorius, 2011). For consistency sake, the recommendations of the King II Report were applied for the entire study period.

Based on existing literature, standardised financial data (ROA, ROE, EPS and TSR) were sourced from the McGregor BFA (2013) database. The CAPM and Fama–French three-factor models were used to estimate risk-adjusted abnormal returns. Data on the risk-free rate of return and the market proxy in South Africa (the Financial Times Stock Exchange [FTSE]/JSE All Share Index) were obtained from the Bureau for Economic Research (BER, 2013), a research institute at Stellenbosch University.

1.5.3   Population and sample

The population consisted of all JSE-listed firms for the period 2002−2010. A combination of judgement and convenience sampling was used to draw a sample from six JSE industries. The considered industries were Health Care, Consumer Goods, Consumer Services, Industrials, Telecommunications and Technology. Extensive details on the sample selection process are provided in Section 5.8.

Survivorship bias refers to the consequence of excluding firms that delisted during the study period from a study's dataset (Pawley, 2006: 21). The exclusion of delisted firms can skew the results of a study, since the firms that remain listed are often financially more successful than the ones that delisted. Another form of sampling bias can result from the exclusion of small firms from the sample. Previous corporate governance researchers in South Africa tended to focus on large listed firms. In an attempt to reduce survivorship and sampling bias, listed firms and companies that delisted during the study period were included in the sample. The considered firms included large, medium and small firms based on market capitalisation. Details on this study's population and sample are provided in Table 1.1.

Table 1.1:   Details on the population and sample utilised in this study

Year	Population[a]	Complete sample
2002	451	188
2003	411	190
2004	389	165
2005	373	159
2006	389	144
2007	411	139
2008	411	144
2009	398	149
2010	397	139

a) Data sourced from the World Federation of Exchanges (2014)
Source: Researcher's own construction

1.5.4   Data collection

The collection of data entails the systematic gathering of data for a specific purpose from various sources (Silber & Foshay, 2010: 96). As part of this process, the variables for the current study were identified. Table 1.2 provides a summary of the variables, as well as the relevant data sources.

Table 1.2:   Summary of the variables considered in the current study

Variable	Source
Corporate governance	
Annual CGS	Compiled by the researcher from the firms' annual reports (sourced from McGregor BFA, 2013) by means of content analysis
Accounting-based performance measures	
Annual ROA	Sourced from McGregor BFA (2013)
Annual ROE	Calculated by the researcher based on financial data obtained from McGregor BFA (2013)
Annual headline EPS	Obtained from McGregor BFA (2013)
Market-based performance measures	
Monthly TSR	Obtained from McGregor BFA (2013)
Risk-adjusted abnormal return	Estimated by the researcher for four corporate governance portfolios based on regression analysis
Estimation models	
CAPM (market model)	Data provided by the McGregor BFA (2013) database and the BER (2013)
Fama–French three-factor model	Data provided by the McGregor BFA (2013) database and the BER (2013)
Data required for the estimation of alphas	
Book value of ordinary shares (BE) (year $_{t-1}$)	Sourced from McGregor BFA (2013)
Size (year $_{t-1}$)	Sourced from McGregor BFA (2013)
Monthly risk-free rate (Bond exchange yield on the long-term R186 government bond)	Data provided by the BER (2013)
Monthly return on the market (FTSE/JSE All Share Index; average calculated monthly TSR based on equally-weighted portfolio construction)	Data provided by the BER (2013)

Source: Researcher's own construction

1.5.5   Data processing

Once collected, the quantitative data were processed by means of descriptive and inferential statistics. Descriptive statistics (the mean, median, minimum value, maximum value and standard deviation) were used to summarise the collected data (Coldwell & Herbst, 2004). A Chow test was employed to determine whether 2008, the midpoint of the 2007−2009 global financial crisis, represented a structural break in the financial dataset. This was done to examine whether or not the financial variables were stable over time.

Inferential statistics were used to consider the association between the dependent and independent variables. A mixed-model analysis of variance (ANOVA) was used to determine whether the mean CGSs of the listed firms differed significantly from those of the delisted firms, as well as over the research period. The ordinary least squares regression (OLS) model was used in many previous studies to test for an association between corporate governance and financial performance (Ramdani & Van Witteloostuijn, 2010). However, specification errors may occur if the assumptions of the OLS regression model are not met. Such errors include, amongst others, autocorrelation and heteroskedasticity (Bradley, 2011). Care was taken to minimise these errors in the current study.

The fixed effects and random effects regression techniques are commonly associated with panel data analysis (Hassett & Paavilainen-Mäntymäki, 2013: 45). For the purpose of this study, both the F-test for fixed effects and the Hausman test were considered to select the appropriate regression model. See Sections 5.10.2.5−5.10.2.8 for an in-depth discussion on these regression models as well as the relevant tests. Panel regression analyses were conducted on CGS and EPS, ROA, ROE and TSR respectively.

In addition to TSR, which does not reflect risk, risk-adjusted abnormal returns (alphas) were estimated. For this purpose, both the CAPM and Fama−French three-factor models were employed. Four corporate governance portfolios were constructed, based on the level of corporate governance compliance of the sample companies. The estimated alpha values of these four portfolios were compared over the period 2002−2010.

Attention was furthermore given to whether the firms with the highest CGSs were able to weather the 2007−2009 financial storm better than the companies with the lowest CGSs. For this purpose, the dataset was sub-divided into two periods, namely before May 2008 and after

May 2008. The estimated alphas of the four corporate governance portfolios were then also compared for these two sub-periods.

1.6   Prior academic research on the topic

An extensive word search was done in 2010 when this study started. The key words 'corporate governance', 'financial performance', 'financial crisis', 'South Africa' and 'JSE' were searched on the Sabinet database. Attention was given to current and completed research and the Union Catalogue of Theses and Dissertations. A similar search was conducted on Nexus for current and completed research projects. No studies were found that considered the relationship between corporate governance and the financial performance of JSE-listed firms that specifically included the 2007–2009 crisis period.

See Section 1.2.2 for a discussion on previous South African researchers who also examined the relationship between corporate governance and financial performance. In this dissertation, specific reference is made to the differences between these studies and the current research.

1.7   Contribution of the study

After an extensive literature study, it was evident that inconclusive evidence existed in the emerging market context on the relationship between corporate governance and financial performance. A gap in the literature was hence addressed by considering this relationship in the South African context. Various stakeholders could benefit from this study's findings, including directors and managers, private sector training providers and consultants, investors, ESG data providers, the media, researchers, educators and policymakers.

In this study, the importance of sound corporate governance compliance will be highlighted. Hopefully, managers and directors would recognise and (more) efficiently perform their moral and legal responsibilities towards their firms' shareholders and other stakeholders. Directors and managers could receive training with regard to firm-specific corporate governance compliance difficulties. Such training could be provided by private sector training providers, consultants and the IoDSA.

In 2010, when this study commenced, there was no comprehensive corporate governance database available from which data could be sourced for academic research. As such, the

researcher refined an existing corporate governance research instrument. She then applied this instrument to compile a comprehensive database on the corporate governance compliance of a sample of JSE-listed firms over a nine-year period. Since investors need data to make informed investment decisions, more data providers could provide ESG data in future.

The media could place more focus on the importance of corporate governance compliance. The results of this study can, for example, be published in business newspapers and financial magazines. Researchers could benefit from this study as a result of the contribution to the body of knowledge on corporate governance and financial performance. Educators could teach their students both financial and non-financial aspects, such as corporate governance. They can then apply this knowledge when working as corporates in South Africa and elsewhere.

Policymakers should consider whether the voluntary approach of the King Reports is working in practice. If not, these voluntary principles might possibly be converted into legislation. More details are provided on this study's contribution in Section 8.5.

1.8   Limitations of the research

Four limitations of this study have been identified. Firstly, the sample only included firms listed in six of the ten JSE industries. The reason for the exclusion of Basic Materials, Oil and Gas and Financials was that the nature of the financial reporting of the firms listed in these industries differs from that of the other industries. During the study period, no firms were listed in the Utilities industry. Firms listed in the excluded industries could possibly provide different results in terms of both financial performance and corporate governance compliance.

Secondly, the limited timeframe excluded the possible effect of the King III Report on recommendations such as integrated reporting. Furthermore, the current study was conducted in an emerging market context, where limited ESG data were available. In future, South African academics might be able to examine the complete ESG spectrum and not only corporate governance compliance. However, at the time that this study was undertaken, sufficient comparative environmental and social data were not published by enough JSE-listed companies to justify such a study.

Thirdly, annual reports were only sourced from McGregor BFA (2013). Some firms could have made (unaudited) separate sustainability reports and sustainability-related information available on their websites. For consistency sake, this information was not considered by the researcher. If such information existed and was taken into account, the scores that were allocated for the sustainability reporting category could have been different.

Lastly, specific accounting-based and market-based performance measures were used in the current study. The selected measures were selected based on previous research. Numerous financial performance measures are discussed in literature. The usage of other performance measures could possibly have led to different results.

1.9   Key concepts

This study's key concepts were:

- **Acceptability:** an indication that the disclosed corporate governance information in a company's annual report was in line with the recommendations of the King II Report and the PIC (2011).

- **Accounting-based performance measures:** measures which reflect a firm's past performance, with a general focus on profitability (Agarwal, 2013: 149).

- **Annual report:** a formal account of the proceedings of a firm or group throughout the preceding year with the intention of giving information to stakeholders regarding the financial performance and non-financial activities of the firm (Collier, 2009a).

- **Compliance:** a firm's reported corporate governance initiatives were in line with the King II principles and recommendations by the PIC (2011). The notion of compliance was based on the "comply or explain" approach as discussed in the King II Report. Compliance in this study involved both disclosure and acceptability criteria.

- **Content analysis:** a systematic way of quantifying and describing observed phenomena (Krippendorff, 2004).

- **Corporate governance:** the system by which firms are directed and controlled (IoDSA, 1994).

- **Corporate governance score:** a score that reflects the compliance of a specific JSE-listed firm with the guidelines of the King II Report and the recommendations of the PIC (2011) for a given year.

- **Disclosure:** information on financial and non-financial considerations published in audited annual reports (PIC, 2011).

- **Financial crisis:** a disruption to financial markets, which can affect the entire economic environment (Portes & Swoboda, 1987: 10).

- **Market-based performance measures:** measures that give an indication of investors' perceptions regarding the past performance and future prospects of the firm, typically based on the company's share price (Bhat, 2008: 81).

- **Responsible investing:** the integration of ESG considerations into investment management processes and ownership practices based on the belief that these factors have an impact on financial performance (UNEP FI & Mercer, 2007).

- **Risk-adjusted abnormal return:** a market-based performance measure that considers share returns in excess of expected returns (Lee, Lee & Lee, 2009). Risk-adjusted abnormal returns were based on the CAPM and Fama–French three-factor models in the case of this study.

1.10 Structure of the dissertation

This dissertation comprises eight chapters.

Chapter 1: Introduction to the study

This chapter reflects a broad overview of the study. A background sketch, the research problem, the research objectives and hypotheses, research methodology, prior academic research on the topic, the contribution and limitations of the current study, key concepts, as well as an overview of the contents of the chapters comprising the dissertation are provided.

Chapter 2: Financial performance and financial crisis

The focus of Chapter 2 is on two of the main constructs of this study, namely 'financial performance' and 'financial crisis'. This chapter starts by defining financial performance, followed by a discussion of accounting-based and market-based performance measures. Non-

traditional performance considerations are also mentioned. The causes of financial crisis periods are discussed. Specific reference is made to the 2007–2009 global financial crisis and the role that insufficient corporate governance compliance played in this crisis.

Chapter 3: Responsible investing and corporate governance

Corporate governance is the third main construct of this study. It is positioned in the field of RI. Corporate governance compliance is one of the non-financial aspects to which investors in general and responsible investors in particular give attention. This chapter begins with a discussion on the history of RI. Specific attention is given to the South African regulatory environment, followed by a detailed discussion on corporate governance globally and the development of the local King Reports over the past two decades. A summary of previous corporate governance studies conducted in developed and emerging countries is provided. Specific reference is made to previous South African studies. Research on the effect of previous crisis periods on corporate governance is also considered.

Chapter 4: The corporate governance research instrument

In Chapter 4, a detailed discussion is provided on the refinement and implementation of the research instrument that was used to compile annual CGSs for the sample firms.

Chapter 5: Research design and methodology

This chapter focuses on the research process that was followed. Nine steps are discussed, namely identifying and formulating the research problem and objectives, developing a research design, conducting secondary and primary research, determining the research frame, collecting data, processing data and finally, reporting the research findings.

Chapter 6: Empirical results: descriptive statistics

The findings of the descriptive statistics for both the independent and dependent variables are presented in this chapter. An overview is also provided of relevant economic data, with specific reference to the 2007–2009 global financial crisis.

Chapter 7: Empirical results: inferential statistics

Chapter 7 presents the results of the inferential statistics. The results of the mixed-model ANOVA design, which was used to determine the significance of the observed trends in the

CGSs, are discussed. The results of various panel regression analyses are also reported. Focus was placed on whether 2008, the mid-point of the 2007–2009 global financial crisis could be seen as a structural break in the financial dataset. In addition to the market-based TSR measure, risk-adjusted abnormal returns were estimated for four corporate governance portfolios by applying both the CAPM and the Fama–French three-factor models.

Chapter 8: Summary, conclusions and recommendations

In Chapter 8, a summary of the study is provided. Conclusions are drawn and recommendations made, based on the research findings. Finally, suggestions for future research, based on the identified limitations of this study, are provided.

CHAPTER 2

FINANCIAL PERFORMANCE AND FINANCIAL CRISIS

2.1 Introduction

As indicated in Chapter 1, the current study considered the relationship between corporate governance and financial performance within the South African context. One of the ultimate goals of corporate governance is to ensure that financiers receive a [sustainable] return on their investment (Shleifer & Vishny, 1997). The evaluation of financial performance is thus a central theme in corporate finance (Verweire & Van den Berghe, 2004: 8, 15).

Measures to assess financial performance typically include return on investment ratios such as ROA and ROE (Schniederjans, Hamaker & Schniederjans, 2010: 60). The accountability of a firm's managers to financial claimholders can be enhanced by having efficient corporate governance mechanisms in place (Jostarndt, 2007). According to the King III Report (IoDSA, 2009), the 2007–2009 global financial crisis that started in the United States of America (USA) can be partly described as a corporate governance crisis. Corporate governance mechanisms were criticised for failing to safeguard firms against excessive risk-taking prior to this crisis (Kirkpatrick, 2009). On a positive note, sound internal corporate governance can mitigate the negative effects of a crisis (Chang, Park & Yoo, 1998; Moody-Stewart, 2009).

Previous corporate governance researchers mostly considered the period before the 2007–2009 global financial crisis. This crisis period was deliberately included in the current study, since the effect of the crisis on the financial performance of JSE-listed firms could not be ignored. There is no optimal set of performance measures that should be used to evaluate financial performance. In this study, the researcher concentrated on selected accounting-based and market-based financial performance measures that were used by previous corporate governance researchers.

Financial performance is defined in Section 2.2, followed by a discussion on different accounting-based and market-based performance measures. Non-traditional performance

considerations are explained in Section 2.5. Thereafter, the causes and impact of financial crises are discussed in Section 2.6.

2.2   Defining financial performance

Financial performance can be defined as the results of the operations and policies of a firm in monetary terms (BusinessDictionary.com, 2013). The financial performance of companies may be influenced by internal managerial decisions (for example the financing of assets) and by external factors (such as a financial crisis). Although managers can exercise control over the internal corporate environment, they have very limited influence over changes in the external environment (Lussier, 2012: 56).

Conventional financial management entails an integrated decision-making process (Baker & Powell, 2005). It concerns the acquisition and financing of assets as well as accomplishing the overall corporate objectives whilst operating in a complex economic environment (Epstein & Buhovac, 2014). Managers are supposed to regularly measure the performance of the firms for which they work. Performance measurement refers to the collection and reporting of mainly financial data, as well as the periodic analysis of this data by a company's managers (Abramson & Kieffaber, 2003: 194). The measurement of performance provides the link between corporate decisions and the extent to which stated objectives have been reached (Epstein & Buhovac, 2014).

2.2.1   Traditional financial performance objectives

In this section, consideration is given to two traditional financial performance objectives, namely shareholders' wealth maximisation and profit maximisation.

2.2.1.1   *Shareholders' wealth maximisation*

Traditionally, the primary objective of a firm's managers is considered to be the maximisation of the shareholders' wealth. Financial authors (such as Bodie, Kane & Marcus, 2009; Brigham & Houston, 2012) often indicate that shareholders' wealth maximisation could be obtained by optimising the market price per share. This objective is based on the notion that shareholders are the owners of a firm. They buy shares with the aim of earning a return without undue risk exposure (Brigham & Ehrhardt, 2013: 9).

The shareholders of a firm then elect directors, who in turn hire managers to manage the daily operations of the firm. Actions driven by managers who are acting out of self-interest could increase the rate of return by keeping the share price artificially high. The share price of a firm can then be optimised, while shareholders' wealth is simultaneously destroyed (Baijal, 2012; Ehrbar, 1998: 6; Parboteeah & Cullen, 2013: 25). The decisions of a firm's managers can thus have a significant effect on the wealth of investors as well as on their perceptions of future performance (Khan & Jain, 2007).

Most proponents of the shareholders' wealth maximisation perspective argue that this long-term goal can also provide benefits to society (Martin, Petty & Wallace, 2009). They reason that competing companies will direct scarce resources to the most productive uses in order to create wealth. This wealth could then benefit the broader firm community. The effect could trickle down to benefit shareholders in the end (Keown, Martin, Petty & Scott, 2004: 4). Unfortunately, as explained in more detail in Section 2.6.3, the actions of managers are not always in line with the best interests of the firm's shareholders.

2.2.1.2   *Profit maximisation*

The well-known American economist Milton Friedman (1912–2006) stated that the social responsibility of a firm is to increase its profits as long as it stays within "the rules of the game" (Friedman, 1970: 32). Friedman believed that the foundation of a free society is undermined when firms pursue any other responsibility (Horrigan, 2010; Ransome & Sampford, 2010: 35).

From a microeconomic and accounting perspective, it is thus typically argued that profit maximisation should be the ultimate corporate goal. According to this viewpoint, profitability measures are critical tests of a firm's performance, since profit is essential for the survival and long-term prosperity of a firm (Kumar & Sharma, 1998). A company should accordingly engage in activities that add to its profitability and eliminate activities that reduce profitability (Mittal, 2010: 349).

When a microeconomic approach is used, the risks associated with investment projects and the timing of returns is typically ignored. However, investors normally require a higher return for taking on more risk. If the risk–return relationship is ignored, incorrect financial

management decisions may follow (Keown et al., 2004: 4–5). Furthermore, in a real-world scenario, the effect of possible future profits can also not be ignored.

The profit maximisation perspective usually entails a theoretical, short-term goal. Accounting performance measures (as reflected in the annual reports of listed companies) are thus typically not focused on shareholders' wealth creation (Keown et al., 2004: 124). The focus on short-term accounting-based performance measures, such as preliminary earnings results, can detract attention from the long-term objective of wealth creation. Managers should realise that decisions that could create long-term wealth, but strain short-term accounting results could (and should) be made. The rationale for such decisions should then be explained to shareholders by using the positive net present value (NPV) concept. Managers who consider this concept should invest in projects that will create value for the firm's stakeholders over a longer period. The expected future benefits should exceed the cost of such investments (Floyd & Allen, 2002: 355; Madden, 2010; Moyer, McGuigan & Kretlow, 2009: 105).

According to the two above-mentioned traditional perspectives, profitability and/or share returns are two important considerations for firms' managers. As discussed, profit maximisation is often seen as a short-term objective, while wealth creation is typically a long-term objective (Chapman, 2011).

Traditional financial performance measures can be further classified according to three main dimensions, namely time-relatedness, value-relatedness and observation-relatedness (Lindow, 2013: 114). The time-relatedness dimension categorises financial performance measures based on their focus on past or future performance. The second dimension (value-relatedness) places focus on the quantitative (financial) or non-financial nature of the measures. Lastly, according to observation-relatedness, financial performance measures can be divided into measures based on accounting data and/or market data (Lindow, 2013: 114).

Over time, various financial performance measures have been designed to assess specific aspects of a company's financial performance. These performance measures include, inter alia, accounting-based and market-based measures (Daily & Dalton, 1992: 379; Neely, 2002: 8). In the following two sections, accounting-based and market-based performance measures are discussed.

2.3   Accounting-based performance measures

As the name indicates, accounting-based performance measures rely on the financial information published in the annual reports of firms (Weber, 2012: 151). These measures typically reflect a firm's past performance, with a focus on profitability (Agarwal, 2013: 149; Baker & Kiymaz, 2011; Faulkner, Teerikangas & Joseph, 2012: 120). Historically, accounting-based measures have been the most widely used by researchers across disciplines, including corporate governance, who investigated the relationship between an observed variable (such as a corporate governance score) and financial performance (Gomez-Meija, Berrone & Franco-Santos, 2010: 267).

Profitability ratios can be used to assess the collective effects of liquidity, asset and debt management on amongst others the operating results of a company (Brigham & Houston, 2012). Such ratios reflect on the ability of management to generate profit during a specific period. Profitability measures are often used to compare the performance of a firm with its competitors (Younger, 2013). The King II Report explicitly states that, without satisfactory profit levels, it is unlikely that stakeholders will have an enduring interest in a company.

The ROA, ROE and EPS ratios are widely used accounting-based performance measures (Murray & Murray, 2012; Ramdani & Van Witteloostuijn, 2010). The relevance of these measures, as well as possible shortcomings are discussed in Sections 2.3.1 and 2.3.2.

2.3.1   Return ratios

Return ratios measure the efficiency of a firm to generate net income from its assets or capital (Gutmann, 2013). The ROA and ROE ratios are two commonly used return ratios. These measures give an indication of a firm's financial health and are often used by investors to evaluate the efficiency of an investment (Basarab, 2011; Lesáková, 2007).

The ROA ratio links a firm's annual operating activities with its investment activities (Ingram, Albright & Baldwin, 2004). This ratio thus evaluates a firm's effectiveness to generate profits from its available assets. The ROE ratio measures the return that a company has generated for ordinary shareholders. Consideration is given to the profit after tax for a specific year and capital provided by ordinary shareholders (Hatten, 2012: 199–200). Another approach to determine the ROE ratio is to multiply the ROA ratio with the firm's financial leverage, defined as total assets divided by total equity. The ROE ratio thus provides a

summary of the firm's success in terms of its operating, financing and investing activities (Hatten, 2012: 199–200; Ingram et al., 2004).

The actions of managers and efficient corporate governance mechanisms (or the lack thereof) can play an important role in a firm's investment, financing and operating decisions and the outcomes of such decisions (Cai, 2013). Efficient managers should not invest in ineffective assets or overinvest by choosing negative NPV projects. They should rather choose projects that create shareholder value. Regarding operating activities, if excess cash is available, positive NPV projects should be funded. Such projects are supposed to generate positive cash flows. However, when debt usage is high, profits are likely to decrease. The effect of leverage on the ROE ratio should thus be considered (Cai, 2013). In the case of positive financial leverage (the cost of money is less than the return on an investment) a firm's ROE ratio is likely to increase if the company uses more debt capital to finance its assets. Such an increase does not necessarily indicate that the firm is well managed (Hatten, 2012: 199; Simkins & Simkins, 2013).

2.3.1.1   *Proponents of return ratios*

Some corporate governance researchers prefer accounting-based return ratios above market-based share measures (Baker & Anderson, 2010: 108; Bhagat & Bolton, 2008). These researchers argue that accounting profitability is directly linked to a firm's financial survival. Proponents of accounting-based measures reason that these measures are typically more stable and less subjective to speculation than market-based share measures (Hengartner, 2006; Joh, 2003: 297). Furthermore, when the share market is inefficient, share prices are not likely to reflect all available information (Joh, 2003: 297). This is of particular importance during crisis periods, such as the 2007–2009 global financial crisis. During a crisis, investors often act irrationally by not exercising their ability to reason logically (Mitchell & Wilmarth, 2010: 98; Rand, 2004: 366).

Ramdani and Van Witteloostuijn (2010) considered a large number of corporate governance studies that were conducted over the period 1985–2008. They found that ROA and ROE were favoured as financial performance measures in most of these studies. The main reason was that these return ratios provide a measure of how efficient a company's managers are using the capital provided by investors to generate earnings (Rainey, 2008: 268). In Section 3.4,

further information is provided on previous corporate governance and financial performance studies where the ROA and ROE return ratios were used.

2.3.1.2   Criticism against the ROA and ROE ratios

Debt, equity or a combination of these financing sources can be used to fund positive NPV projects. However, excessive debt usage can be both risky and costly. For example, a firm's financing costs will increase as more debt is used. If firms default on interest payments, they can experience financial distress and possibly file for bankruptcy (Brigham & Ehrhardt, 2013: 600). Investors might view a company's high ROE ratio as a positive sign, while the company is in fact struggling financially due to excessive debt usage.

Evidence from the 2007–2009 global financial crisis revealed that, before the crisis period, some firms based their executive directors' emoluments on their ROE ratios. Inflated debt levels were maintained to pay excessive bonuses to directors. When the crisis period ensued, those firms experienced severe financial difficulty. Some of these companies have not yet recovered from their financial losses and had to delist and/or file for bankruptcy (Simkins & Simkins, 2013).

Another criticism is that the ROE ratio can be artificially manipulated by share buybacks, especially if debt capital is used to buy back shares (Taparia, 2003: 77). An increase in a firm's debt usage results in higher financing costs and hence a decrease in net income. The ROE ratio might have increased (since the amount of ordinary shareholders' equity probably decreased), although the firm's profit did not improve (Taparia, 2003: 77). If a firm's managers realise that they will be monitored regularly, inter alia, for illegal and misleading practices, they will be more likely to engage in sound business practices and comply with corporate governance guidelines (IoDSA, 2002).

In addition to the ROA and ROE ratios, the EPS ratio was also used in the current study. Executives and market analysts tend to focus on the EPS performance measure when analysing financial performance (Ogilvie, 2009: 81). Previous corporate governance researchers (such as Alhaji, Yusoff & Alkali, 2012; Cheema & Din, 2013) also used the EPS ratio to measure financial performance.

2.3.2   The EPS ratio

The EPS ratio reflects the net earnings available per share to a firm's ordinary shareholders (Warren, Reeve & Duchac, 2012: 516). This ratio can be calculated based on historic earnings as well as projected future earnings (Tracy, 2002). Information can possibly be obtained about a company's historical financial success (or the lack thereof) by analysing trends in the EPS ratio over time (Needles & Powers, 2009: 707; Nikolai, Bazley & Jones, 2010: 840).

Different definitions for the EPS ratio are used in practice. JSE-listed companies are required to report their headline EPS (HEPS) (SAICA, 2009). Refer to Section 5.9.4.3 for a detailed discussion on the calculation of this ratio. In academic studies, reference is typically made to the use of EPS, with an explanatory section to discuss the specific EPS definition that was used. This approach was also followed in the current study. Share options and share repurchases can have a considerable influence on the EPS ratio, as explained in Section 2.3.2.1.

2.3.2.1   *Share options, share repurchases and the EPS ratio*

The number of issued ordinary shares differ amongst firms. It might therefore be difficult to compare net income amongst small and large firms. The analysis of trends in the EPS ratio might also be challenging if large changes occur in the shareholders' equity of a firm over time. Share buybacks, for example, result in a decrease in the number of ordinary shares issued. Consequently, the EPS ratio of a firm can improve, even if net profit does not improve (Christie, 2007).

Managers are often obsessed with EPS growth over the short term (Young & Yang, 2011). This can be seen as an impediment to good corporate governance and the objective of creating value over the long term. The reason for this obsession is that managers' emolument packages and incentives, such as share options, often depend on whether they have reached the EPS growth targets. However, short-term EPS growth does not necessarily create long-term value (Bogle, 2005: 113–114; Young & Yang, 2011).

Since the 1980s, the popularity of share options schemes drastically increased in the USA (Winslow, 2003). Such schemes provide managers and directors with the possibility to obtain shares below the market price when they exercise their options. Executives and managers can hence influence share prices over the short term to benefit from share options. Inefficient

managers can cause large financial losses to their firms. However, once the share price recovers, these corporate role players can still gain from their share options. Option beneficiaries thus do not experience a personal financial loss due to their mismanagement. The personal wealth of firms' insiders can hence be enhanced at the expense of the shareholders, something which is clearly in contradiction to the goal of shareholders' wealth maximisation (Niskanen, 2005: 263; Wheeler, 2004: 10–11; Winslow, 2003: 48–50).

Before the 2007–2009 financial crisis, the executives of the USA government-sponsored mortgage finance firm Fannie Mae, for instance, used share repurchases to reach their EPS growth target (Christie, 2007). EPS growth targets were regularly used by this firm to evaluate and compensate its executives. These growth targets were also used to allocate share options to the executives. In 2008, Fannie Mae made a financial loss that exceeded the net profit generated in the previous seventeen years (Arrowsmith & McNeil, 2008: 112; Cyert & DeGroot, 1987; Rosenberg, 2012: 219–120).

Despite the financial loss and misstated earnings, Fannie Mae's executives were not required to return their compensation (Hagerty, 2012: 251). However, the Dodd−Frank Wall Street Reform and Consumer Protection Act (signed in July 2010) consequently mandated firms listed in the USA to recoup executive compensation in the event of material financial restatement (Oehmann, 2011).

2.3.2.2   *Other possible disadvantages of the EPS ratio*

In addition to the distorting effect of share repurchases, inflation can also have an adverse effect on the EPS ratio, since heterogeneous figures, such as numbers not expressed in the same monetary unit, are combined in this metric (Venanzi, 2012). Given that monetary figures are the general measurement unit used in accounting, comparisons over different time periods can be challenging (Whittington, 2007: 197).

Another possible disadvantage is that firms can manipulate their reported profit, which can lead to false EPS figures (Haberberg & Rieple, 2008). Although such practices are clearly immoral and contradictory to sound corporate governance principles, they do unfortunately occur. An ethical corporate climate may reduce incidents of accounting manipulation (Abernethy, Bouwens & Van Lent, 2012). Therefore, the independence of financial

professionals, such as financial analysts and chartered accountants, should not be impaired (Chartered Financial Analyst Institute, 2010; SAICA, 2013).

A firm's auditors should use ratio analysis to identify abnormal values or deviations from the norm. Although absolute quantities can easily be manipulated, it is more difficult to manipulate all interrelated amounts (Gupta, 2005: 180). Consequently, if financial manipulation exists, the auditors are supposed to detect it by analysing trends and deviations in ratios before giving an unqualified audit opinion. Stakeholders could then use these audited reports to gather the necessary accounting-based information (Abernethy et al., 2012; Gupta, 2005: 584).

Financial statements reflect the effect that the decisions of managers had on a firm during the past year. Accounting-based measures reflect on historic performance, while share market measures reflect the market's perception about the firm's future prospects. Critics of accounting performance measures therefore often argue that share price performance measures should rather be considered, since it is an external measure that considers future performance (Madden, 2010; Venanzi, 2012).

To address some of the shortcomings of accounting-based measures, market-based measures are often also included in studies that attempt to link corporate governance with financial performance (Mulsow, 2011; Wagner, 2003: 40). The market-based measures that were considered in this study are discussed in the following section.

2.4   Market-based performance measures

Share market data such as share prices are used as the primary source to evaluate market-based performance (Eikelenboom, 2005: 116). Measures that are based on share prices are often used to assess long-term future performance (Gentry & Shen, 2010). These measures improve on accounting-based measures, since they can give management an indication of investors' perceptions of the firm's past performance and future prospects (Bhat, 2008: 81).

Market-based measures are less subject to managerial manipulation in well-regulated markets than accounting-based measures (Mulsow, 2011: 34). In efficient markets, share prices should quickly adapt to new information. Market data are available on a daily basis, while accounting-based information is typically published less frequently (Gross, 2007). Market-

based measures can also not be manipulated as easily as ratios that are based on financial statements (Bryson, 2012: 151).

Another major advantage of market-based measures is that it can be adjusted for risk. Companies (and markets) with weak corporate governance practices can be less attractive to investors, especially due to possible heightened risks during a financial crisis period. Therefore, market-based measures are often included in corporate governance studies to consider whether firms that have high corporate governance compliance deliver better long-term return rates compared to firms with low corporate governance compliance (Von Rekowsky, 2013).

Unfortunately, market-based measures may be influenced by aspects that are not under the control of management, such as herding behaviour (Mitchell & Wilmarth, 2010: 98).

2.4.1   Herding behaviour

Theoretically, share prices that form the basis of market-based measures represent the discounted present value of future cash flows (Knecht, 2014: 223). However, instead of incorporating the potential future returns, share price movements can be induced by financial market volatility and herding behaviour (Bryson, 2012: 151; Knecht, 2014: 223). For example, before and during the 2007–2009 global financial crisis, many market participants engaged in herding behaviour (Mitchell & Wilmarth, 2010: 98).

Herding behaviour refers to the tendency of individuals (and institutions) to act in similar ways, as if they were operating in a proverbial herd (Kremer & Nautz, 2013; Rizzi, 2008: 89). In the lead-up to the 2007–2009 global financial crisis, many investors and fund managers were influenced by each other's decisions. They tended to follow one another into risky ventures (Bikhchandani & Sharma, 2000; Kolb, 2010: 279). When the financial difficulties started, investors also followed each other in withdrawing from certain investments and industries. Consequently, market liquidity became strained. Furthermore, investment managers probably did not want to jeopardise their jobs by investing when other market participants abandoned the market (Bikhchandani & Sharma, 2000).

In financial markets, herds form more often on the sell-side of the market than on the buy-side. Sell-side herding is also most evident for shares with low prior returns (Bikhchandani & Sharma, 2000). Herding behaviour exacerbated share market volatility before and during the

2007–2009 global financial crisis period (Kolb, 2010: 279).When observing a sample of German listed companies during the 2007–2009 crisis period, it was found that rising share volatility led to sell herding behaviour (Kremer & Nautz, 2013).

Three popular market-based measures used to determine shareholders' wealth increases, namely TSR, risk-adjusted abnormal return and Tobin's Q (Gross, 2007: 23; Ntim et al., 2012) will now be discussed.

2.4.2   Share returns and risks

An elementary consideration for existing and potential shareholders is the amount of money that they can earn on a specific investment. The TSR measure considers the dividend income and the change in the share price over the investment horizon (Megginson et al., 2008: 194). This market-based performance measure was included in previous studies that considered the relationship between corporate governance and financial performance (such as Ntim et al., 2012; Vafeas & Theodorou, 1998).

The main reasons for the inclusion of this measure in the current study are that previous corporate governance researchers considered TSR, the measure is simple to calculate and allows comparisons with other performance measures. The TSR measure is externally focused by reflecting the market's perception of performance. The measure could hence be adversely impacted if the share price of a fundamentally strong firm "suffers" in the short term, for instance, during financial crisis periods. A disadvantage is that the measure does not take risk into account (QFINANCE, 2014a; Larrabee & Voss, 2013).

Finance theory indicates that the expected return on an investment should be proportional to the level of risk that a rational investor takes (Arouri, Jawadi & Nguyen, 2010: 16; Groppelli & Nikbakht, 2006). Market efficiency (and thus rational expectations) implies that share prices should reflect all information that is available about a company and its prospects (Brigham & Ehrhardt, 2013). The intrinsic price per share should thus be approximately equal to the actual market price. However, share markets are not always efficient. Certain types of shares, with certain risk profiles, can thus occasionally outperform the market (Brigham & Ehrhardt, 2013; Stevenson, 2012).

Risk cannot be ignored by financiers, especially in an emerging market context. South Africa offers considerable investment opportunities, but also presents a distinct set of challenges and

risks to investors (Van Dijk, Griek & Jansen, 2012). Possible risks are inter alia related to social challenges such as broad-based black economic empowerment (BBBEE), Human Immunodeficiency Virus (HIV) and Acquired Immune Deficiency Syndrome (AIDS) as well as environmental problems such as water pollution, deforestation and over-fishing (Africa faces some serious environmental problems: Greenpeace, 2013; World Wildlife Fund, 2013).

The relationship between risk and return should thus be carefully evaluated before deciding on a specific share investment (Swart, 2002: 159). There are three types of risks that should be considered, namely unsystematic, systematic and systemic risk (Adina & Cezar, 2012; Periasamy, 2009). An unsystematic risk, such as a strike or failed marketing campaign, is related to a specific company or industry (Strong, 2009: 168). Investors can diversify such risks by including securities from different firms in their portfolios (Moyer et al., 2009: 202). A risk inherent to the market is called a systematic risk, such as an unexpected interest rate change or recession (Strong, 2009: 168). Systematic risks cannot be eliminated through diversification. As unsystematic risk can be eliminated through diversification, the market consequently only rewards investors for bearing systematic risk (Moyer et al., 2009: 202).

Systemic risk refers to the risk that an entire financial system or market can experience strain (Adina & Cezar, 2012: 371). Such a risk can occur due to interdependencies in market systems. The failure of an entity or entities can then cause cascading failure for an entire economy (Chen & Sebastian, 2012: 37). Systemic risk thus ultimately has a systematic nature (Scalcione, 2011: 92). For example, the 2007–2009 global financial crisis demonstrated the failure of global institutions to manage the underlying forces of systemic risk (Goldin & Vogel, 2010).

One share is not necessary better than another if its TSR is higher, since systematic risk is not considered. Therefore, investors do not simply seek higher returns, but higher risk-adjusted abnormal returns (Martin et al., 2009: 30). Risk-adjusted abnormal returns can be estimated by considering the actual TSR less the expected return (Bartholdy & Peare, 2005; Catty, 2010: 129). Two models are predominantly used in finance literature for such estimation purposes, namely the CAPM and the Fama–French three-factor model (Bartholdy & Peare, 2005; Catty, 2010: 129). These models are discussed in more detail in Sections 2.4.3 and 2.4.5.

2.4.3   The CAPM

A firm's expected share return is typically based on parameters from a market model, estimated over a number of returns prior to the sample period (Larrabee & Voss, 2013: 63). The well-known CAPM developed by Treynor (1961), Sharpe (1964), Lintner (1965) and Mossin (1966) is often used by practitioners to estimate the expected return for individual shares or portfolios (Damodaran, 2008: 77; Kleuser, 2007).

The CAPM is based on a number of assumptions, the most important being (Kürschner, 2008: 5):

- all investors consider a single period investment horizon;

- the portfolio selection is based on the expected return and standard deviation over the considered period;

- investors have homogenous expectations; and

- taxes and transaction costs are ignored.

According to the CAPM, the expected return of a share ($E(R_{it})$) can be estimated by the risk-free rate (R_{ft}), beta (β_i) and the expected return on the market ($E(R_{mt})$) less the risk-free rate, also known as the market risk premium. The equation to estimate the expected return of a share by applying the CAPM is (Megginson, Smart & Graham, 2010: 208):

$$E(R_{it}) = R_{ft} + \beta_i[E(R_{mt}) - R_{ft}] \tag{2.1}$$

As indicted above, the CAPM equation starts with the risk-free rate. A good proxy for the risk-free rate is the yield on long-term government bonds. This yield closely reflects the default-free holding period returns that are available on long-term treasury securities (Baker & Powell, 2005: 352). Long-term government bonds, such as the R186 in South Africa, are regarded as having practically no default risk (Armitage, 2005: 278; Jones, 2010: 146).

Logically, it is almost impossible to hold or observe the entire market portfolio with an enormous number of assets (Ho & Lee, 2004: 36). Consequently, an alternative estimate for the South African market portfolio should be used, such as the FTSE/JSE All Share Index (also known as the ALSI) (Kürschner, 2008: 7).

Beta is added to the CAPM as a measure of the share's systematic risk (Ward & Muller, 2012: 1). The beta measure indicates, based on past performance, the sensitivity of a firm's historic return to the market portfolio's historic return (Neely, 2007: 266–267; Ward & Muller, 2012: 253). The relationship between the expected rate of return and the level of systematic risk is reflected by the security market line (SML) (Ross, Westerfield & Jordan, 2009) as indicated in Figure 2.1.
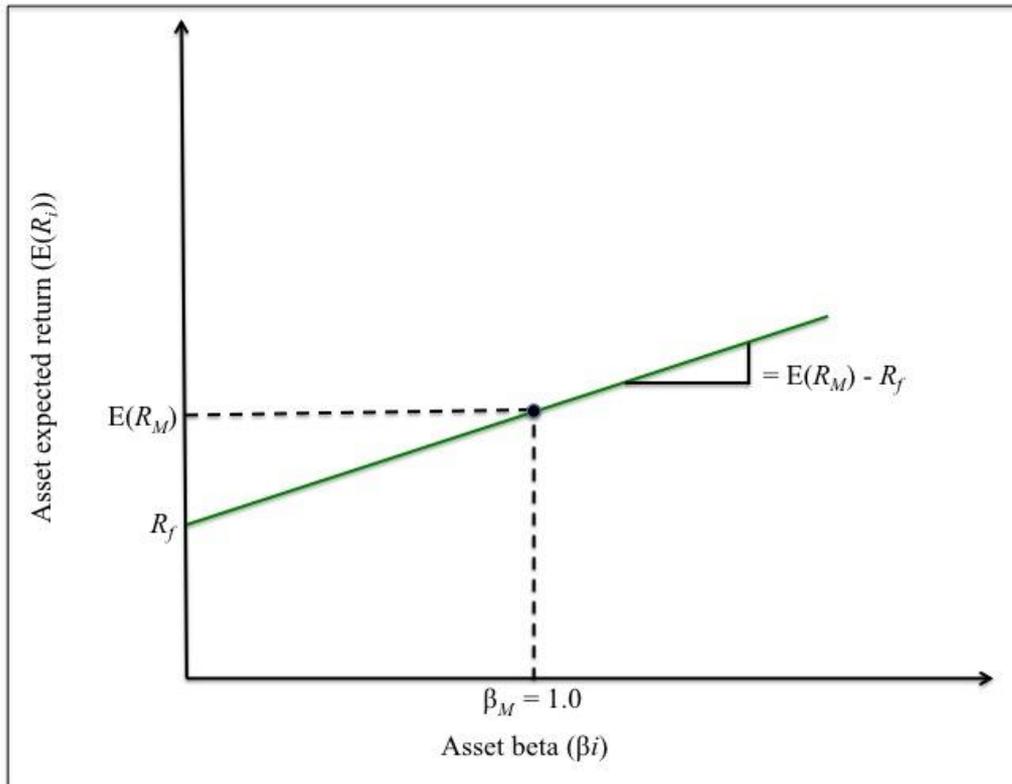
Figure 2.1:   The security market line

Source: Ross et al. (2009)

As seen in Figure 2.1, the SML shows the trade-off between the expected return and systematic risk as a straight line that intersects the y-axis at the risk-free rate (Reilly & Brown, 2012: 218). The slope of the SML is equal to the market risk premium (Ross et al., 2009). As the systematic risk of a security increases, so does its expected rate of return. If a security has the same return movement as the market, its beta is one. For a more responsive security, the beta is higher than one. The beta of a less responsive security is less than one (Kürschner, 2008: 4; Moyer et al., 2009).

The basis for modelling the relationship between risk and return was laid by the CAPM (Bodie et al., 2009). Practitioners tend to prefer this simple linear regression model above a multi-factor model, mainly due to the CAPM's simplicity and the convenience to estimate expected return (Bartholdy & Peare, 2005; Shah, Abdullah, Khan & Khan, 2011). However, there is also critique against the CAPM.

The CAPM is often criticised for relying on the theoretical market portfolio which includes all assets (Baker & Powell, 2005: 351; Bodie et al., 2009). Furthermore, in practice, most of the model's assumptions do not hold (Kürschner, 2008: 5). Roll (1977) argued that the CAPM is inherently untestable, since in practice it is impossible to measure the return on the market portfolio (Rubinstein, 2006). The usage of historical data to predict the forward-looking CAPM estimates has also been criticised (Baker & Powell, 2005: 351; Bodie et al., 2009).

In line with Roll's (1977) critique, Fama and French (2004: 41) claimed that the CAPM has "never really been tested" and therefore cannot definitely be denied or proved. To evaluate the validity of a model, the positive economics approach suggested by Friedman (1966) could be used. According to this approach, what is relevant to the validity and usefulness of a model is its explanatory power. In the current study, the CAPM was hence considered for its explanatory ability rather than the validity of its assumptions (Levy, 2012: 187).

Risk-adjusted abnormal share return can be estimated by comparing the actual TSR with the estimated expected return. The resultant excess return (also called the 'abnormal return') can be used to evaluate whether an investment, be it a single security or portfolio, under-performed or over-performed relative to the market. Securities can also be directly compared on a risk-adjusted basis (Damodaran, 2012). In Section 2.4.4, attention is given to Jensen's alpha, a measure of the actual return realised in excess of the expected return (Jensen, 1968).

2.4.4   Jensen's alpha

Jensen (1968) proposed a regression-based view to measure a portfolio's performance relative to the market. Jensen's alpha is a measure of the actual return (TSR) realised in excess of a market model's (such as CAPM) expected return. Jensen's alpha refers to the intercept (called 'alpha') in an estimation of the CAPM regression model of the return on a portfolio relative to the market (Bacon, 2013: 72; Mirabile, 2013).

A portfolio's expected return should lie exactly on the SML (refer to Figure 2.1) if the CAPM is the correct model of equilibrium returns (Kim & McKenzie, 2007: 402). Jensen's alpha should then be zero. If a portfolio yields a significant positive alpha, it indicates superior performance of a fund manager (Guerard, 2009: 585).

Following criticism on the CAPM, Fama and French (1992) provided evidence that the differences in return amongst equity portfolios are primarily due to systematic risk and two other factors, as explained in Section 2.4.5. Jensen's alpha can also be used in the Fama–French context to measure the risk-adjusted abnormal return of a share or portfolio (Gregoriou, 2006: 89).

2.4.5   The Fama–French three-factor model

Based on ground-breaking research, Fama and French (1992; 1993) indicated that returns are not only based on market risk, but also on the spread in returns between small and large firms, as well as the spread in returns between value and growth shares (Jelicic, 2010; Pinto, Henry, Robinson & Stowe, 2010: 65). It can thus be argued that the CAPM is based on theory (with strong assumptions) while the Fama–French three-factor model is based on empirical evidence (Koller, Goedhart & Wessels, 2010: 256).

The Fama–French three-factor model assumes a linear risk–return relationship similar to the CAPM. In addition to the CAPM market factor, Fama and French (1992) added a firm size factor and a value/growth factor to the CAPM equation. The Fama–French three-factor model is indicated by the following equation (Basiewicz & Auret, 2010):

$$\left(R_{it} - R_{ft} \right) = \alpha_i + \beta_{i1}(R_{mt} - R_{ft}) + \beta_{i2}\text{SMB} + \beta_{i3}\text{HML} + \epsilon_{it} \tag{2.2}$$

Fama and French (1992; 1993) argued that firm size, as measured by market capitalisation, could also have an effect on share returns. Therefore, they consider small market capitalisation firms versus large firms, denoted as small minus big (SMB) (Crane, McWilliams, Matten, Moon & Siegel, 2008; Kleuser, 2007). A firm's market capitalisation is determined by multiplying its current share price with the number of ordinary shares issued (Verweire & Van den Berghe, 2004: 21). If the market capitalisation is higher than the book value of ordinary shareholders' equity, management created value for shareholders.

The difference between value and growth firms, denoted as high minus low (HML) is determined by ranking the ratio of book value of ordinary shareholders' equity to the market value of ordinary shares (BE/ME) (Crane et al., 2008; Fama & French, 1993; Kleuser, 2007). The BE/ME ratio thus combines financial statement data (book values) with market data. The ratio can be used as a proxy for future growth, bearing in mind that growth generates future value. Shares with high BE/ME ratios are referred to as 'value shares' whilst shares with low BE/ME ratios are called 'growth shares' (Peterson & Fabozzi, 2013). The larger this ratio, the lower the firm's expected future growth prospective. Then again, a lower BE/ME ratio indicates that the firm's assets are being managed effectively to generate future value, as reflected in a higher market price (Mayo, 2011; Peterson & Fabozzi, 2013: 177).

A firm with a low BE/ME ratio is considered to be less risky than a firm with a high BE/ME ratio, and thus likely to generate lower returns (Fama & French, 1993). The prices of growth shares are typically bid up by investors who anticipate higher growth in earnings. The BE/ME ratio is then reduced by the higher share price. Such shares often tend to underperform the market (Mayo, 2011: 397; Peterson & Fabozzi, 2013: 177). For example, new firms in high-technology industries generally fit this definition (Graham, Smart & Megginson, 2010: 216).

Subsequent to the development of the three-factor model, some researchers (Carhart, 1997; Graham et al., 2010: 216) pointed out that other factors could also influence share returns. Momentum can, for example, be added as an additional factor to the Fama–French model.

2.4.6   Momentum and arbitrage pricing theory

Carhart (1997) extended the Fama–French three-factor model by adding momentum as a fourth factor. Momentum refers to the tendency of individual share prices to continue following an upward or downward trend (Ferri, 2011: 54–55; Kensinger, 2011: 54). Carhart (1997) argued that the momentum factor could improve the explanatory power of portfolio returns.

While the size and BE/ME factors of the Fama–French three-factor model tend to adjust relatively slowly, the momentum factor tends to vary rapidly over time. Frequent portfolio rebalancing is therefore required when considering the Carhart four-factor model (Connor, Goldberg & Korajczyk, 2010: 132).

Ross (1976) argued that, in addition to a security's beta coefficient, others factors could be required to specify the equilibrium risk-return relationship. These factors could extend beyond the size and BE/ME considerations of the Fama–French three-factor model. The approach that Ross (1976) suggested is called arbitrage pricing theory. This approach can include any number of risk factors. Practical usage of the arbitrage pricing theory to date has been limited, due to the complex nature thereof (Brigham & Daves, 2013).

In line with previous South African researchers (such as Basiewicz & Auret, 2010; Van Rensburg & Robertson, 2003) a decision was taken not to use a four-factor model including momentum, but rather to use the Fama–French three-factor model.

2.4.7   Tobin's Q

The Tobin's Q measure can be defined as a hybrid performance measure, since it evaluates both market-based and accounting-based data (Gross, 2007: 23). This ratio can be employed to demonstrate how a firm's shares are valued relative to a firm's property, plant (at market value), equipment and inventory (at replacement cost) (Chorafas, 2005: 178). Critics of the Tobin's Q ratio argue that its value is typically over-exaggerated, since replacement cost is underestimated. Furthermore, there is a lack of evidence that this ratio can be used effectively over a short study period (Chorafas, 2005: 178).

Dybvig and Warachka (2010) indicated that Tobin's Q does not measure financial performance sufficiently. They reported that the relationship between Tobin's Q and firm performance is confounded by endogeneity. This problem can, for example, arise as a result of omitted variables. In turn, this can result in an ambiguous effect of performance on the Tobin's Q measure. Consequently, this measure was not included in the current study.

2.4.8   Relevance of market-based models to corporate governance

As discussed in Section 2.3.1, if a firm's management is serious about creating value, they will invest in projects that have positive NPVs. The expectation is that such decisions would be recognised by the market, and share prices should consequently reflect the expected future benefits (Parrino & Kidwell, 2009). Investors are also interested in whether their investment will generate returns without violating their shareholders' rights (IFC, 2009: 14).

Managers should track the different internal and external factors that could influence financial performance (Martin et al., 2009). One of the main considerations in the current study was whether corporate governance compliance was associated with financial performance, even in periods when external factors, such as a financial crisis, play a significant role. The focus was not simply on the TSRs of well- and poorly governed firms. Risk-adjusted abnormal returns were estimated for four portfolios, compiled based on the sample firms' CGSs, by applying both the CAPM and the Fama–French three-factor model.

Two traditional financial performance objectives were discussed in Section 2.2.1. However, as explained in Section 2.5, there are also other performance considerations, which did not traditionally form part of performance discussions (Martin et al., 2009).

2.5 Non-traditional performance considerations

Different theoretical perspectives exist on what the ultimate corporate objective should be. As indicated in Section 2.2.1.1, traditionally, shareholders' wealth maximisation should be the primary goal of a firm's managers (Blanpain, 2011). However, it is debatable whether the focus of financial managers in the 21st century should be expanded from just making money for shareholders to include the interests of other relevant stakeholders (Martin et al., 2009).

Freeman (1984: 246) identified stakeholders as "any group or individual who can affect or is affected by the achievement of the firm's objectives". This broadens the stakeholder category to include among others environmental groups and the community (Keay, 2011). Supporters of the stakeholder view argue that shareholders' wealth maximisation can be better achieved with the co-operation of key stakeholders (Khan & Jain, 2007). However, stakeholders can have different, often contrasting interests (Crouch & Maclean, 2011: 40).

Managers, for example, could investigate the construction of a new facility. If it is build close to a local community, the standard of living of employees from the community is likely to increase. The construction of the factory could, however, also affect the water resources in the area as chemicals used in the factory might contaminate a nearby stream. Measures to contain chemical leakages would require additional funding. Responsible investors would most likely expect that (costly) environmental conservation programmes should be in place.

The relevant internal and external stakeholders, to whom the firm is accountable, should hence be identified and their interests should be considered (Keay, 2011). This notion is supported in this dissertation, since if a firm's board is expected to be accountable to everyone; it could result in being accountable to no one (IoDSA, 2002).

Historically, a firm's ESG responsibilities were typically ignored or excluded when financial decisions were made. However, some managers started to include both financial and non-financial performance considerations (Crane et al., 2008: 269; Landier & Nair, 2009). If financial claimholders also critically consider the ESG considerations of investments, they could benefit over the long term in more than just monetary terms by encouraging corporate change (Landier & Nair, 2009).

After the 2001 Enron scandal, increased focus was placed on value-based management. According to this enlightened value maximisation approach, the maximisation of the firm's long-term value is seen as the criterion for making trade-offs amongst stakeholders (Jensen, 2001; Martin et al., 2009). This approach was followed in the current research. Shareholders were not regarded as more important than other key stakeholders such as employees or suppliers. However, since it is not possible to maximise more than one aspect at a time (unless they are simple transformations of each other), attention is often given to shareholders' wealth maximisation. A midpoint should be found on the continuum of shareholders' best interests on the one side and stakeholders' best interests on the other side. Corporate processes should be put in place to structure win-win agreements between the different stakeholders to share the created value (Jensen, 2001; Martin et al., 2009). In the researcher's opinion, the ultimate corporate objective should hence not be the maximisation of shareholders' wealth. Attention should rather be given the interests of the firm's various relevant stakeholders.

Stakeholders are negatively impacted by financial crises. Internationally and in South Africa, firms lost a great deal of value during the 2007–2009 global financial crisis. This happened mainly due to two reasons, namely the acceptance of lower NPV projects and limited access to external funding sources (Enikolopov, Petrova & Stepanov, 2012). In addition, in countries with poor investment protection, the ability of a firm to attract outside funding depends heavily on the quality of the firm's corporate governance compliance (Erkens, Hung & Matos, 2012).

In the following section, a detailed discussion is provided on financial crises. Specific attention is given to the negative impact of the 2007–2009 crisis period on the financial performance of South African companies.

2.6   Financial crises

A large body of literature exists on financial crises and the causes thereof. However, there is no single definition of the construct or of the causes thereof that applies in all situations. Generally, a financial crisis refers to a disruption to financial markets, which can affect the entire economic environment (Chung & Eichengreen, 2004: 297; Portes & Swoboda, 1987: 10).

During an international financial crisis, the disruption spills over national borders and disrupts the entire market's capacity to allocate capital internationally (Portes & Swoboda, 1987: 10). The classic explanation is that financial crises are mostly caused by monetary excesses. Such excesses lead to a prosperous period followed by an inevitable financial collapse (Kindleberger, 1978). A crisis period is typically associated with falling share prices, debtors' insolvency, company failures and deflation. Exchange rates, interest rates and economic output growth are generally also negatively affected (Kamin, 1999; Portes & Swoboda, 1987).

Asymmetric information problems between financial market buyers and sellers can create the right conditions for a financial crisis (Mishkin, 2009). Asymmetric information exists when two parties to a transaction have different information about each other's intentions and the risks involved (Hendrickson, 2013: 37). Two common problems that arise from such asymmetries are moral hazard and adverse selection problems (Thomas, 2006: 70).

According to adverse selection theory, loans can be made to investors who are unlikely to pay the loans back. After the transaction took place, the moral hazard problem may occur (Thomas, 2006: 70). According to this problem, an individual could have the tendency to act less carefully than he or she would if he or she had to bear the full consequences of his or her actions (Dowd, 2009: 143). A financial agent could thus have the incentive to take additional risk, since the costs that could occur would not be borne by him or her (Chaudhary, 2009; Hansanti, Islam & Sheehan, 2008). It has been shown that these problems could lead to financial instability and systemic risk in global markets (Mishkin, 1992).

Friedman and Schwartz (1963) indicate that financial crises are also associated with banking panics and consequent bank runs. In the case of a banking panic, investors withdraw their funds from both insolvent and solvent banks due to asymmetric information. When depositors hear that a crisis is imminent, they typically panic. Without knowing which banks are at risk, depositors can withdraw their money from all financial institutions. During the USA banking panics that took place in the 19th and 20th centuries, depositors literally ran to their various banks in a withdrawal attempt, since they had lost trust in the solvency of all banks. If the banking system is unable to meet customers' demands in cases like these, the complete system could become insolvent (Gorton, 2010; Smith, 2010: 93).

During a banking panic, all banks must sell loans to meet their obligations to depositors (Gorton, 2010). However, in such panic situations, other institutions are not willing to take over these loans. Previously, the banking system was typically saved from destruction by refusal of the whole group of banks to give cash back to their depositors (Gorton, 2010). The development and maintenance of a sound banking system and banking stability provided a possible solution to this problem (Parker & Whaples, 2013; Smith, 2010: 93).

Not all disruptions to financial markets necessarily constitute a financial crisis. In a well-developed financial system, the financial intermediaries concentrate on the reduction of the asymmetric information problem through both screening and monitoring activities (Brakman, Garretsen, Van Marrewijk & Van Witteloostuijn, 2006: 243). Therefore, a share market crash will only cause a financial crisis if the financial market can no longer perform its main task of channelling funds to the most productive investment opportunities (Mishkin, 1992).

As indicated in Section 2.6.1, the financial crisis that emerged in 2007 was based on unsustainable financial developments, insufficient corporate governance and a lack of proper monitoring of financial institutions that dated back for decades (SAICA, 2010; Smith, 2010).

2.6.1   Causes of the 2007–2009 global financial crisis

The 2007–2009 global financial crisis was preceded by existing problems in the USA debt market (Krishnamurthy, 2010). Although derivative instruments can provide means of hedging and speculation for many capital market role players, derivative activities at investment banks in the USA were not sufficiently monitored during the period preceding the crisis (FCIC, 2011). In 2003, Warren Buffett already stated that derivatives were "weapons of

mass destruction". He also warned that the rapidly growing trade in these instruments posed a very large threat for the global economy (Buffett warns on investment 'time-bomb', 2003). In 2007, with the start of the global financial crisis, his words proved to be true.

The turmoil in the USA's financial institutions led to a financial crisis which was described as "the most serious financial crisis since the Great Depression of 1929–1939" (Kirkpatrick, 2009: 3). Financial losses during the 2007–2009 crisis period were amplified by the increased usage of certain derivatives, specifically synthetic securities (FCIC, 2011; Lartey, 2012). Synthetic structured products are securities of which the pay-offs do not primarily depend on the cash flows from a certain discrete pool of assets (Fuchita & Litan, 2007: 176). Rather, they depend on securities, assets or indices that are not held in any specific asset collection. Such products include credit default swaps and collateralised debt obligations (Fuchita & Litan, 2007: 177).

Other reasons for the 2007–2009 global financial crisis include insufficient monitoring by the US Securities and Exchange Commission, inappropriate credit agency ratings and ineffective risk management (Lartey, 2012). The 2007 events that culminated in the global crisis entailed a modern version of the historic bank run problem discussed in Section 2.6. In 2007, non-bank financial institutions ran on banks when the crisis became eminent. The largely unregulated shadow banking sector, which included hedge funds and unlisted derivatives, played an important role in the build-up to the credit crisis (Brooks & Dunn, 2012; Gorton, 2010; Mullard, 2011: 54).

Shadow banking refers to non-bank financial institutions that are engaged in maturity transformation (Kodres, 2013). This kind of transformation implies that non-bank institutions use short-term deposits to fund their longer-term loans. However, non-bank institutions in the USA were not subject to banking regulation prior to the crisis. Such institutions could also not borrow from the Federal Reserve Bank if necessary and did not have insurance-covered depositors' funds. Although these financial institutions acted like banks, they were not supervised like banks (Brooks & Dunn, 2012; Kodres, 2013). These non-bank institutions were thus, figuratively speaking, operating in the "shadows" of the banking industry.

Shadow banks played a prominent role in turning home mortgages into tradable securities (Kodres, 2013). Financial institutions and shadow banks gave sub-prime retail mortgages to house buyers who do not qualify for lower interest loans (IOSCO, 2008). Over time, the USA

sub-prime mortgage underwriting standards weakened. The weakening of credit terms was symptomatic of larger market erosion (Bhardwaj & Sengupta, 2008).

Despite their high risk, asset-backed securities, sub-prime residential mortgage-backed securities and collateralised debt obligations were popular among USA institutional investors due to their high returns. The shadow banking system developed out of asset securitisation, such as collateralised debt obligations (Adrian & Shin, 2009; IOSCO, 2008). Before the crisis, investor losses on these products were minimal. Ironically enough, collateralised debt obligations and other financial instruments (also referred to as 'conduits') were designed to decrease investor risk through diversification, while these instruments actually resulted in increased risk concentration (Blundell-Wignall, 2007: 31; Friedman, 2011; IOSCO, 2008).

As sub-prime interest rates in the USA decreased, the profit margins for sub-prime lenders also declined. Instead of tightening underwriting guidelines to compensate for the subsequent risk, some lenders lowered their lending standards even further. This was done in an attempt to increase their market share (IOSCO, 2008). In 2007, credit spreads, the premium that riskier borrowers pay compared to the least risky ones, started to increase in some of the main global financial markets. Although the degree of the increase was relatively small compared to historic levels, the effects were wide-ranging (Bitner, 2008; IOSCO, 2008: 2–3).

By the last trimester of 2007, changes in the expected sub-prime mortgage rates created considerable uncertainty regarding the cash flow prospects of residential mortgage-backed securitiess and collateralised debt obligations. Credit markets tightened due to this uncertainty (IOSCO, 2008: 3). As sub-prime lending losses were realised, shadow banks (and banks) refused to lend more money. This action of the shadow banks was not "shadowy" per se. When many investors tried to withdraw their funds all at once, banks and non-bank institutions experienced financial difficulty. In some instances, they simply did not have the funds to reimburse investors (Brooks & Dunn, 2012: 545; Kodres, 2013).

Between 2001 and 2007, the global economy grew faster than in any other six-year period during the previous 30 years and many countries shared in the benefits of this boom period (Van Niekerk, 2010; Wade, 2008: 23). The crisis that commenced in 2007 had consequences far beyond the USA sub-prime debt markets; it contributed to a worldwide financial crisis (IOSCO, 2008: 3; Reinhart & Rogoff, 2008). This crisis also impacted severely on the state of the South African economy, as discussed in the next section.

2.6.2   The impact of the 2007−2009 global financial crisis on the South African economy

The crisis in the USA sub-prime market had a significant effect on many countries globally. In South Africa, the crisis resulted in a recession during the first semester of 2009 (BER, 2009; SARB, 2013). The expected outcomes of a global financial crisis are slower global expansion, a decrease in the volume of international trade and a drastic decrease in world economic growth (IMF, 2009; United Nations Educational, Scientific and Cultural Organization Institute for Statistics, 2009). Before the crisis, South Africa already had a relatively high unemployment rate. By 2010, as a result of the crisis, an additional 900 000 workers lost their jobs (International Social Security Association, 2010). Furthermore, foreign investors became reluctant to invest in emerging markets and the demand for export products decreased (SAICA, 2010).

By 2009, most developed countries were in a deep recession (McKibbin & Stoeckel, 2009). By the end of 2009, there was some financial respite in South Africa. However, during the second quarter of 2010, financial turmoil was again experienced. Europe had impending sovereign debt crises and share markets decreased globally (SAICA, 2010).

According to Daniel Mminele, the deputy governor of the South African Reserve Bank (SARB) the magnitude of the financial shocks was experienced in 2007–2008 (SARB, 2012). The SARB (2013) indicated the downturn in economic activity in South Africa, including the technical recession in the first and second quarters of 2009, as from December 2007 to August 2009. In the current study, reference is hence made to the global financial crisis of 2007–2009. In Section 2.6.3, consideration is given to the link between corporate governance aspects and financial crises.

2.6.3   Corporate governance failure during financial crises

More than two centuries before the 2007–2009 global financial crisis, Adam Smith (1723–1790) argued that it cannot be expected of a company's executives to monitor invested money with the same attentiveness as partners in a private business (Dowd, 2009; Smith, 1776). Executives are likely to rather concentrate on their own wealth, than to focus on the wealth maximisation of their firms' investors (Martin et al., 2009: 6).

This problem is called the agency problem and occurs when shareholders shift their control responsibility to management. The managers can then abuse their control function for their own benefit (Jensen & Meckling, 1976: 308). Due to more dispersed and changing ownership structures, this problem became more prominent during the 20th century than in previous periods (Maher & Andersson, 1999: 5–6; Rossouw, Van der Watt & Malan 2002: 289). In South Africa, corporate governance principles have been introduced in the early 1990s (through the publication of the first King Report) to bridge the interests-gap between ownership and control (Ncube, 2006).

Despite the implementation of corporate governance principles and codes, the responsiveness of boards (both globally and in South Africa) to prevent excessive risk-taking to protect the shareholders in the lead-up to the 2007–2009 global financial crisis was questioned (Ringe, 2013). Before the financial crisis, the International Federation of Accountants (2007) conducted a survey on the extent to which corporate governance disclosure has improved over time. The survey involved 341 participants, representing investors, directors and regulators. The respondents indicated that firms seemed to implement those governance aspects that are relatively easy to comply with, but were slower to adopt the more substantial considerations. Furthermore, many directors regard corporate governance as a certification exercise that needs to be conducted according to a checklist, rather than a principles-orientated approach that focuses on improved corporate practices (UN, 2010).

Awareness of eminent corporate governance issues existed before the 2007–2009 global financial crisis, but was ignored by most corporate role players (UN, 2010). The effects of this crisis could have been reduced, but proper attention was not given to early warning signals (FCIC, 2011). This crisis could, at least to a certain extent, be ascribed to the weaknesses and failures in global corporate governance mechanisms and the systematic breakdown in accountability and ethics (Kirkpatrick, 2009: 3–4). When considering corporate governance failure, weaknesses in four areas mainly contributed to the 2007–2009 global financial crisis, namely risk management, board practices, director emolument and the exercising of shareholder rights (International Corporate Governance Network, 2008).

In many firms, risk management became separated from the implementation of their corporate strategy before the crisis. Boards were consequently ignorant of imminent risks (OECD, 2010). In many cases, the monitoring role of board members was also impaired by a dominant chief executive officer (CEO). Furthermore, corporate governance guidelines recommend that

directors' remuneration should be linked to their own as well as the firm's performance. However, before the crisis, directors often received compensation that was not in line with shareholders' best interests. In some instances, bonuses were even paid based on misstated financial performance (International Corporate Governance Network, 2008; OECD, 2010).

Shareholder representation on boards provides important governance checks and balances, specifically with regard to board practices. Before the 2007–2009 crisis period, shareholders seldomly challenged boards in sufficient numbers to change inappropriate corporate actions (G30 Working Group, 2012: 11). The interests of managers and some shareholders were also found to be aligned during the pre-crisis period in that some shareholders preferred the same short-term incentives as the executives (OECD, 2010). Consequently, these shareholders did not necessarily held directors accountable for their actions (OECD, 2009).

Shareholders should be encouraged to take a more active role in the corporate governance of their investee firms by exercising their shareholder rights (UN, 2010). Investors in general and responsible investors in particular can use their investments to direct changes within firms (Landier & Nair, 2009). As discussed in Section 3.2.3, the UN PRI (2013) also encourages shareholder activism as a driving force for corporate governance compliance (Chiu, 2010). In turn, managers should engage more with their firms' shareholders (OECD, 2009).

From the above, it is clear that the insufficient application of corporate governance guidelines was not the only contributing factor to the 2007–2009 crisis. Adams (2009) claims that the media over-exaggerated the governance failures that led to the crisis. Corporate governance principles per se did not fail; the principles were rather not properly applied (UN, 2010).

2.7   Summary and conclusions

Corporate governance mechanisms and their link to financial performance are debated in the economics and finance literature, both at a theoretical and empirical level (Ramdani & Van Witteloostuinj, 2010). Various performance measures have been used to assess the financial performance of listed companies. Historically, accounting-based performance measures were the most widely applied in research. After a consideration of measures used by previous corporate governance researchers, the ROA, ROE and EPS (specifically HEPS) ratios were selected for application in this study.

Market-based performance can be evaluated by means of share returns. In the current study, the non-risk-adjusted TSR measure was used. Jensen (1968) proposed a regression-based view to measure the risk-adjusted abnormal performance of a portfolio. Both the CAPM and Fama–French three-factor models were hence applied to estimate risk-adjusted abnormal returns for four corporate governance portfolios. The application of these models is discussed in more detail in Sections 5.9.5.2 and 5.9.5.3.

The current study was conducted for the period 2002–2010, thus including the global financial crisis of 2007–2009. This crisis, which started in the USA sub-prime market, had a severe impact on the South African economy and hence on the financial performance of companies operating in the country (BER, 2009). The crisis was attributed to various factors, including corporate governance compliance failures. A detailed discussion on corporate governance is provided in Chapter 3.

CHAPTER 3

RESPONSIBLE INVESTING AND CORPORATE GOVERNANCE

3.1   Introduction

"The problems we have today cannot be solved by thinking the way we
thought when we created them."

This quote by Albert Einstein (1879–1955) (in Dettmer, 1998: 119) is particularly apt when considering the widespread consequences of irresponsible corporate actions. In recent years, many investors have come to realise that, by owning a security and earning a return on it, they implicitly approve the actions of the investee firm. Many investors have also come to recognise that approving an inappropriate action is immoral (Larmer, 1997). More investors are resorting to a new (more responsible) way of thinking when making investment decisions and exercising their shareholder rights (Micharikopoulos & Danalis, 2010).

The market for RI products is growing internationally, as increasing numbers of investors are recognising the impact of ESG considerations on financial performance (UNEP FI & Mercer, 2007). Corporate governance issues started to dominate ESG considerations by the early 21st century, due to global debacles such as Enron and excessive executive remuneration (Micharikopoulos & Danalis, 2010). The King Reports provide a well-developed corporate governance framework for firms operating in South Africa. The first King Report was based on the Cadbury Report published in the United Kingdom (UK). In this study, given data constraints in terms of environmental and social data, the focus was placed on the G-component of ESG, namely corporate governance.

To gain greater insight into the construct of corporate governance, the grounding thereof in the phenomenon of RI is firstly discussed. The importance of corporate governance globally and in South Africa is explained in section 3.3. Previous studies on the relationship between corporate governance and financial performance are discussed in Section 3.4.

3.2   Responsible investing: from the 18th to the 21st centuries

As explained in Sections 3.2.1–3.2.5, RI developed considerably from its origin in the 18th century to the 2000s.

3.2.1   The history of RI

The history of RI dates back to the 18th century when Quakers in the USA refused to profit from the slave trade, the sale of alcohol and weapon dealings (Hamm, 2003). The Quakers have a long-standing commitment to pacifism, social activism and the fair treatment of natives. At about the same time, John Wesley (1703–1791), the founder of the Methodist Church in England, preached that people should not engage in sinful trade or profit from the exploitation of other human beings (Hamm, 2003; Renneboog, Ter Horst & Zhang, 2008).

In the 19th century, the Industrial Revolution transformed the manufacturing of products (Blowfield & Murray, 2008: 44). There was a movement from hand-made production to machine manufacturing. The revolution brought about improvement in living standards, but at a social cost (OECD, 2008). Slaves from the African continent were often used to provide low cost labour. Child and female labourers were exploited to work long hours for very low salaries. Countries that adopted enlightened corporate conduct standards took many years to address these issues practically (Goloboy, 2008; OECD, 2008).

In the 1920s, the UK Methodist Church avoided investments in firms involved in the production of alcohol, tobacco and gambling. The Methodist Church regarded these practices as sinful (Renneboog et al., 2008: 1725). The first modern RI mutual fund in the USA, the Pioneer Fund, was founded in 1928 by local Methodists as could be expected. This fund employed investment criteria based on religious convictions (Renneboog et al., 2008: 1725; Schwartz, 2003). Activism further developed in the USA after World War II (1939–1945), as investors lost their faith in the capitalist system (Boeckh, 2010: 269; Coerwinkel, 2007).

A series of social campaigns made investors aware of the environmental and social consequences of their investments. These campaigns were fuelled by anti-war and civil rights movements (Zarbafi, 2011: 29). For example, the Pax World Fund, founded in 1971 in the USA, was created for investors opposed to the Vietnam War in particular and militarism in general (Zarbafi, 2011: 30).

In the 1980s, a great deal of shareholder activism took place against South African companies, multi-national firms and banks that had operations in South Africa. This occurred due to the system of Apartheid enforced in the country at that stage. RI investors in Europe, UK, North America, Japan and Australia exerted substantial pressure on firms doing business in South Africa to divert their operations to other countries (Renneboog et al., 2008: 1725).

The trend to become responsible when investing had a substantial effect on the institutional investment community, pension fund trustees, managers of firms as well as the broader society (Solomon, 2007: 274). During 2007–2009, when the global economy experienced the first true recession since World War II, scepticism about the capitalist system once again reappeared, this time on a global scale (Sinn, 2010).

3.2.2   Prominent RI strategies

Different RI strategies developed over time with screening, shareholder activism and impact investing being the most prominent strategies (Harrington, 2005: 173; Schut, 2008: 175). Screening options for a RI portfolio can be divided into negative, positive and best-in-class screening strategies (Eurosif, 2010).

Negative screening is exclusionary in nature, and represents the most basic form of evaluating investments. This screening strategy entails that investors refrain from investing in securities from firms that produce undesirable products and services, as well as companies that operate in undesirable industries and countries. Firms are thus omitted based on certain ethical and ESG criteria. Negative screening decisions usually entail yes/no decisions. Responsible investors who follow this strategy will thus typically avoid investments in firms that are associated with the production and sale of weapons, tobacco, alcohol and pornography. Faith-based investors often apply this strategy (Eurosif, 2010).

In contrast, positive screening is an inclusionary portfolio construction strategy. This strategy is based on actively choosing investments that meet a range of ethical and ESG criteria. Conscious investment decisions are made that can deviate from conventional choices (Fung, Law & Yau, 2010: 28). In South Africa, criteria dealing with labour issues and BBBEE are often employed as positive screens (Viviers et al., 2008: 39). South African investors also tend to use corporate governance as a screening criterion (Viviers, forthcoming a).

A combination of positive and negative screening strategies, referred to as best-in-class screening, may also be used. Such a combination often provides a practical way of integrating ESG issues in RI portfolios and increase financial returns (Fung et al. 2010: 28). Renneboog, Ter Horst and Zhang (2006: 1) indicate that RI mutual funds that employed a higher number of screens to model their investment universe received larger monetary inflows and performed better in the long run compared to narrowly focused funds.

RI advocates argue that ESG screening could help investors to avoid risks which are not necessarily identified by traditional analysts. Furthermore, such screening can enable investors to recognise exceptional management, which can result in enhanced firm performance and a decrease in the cost of capital (Boatright, 2010: 399; Camejo, Aiyer, Case, Hale & Hawley, 2002). On the other hand, RI critics argue that, based on modern portfolio management theories, restrictions on the potential investment universe can increase risks and consequently reduce risk-adjusted returns (Boatright, 2010: 399; Camejo et al., 2002).

Shareholder activism by institutional investors, the second major RI strategy, is regarded as a driving force for good corporate governance (Chiu, 2010). The concept entails that shareholders actively engage with managers and directors on a variety of ethical and ESG issues (Viviers et al., 2008: 39). It is a process of working with firms' boards and managers to encourage them to change certain policies, products and practices. Shareholder activism is mostly cordial and done through private discussion and resolutions at annual general meetings. However, it can be confrontational, particularly when shareholders feel their concerns are not getting reasonable attention from corporate decision-makers (Little, 2008).

The third major RI strategy is that of impact investing (Chen 2001: 6). This strategy entails that a specific worthy cause or activity is supported by financing it. The strategy is also called 'community investing', since financial resources are often invested to support underprivileged communities (Basso & Funari, 2003: 522). Impact investors may seek market-related return or they may take a lower return in order to achieve a particular "social return" for society (Chen 2001). Corporate governance is an important consideration for all three discussed strategies.

In Section 2.2.1.1, attention was given to the importance of shareholders' wealth maximisation. It should be considered that RI does not necessarily have a negative effect on share returns (Landier & Nair, 2009). However, in 2006, Milton Moskowitz, a pioneer in

corporate social responsibility research, stated that many investors at that stage still regarded ESG considerations as relatively unimportant when making investment decisions (Crane et al., 2008: 267). Investors thus need to be educated regarding the relevance of ESG metrics and the application of RI strategies.

As the RI phenomenon grew, the need arose for globally accepted, standardised principles to guide responsible investors when making investment and ownership decisions. The UN PRI was hence established.

3.2.3   The UN PRI

In 2005, Kofi Anan, the then Secretary-General of the United Nations (UN), invited a group of the world's largest institutional investors to develop a set of principles for responsible investment. Twenty institutional investors from twelve countries agreed to participate in the investor group. This group was supported by a stakeholder group of experts (UN PRI, 2010). As a result of the discussions, the UN PRI emerged. In 2010 (the last observed year for the current study), there were more than 800 investment institutions from 45 countries (including South Africa) that became signatories (UN PRI, 2010). Table 3.1 indicates the six principles and possible actions that can be taken by institutional investors to support specific principles.

Table 3.1:   The six UN PRI principles and possible actions to support the principles

	Principles	Possible actions
1.	Incorporate ESG issues into investment analysis and decision-making processes.	• support the development of ESG-related metrics • access the capabilities of managers to incorporate ESG issues • encourage academic research on the theme
2.	Be active owners and incorporate ESG issues into ownership policies and practices.	• exercise voting rights • engage with firms on ESG issues • ask management to report on ESG-related engagement
3.	Seek appropriate disclosure on ESG issues by the investee companies.	• request integrated standardised reporting on ESG issues • support ESG disclosure initiatives
4.	Promote the acceptance and implementation of the principles within the investment industry.	• communicate ESG expectations to investment service providers • support the development of ESG integration benchmarking tools • support enabling policy or regulatory developments
5.	Work together to enhance effectiveness in implementing the principles.	• develop and support appropriate collaborative initiatives • collectively address relevant emerging issues • support ESG networks
6.	Report on activities and progress towards implementing the principles.	• disclose how ESG issues are integrated within investment practices • reveal ownership activities • communicate with beneficiaries regarding the implementation of the principles

Source: UN PRI (2010)

Institutional investors have a duty to act in the best long-term interest of their beneficiaries. Furthermore, ESG factors can affect the performance of investment portfolios to varying degrees over time. Therefore, such issues should be incorporated into investment analysis and ownership practices, as seen in Table 3.1. By applying the six UN PRI principles, investors' ownership decisions and practices may be well aligned with the broader objectives of society (UN PRI, 2010).

3.2.4   The RI market

An increasing number of investors believe that ESG analysis could result in share market outperformance in the long run (Allianz, 2009). The 2010 Report on Socially Responsible Investing Trends in the United States shows that RI has continued to grow at a faster pace than the broader universe of conventional investment assets under professional management (US SIF, 2010). By 2010, the global RI market had reached approximately €6.9 trillion (Eurosif, 2010).

In 2003, the International Finance Corporation (IFC, 2003) reported that South Africa shows potential for RI in emerging markets. However, in 2010, only approximately 1.04 per cent of all assets under management in South Africa were managed according to RI principles (Giamporcaro, 2010: 6). It thus seems as if growth in the South African RI market has lagged behind its international counterparts in the first decade of the 21st century.

As interest in the RI market increased globally, a large number of investment policies and codes were developed. Since the early 1990s, governments in certain developed countries, mainly the USA and the UK, promoted RI in general and corporate governance in particular by means of codes of practice, such as the Cadbury Report (Chandra & Aneja, 2004). In the 2000s, an increase was also seen in the promulgation of legislation in the USA, such as the Sarbanes–Oxley Act of 2002 and the Housing and Economic Recovery Act of 2008. This increase in legislation was driven by the series of corporate scandals and the 2007–2009 global financial crisis (Agrawal & Chadha, 2005; Windsor, 2009: 308). In the next section, attention is given to the South African ESG regulatory environment.

3.2.5   The ESG regulatory environment in South Africa

In South Africa, an emerging country, emphasis was mainly placed on voluntary compliance with the King Reports on corporate governance (Mangena & Chamisa, 2008). However, as

interest in RI within the country is steadily growing, positive changes are starting to occur (Viviers et al., 2009: 3). For example, the FTSE/JSE Socially Responsible Investment (SRI) Index was launched in May 2004 in response to the debate around sustainability in South Africa. This index was a pioneering initiative amongst emerging markets and led to increased RI attention in these markets (Herringer, Firer & Viviers, 2009: 14; JSE, 2010).

The FTSE/JSE SRI Index does not only consider large market capitalisation firms, but also includes small and medium capitalisation firms. Since the establishment of this index, the number of small and medium capitalisation constituents increased significantly. In 2011, the first year that JSE-listed firms had to provide integrated reports, 36 Top 40 firms, 31 middle capitalisation and seven small capitalisation firms formed part of the index (Le Roux, 2011).

In an attempt to improve the stability of global economies, especially in the light of the 2007−2009 global financial crisis, a greater need for financial market oversight through government regulation arose (Hebb, 2012). More stringent regulation and investor pressure are important drivers of RI in many countries, including South Africa (Eccles, De Jongh, Nicholls, Sinclair & Walker, 2007). In many Organisation for Economic Co-operation and Development (OECD) countries, pension fund regulation authorities have taken a relatively passive regulatory stance before the 2007−2009 global financial crisis (OECD, 2007).

Since 2011, significant regulatory changes took place in South Africa. In March 2011, Regulation 28 of the Pensions Fund Act (Act No. 24 of 1956) was amended to include ESG considerations (Compliance Institute of South Africa, 2011). This regulation now provides a defined set of principles to promote RI across all asset classes in South Africa (Bertrand, 2011). The amendment had important implications in terms of the RI criteria and strategies used by local asset managers and fund managers. Pension fund trustees are now required to develop an investment policy statement, which must describe the fund's approach to ESG issues. The prudential limits set out in Regulation 28 ease prior restrictions on alternative investments, including hedge funds and unlisted equities (Cameron, 2011).

An important driving force behind the growing awareness of RI in South Africa is the commitment shown by the largest local institutional investor, namely the Government Employees Pension Fund (GEPF). The GEPF was one of the founding members of the UN PRI (GEPF, 2010; Oliphant, 2010; World Federation of Exchanges, 2010). Most of the GEPF's assets are managed by the PIC (2012), an asset management company that is wholly

owned by the South African government. The corporate governance research instrument that was used in this study was based on specific recommendations of the King II Report and the PIC (2011), as explained in Chapter 4.

Furthermore, the first RI code, called the Code for Responsible Investing in South Africa (CRISA) was launched in July 2011 (IoDSA, 2011). The aim is to provide investors with the necessary guidance to give effect to the King III Report and the UN PRI initiative. The CRISA is not legislation and merely encourages service providers and institutional investors to practice its recommendations on an "apply or explain" basis (IoDSA, 2011). One of the main recommendations of this code is that institutional investors should incorporate sustainability considerations, including corporate governance, into investment activities (Association for Savings and Investment South Africa, 2012).

Eccles et al. (2007) conducted a study on the materiality of ESG risks in South Africa. BBBEE and HIV and AIDS were added to the more conventional range of ESG risks, as indicated in Table 3.2.

Table 3.2:   Perceptions on the materiality of ESG issues in South Africa

Ranking	Pension fund managers	Asset managers	Advisory service providers
1	Corporate governance	Infrastructure development	Infrastructure development
2	Sustainability	Corporate governance	BBBEE and gender empowerment
3	Infrastructure development	BBBEE and gender empowerment	Employee relations
4	HIV and AIDS	Employee relations	Corporate governance
5	BBBEE and gender empowerment	Sustainability	HIV and AIDS

Source: Eccles et al. (2007: 15)

As highlighted in Table 3.2, corporate governance issues are regarded as quite important by South African pension fund managers and asset managers (Eccles et al., 2007). This tendency could be due to the well-developed South African corporate governance framework that improved understanding of the concept. In the following section, the concept 'corporate governance' is discussed in more detail.

3.3   Corporate governance: globally and in South Africa

The term 'corporate governance' started to capture the attention of economists in the late 1980s and early 1990s (Grandori, 2004). It falls at the intersection of various disciplines, most notably economics, finance, management theory and law (Windsor, 2009: 310). In this section, corporate governance is firstly defined. Attention is then given to the development of global corporate governance codes and reports, followed by a discussion of corporate governance in South Africa. Details on previous corporate governance studies are also provided.

3.3.1   Defining corporate governance

Prominent researchers in the field are neither consistent nor unified in their standpoint regarding what corporate governance exactly entails (Windsor, 2009: 310). Furthermore, although corporate governance is relevant to all countries, regardless of the country's level of development, there is no single, globally accepted definition for the concept (Mallin, 2007: 248).

3.3.1.1   The narrow and broad views of corporate governance

The preferred corporate governance definition in a particular country generally depends on whether a narrow or broad view of corporate governance is considered (Windsor, 2009). The narrow view places focus on the relationship between a firm and its shareholders. In their seminal book called *The Modern Corporation and Private Property*, Berle and Means (1932) indicated concern about the separation of ownership and control. The book explores the agency theory and still serves as a foundational text in finance and economics (Windsor, 2009: 307).

As mentioned in Section 2.6.3, the agency problem could occur when the ownership and control of a firm become separated. The shareholders (called the 'principals') can shift their control responsibility to the managers (called the 'agents') (Jensen & Meckling, 1976: 308). However, the managers could use their control function for their own, and not necessarily the shareholders' benefit (Rossouw et al., 2002: 289).

Enron and WorldCom are examples of large North American companies where the abuse of agents' power led to the downfall of these two firms. In the Enron case, directors were paid

above-average salaries (more than twice the average director compensation for the 200 largest USA corporations in 2001). WorldCom did not report that the CEO received a loan of more than $400 million at a below-market interest rate. The loan received no attention in the media until the firm was involved in an irrecoverable financial scandal in 2002 (Bebchuk & Fried, 2003: 3, 10).

Hart (1995: 678–679) indicates that, in the absence of agency problems as in the case of sole proprietorships, all individuals associated with the entity could be instructed to maximise profit. Theoretically, no governance structure would thus be required to solve disagreements, since no disagreements will occur. However, in reality, agency problems are present and a company's governance structure does matter. Withering economic prospects often intensify agency problems (Johnson, Boone, Breach & Friedman, 2000). Corporate governance can then be used as a mechanism to bridge the separation between ownership and control (Ncube, 2006).

Ownership structure (referring to the identities of the firm's equity holders) is hence often considered in corporate governance studies (Denis & McConnell, 2003; Fernando, 2009: 52; Jiang, 2004: 88). In June 2013, South Africa's Central Securities Depository publicly argued that shareholder information should be withheld from data vendors (such as McGregor BFA), due to the terms of the new Financial Markets Act (Act No. 19 of 2012). In 2013, when the data collection for this study was completed, the case was still considered by the Financial Services Board (Pickworth, 2013). Since the outcome could have possibly limited the availability of shareholder data, the ownership structure of JSE-listed firms were not considered in the current study.

The dominant theoretical perspective in corporate governance studies is that the concept of corporate governance was born out of the agency problem (Daily, Dalton & Cannella, 2003: 371). To curb agency conflicts and limit agency costs, various governance mechanisms have been suggested in corporate governance literature (Haniffa & Hudaib, 2006). However, these control measures bring about certain costs. Firms complain that, while they are already struggling with increasing auditing expenses, such governance measures cost them additional time and money (Solomon & Bryan-Low, 2004: 1).

The broad view of corporate governance can be expressed in the stakeholder theory. According to this view, the interests of all the relevant stakeholders, including amongst others

shareholders, employees, customers and creditors, should be considered (Blair, 1995: 225; Solomon, 2007: 12). The reasoning is that various stakeholders make contributions to the firm. Therefore, their interests should also be considered in the constitution and conduction of corporate governance. The directors have the duty to align and balance the potentially competing interests of the relevant stakeholders of a firm. This broad view is gradually attracting more attention globally (Boatright, 2006: 235; Collier & Roberts, 2001: 67; Fernando, 2009: 4). According to this inclusive corporate governance approach, a firm's performance is judged by a wider constituency, interested in growth in trading relationships, market share and financial performance (Maher & Andersson, 1999: 6; Mayer, 1996: 11).

3.3.1.2   *The corporate governance definitions of the Cadbury Report and the OECD*

Mallin (2011) states that two different, though related, definitions of corporate governance have been advanced in the academic literature. These two definitions include the 1992 Cadbury Report's definition and the broader definition of the OECD.

Corporate governance is defined in the Cadbury Report as "the system by which firms are directed and controlled" (Gertz, 2003: 115). The Cadbury Report's definition hence implies that the main responsibility for the corporate governance of listed companies lies with their boards of directors. The South African King Reports also use this definition (Rossouw et al., 2002: 289). Researchers generally consider the specific corporate governance definition that is used in the country in which they conduct their research (Solomon, 2007: 12). Therefore, in the current study, the King Reports' definition of corporate governance was used.

The OECD (2004: 11) defines corporate governance as "a set of relationships between the management, board, shareholders and other stakeholders of a company". According to this definition, in contrast to the traditional finance paradigm of shareholders' wealth maximisation, focus should be placed on the interests of a company's relevant stakeholders and not just on the shareholders' interests. The OECD definition is thus in line with the broad view of corporate governance discussed in the previous section.

3.3.1.3   *The protection of finance suppliers and investors*

Two other views on corporate governance centre on the protection of finance suppliers and adequate returns for investors. Shleifer and Vishny (1997) define corporate governance as

"the manner in which the finance suppliers of firms assure themselves of getting a return on their investment". La Porta, Lopez-de-Silanes, Shleifer and Vishny (2000: 4) define corporate governance as "a set of mechanisms through which outside investors protect themselves against expropriation by insiders". According to this definition, countries with efficient governance systems could become preferred locations for firms to operate and invest in (Grandori, 2004: 318).

3.3.1.4   *Enterprise governance*

The International Federation of Accountants (2004: 4) uses the term 'enterprise governance' instead of merely referring to corporate governance. Enterprise governance constitutes the entire accountability framework by paying attention to the role of the board and the firm's strategic direction. The term comprises two dimensions, namely conformance of corporate governance and performance of business governance (International Federation of Accountants, 2004).

The conformance dimension mainly covers issues related to the board, such as CEO/chairperson role duality and independence. The recommendations of the King Reports are mainly used to address this dimension. The focus of the performance dimension is on strategic decision-making with the aim of creating (and maximising) value (International Federation of Accountants, 2004). Strategic scorecards can be used to aid directors in exercising oversight over the strategic process (Chartered Institute of Management Accountants, 2007; Collier, 2009b: 21–23).

A positive outcome of the 2007–2009 global financial crisis is that corporate governance, sustainability and strategy became inseparable. The ultimate economic responsibility is still to ensure performance that result in value creation for shareholders and other stakeholders. Firms thus need to balance their conformance efforts with further performance improvements (UN, 2010). To assist firms with this responsibility, a number of corporate governance codes and reports were developed, as discussed in Section 3.3.2.

3.3.2   The development of global corporate governance codes and reports

A corporate governance code generally presents a comprehensive set of recommendations for corporate governance compliance within a specific country. The specific recommendations could thus vary amongst countries (Grandori, 2004). Most codes are based on two main

principles, namely acceptable disclosure and appropriate checks and balances. Such codes are generally not statutory, although listed firms tend to adopt at least some of the recommendations. The reason is that in several countries, the stock exchange's listing requirements oblige firms to comply with the code's recommendations or justify non-compliance (Grandori, 2004: 320).

3.3.2.1   *Four main corporate governance systems*

Weimer and Pape (1999) identified four main corporate governance systems, namely the Anglo−Saxon, Germanic (also known as Continental European), Latin and Japanese systems. The Anglo−Saxon system, which is followed in the USA and UK, was of specific relevance to this study, since the King Reports were based on this system (Gstraunthaler, 2010).

There are two broad approaches to corporate governance reports, namely common law in countries (including South Africa) that follow the Anglo−Saxon model, and civil law in countries that use the Continental European model. The common law approach is rules-based, while the civil law approach tends to follow principals. An advantage of the civil law approach is that while rules are more specific, general principals can be more broadly interpreted by regulators (Windsor, 2009: 310–311).

The King III Report recommends an "apply or explain" corporate governance approach. JSE-listed companies hence have to report on their application of the King guidelines and explain non-compliance (IoDSA, 2009). This approach could, however, lead to the perception that if managers and directors cannot adhere to the King guidelines, they can alter the interpretation thereof (Carte, 2009). This could obviously lead to non-compliance with the (original) King recommendations.

3.3.2.2   *Corporate governance codes in developed countries*

The USA Business Roundtable drafted the first guidelines to improve the corporate governance capacity of USA firms in 1978. These guidelines were called *The Role and Composition of the Board of Directors of the Large Publicly Owned Corporation* (Grandori, 2004: 322). The guidelines stated that the main duties of directors include overseeing management and reviewing performance.

Following on this publication, the Hong Kong Stock Exchange issued its first code of best practice in 1989. Two years later, the Irish Association of Investment Managers drafted what was called *The Statement of Best Practice on the Role and Responsibility of Directors of Publicly Listed Companies* (Grandori, 2004: 322).

Due to public concern regarding firms' management and possible power abuse, UK normative framework developers started discussions on corporate governance in the early 1990s. The Cadbury Report and accompanying code of best practice on corporate governance in the UK was compiled in 1992. This report emphasises the importance of corporate transparency and the need to focus on corporate responsibility towards all relevant stakeholders (Solomon, 2007: 52–54). Hence, the broad view of corporate governance (see Section 3.3.1.1) was considered.

Although the Cadbury Report was not legally binding, listed firms had to publish a statement of compliance with the report in their annual statements. Any non-compliance with the report had to be explained. This formed the basis of the "comply or explain" approach chosen for the UK corporate governance framework. The Cadbury Report had a substantial effect on the development of corporate governance codes and hence the governance of firms around the world (Solomon, 2007: 52–54). In 2002, the Sarbanes–Oxley Act was adopted, imposing corporate governance rules on all USA public firms (Agrawal & Chadha, 2005).

Despite a slow start, the development of corporate governance codes grew rapidly (Grandori, 2004: 322). In 2003, 35 countries (including countries in developed, developing and emerging countries) issued at least one such code (European Corporate Governance Institute, 2013). By the middle of 2013, more than 360 corporate governance codes (including reports, drafts, reforms, recommendations and codes for institutional investors) were published worldwide (European Corporate Governance Institute, 2013).

3.3.2.3   *Corporate governance codes in African countries*

In many developing countries, corporate governance mechanisms were practically non-existent prior to the 1990s (Shleifer & Vishny, 1997). Although a number of African countries published corporate governance codes during the past decade (2002–2012), South Africa was the only African country that published a corporate governance code in the 1990s. The country was thus a corporate governance pioneer within the African continent, as well as

amongst other emerging countries (Grandori, 2004: 324). Table 3.3 indicates the number of corporate governance codes that were published by specific African countries during the period 1994–2011.

Table 3.3: **Number of corporate governance codes published in specific African countries (1994–2011)**

Country	Number of corporate governance codes (including reports, drafts, reforms and recommendations)	Year(s) issued
Ghana	1	2010
Kenya	2	2002
Malawi	1	2010
Nigeria	4	2003, 2006, 2008, 2011
South Africa	4	1994, 2002, 2009, 2011

Source: European Corporate Governance Institute (2013)

When considering the African countries indicated in Table 3.3, it is evident that South Africa is a frontrunner in terms of the early publication dates (Vaughn & Ryan, 2006). Section 3.3.3 provides a detailed discussion on corporate governance within South Africa.

3.3.3 Corporate governance in South Africa

South Africa has a turbulent history, experiencing social unrest and inequality, provoked by the Apartheid system of racial segregation. After democracy was restored in 1994, extensive legislation led to both social and political transformation. The country hence started to draw more foreign investor attraction. However, foreign institutional investors criticised the (inefficient) corporate structures and systems of JSE-listed companies (Abdo & Fisher, 2007; Malherbe & Segal, 2001; United Nations Economic Commission for Africa, 2007: 20). Attention therefore had to be given to the development of corporate governance guidelines for firms operating in South Africa.

3.3.3.1 The first King Report

In 1994, a corporate governance committee, chaired by judge Mervyn King, created the first King Report on corporate governance in South Africa (Malherbe & Segal, 2001; Mallin, 2007: 248). The publication of this report evoked unprecedented interest in corporate governance in the country. However, corporate governance has already been at stake since the

inception of the first publicly owned firms in South Africa, which was more than 100 years ago (IoDSA, 1994; Rossouw et al., 2002: 289).

The first King Report adopted an inclusive approach to corporate governance (Mallin, 2007: 248). According to such an approach, a firm should consider the interests of various stakeholders when conducting its operations. Both financial and ethical dimensions were discussed in this report, based on the South African circumstances at the time of publication (Mallin, 2007: 248; Rossouw et al., 2002: 296).

The board of directors was highlighted as the focal point of the South African corporate governance system (Mangena & Chamisa, 2008: 31). The report provided guidelines concerning, inter alia, the composition of the directorate, board meeting frequency and directors' remuneration (IoDSA, 1994). Compliance with these guidelines was voluntary, based on the "comply or explain" approach, as discussed in Section 1.1 (Malherbe & Segal, 2001).

Between 1994 and 2002, there were extensive legislation changes in the country, including the promulgation of the Employment Equity Act (Act No. 55 of 1998). The first King Report needed to take account of these developments and was consequently revised in 2002 (Mallin, 2007: 248).

3.3.3.2   The King II Report

According to Naidoo (2002: 3), Mallin (2007: 248) and Du Plessis, Hargovan and Bagaric (2011), the King II Report, that became active in 2002, was ground-breaking in terms of its recommendations and outlook. This report provides information concerning, among others, the composition of the board, risk management and sustainability.

In the current study, the period 2002–2010 was considered. Specific attention was hence given to the King II guidelines. In Chapter 4, a detailed discussion is provided on the refinement of the corporate governance research instrument, based on selected recommendations by the King II Report and the PIC (2011).

The King II Report identified seven characteristics that may be regarded as constituting the characteristics of good corporate governance, namely:

1. **Discipline:** commitment by the senior management of a firm to adhere to universally accepted behaviour;

2. **Transparency:** the effortlessness with which a firm-outsider can make a meaningful analysis of the financial and non-financial considerations of a firm;

3. **Independence:** the extent to which mechanisms have been introduced to minimise or avoid potential conflict of interest;

4. **Accountability:** corporate individuals or groups should be held answerable for their actions;

5. **Responsibility:** behaviour that allows for corrective action and penalisation for mismanagement;

6. **Fairness:** the interests of all the relevant stakeholders of a firm should be taken into consideration; and

7. **Social responsibility:** being aware of and responding to social issues as well as placing priority on ethical standards.

The King II Report recommends that directors should comply with the above-mentioned characteristics. However, it is important to distinguish clearly between the accountability and responsibility of directors. In corporate governance terms, a director is accountable at common law and by statute to the firm and responsible to the firm's relevant stakeholders. As explained in Section 2.5, the notion of accountability to all possible stakeholders must be rejected. The board should identify the relevant stakeholders and agree to policies in terms of managing the relationship with those stakeholders (IoDSA, 2002).

It is important to note that the compliance of JSE-listed companies with the King II Report's guidelines was voluntary (Mangena & Chamisa, 2008: 31). However, the JSE Listing Requirements (JSE, 2005) oblige listed firms to disclose the extent of their compliance with the King II Report's recommendations in their annual reports. In the case of non-compliance, reasons should be provided (Mangena & Chamisa, 2008: 31).

Corporate governance in South Africa is developing in a highly turbulent context. The unavoidable uncertainty caused by this context makes the revision of corporate governance an ongoing concern. In order for South African firms to participate in the global economy, they

have to meet international standards without neglecting their allegiance to the African continent (Rossouw et al., 2002: 301). The King III Report was hence developed in 2009.

3.3.3.3   *The King III Report*

The publication of the King III Report in 2009 became necessary due to promulgation of the new Companies Act (Act No. 71 of 2008) as well as changes in international corporate governance trends (IoDSA, 2009). Whereas the first two King Reports followed a "comply or explain" approach, the King III Report follows an "apply or explain" approach. The focus is thus on how the principles of the King III Report are applied in practice (Malan, 2010).

One of the main differences between the King II and King III Reports is the enhanced focus on integrated reporting (PWC, 2009). The King II Report included a chapter on sustainability reporting. The concept of triple bottom line reporting (focusing on economic, social and environmental issues) was thus already explained to South African corporate agents in 2002. However, due to growing attention to sustainability issues, the King III Report now requires that the financial and non-financial information (ESG) should be published in a so-called 'integrated report' (PWC, 2009).

From 2011, it is mandatory for JSE-listed firms to include an ESG analysis in their annual integrated reports (Pretorius, 2011). Since the quality and availability of ESG information are important considerations for emerging market investors (Gifford, 2008), improved ESG disclosure is essential to enhance the development of RI in South Africa. Having gained insight in the construct corporate governance, previous corporate governance studies will now be discussed.

3.4   Previous studies on corporate governance and financial performance

This section focuses on previous studies that considered financial performance and corporate governance compliance. Miller (2004: 266) suggests that corporate governance researchers should concentrate on one country or world region. The rationale is to control for the effect of factors that could differ across countries. After a thorough consideration of the available corporate governance literature, it was evident that previous researchers did indeed focus on specific countries, such as Vafeas and Theodorou (1998) who focused on the UK. A few

international comparative studies were also conducted, such as those by Klapper and Love (2004) and Shah (2009).

Studies conducted in developed countries are firstly considered. Thereafter, studies conducted in emerging and developing countries are discussed, with specific focus on African studies. Possible caveats of the interpretation of results are explained. Lastly, attention is given to corporate governance studies that were conducted during financial crisis periods.

3.4.1   Corporate governance studies conducted in developed countries

Previous researchers who conducted studies in developed countries used different corporate governance and financial performance measures. Inconclusive evidence was reported on the nature (positive or negative) of the relationship between corporate governance and financial performance, as discussed in Sections 3.4.1.1–3.4.1.3.

3.4.1.1   Board characteristics and financial performance

In the 2002 *Global Investor Opinion Survey* (McKinsey & Company, 2002) it was reported that investors were particularly interested in the structure, remuneration and practices of the boards of companies. Evidently, these give strong indicators to the corporate governance measures that should be implemented within firms and considered for corporate governance studies (Wilkes, 2004: 13). Some corporate governance authors did focus mainly on board-related variables. This was possibly the case since the board is the focal point of corporate governance and board-specific compliance is relatively easy to measure.

Daily and Dalton (1992) considered a sample of USA listed entrepreneurial firms and found modest performance advantages (in terms of ROA, ROE and the price-earnings ratio) when a board had more external than internal directors. Vafeas and Theodorou (1998) focused on the board structure of a sample of 250 UK listed companies. They used corporate governance data provided by the 1995 version of the Global Vantage database. The authors considered the market-to-book ratio, TSR and ROA as financial performance measures. They did not find a significant link between board structure and the considered performance measures. Kiel and Nicholson (2003) reported a positive relationship between the size of the board and market-based performance (Tobin's Q) for 348 listed Australian companies in 1996.

Florackis (2005) reported that executive emolument can help align the interests of shareholders and managers, and thus enhance firm value (as measured by Tobin's Q). He considered 962 UK listed firms over the period 1999−2003. However, in another UK study, Abdullah and Page (2009) found no association between corporate governance (measured by board-specific variables and ownership structure) and improved performance (ROA, market-to-book ratio and sales-to-total-assets ratio) of UK FTSE 350 firms between 1999 and 2004.

3.4.1.2   *Corporate governance ratings and financial performance*

Instead of focusing on board-specific considerations, some researchers that conducted corporate governance studies in developed markets designed their own corporate governance rating instrument. The study by Gompers, Ishii and Metrick (2003) is often cited by other corporate governance researchers. They created what was called a Governance Index for 1 500 USA firms, based on 24 corporate governance rules. They considered the period 1990−1999 and used data provided by the Investor Responsibility Research Center, the Center for Research in Security Prices and the Standard and Poor's Compustat database to construct their Governance Index. These authors found a strong correlation between their index and share returns over the researched period.

Bhagat and Bolton (2008) used Gompers et al.'s (2003) Governance Index. The authors examined 6 126 annual corporate governance observations for USA listed firms over the period 1990−2004. They found that higher corporate governance compliance was related with higher operating performance (as measured by ROA). However, contrary to Gompers et al.'s (2003) findings, Bhagat and Bolton (2008) found no correlation between share market performance and corporate governance. In line with Bhagat and Bolton's (2008) finding, Brown and Gørgens (2009) stated that the Top 300 Australian listed firms that were more compliant with corporate governance guidelines had higher profitability (as measured by ROA) compared to less compliant firms over the period 2004−2006.

For their study in the USA, Brown and Caylor (2004: 3) designed a measure called Gov-Score, based on data provided by Compustat. The measure included 51 factors for eight corporate governance categories. The authors considered the corporate governance compliance of 2 327 USA listed firms for the year 2002. They reported that better governed firms were relatively more profitable (ROE and net profit margin was used), more valuable

(Tobin's Q was considered) and paid out more cash to shareholders than their counterparts with lower corporate governance compliance.

Considering profitability as a measure of financial performance, Bauer, Günster and Otten (2004) determined a negative relationship between corporate governance and profitability (measured by ROE and the net profit margin) for a sample of European firms. The authors used Deminor Corporate Governance Ratings. Their study was conducted over a relatively short period, namely 2000–2001.

Nguyen and Aman (2006) constructed a corporate governance index for a sample of Japanese firms for the period 2000–2005. They reported a strong correlation between the corporate governance index and ROA as well as Tobin's Q. Sami, Wang and Zhou (2011) used data from the China Listed Firms Corporate Governance Research database to conduct a corporate governance study on a sample of Chinese listed firms. They considered 1 236 corporate governance ratings over the period 2001–2003. They reported a positive relationship between accounting-based performance (ROA and ROE) and corporate governance disclosure. A positive relationship was also observed between the market-based Tobin's Q measure and corporate governance disclosure.

In addition to the Tobin's Q and TSR market-based performance measures, previous corporate governance researchers also applied the CAPM and Fama–French three-factor models to estimate risk-adjusted abnormal returns.

3.4.1.3   *The application of the CAPM and Fama–French three-factor model*

When the Fama–French three-factor model was applied in previous corporate governance studies, portfolios were typically constructed based on a distinction between well-governed and poorly governed companies. Equally weighted (every firm in the portfolio has the same weight, irrespective of the size of the firm) or value-weighted portfolios (each share is weighted according to its percentage contribution to the total market value of the portfolio) were typically formed (Amenc & Le Sourd, 2003; Fabozzi, 1998: 99).

With regard to the size of firms, previous emerging market researchers (such as Alves & Morey, 2009; Black, Jang & Kim, 2006) reported that larger firms were better governed than smaller firms. However, the effect of differences in size on corporate governance is ambiguous. Large firms may have greater agency problems than small firms and thus need

stricter corporate governance mechanisms. Small firms with good growth opportunities may need higher external financing and hence adopt sound corporate governance mechanisms (Klapper & Love, 2004: 708).

Bauer et al. (2004) compiled portfolios consisting of well-governed firms (20 per cent of firms with the highest corporate governance ratings) and poorly governed firms (20 per cent of companies with the lowest corporate governance ratings). The authors considered the Deminor Corporate Governance Ratings for firms included in the FTSE Eurotop 300. They found large excess returns relative to a zero-investment corporate governance strategy. Such a strategy entails forming a long portfolio in one set of shares and a short portfolio in another (Alexander, 2000). With respect to the size and BE/ME factors, the portfolios did not differ substantially (Bauer et al., 2004).

Drobetz, Schillhofer and Zimmermann (2004) constructed corporate governance ratings for a sample of German listed companies. Corporate governance commitment, the rights of shareholders, transparency, management and supervisory board matters and auditing were considered. They sourced monthly TSR data over the period January 1998 to February 2002. By applying the Fama–French three-factor model, they reported that an investment strategy whereby investors bought companies with high corporate governance ratings and shorted firms with low corporate governance ratings earned positive abnormal annual returns.

As indicated previously, Nguyen and Aman (2006) constructed a corporate governance index for a sample of Japanese companies for the period 2000–2005. They evaluated the performance of governance-sorted portfolios by applying the Fama–French three-factor model. The authors indicated that the well-governed portfolio significantly underperformed the poorly governed portfolio. In line with market efficiency, share prices thus seemed to reflect the higher risk associated with poor corporate governance (Aman & Nguyen, 2008).

Bauer, Frijns, Otten and Tourani-Rad (2008) used a dataset provided by Governance Metrics International to consider the relationship between corporate governance and the performance of Japanese non-financial firms. The August 2004 Governance Metrics International ratings for 356 firms were considered. The authors applied the Fama–French three-factor model and reported that poorly governed companies were significantly outperformed by well-governed firms.

Kleuser (2007: 4) investigated the relationship between a cross-section of firms' share returns and their corresponding corporate governance ratings. He used a sample of USA listed firms for the period August 2003–December 2006. The corporate governance data were provided by Governance Metrics International. One of the aims of his study was to determine bad governance risk by sorting the firms into good and bad corporate governance portfolios based on their governance ratings. He applied both the CAPM and the Fama–French three-factor model. His findings revealed that the portfolio of firms with the worst corporate governance ratings outperformed the portfolio consisting of the best governed firms over the considered period.

Gawer (2012) considered the corporate governance compliance of a sample of European firms over the period 1999–2009. The author conducted a long-term event study analysis, based on the Fama–French three-factor model. He used corporate governance data from Vigeo, a European corporate social responsibility rating agency. Gawer reported that high corporate governance ratings were positively associated with significant abnormal returns.

In addition to the above-mentioned studies that centred on corporate governance ratings, specific attention was also given to two performance-related studies that placed focus on RI. Bauer, Koedijk and Otten (2005) applied the Carhart four-factor model to study ethical mutual fund performance. They used an international database containing USA, UK and German ethical portfolios. The results indicated no significant differences in risk-adjusted abnormal returns between conventional and ethical funds for the observed period (1990–2001) after controlling for investment style. A positive observation was that investors were not negatively affected by investing responsibly. This result could be a driver for more RI.

After the 2007–2009 global financial crisis, the French EDHEC-Risk Institute evaluated the performance of RI investments by applying the Fama–French three-factor model (Amenc & Le Sourd, 2010). RI funds were defined as those made by selecting shares that meet specified ESG criteria. In most cases, statistically not significant negative alphas were reported, showing that, in itself, RI security selection does not lead to outperformance.

3.4.2 Corporate governance studies conducted in emerging and developing countries

Since the current study was conducted in South Africa, previous research that focused on emerging and developing markets is highlighted. The International Monetary Fund (IMF, 2013) uses a country classification system that considers the per capita income level, export diversification and degree of integration into the global financial system to differentiate between developing markets and emerging markets. South Africa is considered to be an emerging market. The country forms part of the BRICS group (an acronym for a group of major emerging markets, the others being Brazil, Russia, India and China) since 2010 (Bloomberg, 2010).

Table 3.4 provides a comparative summary of studies conducted in emerging and developing countries, based on an extensive literature review. A separate discussion is provided on African studies in Section 3.4.2.1.

Table 3.4: **A summary of previous corporate governance studies conducted in emerging and developing countries**

Researcher(s) and publication year	Country considered	Corporate governance measure	Performance measure(s)/ Financial data	Results
Judge et al. (2003)	Russia	Board structure	Respondents compared their perceptions of their firm's performance relative to the performance of competitors on a five-point Likert-type scale	Effective corporate governance seemed to be essential to firm performance in Russia
Klapper & Love (2004)	14 emerging markets (including South Africa)	Credit Lyonnais Securities Asia corporate governance questionnaire	ROE; Tobin's Q	Wide variation in firm-level corporate governance; better corporate governance is correlated with better operating performance and market valuation
Haniffa & Hudaib (2006)	Malaysia	Board-specific characteristics; shareholding	ROA; Tobin's Q	Significantly positive relationships between specific corporate governance considerations and accounting as well as market-based performance
Imam & Malik (2007)	Bangladesh	Ownership structure (alternative corporate governance measure)	TSR; Tobin's Q	Significant positive relationships between ownership structure and

Researcher(s) and publication year	Country considered	Corporate governance measure	Performance measure(s)/ Financial data	Results
				market-based performance
Omran et al. (2008)	Arab countries (Egypt, Jordan, Oman and Tunisia)	Ownership concentration	ROA; ROE; Tobin's Q	Prospect improvements in corporate governance practices are better determined through the effect on accounting-based performance than market measures
Shah (2009)	Pakistan (and USA)	Corporate governance scorecard	ROE; ROA; Tobin's Q; market-to-book value of equity; Fama–French three-factor model; four-factor model including momentum	Positive relationships were observed between corporate governance and the performance measures for both countries
Chi (2009)	Taiwan	Firm-level transparency and disclosure rankings	Tobin's Q	Good corporate disclosure practices play a positive role in Taiwanese firms' market-based performance
Morey, Gottesman, Baker and Godridge (2009)	21 emerging market countries (including South Africa)	Monthly AllianceBernstein corporate governance ratings	Tobin's Q; price-to-book ratio	Corporate governance improvements result in significant positive market valuations
Ramdani & Van Witteloostuijn (2010)	Indonesia, Malaysia, South Korea and Thailand	Board independence and CEO/chairperson role duality	ROA	The quantile regression analysis used by the authors indicated that the relationship between corporate governance and firm performance variables was different across the conditional quantiles of the firm performance distribution
Alhaji et al. (2012)	Malaysia	Board-specific characteristics	EPS	No significant relationship was reported between the board-specific characteristics and the accounting-based EPS measure
Fallatah & Dickins (2012)	Saudi Arabia	Constructed a corporate governance index based on board characteristics and share ownership	ROA; Tobin's Q; market value of equity	Corporate governance and ROA was unrelated, while corporate governance and Tobin's Q was positively related
Poramapojn (2013)	Thailand	Corporate governance score acquired from the Corporate Governance Report of Thai Listed Companies in 2010 published by the Thai Institute of Directors	ROA; Tobin's Q	Firms with high profitability are likely to have good corporate governance compliance; the relationship with Tobin's Q was not significant

Researcher(s) and publication year	Country considered	Corporate governance measure	Performance measure(s)/ Financial data	Results
Velnampy (2013)	Sri Lanka	Board and board committee characteristics	ROA; ROE	Corporate governance did not affect the profitability of the considered manufacturing firms

Source: Researcher's own construction based on the indicated studies

It is evident that corporate governance compliance in studies conducted in emerging and developing markets is often measured in terms of board-specific variables, as reflected in Table 3.4. Furthermore, several of these researchers tended to use ROA and ROE as profitability measures, while Tobin's Q was favoured as a market-based performance measure. Based on the divergent results indicated in Table 3.4, it is evident that inconclusive evidence exists on the nature of the relationship between corporate governance and financial performance in the developing and emerging market context. In the following section, focus is placed on selected African corporate governance studies.

3.4.2.1 *African corporate governance studies*

Nganga, Jain and Artivor (2003: 8–9, 18) evaluated corporate governance in Africa for a survey of publicly listed firms (South African firms were not included in their sample). They reported that the corporate governance standards of the considered African firms were mostly on a par with listed firms in other developing countries.

A number of corporate governance researchers focused on Nigeria and reported varying results. Sanda et al. (2005: 3) considered the efficiency of corporate governance mechanisms as a means of increasing the financial performance of 93 listed Nigerian firms between 1996–1999. They used board-specific corporate governance measures and the price-earnings ratio, ROA, ROE and Tobin's Q performance measures. These authors found no evidence that boards with more outside directors performed better than other firms. However, they indicated that companies that were managed by foreign CEOs tended to achieve higher performance levels than those managed by Nigerian CEOs.

In another Nigerian study, Kajola (2008: 20–21) observed the relationship between board-specific corporate governance variables and the ROE ratio. The author considered a sample of 20 listed Nigerian companies for the period 2000–2006. A statistically significantly positive relationship was found between profitability and board size as well as the status of the CEO.

Ehikioya (2009: 232) also examined the relationship between board-specific variables and the performance (ROA, ROE, price-earnings ratio and Tobin's Q) of 107 Nigerian listed firms over the period 1998–2002. He reported no evidence to support the (positive) impact of board composition on performance.

Babatunde and Olaniran (2009: 338) found no significant evidence that outside directors enhanced the financial performance of selected Nigerian firms. They examined the relationship between external and internal corporate governance mechanisms and the ROA and Tobin's Q measures for a sample of 62 listed Nigerian firms between 2002–2006. Okpara (2011) indicated that Nigerian firms are challenged by a lack of board commitment, weak governance monitoring systems and insufficient corporate transparency and disclosure.

Studies that were conducted in Egypt and Kenya also provided contradictory results. El-Masry (2010) considered the Top 50 listed Egyptian firms for the period 2004–2006. Various board-specific characteristics were positively related to firm performance (measured by ROA, ROE and Tobin's Q). In contrast, Barako, Hancock and Izan (2006: 11) examined the voluntary corporate governance disclosure practices of listed firms in Kenya. They considered ROE as a profitability control variable with no statistically significant results. A possible reason for this tendency was that ROE declined during the period under investigation (1992–2001) as a result of the general decline in Kenya's economic performance. Okiro (2010) also found no relationship between board size and performance (ROA and the dividend pay-out ratio were considered) of listed firms in Nairobi for the period 2006–2008.

In line with the results of studies conducted in developed countries (see Table 3.4), inconclusive evidence was also reported on the nature of the relationship between corporate governance and the financial performance of firms operating in emerging and developing countries.

3.4.2.2   *South African corporate governance studies*

Abdo and Fisher (2007: 46) examined the effect of reported corporate governance disclosure practices on the financial performance of selected JSE-listed firms. They considered the period June 2003–June 2006. The authors developed the G-Score research instrument. This instrument was based on 29 corporate governance disclosure factors. They reported that corporate governance had a positive correlation with share returns. Abdo and Fisher's (2007)

G-Score was used by Opperman (2009) to consider the relationship between corporate governance compliance and the cost of capital of the 20 largest listed South African firms.

Kyereboah-Coleman (2007: 208) considered the corporate governance data of 103 listed African firms. He included companies from Ghana, Nigeria, Kenya and South Africa in his sample. The author indicated that the independence of corporate boards is particularly important for the performance (as measured by ROA and Tobin's Q) of the considered companies.

Moloi (2008) used content analysis based on the King II Report's recommendations and the Corporate Laws Amendment Act (Act No. 24 of 2006) to assess the corporate governance reporting of the Top 40 JSE-listed firms in 2006. He found that these companies adhered to good corporate governance practices. A limitation of his study was that only the largest firms were included in the sample. The results were thus not unexpected.

Mangena and Chamisa (2008: 29) examined the association between firms' corporate governance structures and incidences of listing suspension from the JSE. They considered 81 firms suspended between 1999 and 2005. These authors reported that the likelihood of suspension was higher for firms with weaker corporate governance compliance than for their counterparts with better corporate governance compliance. However, they indicated no association between ROA and the board-specific variables that were studied.

In 2012, Ntim et al. (2012) considered the disclosure practices of 169 JSE-listed firms from 2002–2007, based on 50 King II provisions. They reported that good corporate governance disclosure practices impacted positively on firm value (measured by TSR, among other measures). The authors only paid attention to disclosure practices, while both the disclosure and acceptability dimensions of corporate governance compliance were considered in the current study.

Although South African researchers mentioned improvements in corporate governance compliance over time, the relationship between corporate governance and the selected financial performance measure(s) ranged from positive, negative to no association at all.

Previous researchers identified three possible caveats that should be considered when interpreting results on the relationship between corporate governance compliance and financial performance.

3.4.3   Possible caveats of the interpretation of corporate governance and financial performance results

Firstly, Klapper and Love (2004: 706) indicated that a possible caveat on results that show a positive relationship between corporate governance and financial performance is the likely endogeneity of corporate governance compliance practices. Growing companies with large external funding requirements have more motivation to adopt good corporate governance practices to lower the cost of capital than their more established counterparts. Furthermore, growth opportunities would be reflected in a firm's market valuation, thus possibly inducing a positive relationship between a market-based measure such as Tobin's Q and corporate governance compliance.

Klapper and Love (2004) recommend that size should be considered as a control variable that could proxy for growth opportunities. Panel data techniques can also be used to address this problem. In the current study, both size and value/growth factors formed part of the Fama−French three-factor analysis. See Section 5.9.5.3 for more details on the application of this model in the current study. In addition, panel regression models were used, as discussed in Sections 5.10.2.5−5.10.2.6.

Secondly, if only large, financially successful firms adopt the specific recommendations of the observed corporate governance code, a positive relationship between corporate governance and financial performance is expected. It is then possible that a high corporate governance rating only indirectly affects performance (Bjuggren & Mueller 2009: 361−362). In the current study, both large and small market capitalisation firms were examined. In addition, the sample included both listed firms and firms that delisted from the stock exchange during the considered time period. Refer to Section 5.8.3 for more information on the compilation of this study's sample.

Thirdly, corporate governance researchers tend to expect a (causal) relationship between corporate governance compliance as the independent variable and financial performance as the dependent variable. However, the inverse of this relationship may also apply, namely that better financial performance leads to better corporate governance compliance. Companies with good operating performance may hence decide to adopt improved corporate governance practices, because they can afford it (Love, 2010: 2). Corporate governance could accordingly be the dependent or independent variable when considering the relationship between

corporate governance compliance and financial performance. As reported in Section 7.3, separate regression analyses were conducted in the current study on corporate governance as the dependent and independent variable respectively.

Fourthly, Hermalin and Weisbach (2003: 96) warned that if a significant relationship is found between corporate governance and a financial performance measure, a researcher cannot merely accept a causal relationship. Other factors that were not considered within the specific study could have an influence on the reported association. The relationship between corporate governance compliance and financial performance is hence likely to be spurious rather than causal.

The relationship between the corporate governance compliance and financial performance of a sample of JSE-listed firms was considered in the current study. The study period (2002–2010) included the 2007–2009 global financial crisis. The failing corporate governance structures of listed firms in the USA were one of the main causes of this crisis (Adams, 2009). The financial performance of JSE-listed firms was severely influenced during this crisis period. The influence of the 2007–2009 crisis period on the considered relationship could hence not be ignored. While none of the discussed South African corporate governance researchers (see Section 3.4.2.2) included the crisis period in their corporate governance studies, the 2007–2009 crisis formed part of the current study's research period.

With regard to previous financial crisis periods, a number of researchers conducted corporate governance studies during the Mexican financial crisis of 1994–1995, the Asian financial crisis of 1997–1998 and the 2007–2009 global financial crisis.

3.4.4 Corporate governance studies that were conducted during financial crisis periods

Previous corporate governance researchers either considered the periods before or after a financial crisis, or deliberately included a financial crisis period to consider the effect thereof on the outcomes of their studies. Joh (2003: 319) studied the effect of corporate governance on financial performance of Korean firms before rather than during the Asian crisis of 1997–1998. He indicated that weak corporate governance led to the deteriorating of the considered firms' performance over time, even before the 1997–1998 Asian crisis.

Mitton (2002: 239–240) reported a positive association between share price performance and disclosure quality for a sample of 398 listed firms from Indonesia, Korea, Malaysia, the Philippines and Thailand during the 1997–1998 Asian crisis. In another Asian crisis study, Baek, Kang and Park (2004: 265) examined the effect of corporate governance compliance on the share price data of 644 Korean listed firms. These authors found that a change in the value of a firm during this crisis was a function of firm-level corporate governance differences. In addition, they reported that the considered firms with high corporate governance disclosure (and alternative external financing sources) "suffered less" in financial terms during the 1997–1998 Asian crisis than firms with weak corporate governance disclosure.

Leung and Horwitz (2010) considered the effect of corporate governance compliance on the share prices of 463 Hong Kong listed companies during the 1997–1998 Asian crisis. They indicated that companies with more concentrated director ownership and CEO/chairperson role duality experienced a smaller share price decline than their counterparts with less concentrated director ownership and separate CEO/chairperson roles.

Regarding the 2007–2009 global financial crisis, Nogata, Uchida and Moriyasu (2009) examined the effect of corporate governance compliance on the share price performance of listed firms in Japan during the crisis. They found that corporate governance structures were important determinants of the considered firms' share price performance. The share prices of firms that had share option plans were severely negatively affected during this crisis period. It thus seems as if managerial risk-taking incentives make share price performance (more) vulnerable during a financial crisis period (Nogata et al., 2009).

Erkens et al. (2012) considered the effect of corporate governance on the performance of financial firms from 30 countries during the 2007–2009 global financial crisis. A surprising result was that firms with more independent boards and higher institutional ownership structures had significantly lower share returns than firms with less independent boards and lower institutional ownership. Manescu (2010a) warned that investors seem to have little concern with corporate governance when firms perform well; however, boards often come under pressure to change their corporate governance practices during underperformance periods (Abdullah & Page, 2009). In the current study, the risk-adjusted abnormal performance of the sample of JSE-listed companies before and during the recent crisis period was considered. See Section 7.5.3 for more details.

3.5   Summary and conclusions

The history of RI dates back to the Quakers who refused to profit from investments related to alcohol and weapon dealings in the 18th century (Hamm, 2003). The concept of RI developed over time, focusing the attention of investors on the importance of ESG considerations in the investment process. Since 2005, the UN PRI (2010) provides standardised, globally accepted principles that guide responsible investors. Corporate governance is generally the first level of ESG engagement for investors (World Federation of Exchanges, 2010: 2).

Statistics revealed that the interest of institutional investors in RI considerably increased between 1999 and the early 2000s (International Labour Office, 2003: 71). Enhanced focus was hence placed on the development of RI initiatives, policies and codes. South Africa's FTSE/JSE SRI index was a pioneering initiative amongst other emerging market countries (JSE, 2010). Furthermore, the amendments to Regulation 28 of the Pensions Fund Act (Act No. 24 of 1956) and the CRISA guide and encourage institutional investors to incorporate ESG considerations into investment activities (Bertrand, 2011). With regard to the ESG compliance of South African firms, focus is mainly placed on corporate governance. This tendency can be attributed to the country's well-developed corporate governance framework provided by the King Reports.

Previous researchers in developed and emerging countries reported inconclusive evidence on the nature of the relationship between corporate governance and financial performance. The current researcher aimed to contribute to the body of knowledge on this relationship by focusing on the South African context.

However, while clearly defined financial performance measures are available, corporate governance is an abstract concept that is difficult to measure (Baber & Liang, 2008). Many previous corporate governance researchers hence tended to concentrate on board-specific variables. In contrast, in the current study, a comprehensive, well-defined corporate governance research instrument was refined and used to compile a CGS for each of the JSE-listed firms in the sample. This instrument was based on the recommendations of the King II Report and the PIC (2011), as explained in Chapter 4.

CHAPTER 4

THE CORPORATE GOVERNANCE RESEARCH INSTRUMENT

Not indicated due to a confidentiality agreement between the researcher and the Centre for Corporate Governance in Africa at the University of Stellenbosch Business School.

CHAPTER 5

RESEARCH DESIGN AND METHODOLOGY

5.1   Introduction

> "Research consists of seeing what everyone else has seen,
>
> but thinking what no one else has thought."

This quote by the 1937 Nobel Prize winner Albert Szent-Györgyi (1893–1986) indicates that a researcher should find a novel problem in the sphere of existing information on the considered research topic. The researcher should then cautiously select a research design and manage the entire research process actively (O'Leary, 2010).

Systematic problem solving could lead to better research results (Kumar, 2011). A systematic research process normally entails a number of steps. Firstly, the researcher should decide what he or she wants to achieve, namely the study's research problem, objectives, questions and hypotheses (Coldwell & Herbst, 2004: 2–3). As indicated in Section 1.3, this study's research problem was to investigate the relationship between corporate governance and the financial performance of selected JSE industries for the period 2002–2010. South Africa presents an appropriate emerging market environment in which to conduct corporate governance research, due to the well-developed corporate governance framework provided by the King Reports.

In the context of the research problem and objectives, the preceding literature chapters provided an in-depth discussion on financial performance, the 2007–2009 global financial crisis and corporate governance. In Chapter 4, a detailed discussion was provided on the refinement of the corporate governance research instrument. In the remainder of Chapter 5, the research process, consisting of nine steps, is discussed.

5.2   Defining business research

Research is important for both academics and practitioners. Although the definition of research differs amongst users, there is a general consensus that research is systematic, entails a process of enquiry and investigation as well as increases knowledge (Wilson, 2010: 2–3). One of the research areas that are of particular concern to social scientists is that of business research.

Business research can be defined as the objective, systematic process of collecting, recording, analysing and interpreting data to help solve managerial problems (Zikmund, Babin, Carr & Griffin, 2013: 4–5). In the context of the current study, responsible and mainstream investors need corporate governance and financial performance data for both short-term and long-term decision-making purposes. Corporate governance compliance is often costly and time-consuming. Investors and other stakeholders are thus interested in understanding how the firm can benefit (in financial and non-financial terms) from efficient corporate governance compliance (Solomon & Bryan-Low, 2004).

A general consensus amongst researchers is that research should increase knowledge. After the completion of the current study, new knowledge on the specific research area of concern (the relationship between corporate governance and financial performance) would have been created for use by other academics, business leaders and practitioners, amongst others. These interested parties could then possibly apply the research findings for future decision-making purposes, problem solving and research.

The term 'systematic' in the definition of business research entails that the research should be well organised and planned (Wilson, 2010: 2). This could be accomplished by the nine steps of the research process illustrated in Figure 5.1.

Research process	**Step 1:** Identify and formulate the research problem (refer to Section 1.3)
	Step 2: Determine the research objectives (see Sections 1.4.1, 1.4.2 and 5.2)
	After the research problem and research objectives have been defined, the appropriate research type(s) should be decided on (refer to Section 5.3)
	Step 3: Develop a research design (see Section 5.4)
	Step 4: Conduct secondary research (refer to Section 5.5)
	Step 5: Conduct primary research (see Section 5.6)
	Step 6: Determine the research frame
	Specific attention should be given to the study's population (refer to Section 5.7) and sample (refer to section 5.8)
	Step 7: Collect data (refer to Section 5.9)
	Step 8: Process data (see Section 5.10)
	Step 9: Report the research findings (refer to Section 5.11; Chapters 6 and 7)

Figure 5.1:   The research process that was followed in the current study

Source: Adapted from Cant et al. (2003: 39)

The primary research objective of the current study was to investigate the relationship between corporate governance and the financial performance of selected JSE industries. Refer to Sections 5.10.2.4–5.10.2.6 for details on the regression models that were used to test for this relationship.

The research questions formulated in this study included the following:

- Are there differences between the corporate governance compliance of JSE-listed companies and that of delisted companies? (Refer to Section 5.10.2.10 for a discussion on the mixed-model ANOVA).

- Was there an association between the corporate governance compliance of the top CGS firms in the sample and their risk-adjusted financial performance? (See Sections 5.9.5.2–5.9.5.3 for detail on the estimation of abnormal share returns).

- Does 2008, the midpoint of the 2007–2009 global financial crisis, represent a structural break in the financial dataset? (Refer to Section 5.10.2.12 for detail on the Chow test).

In the following section, different types of research are explained. Specific reference is made to the research types that were used in this study.

5.3   Types of research

A study's research problem affects the appropriate research type(s) that should be used (Bless, Higson-Smith & Kagee, 2006: 43). Collis and Hussey (2003: 10) state that the purpose, logic and process of research can be used to classify different types of research, as indicated in Table 5.1.

Table 5.1:   **Classification of different research types**

Research type	Basis of classification
Descriptive, exploratory, causal, explanatory, predictive and evaluative research	Purpose of the research
Deductive and inductive research	Logic of the research
Quantitative and qualitative research	Process of the research

Source: Adapted from Collis & Hussey (2003: 10)

5.3.1   Descriptive, exploratory, causal, explanatory, predictive and evaluative research

Descriptive research aims to provide an accurate description of a specific phenomenon's characteristics (Johnson & Christensen, 2012: 366). This strategy addresses the "who, what, where, when and how" aspects of the research. Descriptive research can be used to determine possible interactions between variables, but cannot be used to make cause-and-effect statements (Blumberg, Cooper & Schindler, 2008; Silver, Stevens, Wrenn & Loudon, 2013).

Exploratory research attempts to generate new ideas and insight. If a study area is relatively novel, exploratory research often first needs to be conducted to develop a conceptual framework. This type of research can be used to clarify ambiguous situations (Burns & Burns, 2008: 82; Zikmund & Babin, 2010: 50). Surveys are often used when conducting exploratory research. This type of research can lead to implementable suggestions or solutions for a

specific research problem (Blumberg et al., 2008; Silver et al., 2013). Shareholder activism in South Africa is, for example, a novel research field.

The third type of research is that of causal research. This research type can be used to demonstrate that a change in one variable causes a (predictable) change in another variable. A "cause-and-effect" relationship is hence considered (Zikmund & Babin, 2010: 53). It can also provide the researcher with a better understanding of the outcome of one variable when varying the other (Silver et al., 2013). Causal research is based on the assumption that the dependent variable is causally related to one (or more) independent variables (Coldwell & Herbst, 2004: 11–12). There are three strict criteria for causality, namely temporal sequence (the cause must occur before the effect), concomitant variation (when a change occurs in the cause, a change should also be observed in the outcome) and non-spurious association (cause and effect observations are not due to another variable) (Zikmund & Babin, 2010: 53).

Explanatory research is used to explain why a specific phenomenon occurred. This research type provides for the inclusion of reasons for a specific occurrence (Adler & Clark, 2011: 15). Explanatory research can be used to test a theory that describes a (positive or negative) cause-and-effect relationship amongst variables, as well as the strength of the relationship. It can also be utilised to explain why variables are related (Salkind, 2010: 1254). Based on the interpretations suggested by explanatory research, predictive research can be used to forecast future phenomena or problems. Furthermore, when a researcher aims to assess whether a specific intervention or procedure can change the behaviour of observed objects, evaluative research can be used (Salkind, 2010: 1254; Vogt & Johnson, 2011: 300).

In the current study, descriptive research was used to determine the nature and characteristics of the financial performance and corporate governance datasets. The interaction between the dependent and independent variables were also examined. As indicated in Table 5.1, the next basis of classification is the logic of the research.

5.3.2   Deductive and inductive research

The scientific norm of logical reasoning provides a hypothetical two-way bridge between the application of theory and conducting new research. In practice, scientific enquiry involves deduction, induction or a combination thereof (Babbie, 2013: 51-52). Deductive research is based on the application of a well-known theory, such as the agency theory. Hypotheses are

then deduced based on this theory. Thereafter, empirical observations are made to confirm or contradict the theory. In contrast, inductive reasoning typically starts with observation(s), where after tentative hypotheses are formulated. A general theory is then developed, based on these observations. The inductive approach can thus be seen as a theory-building process (Crowther & Lancaster, 2008; Trochim, 2006; Wilson, 2010: 7).

By its very nature, inductive reasoning is exploratory (Wilson, 2008: 44). A deductive research approach is often used if the researcher wants to consider a relationship between certain variables (Collins, 2010: 42). In this study, the deductive research approach was followed. The researcher conducted a thorough literature review on corporate governance, financial performance and global financial crises. Thereafter, the hypotheses for the study were formulated.

5.3.3   Quantitative and qualitative research

The quantitative and qualitative research types each relates to a specific research paradigm. A study's research paradigm is derived from its underlying research philosophy (Armstrong, 2010b). The concept 'research philosophy' can be defined as the development and nature of the research background and knowledge (Saunders, Lewis & Thornhill, 2007). The relevant research paradigms and their underlying philosophies are firstly discussed (refer to Figure 5.2), before quantitative and qualitative research types are explained.
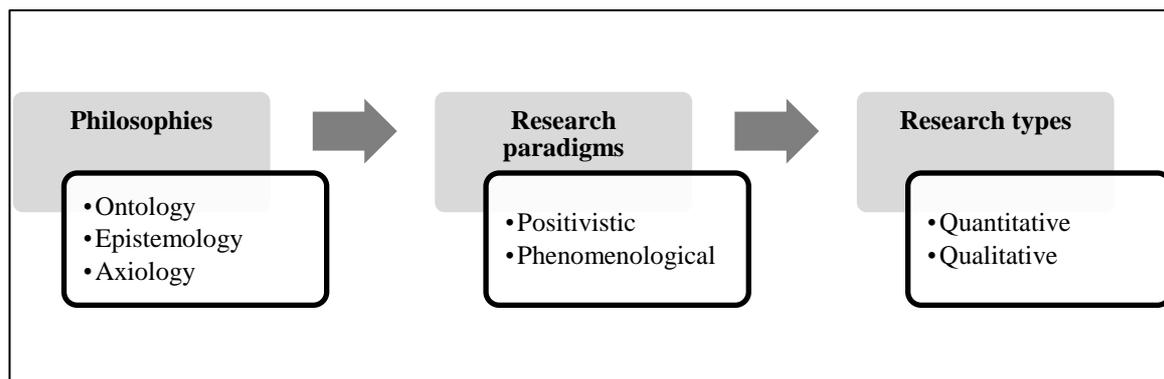
Figure 5.2:   **Philosophies, research paradigms and research types**
Source: Researcher's own construction

There are three main philosophical dimensions in research, namely ontology (focuses on a researcher's perception of reality), epistemology (the nature of knowledge within a specific field) and axiology (concerned with the researcher's values and ethics) (Collins, 2010: 36;

Wahyuni, 2012: 69–70). Research paradigms are used to address the philosophical dimensions of a scientific discipline (Wahyuni, 2012: 69). Based on their research philosophy, researchers in the social sciences could adopt either a phenomenological or a positivistic research paradigm. In many cases, a blended approach is also suitable (Remenyi et al., 1998).

Researchers who adopt a positivistic paradigm focus on explanations and the possibility of causality (Kasi, 2009: 95). This paradigm is associated with quantitative data collection and analysis (Blaxter, Hughes & Tight, 2006: 61). Existing theories are typically considered to formulate research questions and hypotheses through a deductive reasoning approach. Numerical data are then collected on which statistical analyses are conducted. Thereafter, the stated hypotheses are rejected (or not) based on the statistical results (Lodico, Spaulding & Voegtle, 2010).

Researchers who follow a phenomenological paradigm typically consider feelings or experiences of participants in their study through words and descriptions (Taylor, 2005: 108). It is an interpretative research approach concerned with understanding the meanings which are attached to specific phenomena within the observed individuals' social contexts. This research paradigm is typically associated with qualitative data collection and analysis (Ritchie & Lewis, 2003: 3; Taylor, 2005). Qualitative research allows the researcher to interpret specific phenomena without depending on numerical measurement. Specific data collection methods are used, such as interviews and focus groups, to gain new insights or determine inner meanings (Zikmund & Babin, 2010: 131). Qualitative research typically follows an inductive approach (Lodico et al., 2010).

In this study, quantitative research was conducted. This research type offers a number of advantages over a qualitative approach. Since it is based on numerical measurement, it can be simpler to generalise than qualitative research. It is also easier to illustrate the results on graphs for explanatory purposes. However, quantitative data do not necessarily provide the researcher with the same level of depth as qualitative observations (Tashakkori & Teddlie, 2003; Thomas, 2003: 2). Most previous studies (refer to Section 3.4) on the relationship between corporate governance and financial performance were also quantitative in nature.

At this stage, the study's research questions have been formulated, the research objectives were derived and the appropriate research types were identified. The third step in the research process (refer to Figure 5.1) entails that a research design should be developed.

5.4   Development of a research design

The research design of a study indicates the necessary steps to provide answers to the research questions and to test the stated hypotheses (Gravetter & Forzano, 2009: 185; Silver et al., 2013: 55). In the current study, time measurement was of specific concern to the selected research design. Observations can be evaluated in a single period or over a longer period. In this regard, two main research designs can be used, namely cross-sectional and longitudinal (Babbie, 2013: 106).

A cross-sectional research design focuses on data collection from a section (i.e. the sample) of the population at a single point in time (Du Plooy, 2009: 91). The differences amongst the sample objects in this single period are typically considered. Such a design cannot be used to measure change(s) over an observed time period (Kumar, 2011: 107). Exploratory studies are typically cross-sectional in nature (Babbie, 2013: 105). Figure 5.3 illustrates how a cross-sectional design was used in the current study.

Year	CGS firm 1	CGS firm 2	CGS firm 3	CGS firm n
2010	40	69	34	50

Figure 5.3:   **Example of a cross-sectional design in this study**

By using a cross-sectional research design, the researcher was able to compare the compiled CGSs amongst all the companies in the sample in a particular year, say 2010. However, the primary objective of this study was to observe the relationship between corporate governance and the financial performance of selected JSE industries over a nine-year study period (2002–2010). The consideration of only cross-sectional data was thus insufficient.

In contrast to cross-sectional studies, longitudinal studies consider the same phenomenon over an extended period of time (Babbie, 2013: 106). Time-series and panel designs are typically used during longitudinal studies. Time-series designs evaluate a specific object (such as the

CGS of a specific firm) over a set time period (Blaikie, 2010: 202). The application of a time-series design was used in the current study as illustrated in Figure 5.4.

Year	CGS firm 1
2007	25
2008	30
2009	38
2010	40

Figure 5.4: **Example of a time-series design in the current study**

As seen in Figure 5.4, a time-series design could provide the researcher with useful information regarding changes for a specific variable, such as a firm's CGS over a four-year period. However, instead of considering only one firm over a number of years, the researcher collected corporate governance data for 230 JSE-listed firms over the period 2002–2010. As such, the usage of a panel research design had to be considered, since such a design includes changes in multiple sample objects over an observed period (Blaikie, 2010: 202; Jupp, 2006).

Panel designs are widely used in the social sciences, where it is also known as 'pooled cross-sectional time-series designs' (Frees, 2004: 4). If a balanced panel design is used, only firms which had data available for every year during a specific study period can be considered. This could create survivorship bias, since only companies that existed for the entire study period could be included in the sample (Baum, 2006: 47). Using an unbalanced panel could decrease this bias. For the purpose of the current study, firms that had fewer than nine annual observations were also included in the sample. The loss of sample size was consequently mitigated. Figure 5.5 provides an example of how an unbalanced panel design was used in the current study.

Year	CGS firm 1	CGS firm 2	CGS firm 3	CGS firm 4
2007	25	50	20	
2008	30	58	24	36
2009	38	62		42
2010	40			50
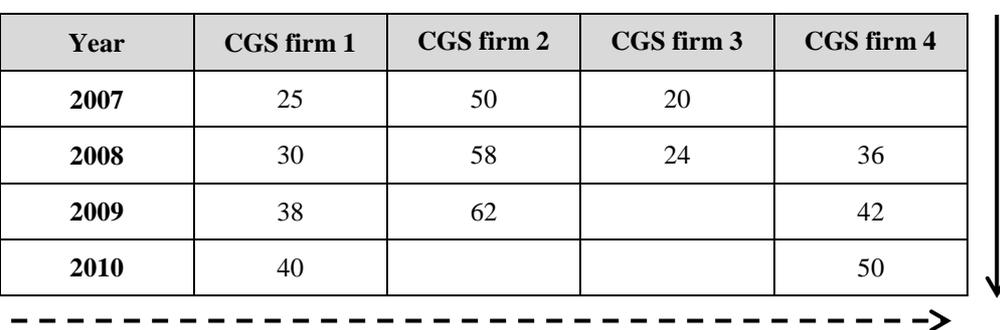
Figure 5.5: **Example of an unbalanced panel design used in the current study**

From Figure 5.5, it can be seen that the unbalanced panel design provided the researcher with the opportunity of observing firms during specific years during which they were listed (Arellano, 2003: 1–3). The use of this design enabled the researcher to combine the simultaneous measurement of time-series and cross-sectional data effects (De Jager, 2008: 54–56; Yang, 2010).

Three main advantages associated with the use of a panel design are that the sample size can be increased, individual heterogeneity (differences amongst individual objects) can be controlled for, and multicollinearity (correlation amongst the explanatory variables) can be reduced (Ajmani, 2009; Schils, 2005: 68). If n subjects (e.g. 100 firms) were observed over t time periods (e.g. 10 years), there would have been a total of 1 000 observations (n multiplied by t). In contrast, if cross-sectional data were used, there would only have been 100 data points.

Possible unobserved individual effects, due to individual heterogeneity can be controlled for by using repeated observations on the same firms over time. Thirdly, multicollinearity can be reduced as a result of the variability between both time periods and individual objects. A detailed discussion of these problems can be found in Sections 5.10.2.3.3–5.10.2.3.4. A disadvantage of using panel data is that it can be very time-consuming to source the data (Ajmani, 2009; Schils, 2005: 68).

Once the research design has been developed, the researcher should determine whether secondary and/or primary research should be conducted. Step 4 of the research process thus focuses on secondary research, while step 5 entails primary research.

5.5   Secondary research

Social science researchers typically start a new study by considering secondary data. This enables them to build the main argument of their study and to evaluate the results of previous researchers within the field (Hair, Celsi, Money, Samouel & Page, 2011: 155; Kumar, 2011: 23; 58). Secondary data are already in existence, since it stems from sources previously compiled for other purposes than the current research project. The collection of secondary data normally does not require access to the original research subjects (Struwig & Stead, 2013; Zikmund & Babin, 2010).

The main advantages of using secondary data include that it is readily available and relatively inexpensive to gather. It is also less time-consuming to collect secondary data than to gather primary data (Zikmund & Babin, 2010: 163). However, if the researcher needs to purchase data from a data provider, the cost of collecting data can increase substantially. A possible disadvantage is that secondary data were not specifically collected for the researcher's needs. One study's primary data can thus become another study's secondary data. The researcher should therefore carefully evaluate the secondary data to determine the reliability and applicability of it in terms of his or her own research (Beri, 2010: 13; Boone & Kurtz, 2012).

Secondary data can be quantitative or qualitative in nature. The necessary secondary data are often collected by using electronic sources, such as academic journals and databases (Zikmund & Babin, 2010: 163). For the purposes of the current study, several journal articles, books, press releases and websites were consulted to conduct a comprehensive literature review on corporate governance, financial crises and financial performance.

Standardised financial data were gathered from the McGregor BFA (2013) database. This database provides financial data both as published in a company's annual report (at financial year end) and in a standardised format. Standardised, annualised financial data were used for the current study, since it could be compared more easily (and accurately) amongst the sample firms. Data on the risk-free rate of return and the market proxy in South Africa (the FTSE/JSE All Share Index) were obtained from the BER (2013). This data were used for the estimation of alphas.

Secondary data sources are often used in corporate governance and social responsibility studies. However, corporate governance data are not necessarily available in an immediately usable format (Hair et al., 2011: 112–113). The data should then be converted into the required format. 'Data conversion' refers to the process of changing the original form of data to a format that is more suitable to achieve the research objective(s) of a specific study (Zikmund & Babin, 2013).

In the current study, the units of analysis, namely firms' annual reports, were downloaded from the McGregor BFA (2013) database for the period 2002–2010. The term 'annual report' was used for the purpose of this study, since integrated reporting has only been expected from JSE-listed firms from 2011 onwards (Pretorius, 2011). The corporate governance data that

were contained in these annual reports had to be converted into an applicable CGS format for analysis purposes. Refer to Section 5.9.3 for details on this conversion process.

5.6   Primary research

If the research objectives cannot be addressed adequately by using secondary data sources, primary data should be collected (Hair et al., 2011: 186). Primary research is conducted if a researcher collects data for the first time for the purposes of a specific research project (Blaikie, 2010: 162). Primary data can, for example, be collected by means of interviews and questionnaires (Kumar, 2011: 26).

This type of data is original and can be used to answer specific research questions (Blaikie, 2010: 160). The analysis of primary data can provide more detailed information than merely evaluating secondary data. However, a disadvantage associated with primary research is that the data can take several months to collect (Boone & Kurtz, 2012). No primary data were used in the current study.

In order to collect the necessary data, a researcher needs to determine which units of analysis will be part of the investigation. This is referred to as the 'research frame of a study'. This frame normally includes sampling technique(s) to select representative units from a population (Pride & Ferrell, 2012: 178). Although only secondary data were used in this study, the afore-mentioned concepts were also relevant.

5.7   Population

A population is the group of all items, units or individuals of interest to a researcher. This group shares some common characteristics (Coldwell & Herbst, 2004: 73). For the current study, the population consisted of all JSE-listed firms for the period 2002–2010.

During the observed period, two different systems were used by the JSE to classify listed firms in terms of economic groups and industries. The JSE used the FTSE Global Classification System from June 2002 to 31 December 2005 to group its Main Board firms into economic groups (JSE, 2008a; JSE, 2011b). Table 1 in Appendix 2 provides a breakdown of the FTSE Global Classification System. Due to investor pressure for a unified global classification system, the FTSE and the Dow Jones Indices announced the creation of a

combined industry classification system, called the Industry Classification Benchmark (ICB) (JSE, 2004).

The ICB thus replaced the separate FTSE and Dow Jones classification systems in January 2006 (JSE, 2006). An outline of the ICB system is provided in Table 2 in Appendix 2. The researcher classified all firms in the sample by considering the classification jargon of both systems that were used during the observed nine-year period (2002–2010). Considerable changes between the ICB and the FTSE Global Classification System are indicated in Table 3 in Appendix 2. After the researcher had considered the changes between the two systems, the population of this study was clearly defined.

5.8   Sampling frame and sample

A sampling frame is a list of elements from which a sample is drawn (Coldwell & Herbst, 2004: 73). It is a partial (or complete) list of the items that comprise the total population (Levine, Stephan, Krehbiel & Berenson, 2005). The researcher created a list of companies that were listed under each industry (as published in *Die Burger*, for the last trading day of 2001 to 2010), as well as the number of years that every firm had been listed.

A sample is defined as the subgroup of the population's elements that is selected for observation (Malhotra, 2010: 371). Sample data are used as the basis for hypothesis testing in order to draw inferences about a population (Gravetter & Wallnau, 2011: 339). A researcher can also use a census to study every element in the population, but this is generally very costly (Zikmund & Babin, 2010: 412).

There are various benefits associated with using a sample, including that it is more economical and timesaving than to study the whole population. A very large population can also be practically inaccessible for the researcher (Coldwell & Herbst, 2004: 73–74; Oliver, 2008). Two main types of samples can be used, namely probability or non-probability samples.

5.8.1   Probability sampling

In probability sampling, every population unit has a known probability to be selected for the sample (Boslaugh, 2013: 57). A representative sampling frame is required to identify and sample members of the considered population. There are four types of probability samples,

namely simple random, systematic, stratified and cluster samples (Levine et al., 2005: 10; Rugimbana & Nwankwo, 2003).

In a simple random sample, every individual or unit in the sampling frame has an equal, independent chance to be selected (Levine et al., 2005: 9). A systematic sample entails that a random starting point is selected. Thereafter, every ith element (e.g. the 30th element in the sampling frame) is chosen. The sampling interval (i) is determined by dividing the population's elements by the sample size (Malhotra, 2010: 383).

When a stratified sample is compiled, the population is divided into sub-groups (called stratums), based on specific characteristics. Equal numbers are then randomly selected from the stratums (Gravetter & Forzano, 2009: 143). In a cluster sample, the population is grouped into collective clusters (aggregates) based on their proximity to each other. Each cluster must be representative of the population. A sample is then drawn by randomly selecting representative cluster(s) and considering all elements in the selected cluster(s) (Jackson, 2011: 119–120).

5.8.2   Non-probability sampling

A non-probability sampling technique can be used if the likelihood of selecting a particular population member is not known (Zikmund & Babin, 2010: 423). It is useful when a sampling frame does not exist, because some of the population's elements are difficult or impossible to locate (Monette, Sullivan, DeJong & Hilton, 2014: 242). This sampling technique typically relies on a researcher's personal judgement (Malhotra, 2010: 376). The main types of non-probability samples are a convenience, purposive (including judgement and quota samples) as well as chain sample (Coldwell & Herbst, 2004: 81).

Convenience sampling entails that items are selected based on their inexpensiveness, convenience and accessibility. The more convenient population elements are thus chosen to form part of the sample (Gravetter & Forzano, 2009: 143; Jackson, 2011: 120). A judgement sample is drawn based on the judgement of the researcher. An assumption is made that the researcher is familiar with the population's characteristics. The researcher thus deliberately selects elements to conform to specific criteria (Reddy & Acharyulu, 2008: 202).

When a quota sample is constructed, the sample is divided into sub-groups according to certain relevant features. Judgement is then used to select units from each sub-group

(Gravetter & Forzano, 2009: 143). Lastly, a chain sample can be used to identify cases of interest from respondents who can indicate other possible sampling candidates (Reddy & Acharyulu, 2008: 203).

The advantages of using a non-probability sampling technique include that it is more convenient and generally involves lower costs than probability sampling. However, a possible disadvantage is a lack of generalisability of the findings due to a non-representable sample (Levine et al., 2005:10).

5.8.3   Sampling method used in this study

In the current study, a combination of judgement and convenience sampling was used. Specific JSE-listed companies were considered, since the annual reports and financial data were conveniently available in a standardised format on the McGregor BFA (2013) database. A sample was drawn from six of the ten JSE industries, as classified according to the ICB system (JSE, 2009). The researcher used her judgement to include specific industries. Previous corporate governance researchers (Lamport, Latona, Seetanah & Sannassee, 2011; Saravanan, 2012; Uadiale, 2012) also used judgement sampling.

Companies that were listed in the Oil and Gas, Basic Materials and Financials industries were excluded from the sample. Firms in these industries were not considered, because their annual statements differed from those of firms listed in the other industries. During the study period, no companies were listed in the Utilities industry. The six selected industries (Health Care, Consumer Goods, Consumer Services, Industrials, Technology and Telecommunications) that were subsequently included in this dissertation are referred to as the considered industries.

Firms were included in this study's sample based on compliance with four criteria, namely:

- the firm formed part of the considered industries (or relevant economic groups);

- the firm's annual reports were available on the McGregor BFA (2013) database;

- the firm was listed for the entire calendar year (January to December) under consideration; and

- firm-specific data were available for at least two consecutive years during the study period. This was done to ensure enough data points for statistical analysis purposes. To determine whether a firm was listed for a sufficient number of years, the JSE

listing information published in a local newspaper, *Die Burger*, for the last trading day of 2001 to 2010 were considered. The year 2001 was included to determine whether a specific firm was already listed at the end of 2001, since a firm should have been listed for two full calendar years to form part of this study's sample. Firms' listing status was checked by comparing the data available on McGregor BFA (2013), *Die Burger*'s trading information, as well as the firms' listing status as published by the JSE (2011a).

A complete list of firms was compiled, indicating their listing status and the number of years that they were part of the sample (see Appendix 3). A comment column was added to indicate reasons why certain firms were not considered, such as listing or delisting during a specific year, a lack of data on McGregor BFA, etc. If a firm changed its name during the period, both names were indicated. A total of 230 firms (1 439 annual observations) were included in the sample. Appendix 4 provides detail on 62 firms that formed part of the observed industries during the study period, but which were excluded from the sample. Reasons are provided for the exclusion of these firms, such as unavailability of annual reports on McGregor BFA.

Possible sampling bias should be considered when drawing a sample from a population, as explained in Section 5.8.4. Attention should also be given to the generalisability of a judgement sample's results, as discussed in Section 5.12.

5.8.4   Sampling bias

Sampling bias refers to the tendency of a sample to differ from the population in a specific, systematic manner due to various reasons, including the sample selection method and the manner in which data are processed (Peck, Olsen & Devore, 2009: 33; Zikmund & Babin, 2010: 197). In the current study, specific attention was given to two potential sampling biases, namely sample selection criteria and survivorship bias.

Sample selection bias can lead to the systematic exclusion of a part of the population (Peck et al., 2009: 33). After a large number of corporate governance studies and annual reports on corporate governance trends had been considered, it was evident that when firms were compared and ranked according to their CGSs, only the largest firms were generally considered. When considering ESG considerations, the selection criteria seem to be biased towards large, listed successful firms, often excluding small, less successful and/or delisted

firms (Ethical Investment Research and Information Service, 2011; Roy & Gitman, 2012). A firm's size and listing status can, however, have an influence on corporate governance aspects, for example, on the size of the directorate (Huse, 2007: 109).

Survivorship bias can occur when only currently listed firms are included in a study's sample. Firms that delisted from the considered stock exchange during the period under review are accordingly excluded (Van Frederikslust, Ang & Sudarsanam, 2008: 229). Such exclusions can possibly influence the results of a study, since only firms that were successful enough to survive were considered (Pawley, 2006: 21). Survivorship bias in a dataset might lead to results that indicate the predictability of future performance based on past performance, even though this predictability is not true. "Winning" shares could have the appearance of predictability, just because they survived. If the share performances of delisted firms were ignored, the realised share returns might have appeared to be higher than what they actually were (Brown, Goetzmann, Ibbotson & Ross, 1992; Goetzmann & Ibbotson, 2006: 11).

In this study, firms were hence not excluded based on their size or listing status. All listed and delisted firms that complied with the clearly defined selection criteria formed part of the sample. See Section 5.8.3 for a discussion of the criteria. After the population and sample had been defined, the necessary data had to be collected (step 7 in Figure 5.1).

5.9   Data collection

Data collection entails the systematic gathering of data for a specific purpose from various sources, such as interviews and published annual reports (Silber & Foshay, 2010: 96). According to the positivistic research paradigm that was considered in the current study, the researcher examined hypotheses and/or research questions that were deducted from theory. These hypotheses contained variables which had to be carefully defined.

Part of the data collection process entails the identification of the relevant variables (Creswell, 2003: 126). Some of this study's variables were relatively easy to define and measure (such as ROA), while others were more difficult to define and measure (such as corporate governance compliance). Albert Einstein (1879–1955) claimed that "not everything that can be counted counts and not everything that counts can be counted" (Zikmund & Babin, 2013: 248). Researchers should thus determine which variables they are interested in (consequently which variables count) and which measurement scale should be used. The nature of the measurement

scale determines whether mathematical comparisons are allowed, in other words whether the variables can be counted or compared numerically (Zikmund & Babin, 2013: 248–249).

In the following section, various measurement scales that can be used by researchers are presented, followed by a discussion on each of the dependent and independent variables.

5.9.1   Measurement scales

The selected measurement scale affects the data analyses that can be conducted (Hartas, 2010: 311; Wiid & Diggines, 2009: 159). For statistical analysis purposes, data are generally classified as categorical or numerical (Anderson, Sweeney & Williams, 2011: 20). The terms 'qualitative' and 'quantitative' data can be used interchangeably with 'categorical' and 'numerical' data (Peck, 2014; Smith, 2012: 6).

When considering categorical data, labels or names are typically used to assign attributes to the observed element(s). The focus is thus on written (or linguistic) expressions and not on numeric data (Albright, Winston & Zappe, 2011: 30). However, categorical variables can be coded numerically, for example, assigning the number one to listed firms and zero to delisted firms. Either a nominal or ordinal measurement scale can be used for categorical data (Anderson et al., 2011: 20). A nominal scale is the lowest level of measurement (Pagano, 2013). Such a scale organises data into categories where no specific order or sequence is implied (Jackson, 2009: 59), as indicated in Figure 5.6.

Categorical variable	Categories
Director's gender	Female (1); Male (2)

Figure 5.6:   Example of a nominal measurement scale in this study

Source: Researcher's own construction based on Levine et al. (2005)

Directors can be categorised as female (coded 1) or male (coded 2). However, the numeric coding does not indicate that males are superior to females. The values are merely assigned for classification purposes (Anderson et al., 2011: 20). Such numeric values thus only serve as labels which do not indicate a quantitative relationship. It can also not account for differences within a specific category (Levine et al., 2005; Spatz, 2011: 10).

An ordinal scale represents a higher measurement level than a nominal scale (Zikmund & Babin, 2010: 328). According to this scale, objects are categorised according to the relevant

amount of a certain concept that they possess (Pagano, 2013; Wiid & Diggines, 2009: 160). The various categories then form a rank order along a continuum. Ordering is implied between the lowest and highest rankings. However, the researcher cannot indicate by how much two rankings differ, since the ranking scores do not have equal unit sizes (Gravetter & Wallnau, 2011: 22; Jackson, 2009: 60). Figure 5.7 provides an example of how the ordinal measurement scale could be applied in the corporate governance context.

Categorical variable	**Ordered categories**
Board leadership	Chair (2); Vice chair (1)

Figure 5.7:   Example of an ordinal measurement scale

Source: Researcher's own construction based on Levine et al. (2005)

From Figure 5.7, it is evident that the chairperson is superior to the vice chair in board leadership terms. However, a ranking of 2 does not indicate that the chairperson's ranking is twice as high (in order of importance) compared to the vice chair's position. Categorical variables, which are measured on a nominal or ordinal scale, can be divided into constant, dichotomous and polytomous variables (Kumar, 2011: 72). A constant variable has only one category. For example, a dozen directors on a board are always 12. A dichotomous variable has two categories, such as yes/no. In contrast, a polytomous variable can be divided into more than two categories, e.g. favourable, uncertain, unfavourable (Kumar, 2011: 72).

In the current study, the annual reports of the sample firms were used to gather the relevant data to compile a CGS for each firm. The dichotomous variables 0 and 1 were used to code the corporate governance data for content analysis purposes (refer to Section 5.9.3). The coding was done to provide comparable data in a numerical format for the independent corporate governance variable.

In contrast to categorical variables, numerical variables typically yield mathematical responses (Srivastava & Rego, 2008). Quantitative data typically require interval or ratio measurement scales (Anderson et al., 2011: 20). Depending on the values assigned to the observed factors, two types of numerical measures can be considered. Discrete variables form one of a finite number of whole numbers. Most nominal and ordinal data are discrete. Continuous variables produce numerical responses arising from a measuring process allowing for fractional amounts (Levine et al., 2005: 15–16). Most interval and ratio data are continuous (Jackson, 2009: 62).

An interval scale can capture meaningful information regarding differences in quantities of an observed object or concept (Zikmund & Babin, 2010: 328). This scale's units of measurement are equal in size, but the scale does not have an absolute zero point (Jackson, 2009: 60). The values cannot be multiplied or divided. Two responses with interval scale options 1 and 2 are as far apart as two responses with interval scale positions 2 and 3. However, if human respondents are used, it cannot be stated that a respondent with a score of 4 feel twice as strong about a specific phenomenon as a respondent with a score of 2 (Coldwell & Herbst, 2004: 65). Figure 5.8 illustrates how an interval scale could be used.

Numerical variable	Level of measurement
Temperature	Degrees of Celsius

Figure 5.8:   Example of an interval scale in this study

Source: Researcher's own construction based on Coldwell and Herbst (2004: 65)

A ratio scale presents the highest measurement form. In addition to the characteristics of the interval scale, it has an absolute zero point (Zikmund & Babin, 2010: 329). An illustration of how the ratio scale was applied in this study is provided in Figure 5.9.

Numerical variable	Level of measurement
ROE	$-267.40\% - +130.61\%$

Figure 5.9:   Example of a ratio scale in this study

Source: Researcher's own construction based on Levine et al. (2005)

The ratio scale allows the researcher to compare differences in scores, as well as the magnitude in scores (Coldwell & Herbst, 2004: 66). The difference between a ROE ratio of 5% and 10% was thus the same as the difference between a ratio of 30% and 35%. In addition, it can be stated that a ROE ratio of 40% was twice as much as a ratio of 20%.

A discussion of each of the dependent and independent variables, as well as the calculation of these variables, follows in Section 5.9.2.

5.9.2   Defining the dependent and independent variables in this study

Part of the data collection process (step 7) was to define the study's variables. A variable is anything that varies or changes from one instance to another, and which can be manipulated

or observed (Zikmund & Babin, 2010: 117). Researchers are often interested in the relationship(s) between the dependent and independent variables. Some previous corporate governance researchers (Al-Baidhani, 2013; Black et al., 2006; Mitton, 2004) considered corporate governance to be the independent variable. However, other scholars are still clarifying what the specific dependent variable should be in a corporate governance study (Judge, 2008). Instead of being included as an independent variable, corporate governance could be considered as the dependent variable (Bjuggren & Mueller, 2009: 373; Nottage, Wolff & Anderson, 2008: 47).

5.9.3   Corporate governance score (CGS)

A CGS was compiled for each of the sample firms for the years that they had been listed on the JSE during the period 2002–2010. This score consisted of a disclosure and an acceptability dimension (see Section 4.3). The focus of the disclosure dimension was on whether information regarding the factor under consideration was indicated in the annual report of a selected firm. Regarding acceptability, specific guidelines were set in line with selected recommendations of the King II Report and the PIC (2011). The maximum CGS that a firm could receive was 74. This value consisted of a maximum possible score of 39 for disclosure and 35 for acceptability. Note that acceptability criteria were not set for four specific factors, as no clear guidelines in terms of acceptability were available.

The equation for the corporate governance score (CGS) was thus:

$$\text{CGS} = \sum_{n=0}^{39} \text{Disclosure}_n + \sum_{n=0}^{35} \text{Acceptability}_n \qquad\qquad (5.1)$$

The numerical CGSs of the firms were compiled by using content analysis. Content analysis is a systematic way of quantifying and describing observed phenomena (Krippendorff, 2004). It provides the researcher with an analytical method to determine the presence of certain key words and concepts within written text documents (Wright, 2008). Previous corporate governance researchers (Al-Moataz & Hussainey, 2012; Bhasin, 2012; Gupta, Nair & Gogula, 2003; Murthy, 2008) also used content analysis to compile corporate governance indices or scores.

The content analysis technique can be used in an inductive or deductive manner with either qualitative or quantitative data (Sullivan, 2009: 108). Researchers who focus on quantitative approaches sometimes use secondary data that are not in a numerical format, e.g. when

considering corporate governance data from the annual reports of JSE-listed firms. The reading of text documents is ultimately a qualitative endeavour. Specific text characteristics can, however, be converted into quantifiable data by determining the amount and/or frequency of certain observed concepts in textual data. A numeric summary can then be compiled by assigning codes to the considered concepts or categories (Bernard & Ryan, 2010: 155; Krippendorff, 2004; Neuendorf, 2002).

Conceptual content analysis was conducted for the purpose of this study. This technique consists of eight steps (Babbie & Mouton, 2003). The researcher should first decide on the level of analysis, such as specific key words, key phrases or a string of key words. The selected key words are usually based on existing literature. The second step is to decide on the number of concepts that should be coded. During the third step, the researcher should determine whether the existence of certain keys words or the frequency thereof (the number of times that the key words occurred in the text documents) should be coded. The fourth step entails that the researcher should decide how to distinguish amongst concepts. The researcher should also determine whether the exact key words should occur, or whether deviations from the key words will be allowed. During step five, rules and parameters should be developed for the coding of text documents. Step six entails that the researcher should decide how to deal with irrelevant information. Unrelated or irrelevant information (not related to the key words and key concepts) can be ignored. During step seven, the data should be coded. It might be necessary to read and re-read the text documents before assigning the applicable codes. The final step entails the analysis of the coded data (Babbie & Mouton, 2003).

In the current study, specific key words were used to conduct word searches in the annual reports of the sample firms. As mentioned in Section 5.5, the considered annual reports were sourced from the McGregor BFA (2013) database. The key words were in line with the specified disclosure and acceptability criteria for each factor, as explained in Section 4.3. Due care was taken to abide by the indicated key words. Word sense disambiguation refers to the clarification that follows after (possible) ambiguity had been removed (Jahns, 2012: 90). To disambiguate the CGSs that were compiled by means of content analysis, the context within which the key words were used in the annual reports was interpreted, before a disclosure and acceptability score were allocated.

As indicated in Section 5.9.1, a dichotomous categorical variable has only two response categories. The dichotomous variables 0 and 1 were used to code the observed corporate

governance data from the firms' annual reports. If the disclosure criterion was met for the specific factor under consideration, it was coded 1. If no information could be found on the specific factor, it was coded 0. Only if a code of 1 was allocated for the disclosure criterion, attention was given to the acceptability criterion. If the acceptability criterion was also met, it was coded 1; if not, it was coded 0.

The considered factors formed part of nine corporate governance categories (refer to Chapter 4). In line with a recommendation of the PIC (2011), the CGSs and the categories' scores were analysed (instead of focusing on the individual factors) in Chapter 6.

An advantage of content analysis is that large volumes of data can be evaluated systematically (Krippendorff, 2004). The researcher considered 1 439 annual reports to compile CGSs for each sample firm for each year of being listed. The disadvantages associated with the use of content analysis include that it is very time-consuming and labour-intensive (Krippendorff, 2004). For the purpose of this study, the CGSs were compiled over several months. It took approximately 60 to 90 minutes to complete one company's CGS score sheet for one year.

5.9.4 Accounting-based financial performance

In line with previous corporate governance researchers (such as Alhaji et al., 2012; Klapper & Love, 2004; Ramdani & Van Witteloostuijn, 2010), ROA, ROE and EPS were selected as accounting-based performance measures. Ratio scale financial data were hence used in this study. The theory behind these measures was discussed in Section 2.3.1 and 2.3.2.

5.9.4.1 Return on assets (ROA)

For the purposes of this study, standardised ROA ratios were sourced on an annual basis from the McGregor BFA (2013) database.

The equation for the standardised ROA ratio (McGregor BFA, 2013) is:

$$\text{ROA} = \frac{\text{Profit before interest and tax} - \text{total profits of extraordinary nature} - \text{taxation}}{\text{Total assets}} \text{ x } 100 \qquad (5.2)$$

5.9.4.2 Return on equity (ROE)

The ROE ratio can be calculated on a before- or an after-tax basis (McLeary, 1999). In line with the ROA ratio, the ROE ratio was adapted to consider the profit after tax by using the

standardised statement of comprehensive income and statement of financial position data of the firms that were available on McGregor BFA (2013).

The equation for the standardised ROE ratio (adapted from McGregor BFA, 2013) is:

$$\text{ROE} = \frac{\text{Profit after tax}}{\text{Ordinary share capital + distributable reserves + non-distributable reserves + preference share capital + non-controlling interest}} \times 100$$

(5.3)

5.9.4.3   *Earnings per share (EPS)*

The equation for the basic EPS ratio (IFRS, 2012; SAICA, 2009) is:

$$\text{Basic EPS} = \frac{\text{Profit or loss attributable to ordinary shareholders of the parent firm}}{\text{Weighted average number of ordinary shares issued}}$$

(5.4)

In practice, different definitions for the EPS ratio are used. JSE-listed firms are required to report the headline EPS (HEPS) (SAICA, 2009). Certain items can distort the EPS ratio. The HEPS measure is therefore determined by excluding separately identifiable re-measurements (net of related tax and non-controlling interest) from the EPS equation. A re-measurement is defined as an amount acknowledged in a profit (or loss) relating to any change in the book value of a liability or asset that arises after the initial recognition of the liability or asset (IFRS, 2012; SAICA, 2009). The standardised EPS ratios that were available on the McGregor BFA (2013) database were determined by using the HEPS equation.

In addition to the selected accounting-based variables, market-based performance measures were also considered.

5.9.5   **Market-based performance measures**

In Section 2.4, TSR and risk-adjusted abnormal share returns (ratio data) were identified as market-based performance measures. The TSR measure reflects a firm's actual share performance over a specific time period (Megginson et al., 2008: 194).

5.9.5.1   *Total share return (TSR)*

The TSR (also called the 'holding period return') is one of the simplest measures of investment performance. It refers to the return that a shareholder earns over a specific period.

The measure includes the capital gain (or loss) and dividends paid during the considered period (Monks & Lajoux, 2011: 270).

The equation for the TSR measure (McGregor BFA, 2013) is (calculated on a monthly basis):

$$\text{TSR} = 100 \text{ x } \left[\left(\frac{P_n + (\sum_{t=0}^{n-1} \frac{D_t}{K} \text{ x } P_t)}{P_0} \right) - 1 \right] \tag{5.5}$$

where:

P_n = the share price at month end

P_0 = the share price at the beginning of the month

P_t = the share price at time t

n = the number of intervals in the period of calculations

D_t = the dividend yield at time t (the published final dividend per share was used)

K = 12 (for monthly calculations)

In line with previous South African researchers who considered monthly share return data (Auret & Sinclaire, 2006; Van Rensburg & Robertson, 2003), monthly TSR data were used in this study. The TSR data were sourced from McGregor BFA (2013). The TSR data were used to consider the actual share returns of each firm. Risk-adjusted abnormal returns were also estimated for four portfolios that were compiled based on the CGSs of the sample firms, as explained in Sections 5.9.5.2 and 5.9.5.3.

5.9.5.2 *Capital asset pricing model (CAPM)*

The equation to estimate the CAPM expected return (Megginson et al., 2010: 208) is:

$$E(R_{it}) = R_{ft} + \beta_i [E(R_{mt}) - R_{ft}] \tag{5.6}$$

where:

$E(R_{it})$ = share i's expected return during month t

R_{ft} = the realised risk-free rate of return for month t

β_i = sensitivity of the expected excess share returns to expected excess market returns

$E(R_{mt})$ = the expected return on the market for month t

The traditional CAPM determines expected return based on historic data. A risk-adjusted market model that is based on the CAPM is often used by academics, since it considers the realised rate of return (Bodie et al., 2009; DeFusco, McLeavey, Pinto & Runkle, 2007: 320).

The equation for the risk-adjusted abnormal rate of return (AR_{it}) (Reilly & Brown, 2012: 156) is:

$$AR_{it} = R_{it} - E(R_{it}) \tag{5.7}$$

where:

R_{it} = realised return on share i during month t

$E(R_{it})$ = the expected rate of return for share i during month t based on the CAPM

To determine the abnormal return, the researcher should specify a statistical model for estimating the expected return of share i on date t. By applying the following regression model (some authors refer to it as the 'market model'), the determined β_i parameter can be used as a measure of the covariation between the returns on share i and the returns on the market, and α_i as a measure of risk-adjusted abnormal return.

The equation for the market model (Lee et al., 2009: 291) is:

$$\left(R_{it} - R_{ft}\right) = \alpha_i + \beta_i \left(R_{mt} - R_{ft}\right) + \epsilon_{it} \tag{5.8}$$

where:

$\left(R_{it} - R_{ft}\right)$ = the monthly return on share i less the monthly risk-free rate

α_i = the estimated intercept

β_i = the estimated slope coefficient of the regression

$\left(R_{mt} - R_{ft}\right)$ = the monthly market risk premium

ϵ_{it} = random error term

The expected return is thus risk-adjusted by taking into account the risk of share i relative to the overall market (Megginson et al., 2008). Since monthly share returns were considered in this study, appropriate monthly risk-free and market return rates were needed. There is a debate amongst researchers regarding the selection of an appropriate risk-free return rate. The bond yield on the R186 (a long-term South African bond) was used by previous South African researchers (Mlonzi, Kruger & Nthoesane, 2011; Raputsoane, 2009) to approximate the risk-free interest rate. The BER also recommended the usage of the R186 during a discussion of the current study. The R186 yield was consequently used for the purpose of this study. The necessary monthly risk-free rate data were provided by the BER (2013).

In previous South African studies (Demetriades, 2011; Strugnell, Gilbert & Kruger, 2011; Van Rensburg & Robertson, 2003), the FTSE/JSE All Share Index (ALSI; J203) was considered as an appropriate measure of the return on the market. In the current study, the return on the J203 was therefore also used as a proxy for the market return. The J203 is seen as a broad market index in that the included firms represent about 99 per cent of the JSE's total market capitalisation (JSE, 2013; Ward & Muller, 2012). Until June 2002, the Actuaries Index was used. The recalculated monthly ALSI data were provided by the BER (2013).

Since only a sample of the JSE-listed firms was considered in this study, it could be questioned whether the ALSI was really representative of the considered market. The average monthly calculated TSR (for all firms listed in that month) was hence also used as a market return index. For this purpose, equally-weighted portfolios were formed. The same portfolio percentage was hence used for every considered share, irrespective of share capitalisation.

In the current study, the CAPM was applied as follows:

1. The monthly risk-adjusted share returns were determined ($R_{it} - R_{ft}$) for all the firms listed during that month.

2. Thereafter, the monthly market risk premiums were determined ($R_{mt} - R_{ft}$).

3. Finally, the beta and alpha parameters were estimated by applying the market regression model (refer to equation 5.8).

The traditional CAPM is widely used by academics and practitioners. However, the model is based on the efficient market hypothesis, which can be questioned (Catty, 2010: 139). The Fama–French three-factor model was also applied in the current study.

5.9.5.3   *Fama–French three-factor model*

Fama and French (1992; 1993) introduced a three-factor model as an extension of the CAPM. The Fama–French three-factor model assumes that the expected return of a share is a linear function of three factors, namely (Fama & French, 1992; Catty, 2010: 141–142):

– the excess return of a market index over the risk-free rate (as considered by the CAPM);

– the difference between the expected returns on portfolios of small and large shares (SMB); and

– the difference between the expected returns on portfolios of high and low BE/ME shares (HML).

According to Fama and French, the equation for $E(R_{it})$ (Cochrane, 2014) is:

$$E(R_{it}) = \alpha_i + \beta_i C_{it} + \epsilon_{it} \qquad (5.9)$$

where:

α_i = the intercept

β_i = the beta coefficient

C_{it} = vector of characteristics (including size and value/growth factors) (for period t)

ϵ_{it} = error term

By applying the Fama–French three-factor model, risk-adjusted abnormal return can be estimated as (Fama & French, 1992):

$$\left(R_{it} - R_{ft}\right) = \alpha_i + \beta_{i1}(R_{mt} - R_{ft}) + \beta_{i2}SMB + \beta_{i3}HML + \epsilon_{it} \qquad (5.10)$$

where:

$\left(R_{it} - R_{ft}\right)$ = the monthly return on portfolio i less the monthly risk-free rate of return

α_i = risk-adjusted abnormal return

β_{i1} = sensitivity of portfolio i to the market factor

β_{i2} = sensitivity of portfolio i to the size factor

β_{i3} = sensitivity of portfolio i to the value/growth factor

$(R_{mt} - R_{ft})$ = the monthly market risk premium

SMB   = the size factor (expected return on small shares compared to large shares)

HML   = the value factor (also called 'book-to-market risk premium')

ϵ_{it} = random error term

For the purposes of the current study, BE and market capitalisation (ME) were determined as follows:

BE = Ordinary share capital + non-distributable reserves + distributable reserves   (5.11)

ME = market price per share x number of ordinary shares issued   (5.12)

The standardised, annualised data to calculate the BE/ME ratios were obtained from the McGregor BFA (2013) database. As the standardised book values were published without three zero's, they were multiplied by a thousand before the BE/ME ratios could be calculated. The actual market capitalisation figures were reported by McGregor BFA (2013), therefore the market capitalisation values were not adapted by the researcher.

The BE/ME ratios were calculated by using the book value of ordinary shares from the previous financial year end, divided by the market value of ordinary shareholders' equity on calendar year end (December). This raises a question regarding the usage of calendar year end or fiscal year end data. Fama and French (1992) considered the usage of December market equity for companies that did not have December fiscal year ends. They concluded that the usage of fiscal year end market equity (also called 'market capitalisation') data instead of December market equity data had little impact on their return tests.

In the current study, the Fama–French three-factor model was applied as follows (French, 2013):

1. The monthly risk-adjusted share returns were determined ($R_{it} - R_{ft}$) for each of the sample firms.

2. Thereafter, the monthly market risk premiums were calculated ($R_{mt} - R_{ft}$).

3. The SMB size aspect was then determined. This was done by sorting the firms from large to small, based on their market capitalisation[*]. In line with Fama and French (1992), the firms with the lowest 25 per cent of market capitalisation ($\leq 25\%$) were defined as small. The top 25 per cent of firms ($> 75\%$) were defined as big.

4. Thereafter, the monthly TSR was determined for each company in the small and big portfolios using equation 5.5.

5. The average TSR for the big and small portfolios respectively was then calculated on a monthly basis.

6. The average monthly TSR for the big firms was subtracted from the average monthly TSR for the small firms for each of the observed 108 months. These monthly differences were the SMB factor.

7. Thereafter, the BE/ME ratios were calculated for the sample firms.

8. To determine the HML aspect, the firms were sorted based on their BE/ME ratios from high to low[*]. In line with Fama and French (1995), the 30 per cent of firms with the highest BE/ME ratio ($> 70\%$) were included in the value portfolio (high), while the bottom 30 per cent firms ($\leq 30\%$) was defined as the growth portfolio (low).

9. Thereafter, the monthly TSR was calculated for each of the firms in the high and low portfolios, using equation 5.5.

10. The average TSR for the high and low portfolios respectively was then calculated on a monthly basis.

11. Then the average TSR of the low portfolio was subtracted from the average TSR for the high portfolio for each of the considered months. These monthly differences were the HML factor.

12. Finally, a regression (refer to equation 5.10) was run based on the determined values and α_i, β_{i1}, β_{i2} and β_{i3} were estimated.

[*]Percentiles were used to assess the spread of the data distribution. Percentiles divide a ranked dataset into 100 equal parts. The pth percentile has p per cent of the data values (e.g. 25%) at or below it and 100 per cent less p per cent (e.g. 75%) of the data values above it (Sharma, 2010: 98; Singh, 2007: 143).

In this study, consideration was specifically given to whether a portfolio consisting of firms with the highest CGSs reported a positive alpha. For this purpose, corporate governance portfolios were constructed as follows:

1. The entire dataset was considered on a monthly basis. All firms that provided a CGS were considered for inclusion in the monthly portfolio (the annual CGS was used for the relevant 12 months). The firms were then ranked according to their CGSs and the 25th and 75th percentiles were calculated, in line with French (2013).

2. All firms with a CGS within one of these two quartiles were included in portfolio 1 (firms with the lowest CGSs) or portfolio 4 (firms with the highest CGSs) respectively. Portfolio CG 2 consisted of firms within quartile 2 and portfolio CG 3 of firms within quartile 3.

3. The abnormal return for each of these four portfolios was then estimated on a monthly basis. Both the CAPM and Fama–French three-factor models were used for estimation purposes.

5.9.5.4 *Summary of the financial performance measures*

Table 5.2 provides a summary of the financial performance data that were sourced for the purpose of the current study. The equations or appropriate measures are indicated, as well as the relevant data sources.

Table 5.2   **Financial performance data**

Financial performance measure	Equation / appropriate measure	Source
Accounting-based measures		
Annual ROA ratio	5.2	Sourced from McGregor BFA (2013)
Annual ROE ratio	5.3	Calculated by the researcher based on financial data obtained from McGregor BFA (2013)
Annual headline EPS (HEPS)	Adapted 5.4	Obtained from McGregor BFA (2013)
Market-based measures		
Monthly TSR	5.5	Obtained from McGregor BFA (2013)
Risk-adjusted abnormal return	5.7	Estimated by the researcher based on regression analysis
Estimation models		
CAPM (market model)	5.8	Data provided by the McGregor BFA (2013) database and the BER (2013)
Fama–French three-factor model	5.10	Data provided by the McGregor BFA (2013) database and the BER (2013)
Data required for estimation		
BE (financial year end; year $_{t-1}$)	5.11	Sourced from McGregor BFA (2013)
Size (calendar year end; year $_{t-1}$)	5.12	Sourced from McGregor BFA (2013)
Monthly risk-free rate	Bond exchange yield on the long-term R186 government bond	Data provided by the BER (2013)
Monthly return on the market	FTSE/JSE All Share Index (J203); average calculated monthly TSR based on equally-weighted portfolio construction	Data provided by the BER (2013)

Source: Researcher's own construction

Once the data for a study have been collected, the researcher can proceed to the 8th step in the research process (as shown in Figure 5.1), namely the processing of the data.

5.10   Data processing

Data processing (also called 'data analysis') entails the summation, computation and application of reasoning in order to understand the gathered data (Zikmund & Babin, 2010: 66). The appropriate data analysis technique depends among other things on the selected research design, the population distribution and the nature of the dataset (Livingstone, 2009).

Parametric statistics encompass numbers with continuous, known distributions. When the sample size is large and the data are on a ratio or interval scale, parametric statistics are typically used (Zikmund & Babin, 2010: 548). These statistics are based on the assumption that the data are drawn from a population that has a normal distribution (Black, 2012; Rubin, 2010: 155). Statistics which do not assume a normal distribution are called non-parametric statistics (Morgan, Leech, Gloeckner & Barrett, 2011: 124). Generally, when data are nominal or ordinal, it is inappropriate to make the assumption that the population has a normal distribution (Rubin, 2010: 155). A main advantage of non-parametric statistical procedures is hence that no specific population distribution is assumed (Weiers, 2011: 506).

Statistical procedures can be divided into two major categories, namely descriptive and inferential statistics (Dawson, 2013). The descriptive and inferential analyses of the corporate governance variable are illustrated in Figure 5.10.
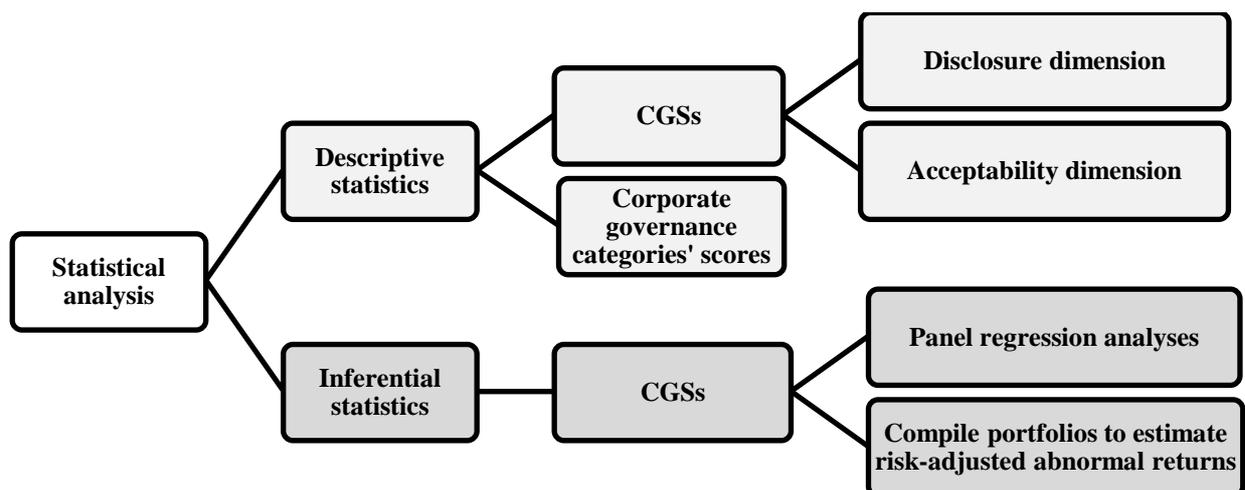
Figure 5.10: Statistical analysis of the corporate governance variable

As shown in Figure 5.10, the sample firms' CGSs were firstly analysed by means of descriptive statistics (refer to Section 5.10.1). The CGSs' disclosure and acceptability

dimensions, as well as the corporate governance categories' scores were also analysed. Thereafter, the relationship between CGS and the EPS, ROA, ROE and TSR financial performance variables respectively were examined by means of panel regression analyses (refer to Sections 5.10.2.4–5.10.2.6 for a discussion of the relevant regression models). The sample firms' CGSs were also used to compile four corporate governance portfolios, as discussed in Section 5.9.5.3. Both the CAPM and Fama–French three-factor regression models were used to estimate risk-adjusted abnormal returns for these four portfolios.

5.10.1   Descriptive statistics

Descriptive statistics consist of procedures that are used to describe, characterise and summarise the collected data (Jain & Aggarwal, 2008: 5). Such statistics include measures of central tendency and variation (also called 'dispersion') (Coldwell & Herbst, 2004: 92). Central tendency refers to a central or typical value of a data distribution, whereas dispersion measures indicate the level of variety in the dataset (Healey, 2005: 114; Miller & Brewer, 2003: 28). Some descriptive statistics (such as the mean and standard deviation) are not only valuable to describe the nature of the dataset, but also to form the basis for other analytical techniques (Healey, 2005).

5.10.1.1   The mean

The arithmetic mean (also called 'average') is the most widely used measure of central tendency (Levine et al., 2005: 105). This measure is calculated by adding the observed values of a specific variable and dividing it by the total number of observations (Jain & Aggarwal, 2008: 91).

The historic sample mean ($\bar{x}$) can be denoted as (Anderson et al., 2011: 87):

$$\bar{x} = \frac{\sum_{i=1}^{n} x_i}{n}$$

(5.13)

where:

x_i = the observed values

n = the number of observations in the sample

Note that equation 5.13 is for historic data; the equation should be adapted if expected values are used.

The mean has various advantages, including that the measure is easily understood and unique, since every dataset has only one mean. However, the mean may be disproportionately affected by outlier values (Coldwell & Herbst, 2004: 103–104; Sharma, 2010). An outlier value is an extreme value that is much smaller or larger than most of the other considered values. It is also possible that the values of individual explanatory variables are not extreme, but the values fall outside the general pattern of the other observations. Such an outlier thus literally "lays outside" the overall pattern of a data distribution (Albright et al., 2011; Salomon, 2011: 599).

When data are analysed, the impact of outlier values should be considered, since they can possibly distort the results due to their extraordinary nature (Fraser, 2012). A possible solution is to use trimmed means, by discarding a fixed percentage of outlier values, e.g. removing the largest and smallest 10 per cent of observations from the dataset (Howell, 2011: 70). Winsorising can also be used to address outlier values. In this study, any value in excess of three standard deviations from the mean were classified as an outlier and replaced by a value equal to the mean ± three standard deviations. A small percentage of the total values (typically between one and five per cent per variable) are modified when using this technique (Vinzi, Chin, Henseler & Wang, 2010: 333).

5.10.1.2   *The median*

The median is the numeric middle value of a dataset after it has been arranged in ascending or descending order. If there are an odd number of data points, the median is the middle value. For an even number of observations, the median is the average of the two middle values (Anderson et al., 2011: 88).

A main advantage of the median is that it is less affected by outlier values than the mean. When extreme values are present in a dataset, the median value could thus rather be considered instead of the mean value (Levine et al., 2005: 108). Furthermore, no assumptions need to be made about the shape of the dataset to determine the median value. This value can be used with nominal, ordinal, interval and ratio measurements (Howell, 2011; Singh, 2007: 138).

5.10.1.3   Minimum and maximum values

The minimum and maximum values are referred to as the first and last order statistics (Borowiak, 2003: 33). The range is the difference between the smallest and the largest value in the dataset (Zikmund & Babin, 2010: 445). A dataset can have unusually large or small outlier values. However, it is not definite that the minimum and maximum values should always be extreme (Anderson et al., 2011: 106).

One of this study's research questions was to determine the corporate governance compliance trend of the sample of JSE-listed companies over the research period. As explained in Section 1.1, the term 'compliance' was used based on the "comply or explain" approach of the King II Report. Attention was inter alia given to average corporate governance compliance (the mean CGS), very low corporate governance compliance (the minimum CGS value) and very high corporate governance compliance (the maximum CGS value).

5.10.1.4   Standard deviation

Variance is a dispersion measure that can be used to determine how far numeric observations are spread out around the mean. However, variance reflects a measurement unit that has been squared. In the squaring process, observations that are farther from the mean get more weight than ones closer to the mean. The standard deviation is the square root of the variance (Struwig & Stead, 2013; Zikmund & Babin, 2010: 447).

The historic sample standard deviation (SD) can be determined as (Anderson et al., 2011: 97):

$$\text{SD} = \sqrt{\frac{\sum_{i=1}^{n}(x_i - \bar{x})^2}{n-1}} \tag{5.14}$$

where:

x_i = the observed values

$\bar{x}$ = the historic sample mean

n = the number of observations

Note that equation 5.14 is for historic data; the equation should be adapted if expected values are used.

In addition to the discussed descriptive statistics, a number of inferential statistics were also employed, as explained in Section 5.10.2.

5.10.2 Inferential statistics

Inferential statistics (also called 'inductive statistics') comprise procedures that are used to make inferences, such as drawing conclusions or making predictions about a population's characteristics, based on the sample information (Dodge, 2008: 263; Mendenhall, Beaver & Beaver, 2013: 4). Numerical characteristics of samples are thus used to estimate population characteristics (also known as 'parameters') (Sullivan, 2009: 225).

Social science researchers typically attempt to find a difference between observed groups or a relationship between variables (Somekh & Lewin, 2005: 226; Sullivan, 2009: 354). Difference inferential statistics, such as ANOVA and *t*-tests are typically used to test for such differences, while an association between two or more variables is tested by using associational inferential statistics, such as correlation and regression analyses (Lee, Lee & Lee, 2013; Morgan et al., 2011: 97). These inferential statistics are generally built around the probability concept, by indicating the probability that any given result can be caused by chance (Gravetter & Wallnau, 2011; Rubin, 2010). The probability concept, as used during hypothesis testing, is explained in the subsequent section.

5.10.2.1   Hypothesis testing

Hypotheses are derived from the research objectives of a study, and are stated based on the theory regarding a specific population parameter (Zikmund & Babin, 2010: 538). The null hypothesis (H_0) indicates that there is no association between the variables or no difference between a sample statistic and a population parameter. The opposite of the null hypothesis, namely the alternative hypothesis (H_a) represents a claim that the researcher wants to prove. The null hypothesis can only be rejected if there is sufficient statistical proof from the sample data to decide that it is unlikely to be true (Hatcher, 2003; LeBlanc, 2004; Levine et al., 2005). Refer to Section 1.4.4 for the research hypotheses that were formulated for the purpose of this study.

A test statistic can be computed, based on the sample data, to determine the plausibility of the null hypothesis. The sampling distribution of a test statistic can be divided into two regions, namely a rejection and a non-rejection region (Black, 2012). The rejection region consists of

the test statistic's values that are unlikely to occur if the null hypothesis is true. The non-rejection region refers to the values of the test statistic for which the researcher should not reject the null hypothesis (Levine et al., 2005). Figure 5.11 illustrates the non-rejection region with one critical value.
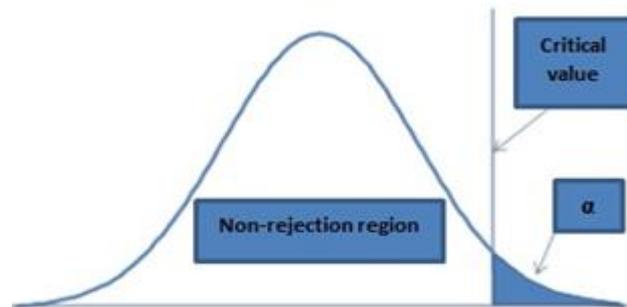
Figure 5.11:   Non-rejection region with one critical value
Source: Healey (2010: 190)

The critical value approach can be used to determine whether the value of the test statistic is small enough to reject the null hypothesis (Anderson et al., 2011: 360). The critical value(s) of the population mean (μ) are the values that lie on the boundaries of the rejection region in Figure 5.11. When the critical value approach is employed, alpha (the level of significance) is used to determine the critical value and the rejection rule. The value of the test statistic and the rejection rule are then used to decide whether the null hypothesis should be rejected or not (Zikmund & Babin, 2010: 542–543). If the test statistic falls into the non-rejection region, the null hypothesis cannot be rejected. However, failure to reject the null hypothesis does not prove that the hypothesis is true. The researcher can then merely conclude that there is not sufficient evidence to reject the null hypothesis (Gravetter & Wallnau, 2011: 202).

The *p*-value (the observed level of significance) is the probability of obtaining a test statistic equal to or more extreme than the result obtained from the sample data, given that the null hypothesis is true. It thus provides a measure of the statistical evidence against the null hypothesis. The considered test statistic's value is used to compute the *p*-value. The *p*-value approach will always lead to the same rejection decision as the critical value approach, namely if the *p*-value is less than or equal to α, the value of the test statistic will be less than or equal to the critical value (Anderson et al., 2011: 360–361; Levine & Stephan, 2010). Table 5.3 indicates the correct interpretations of the null hypothesis and two hypothesis testing errors (α and β) that can occur.

Table 5.3:   **Hypothesis testing and decision-making**

Statistical decision	Actual situation	
	H_0 true	H_0 false
Do not reject H_0	Correct decision	Type II error (β)
Reject H_0	Type I error (α)	Correct decision

Source: Healey (2010: 192)

A type 1 error occurs if H_0 is rejected when it is in fact true. Alpha denotes the probability of committing a type 1 error. The error rate of a type 1 error can be controlled by selecting a risk level for alpha that can be tolerated in rejecting the null hypothesis when it is true. The risk of committing a type 1 error is thus under the control of the researcher, since the level of significance is decided on before the hypothesis testing is conducted. If H_0 is not rejected when it is actually false, a type II error occurs. Beta is used to denote the probability that a type II error can occur (Zikmund & Babin, 2010: 545).

In the current study, levels of significance of one per cent and five per cent were considered. When statistical analysis is conducted, *p*-values are computed. These *p*-values are of considerable importance when interpreting the significance of regression analyses' results (Wooldridge, 2013). For the purpose of this study, various regression analyses were used to analyse the relationship between corporate governance and financial performance.

5.10.2.2   *Simple linear regression*

When a simple linear regression (the most basic type of regression) is conducted, only one explanatory variable is used to explain the numerical dependent variable (Levine & Stephan, 2010: 208). However, the simple linear regression concept can be adapted to the multiple regression setting to include several independent variables (Pardoe, 2012).

The equation for the simple linear regression model (Anderson et al., 2011: 562) is:

$$y = \beta_0 + \beta_1 x + \epsilon \tag{5.15}$$

where:

y = dependent variable

x = independent variable

β_0 = intercept

β_1 = slope

ϵ = error term

To test for a relationship between variables, regression parameters need to be estimated. The ordinary least squares (OLS) regression is a popular, simple method of estimating the unknown parameters of a linear regression model (Zikmund & Babin, 2010).

5.10.2.3   OLS regression

The OLS regression is a statistical technique that ensures that the resulting straight line from a regression will produce the least possible total error, by minimising the sum of squared errors (Heeringa, West & Berglund, 2010: 187–188). Equation 5.15 can be used to conduct an OLS regression (Anderson et al., 2011: 566).

The OLS regression model contains a number of assumptions (Hayes & Cai, 2007: 709), including:

- the dependent variables are generated according to the specified regression model;

- the independent values are fixed (rather than random); and

- the errors are uncorrelated, random variables with zero means and constant variance.

The researcher should find the best means for fitting a straight line to the data. The OLS regression is a straightforward technique that guarantees that the resulting straight line will produce the least possible total error in using x to predict y (Zikmund & Babin, 2010: 601). However, there is a possibility of specification errors if the underlying assumptions of this regression model are incorrect (Bradley, 2011). A specification error can occur if a regression equation or one of the assumptions is incorrect in any way. Social scientists typically consider specification error to refer to mistakes in the manner that variables were incorporated in the regression model (Berry, 1993: 30).

In the current study, four possible specification errors were considered, namely autocorrelation, normality of the errors, multicollinearity and heteroskedasticity.

5.10.2.3.1   Autocorrelation

An autocorrelation (also referred to as 'serial correlation') problem is commonly associated with time-series data. This problem occurs when the observation of the dependent variable at time t is related to the value of the dependent variable at previous time periods. This is specifically the case with financial data, since the products and activities of the sample firms

remain more or less the same from one year to the next (Anderson et al., 2011: 750; Fleming & Nellis, 2000: 321).

Autocorrelation can affect the efficiency of the OLS regression model's estimators. Consequently, the standard error of each estimated regression coefficient can be understated, leading to less precise confidence intervals. As a result, the null hypothesis can be rejected erroneously (Fleming & Nellis, 2000: 321). A possible solution for the autocorrelation problem is to lag the error term by one period (Webster, 2013: 370).

If the value of the dependent variable in time period t is related to the value of the dependent variable in time period t - 1, first-order autocorrelation is present (Fleming & Nellis, 2000: 321). The Durbin–Watson test can be used to test for first-order autocorrelation. The null hypothesis of this test states that the regression errors are serially uncorrelated. However, if first-order autocorrelation is present, the assumption of independent error terms is violated (Anderson et al., 2011: 750).

The Durbin–Watson test statistic (d) can be computed as follows (Anderson et al., 2011: 751):

$$d = \frac{\sum_{t=2}^{n}(\epsilon_t - \epsilon_{t-1})^2}{\sum_{t=1}^{n}\epsilon_t^2} \hspace{6cm} (5.16)$$

where:

n = number of cases

ϵ_t = error at time t

ϵ_{t-1} = error at time period $t - 1$

Based on:

ϵ_i = y_i - $\overline{y}_i$

$y_i; \overline{y}_i$ =observed and predicted values of the response variable for individual i

The value of this test statistic is always between zero and four. A value of two indicates that there is no autocorrelation in the sample. Values that are substantially less than two indicate positive autocorrelation, while values closer to four indicates negative autocorrelation (Hoffinger, 2009). If autocorrelation is present, the AUTOREG SAS procedure can be used to correct the regression estimates for autocorrelation (SAS Institute, 2012).

5.10.2.3.2 *Normality of the errors*

The assumption of normality of the errors entails that the error (disturbance) terms are approximately normally distributed. It does not entail that all the variables in the regression equation should have a normal distribution. The violation of this assumption can be the result of unobserved parameter variations and/or measurement errors (Allison, 1999: 130; Washington, Karlaftis & Mannering, 2011: 124).

If a sample is small, the normality of the error term is important to ensure that the p-values and confidence intervals will be accurate. However, if a sample is fairly large (contain more than 200 observations), the central limit theorem can be applied. This theorem explains that, even if the errors are not normally distributed, as the sample size becomes larger, the sample mean can be approximated as a normal distribution (Allison, 1999: 130; Anderson et al., 2011: 281). This study had a large sample, comprising 1 439 annual observations.

The Kolmogorov–Smirnov goodness-of-fit test can be used to test the hypothesis of normally distributed disturbances (Washington et al., 2011: 124). A goodness-of-fit test considers the agreement between the distribution of a set of sample values and a theoretical distribution (Mahdavi, 2013). The null hypothesis of this test states that there is no difference between the observed distribution of survey scores and a normally distributed empirical sample. If the critical alpha is larger than the obtained p-value, the null-hypothesis should be rejected (Corder & Foreman, 2009: 32).

The formula for the Kolmogorov–Smirnov test statistic (D) (Lilliefors, 1967: 399) is:

$$D = max_x|F^*(x) - S_n(x)| \tag{5.17}$$

where:

n = number of (independent) observations in the sample

$S_n(x)$ = cumulative distribution function of the sample

$F^*(x)$ = normal cumulative distribution function

5.10.2.3.3 *Multicollinearity*

Multicollinearity occurs when two (or more) independent variables are strongly related to one another. It can also occur when independent variables are correlated with omitted variables

that are related to the dependent variable (Washington et al., 2011: 110–111). Non-experimental research methods (such as cross-sectional research) are typically subject to omitted variable bias. This bias refers to the possibility that unmeasured factors can affect the dependent and/or independent variables. The effect of one of the other variables can then be over- or underestimated (David & Sutton, 2004; Treiman, 2009: 364). In the current study, there were other factors (in addition to corporate governance) that could possibly have influenced the financial performance of the sample firms, for example the nature of the firm's products and financial market conditions.

Omitted variable bias can become a problem when the omitted variable is the explanator of the independent variable and/or correlated with an independent variable (Murray, 2006: 111). As a result, it can be difficult to separate the influence of one variable from that of another (Washington et al., 2011: 110–111). The inclusion of dummy variables (such as 0 for females and 1 for males) in a regression can also create multicollinearity (Watson & Teelucksingh, 2002: 44).

The forecasting power of the OLS regression will not be affected by multicollinearity. However, the parameter estimates can have large standard errors. The estimates of the regression coefficients might also not be precise and the signs of the coefficients can be incorrect (Hanssens, Parsons & Schultz, 2001: 218–219). In the current study, the possible effects of multicollinearity were moderated by the size of the sample and the overall fit of the selected regression models. Acceptable tolerance values (> 0.2–0.3) were determined for the predictors.

5.10.2.3.4 *Heteroskedasticity*

One of the assumptions of the OLS regression model is that the variance of the regression errors is constant (known as 'homoskedastic'). Heteroskedasticity occurs when a regression's standard error terms do not all have the same variance. The term literally means different (hetero) spread (skedasticity). The presence of heteroskedasticity can invalidate statistical significance tests, since the estimator of the regression parameter's covariance matrix can then be inconsistent and biased (Hayes & Cai, 2007; Kacapyr, 2011).

The Breusch–Pagan Lagrange multiplier can be used to test for heteroskedasticity in a regression model. The null hypothesis of this test entails that there is no conditional

heteroskedasticity. Individual-specific or time-specific error variance components are thus zero (DeFusco et al., 2007; Park, 2011).

The equation for the Breusch–Pagan test statistic (LM) for one-way random effects (SAS Institute, 2012: 1400) is:

$$\text{LM} = \frac{NT}{2(T-1)}\left[\frac{\sum_{i=1}^{N}(\sum_{t=1}^{T}\epsilon_{it})^2}{\sum_{i=1}^{N}\sum_{t=1}^{T}\epsilon_{it}^2}-1\right]^2 \sim \chi_1^2 \tag{5.18}$$

where:

N = number of cross-sectional units

T = number of time periods

ϵ_{it} = OLS residuals of the pooled model

The distribution of the test statistic is the chi-square (χ^2) with one degree of freedom.

The chi-square distribution is one of the most widely used and basic probability distributions in inferential statistics. It is the distribution of a sum of squares of k independent standard, normal and random variables (Berger, 2001; Eyob, 2009). Note that equation 5.18 is for a one-way random effects model. The test can also be generalised to the case of a two-way random effects model if required.

The pooled OLS regression model is an extension of the simple linear regression model and can be used to analyse time-series cross-sectional data (Menard, 2008: 234).

5.10.2.4 *Pooled OLS regression*

The pooled OLS regression coefficients are constant across time periods and units. Although this model acknowledges repeated observations on the same units, it does not per se model the repeated observations (Menard, 2008: 234).

The equation for the pooled OLS regression model can be expressed as (Menard, 2008: 234):

$$y_{it} = \beta_0 + \beta_1 x_{it} + \epsilon_{it} \tag{5.19}$$

where:

y_{it} = dependent variable

β_0 = intercept

β_1 = regression coefficient

x_{it}　　= independent variable

ϵ_{it}　　= error term

The *i* and *t* subscripts indicate that there were pooled observations for *i* units over *t* time periods.

In the current study, data observations for 227 firms were made over a nine-year period. Panel data were hence considered. Two regression techniques that are commonly used to analyse panel data are fixed effects and random effects (Hassett & Paavilainen-Mäntymäki, 2013: 45). These models are explained in the following two sections. The Breusch–Pagan test (refer to Section 5.10.2.3.4) can be applied to determine whether a pooled OLS regression can be used, or whether a random effects model should rather be considered over a pooled OLS (SAS Institute, 2012).

5.10.2.5　　*Fixed effects regression*

The fixed effects regression model was designed to study the causes of changes within an observed entity (Kohler & Kreuter, 2005: 240). The assumption is that something within the entity might bias or affect the outcome(s) of the variables. There is thus a need to control for this possibility (Snorrason, 2012: 137). The fixed effects method controls for omitted variables in panel data that are constant over the period of time and vary across the cross-sectional units (Gossy, 2008: 126). This model allows the unobserved effects to be arbitrarily correlated with the independent variable(s) in each time period (Wooldridge, 2013: 849).

The fixed effects model can be equated as (Menard, 2008: 234):

$$y_{it} = \beta_{0i} + \delta_t + \beta_1 x_{it} + \epsilon_{it} \tag{5.20}$$

where:

y_{it}　　= dependent variable for entity *i* at time *t*

β_{0i}　　= (*i* = 1…n) is the intercept for each entity (separate intercepts are indicated for each

　　　unit)

δ_t　　= dummy variable for each time period

β_1　　= regression coefficient

x_{it}　　= independent variable for entity *i* at time *t*

ϵ_{it}　　= error term

The *i* and *t* subscripts indicate that there were observations for *i* units over *t* time periods.

The fixed effects model allows the intercept to differ cross-sectionally, but not over time. All the slope estimates are therefore fixed, both over time and cross-sectionally (Brooks, 2008: 490). The coefficients of the model can thus not be biased due to omitted time-invariant characteristics. The model can also not be used to investigate time-invariant causes of the dependent variable(s) (Kohler & Kreuter, 2005: 240).

5.10.2.6   *Random effects regression*

The random effects regression model allows for the inclusion of time-invariant variables. In this model, variation across entities is assumed to be uncorrelated with the independent variable(s). Variation is thus allowed between and within considered units (Dwyer, Gill & Seetaram, 2012: 130–131; Torres-Ryna, 2013).

The equation for the random effects model (Menard, 2008: 234) is:

$$y_{it} = \beta_0 + \beta_1 x_{it} + \mu_i + \omega_t + \epsilon_{it} \tag{5.21}$$

where:

y_{it}	= dependent variable for entity *i* at time *t*
β_0	= intercept
β_1	= regression coefficient
x_{it}	= independent variable for entity *i* at time *t*
μ_i and ω_t	= separate error terms for entity *i* and time *t*
ϵ_{it}	= within-entity error

Note the removal of subscript *i* from the intercept in equation 5.21 compared to equation 5.20. The random effects model assumes that unobserved differences between time and units are random variables, compared to the assumption included in equation 5.20 that they are fixed.

The main distinction between fixed and random effects is not whether these effects are stochastic or not. Stochastic refers to those variables whose values cannot be fully determined or controlled. Focus is rather placed on whether the unobserved individual effect embodies elements that are correlated with the model's regressors (Greene, 2008: 138; Lewis-Beck, Bryman & Liao, 2004: 1084). The random effects model assumes that the error term of the

entity is not correlated with the predictors. This allows for time-invariant variables to play a role as explanatory variables (Snorrason, 2012: 137).

5.10.2.7   *The F-test for fixed effects*

Researchers who use panel data tend to include unit and time dummies, without considering whether they are truly needed. An *F*-test of the unit and/or time dummy variables could be used to determine whether unit and time heterogeneity should be controlled for (Menard, 2008: 237). The null hypothesis of the *F*-test for fixed effects is that all betas are equal to zero. The alternative hypothesis is that one (or more) of the parameters are not equal to zero (Anderson et al., 2011: 659). If the *F*-test is significant, unit and time dummies should be included in the fixed effects model (Menard, 2008: 237).

The equation for the *F*-test statistic for overall significance is (Anderson et al., 2011: 659):

$$F = \frac{MSR}{MSE} \tag{5.22}$$

where:

MSR	= mean square due to regression $= \frac{SSR}{k}$
SSR	= sum of squares due to regression
k	= corresponding degrees of freedom
MSE	= mean square due to error $= \frac{SSE}{n-k-1}$
SSE	= sum of squares due to error
$n - k - 1$	= corresponding degrees of freedom

Both the *p*-value and the critical value approaches can be used to determine whether the *F*-test's null hypothesis should be rejected. The rejection rules are (Anderson et al., 2011: 589, 659):

- *p*-value approach: reject the null hypothesis if the *p*-value $\leq \alpha$

- critical value approach: reject the null hypothesis if $F \geq F_\alpha$

  o where F_α is based on a *F*-distribution with p degrees of freedom in the numerator and $n - p - 1$ degrees of freedom in the denominator

- o if a simple linear regression is used instead of a multiple regression, F_α is based on a F-distribution with 1 degree of freedom in the numerator and $n - 2$ degrees of freedom in the denominator

Different types of F-tests exist. The type *III F*-test (also called the 'partial *F*-test') is typically used to test for fixed effects. This test determines the significance of each term conditionally on the fixed effects of all other terms in the model (West, Welch & Gałecki, 2007: 110). The partial F-test includes considerations for both a restricted and an unrestricted regression model. The unrestricted model has k independent variables. The unrestricted model can be restricted by adding certain exclusion restrictions. If there is (for example) q exclusion restrictions to test, the null hypothesis states that q of the variables have zero coefficients (Wooldridge, 2009: 145).

The equation for the type *III F*-test (Wooldridge, 2009: 145) is:

$$F = \frac{(SSR_r - SSR_{ur})/q}{SSR_{ur}/(n-k-1)} \tag{5.23}$$

where:

SSR_r	= sum of squared residuals from the restricted model
SSR_{ur}	= sum of squared residuals from the unrestricted model
q	= numerator degrees of freedom; the number of restrictions imposed in moving from the unrestricted to the restricted model
$n - k - 1$	= denominator degrees of freedom

If the null hypothesis of this test is rejected, it can be stated that the independent variables are jointly significant at the appropriate level of significance. However, the test alone does not indicate which of the variables has a partial effect on the dependent variable. If the null hypothesis is not rejected, then the variables are jointly not significant. The non-rejection of the null hypothesis could justify the researcher to remove the variable(s) from the regression model (Wooldridge, 2009: 147).

If unobservable factors are time-invariant, the usage of the fixed effects regression model is effective to control for or eliminate omitted variable bias (Eckbo, 2007: 56). The coefficients of the time-invariant regressors of the fixed model are absorbed into the individual-specific effect β_{0i} and are thus not identified (Cameron & Trivedi, 2013: 365). The random effects

model allows coefficients to vary across individual cases (Morgan, 2013: 118). Hausman (1978) proposes an econometric test to choose the appropriate panel regression model.

5.10.2.8   *The Hausman test*

The Hausman test can be used to check the assumptions of the fixed effects regression model. This test can thus be used to choose between the fixed and random effects estimation (Pedace, 2013: 302). The null hypothesis of the Hausman test is that the preferred model is random effects (Snorrason, 2012: 137). If the Hausman test has a significant result ($p < 0.05$), the fixed effects method can thus be used (Hassett & Paavilainen-Mäntymäki, 2013: 45).

In a model with one independent variable, the Hausman test statistic (H) is defined as (Pedace, 2013: 303):

$$H = \frac{(\hat{\beta}_{1\,(FE)} - \hat{\beta}_{1\,(RE)})^2}{\sigma^2_{\hat{\beta}1\,(FE)} - \sigma^2_{\hat{\beta}1\,(RE)}} \sim \chi^2_1 \qquad (5.24)$$

where:

$\hat{\beta}_1$	= estimated coefficient for the independent variable
$\sigma^2_{\hat{\beta}1}$	= estimated variance of the coefficient
FE (fixed effects)	= denotes values that were obtained by fixed effects estimation
RE (random effects)	= denote values that were obtained by random effects estimation

The distribution of the Hausman test statistic is the chi-square (χ^2) with one degree of freedom.

5.10.2.9   *Summary of the considered regression models*

Table 5.4 provides a summary of the appropriate regression model (pooled OLS, fixed effects and/or random effects) that could be used for the inferential analysis. The appropriate model is selected based on the rejection (or not) of the stated hypothesis of the fixed and/or random effects regression models.

Table 5.4:   **Selecting the appropriate regression model**

Fixed effects (*F*-test)	Random effects (Breusch-Pagan test)	Appropriate regression model
H_0 is not rejected: no fixed effect	H_0 is not rejected: no random effects	Data are poolable Use the pooled OLS regression model
H_0 is rejected: fixed effects	H_0 is not rejected: no random effects	Use the fixed effects regression model
H_0 is not rejected: no fixed effects	H_0 is rejected: random effects	Use the random effects regression model
H_0 is rejected: fixed effects	H_0 is rejected: random effects	**Recommendation**: choose one of the fixed or random effects models depending on the result of the Hausman test **Alternatively**: fit a model with a fixed group effect and a random time effect (or vice versa) using a least squares dummy variable model and a random effects model

Source: Park (2011)

In addition to the discussed regression models, a mixed-model ANOVA was also used in this study. The model was employed to determine whether there was a significant trend in the observed CGSs over time, as well for listed and delisted firms.

5.10.2.10   *Mixed-model ANOVA*

The ANOVA model is a special case of the linear regression model (refer to equation 5.15) with three specific features, namely parameters are estimated by OLS, the *F*-test is used for hypothesis testing and betas $(\beta_1, \dots, \beta_n)$ are assumed to be fixed parameters (Demidenko, 2013: 4–5).

A mixed-model ANOVA (also called 'Model *III* ANOVA') can be used to test for differences between two (or more) groups, as well as within groups (Urdan, 2005: 154). A combination of the fixed effects ANOVA model in which observations do not correlate and a random effects model variance component forms the mixed-model ANOVA. The fixed effects factor is a between-subjects variable and the random effects factor is a within-subjects variable (Reinard, 2006; Rovai, Baker & Ponton, 2014: 499).

The equation for the linear mixed-model ANOVA (Demidenko, 2013; XLSTAT, 2014) is:

$$y_i = x_i\beta + z_i\gamma_i + \epsilon_i \tag{5.25}$$

where:

y_i = dependent variable

β   = vector of parameters associated with the fixed factors

x_i = gathers all fixed effects

z_i = matrix gathering all the random effects

γ_i = vector of parameters associated with the random effects

ϵ_i = error term

The restricted maximum likelihood method is typically used to estimate variance components when using a mixed-model ANOVA. By defining the likelihood of residuals, the restricted maximum likelihood method aims to obtain unbiased estimates of variance as well as covariance parameters (Little, 2013: 368).

5.10.2.11 *Fisher's least significant difference (LSD) test*

If an ANOVA is performed and the overall *F*-test indicates a significant difference, the null hypothesis of equal means can be rejected. In such a case, the Fisher's LSD test can be used to make pair-wise comparisons amongst two sample means to determine where the differences occurred. This test requires the smallest difference between two means to state that a difference is significant (Ott & Longnecker, 2010: 463; Tavakoli, 2012: 231).

The Fisher's LSD test statistic (*t*) for comparing two sample means (Anderson et al., 2011: 525) is:

$$t = \frac{\bar{x}_i - \bar{x}_j}{\sqrt{MSE\left(\frac{1}{n_i} + \frac{1}{n_j}\right)}} \tag{5.26}$$

where:

$\overline{x}_i$ = historic mean of sample *i*

$\overline{x}_j$ = historic mean of sample *j*

n_i = sample size of group *i*

n_j = sample size of group *j*

MSE = mean square error obtained from the ANOVA test

If the *p*-value is smaller than or equal to the level of significance, the null hypothesis should be rejected. When the critical value approach is used, the null hypothesis should be rejected if $t \leq -t_{\alpha/2} \; or \; t \geq t_{\alpha/2}$. The value of $t_{\alpha/2}$ is based on a *t*-distribution with $n_T - k$ degrees of freedom (Anderson et al., 2011: 525).

A Chow test was used to determine whether 2008, the midpoint of the 2007–2009 global financial crisis, represented a structural break in the financial dataset.

5.10.2.12   Chow test

A structural break can occur in time-series and cross-sectional data (Mukherjee, White & Wuyts, 1998: 236). Time-series analysts have developed structural break tests to estimate time-series regression models before and after a hypothesised break. The estimated parameters are then compared to determine if the difference is more than can be explained by chance (Gaughan, 2009; Gelman & Cortina, 2009: 218).

The Chow test can be used to determine whether a multiple regression differs across two groups or time periods (Wooldridge, 2013). The researcher hence applied this test to determine whether a statistically significant change occurred in the financial dataset around a specific time period, namely 2008. The Chow test is a commonly used application of the *F*-test. The *F*-test can be applied to determine whether there is more volatility in the score of one sample than in the score of another (Zikmund & Babin, 2010: 576).

The Chow test statistic can be determined as follows (Brooks, 2008: 180):

- Split the dataset into two sub-periods.

- Estimate the regression over the whole period and then separately for the two sub-periods to obtain the sum of squared residuals (*SSRs*) for all three regressions.

The equation to determine the Chow test statistic (*C*) (Brooks, 2008: 180; Hayashi, 2000: 175) is:

$$C = \frac{[SSR_R - (SSR_1 + SSR_2)]/K}{(SSR_1 + SSR_2)/(n\text{-}2K)} \sim F \ (\text{DF} = 2) \tag{5.27}$$

where:

SSR_R = SSR for the entire sample under the constraint that parameter vectors $\beta_1^* = \beta_2$

SSR_1 = SSR from the first sample period ($t = 1, 2\ldots r$)

SSR_2 = SSR from the second sample period ($t = r + 1, r + 2, \ldots, n$)

n = number of observations

[*]Beta contains K elements (number of regressors in each regression)

The null hypothesis of the Chow test states that the parameters are stable over time. If the value of the test statistic is greater than the critical value from the F-distribution [$F (K, n-2K)$] the null hypothesis should be rejected (Brooks, 2008: 181).

5.11   Reporting the research findings

The final step in the research process as set out in Figure 5.1 is to report the research findings. The research findings of the current study are reported in Chapters 6 and 7. A study's research process should also meet specific requirements regarding ethical considerations, reliability and validity, as explained in Section 5.12.

5.12   Research ethics, reliability and validity

Ethical considerations become important when research is conducted with human participants (Saunders et al., 2007). In the current study, firm-specific data were considered and no human respondents were used. The research proposal was nonetheless reviewed by a Departmental Ethics Screening Committee, a sub-committee of Stellenbosch University's Research Ethics Committee. Given the nature of the study, the ethical risks associated with this research were deemed to be minimal.

Attention should be given to both the reliability and validity considerations of a specific research project. If a researcher fails to timeously address the study's reliability and validity, the findings thereof could be useless (Struwig & Stead, 2013). Reliability is the extent to which a study's results are an accurate representation of the population and whether it is consistent over time (Reddy & Acharyulu, 2008: 203). The research instrument, and by extension the measurement scales, are considered to be reliable if the results of the study can be reproduced by using a similar methodology. Refer to Section 5.9.1 for a discussion on the measurement scales that were used in this study.

Intra-rater reliability considers whether the data coder received the same results for attempts over different time periods. Reproducibility refers to whether the coding structure leads to the same text being coded in the same manner if different data coders were used (Reddy & Acharyulu, 2008: 203; Stemler, 2001). This study's research instrument was applied over the complete study period by one coder. Over time, the researcher became more familiar with the research instrument and gathered additional knowledge regarding the implementation thereof.

Therefore, after the CGS data had been collected, the coding was double-checked. It was done in an attempt to ensure that the research instrument and succeeding coding were applied in the same manner for the complete corporate governance dataset (Du Plooy, 2009: 216–217).

Validity denotes the accuracy of the selected measure or the extent to which a score truthfully represents a specific concept (Zikmund & Babin, 2010: 335). In quantitative studies, attention should be given to internal, external and construct validity. Internal validity refers to the interpretation of data. This type of validity considers whether a change in the independent variable relates to a change in the dependent variable (Bless et al., 2006: 93).

Threats to internal validity include, amongst others, history, maturation and mortality. History refers to events that occurred between the beginning and end of a study period that could have affected the research situation. Maturation entails changes within respondents and mortality involves the drop-out of firms during the study period due to delistings (Coldwell & Herbst, 2004: 40–41). The time dimension of a study's research design can thus represent a threat to the validity of the study (Du Plooy, 2009). Controls to increase internal validity include holding as many factors as possible constant and that only one specific researcher should apply the research instrument over the duration of the study period (Newman & Benz, 1998).

In this study, the researcher realised that external factors could possibly have influenced the data and consequently the observed results. Regarding the collection of corporate governance data, some of the typical threats to internal validity did not apply to this study. The researcher did not work with human respondents, but rather considered annual reports. In an attempt to increase the internal validity of the financial data, standardised financial statement data and ratios were sourced from McGregor BFA (2013). The reason was that the format of published financial data could differ slightly amongst firms, hence reducing the comparability.

External validity determines whether or not an observed relationship and conclusion(s) could be generalised across similar situations (Bless et al., 2006: 93). A possible threat to external validity is that the researcher's generalisations might not be accurate, since unusual objects were included at a peculiar time (Coldwell & Herbst, 2004: 42). A possible solution is to gather data across several strata to reflect the situation to which the results will be generalised more accurately (Newman & Benz, 1998).

Regarding the external validity of this study, a detailed sample of JSE-listed firms from six Main Board industries (referred to as 'the considered industries') was analysed. See Section

5.8.3 for an in-depth discussion of this study's sample. The observations of the current study are thus not generalisable to all JSE-listed firms, since four industries were excluded from the study. Generalisations could, however, be made to firms in similar industries.

Construct validity denotes the degree to which the considered constructs are accurately represented and measured by the selected instrument (Sullivan, 2009: 533). A construct refers to concepts which are measured with multiple variables. The ability of the measure to correlate with other (standard) measures and/or established criteria should be considered (Zikmund & Babin, 2010: 325; 336–337). Strong measurement validity can reduce the threats to internal validity (Newman & Benz, 1998).

In line with the recommendations for efficient construct validity, the PIC Corporate Governance Rating Matrix was refined for the purpose of this study. The refined research instrument incorporated recommendations of the King II Report and the PIC (2011). Based on the King III Report, JSE-listed firms should publish integrated annual reports from 2011 onwards. Future corporate governance researchers should thus take note of the King III Report when conducting similar studies and/or applying this study's research instrument.

5.13   Summary and conclusions

In this chapter the research process that was adopted was explained in detail. The selected research process was adapted from that prescribed by Cant et al. (2003). This process met the necessary ethical, reliability and validity considerations associated with good research. A quantitative research approach, based on numerical measurements, was used. Quantitative data are related with the deductive research approach. According to this approach, hypotheses are deduced based on existing literature. A descriptive research type was used to provide a description of the considered constructs' characteristics.

Secondary research was conducted in this study. A large number of journals, books and websites were included in the literature review. Furthermore, corporate governance and financial data were collected within the South African context. Content analysis was used to construct CGSs for the sample firms. The CGSs were based on specific disclosure and acceptability criteria as discussed in Chapter 4.

The financial performance of the firms was measured by using various accounting-based and market-based measures. Standardised ROA, ROE and EPS data were sourced from the McGregor BFA (2013) database. In addition, the CAPM and Fama–French three-factor models were employed to estimate risk-adjusted abnormal returns for four corporate governance-sorted portfolios. The required TSR, market capitalisation and book value data were sourced from McGregor BFA (2013) and the BER (2013).

The population consisted of all JSE-listed firms for the period 2002–2010. A combination of convenience and judgement sampling techniques was applied to draw a sample of 230 firms from six JSE industries. After the necessary panel data had been collected, descriptive statistics were conducted to describe and summarise the dataset.

Pooled OLS regression, fixed effects and random effects regression models were used in this study. The selection of the appropriate regression model depends on the outcomes of the specified tests that can be applied to measure fixed and/or random effects. In addition, a mixed-model ANOVA was applied to determine whether there was a significant difference in the CGSs over time, as well as between the CGSs of listed and delisted firms. A Chow test was employed to determine whether 2008, the midpoint of the 2007–2009 global financial crisis, could be seen as a structural break in the financial dataset.

In the following two chapters, the results of the descriptive and inferential analyses are presented.

CHAPTER 6

EMPIRICAL RESULTS: DESCRIPTIVE STATISTICS

6.1 Introduction

An outlay of this study's research process was provided in Section 5.2. The final step in this process is to report on the descriptive and inferential statistics. More specifically, the results of the descriptive statistics that were used to determine the nature of the corporate governance and financial datasets are reported in this chapter.

The researcher used a corporate governance research instrument to compile 1 439 annual CGSs for 230 JSE-listed firms. These scores reflected the level of corporate governance compliance (or the lack thereof) of the firms over the period 2002–2010. The accounting-based ROA, ROE and EPS (specifically HEPS) ratios were examined to assess financial performance. In addition, the TSRs of the firms were evaluated to consider their market-based financial performance.

This chapter is structured as follows: Section 6.2 provides a discussion of the CGS descriptive statistics, followed by the descriptive statistics of the financial performance variables. Section 6.4 provides an overview of relevant South African economic data, with specific reference to the 2007–2009 global financial crisis.

6.2 Corporate governance

The annual CGS data were processed using Excel and Statistica. The complete sample included both JSE-listed and delisted companies. As mentioned in Section 5.8.4, firms that delisted from the JSE during the study period were included in the sample to reduce possible survivorship bias. Descriptive statistics were hence conducted for the complete sample, as well as for two data sub-sets consisting of listed firms and companies that delisted from the JSE over the study period.

6.2.1   The complete sample

The CGS descriptive statistics for the complete sample are provided in Table 6.1.

Table 6.1: CGS[a)] values for the complete sample

Years	Valid *n*	Mean	Median	Minimum value	Maximum value	Standard deviation
2002	191	39	39	9	67	12
2003	192	45	47	10	69	12
2004	166	49	51	9	72	12
2005	161	51	53	13	71	12
2006	146	52	54	16	71	12
2007	141	52	56	16	70	12
2008	150	55	57	14	72	11
2009	151	57	59	21	72	10
2010	141	59	62	27	74	10
Overall period	**1 439**	**50**	**53**	**9**	**74**	**13**

a) The lowest potential overall CGS was 0 and the highest potential overall CGS was 74.

As seen in Table 6.1, the annual mean and median CGSs exhibited a similar, consistently increasing trend over the research period. A possible explanation for this positive development is that, over time, directors became more aware of the King recommendations and the importance of efficient corporate governance compliance. In addition, based on the content analysis, it was evident that companies gradually introduced one or more internal compliance functions. For example, a compliance officer was appointed and/or a compliance department was introduced. Such functions could help boards and managers to establish (more efficient) corporate governance compliance practices. These observations highlight promising opportunities for investors who consider the corporate governance compliance of JSE-listed firms when evaluating potential investments.

The corporate governance sample had an overall mean of 50 out of a potential 74. On average, the sample firms hence complied with two thirds (67.568%) of the corporate governance disclosure and acceptability criteria that were discussed in Chapter 4. The annual mean CGSs increased. This trend was expected, as boards and directors became (more) accustomed to the guidelines of the King II Report over time.

Despite the overall increasing compliance trend, the sample firms only complied with approximately 68 per cent of the corporate governance criteria for the overall study period (2002–2010). By 2010, the sample firms complied with approximately 80 per cent of the corporate governance criteria. Some firms, however, did not pay enough attention to corporate governance compliance. The directors and managers of such firms probably need more training to properly understand the King guidelines and to incorporate these effectively into their companies' activities. The observed lack of corporate governance compliance provides opportunities for consultants to train directors on various governance-related aspects. If a firm uses a consultant, it has the advantage that the service can be tailor-made to meet the needs of the directors and managers.

To classify the sample firms' level of corporate governance compliance, their CGSs were expressed as a percentage of the maximum potential CGS as indicated in Figure 6.1.

Very low	Low to average	Moderate	High
0	19	37	56	74

Figure 6.1: **Classification of the sample firms' CGSs**

As shown in Figure 6.1, the maximum score of 74 was sub-divided into four classifications, namely equal to or below 25 per cent (CGS less than or equal to 19), above 25 per cent and below or equal to 50 per cent (CGS more than 19 but less than or equal to 37), above 50 per cent and below or equal to 75 per cent (CGS more than 37 but less than or equal to 56) and above 75 per cent (CGS higher than 56). Classification 1 reflects 'very low', classification 2 'low to average', classification 3 'moderate' and classification 4 'high' corporate governance compliance. Firms within classifications 1 and 2 would benefit most from the services of a corporate governance consultant and/or the appointment of an internal compliance officer to assist with their corporate governance compliance practices.

The minimum CGS moved from very low (CGS of 9) in 2002 to the low to average classification (CGS of 27) in 2010. The two companies that obtained a CGS of 9 (in 2002 and 2004) subsequently delisted. In line with this result, Frost, Racca and Stanford (2012) indicated that weak corporate governance compliance could be symptomatic of larger corporate feasibility problems.

Not all firms that had very low corporate governance compliance necessarily delisted from the JSE. Some of the firms with very low CGSs improved their corporate governance compliance over time. The minimum CGS tripled from 2002 to 2010. The CGSs of the companies at the top end of the compliance classification also improved over time, albeit with a smaller increase (from 67 to 74) than the firms with very low compliance. Based on the content analysis, the researcher observed that companies that considerably improved their corporate governance compliance often stated that it takes time to create an efficient corporate governance structure and mechanisms.

The annual standard deviations in Table 6.1 ranged between 10 and 12, indicating some variation in the dataset. Given the fact that the sample contained firms that formed part of the FTSE/JSE Top 40 Index as well as firms that had delisted within a few years from their listing date, the results were not surprising. Firms which formed part of the FTSE/JSE Top 40 Index would be expected to consistently deliver good corporate governance compliance results, because they are more "in the public eye" and thus subject to greater stakeholder scrutiny. The delisted firms were anticipated to have poor(er) corporate governance compliance. Such firms possibly lacked intent and skills to comply with corporate governance guidelines. Some firms that delisted could also have a lack of resources to fund (costly) corporate governance initiatives.

6.2.2   Listed versus delisted firms

The results of some previous international corporate governance studies (e.g. Chiraz & Anis, 2013: 125; Serve, Martinez & Djama, 2012) suggest that the corporate governance structures of delisted companies are weaker than those of listed companies. In the current study, consideration was hence given to whether the CGSs of the sample firms also differed based on their listing status. The complete sample was accordingly divided into two data sub-sets, namely listed and delisted firms.

Of the total 1 439 annual CGS observations, 71 delisted firms contributed 260 annual observations. Figure 6.2 presents the mean and median CGSs for the listed and delisted companies over the nine-year study period.
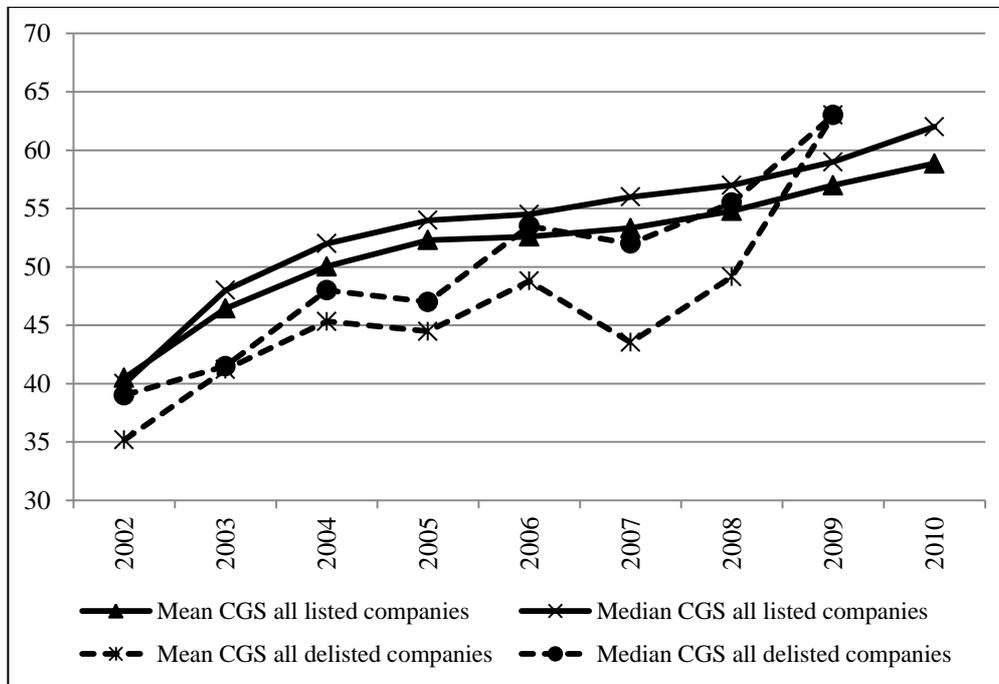
Figure 6.2:   **Mean and median CGSs for the listed and delisted firms**

It can be seen in Figure 6.2 that the mean and median CGSs for listed firms were higher than the corresponding CGSs for delisted firms for the largest part of the study period. While the mean and median values of listed firms consistently increased over time, the mean and median values of delisted companies fluctuated somewhat during the observed period. These findings were in line with the findings of previous corporate governance researchers (such as Chiraz & Anis, 2013; Serve et al., 2012).

As indicated previously, not all firms that delisted from the JSE necessarily experienced corporate governance compliance difficulties. In 2009, three delisted firms, namely Dimension Data, Set Point Group and Spescom had high corporate governance compliance (falling in classification 4). Dimension Data delisted, following a takeover by the Japanese telecommunications firm Nippon Telegraph and Telephone Corporation (Wessels, 2010). Before the takeover, the firm was listed in the Technology industry for 23 years (Convergence Partners, 2010). The board of the Set Point Group indicated that the market sentiment towards small JSE-listed firms in the aftermath of the financial crisis was not favourable. They had consequently decided that there were no material benefits to remain listed (I-Net Bridge, 2010). Spescom had been listed in the Technology industry since 1987 before it merged with Jasco (Prinsloo, 2011).

Firms with high corporate governance compliance can be attractive targets to acquire or merge with, as in the case of Spescom and Dimension Data. Corporate governance initiatives could also be regarded as unnecessary red tape that slow down decision-making processes (Solomon, 2007). Companies with high corporate governance compliance can hence decide to delist to avoid time-consuming compliance activities. No delisted firms formed part of the sample for the year 2010, either because the firms were not listed for the complete 2010 year or their annual reports were not made available on the McGregor BFA (2013) database.

6.2.3   Disclosure and acceptability dimensions

The CGS consists of two dimensions, namely disclosure and acceptability. To ease comparison, the mean disclosure and acceptability scores were converted into percentages by dividing each by the total CGS of 74. In Table 6.2, the annual mean disclosure and acceptability dimensions are indicated. The annual mean CGSs (the sum of the mean disclosure and acceptability dimensions) are also provided.

Table 6.2:   Mean disclosure and acceptability dimensions as a percentage of the total CGS of 74

Firms	Years	2002	2003	2004	2005	2006	2007	2008	2009	2010
All	**Disclosure (%)**	32.291	36.177	38.741	39.869	40.827	41.001	42.198	43.556	44.566
	+ Acceptability (%)	19.803	24.008	27.222	28.513	29.554	29.835	31.541	33.632	34.963
	= Mean CGS[a) (%)	52.094	60.185	65.963	68.382	70.381	70.836	73.739	77.188	79.529
Listed	**Disclosure (%)**	33.616	37.395	39.486	40.905	41.098	41.470	42.324	43.481	44.566
	+ Acceptability (%)	21.108	25.366	28.126	29.773	29.987	30.585	31.719	33.546	34.963
	= Mean CGS[a) (%)	54.724	62.761	67.612	70.678	71.085	72.055	74.043	77.027	79.529
Delisted	**Disclosure (%)**	30.000	34.054	36.612	36.139	39.122	36.383	39.189	47.297	n/a
	+ Acceptability (%)	17.548	21.641	24.639	23.977	26.824	22.453	27.252	37.838	
	= Mean CGS[a) (%)	47.548	55.695	61.251	60.116	65.946	58.836	66.441	85.135	

a) The mean CGSs in Table 6.1 were rounded to the closest integer, while the original (unrounded) mean CGSs were used to determine the percentages presented in this table.

Figure 6.3 provides a visual representation of the two dimensions for the complete sample and for listed and delisted firms.
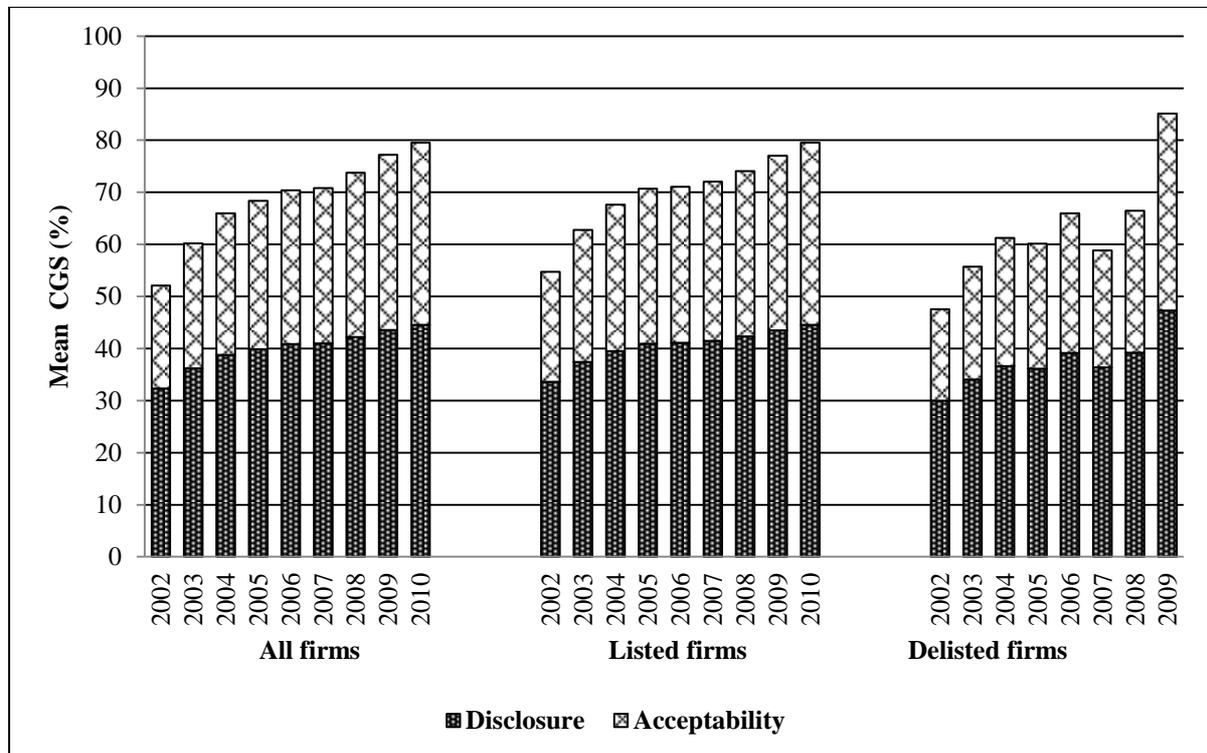
Figure 6.3:   **Disclosure and acceptability dimensions for the complete sample, as well as for the sub-sets of listed and delisted firms**

Perusal of Table 6.2 and Figure 6.3 reveals that in 2002, the mean CGS for all firms was 52.094 per cent. Disclosure contributed 32.291 per cent and acceptability 19.803 per cent to this score. At that stage (2002), the sample firms seemed to have below average (less than 50%) compliance with the acceptability guidelines. Over the study period, the listed and delisted firms gradually improved their compliance with both the disclosure and acceptability dimensions.

In 2010, the mean CGSs of all firms were 79.529 per cent. This score hence increased substantially (with 27.435%) over the research period. Furthermore, the acceptability dimension contributed 34.963 per cent to the mean CGS for the complete sample in 2010, an increase of 15.160 per cent since 2002. This is a promising result for investors, since the sample firms not only improved their disclosure of corporate governance considerations, but also revealed more acceptable compliance practices over time.

As discussed in Section 4.3, acceptability guidelines were not set for gender and race diversity, full disclosure of individual executive director remuneration and the disclosure of shareholding. A firm could receive a maximum score of 39 for disclosure and 35 for

acceptability. The two dimensions thus did not contribute equally to the total CGS of 74. The contributions of both dimensions were calculated as a percentage of the annual mean CGSs for the complete sample, as shown in Table 6.3. For example, a disclosure score of 32.291 per cent out of a mean CGS of 52.094 per cent in 2002 indicates that the disclosure component contributed 61.986 per cent to the CGS.

Table 6.3: **Contributions of the mean disclosure and acceptability dimensions (%) to the annual mean CGSs of all firms**

Years	2002	2003	2004	2005	2006	2007	2008	2009	2010
Contribution of the disclosure dimension to the mean CGS (%)	61.986	60.110	58.731	58.303	58.009	57.882	57.226	56.428	56.037
Contribution of the acceptability dimension to the mean CGS (%)	38.014	39.890	41.269	41.697	41.991	42.118	42.774	43.572	43.963

Table 6.3 shows that in 2002, the acceptability score contributed less than 40 per cent to the mean CGS. It hence appears that the sample firms struggled to correctly apply the corporate governance guidelines. If was evident from the content analysis of the 2002 annual reports that firms tended to explain their non-compliance with some of the King guidelines. Such firms hence complied with the "comply or explain" guideline, but their compliance per se was not necessarily acceptable with regard to the stated acceptability criteria. By 2010, the contribution of the acceptability dimension to the mean CGS improved. The mean CGS was more equally spread between the disclosure and acceptability dimensions than in 2002.

The annual mean disclosure and acceptability scores of the complete sample were also considered as a percentage out of 39 and 35 respectively, as reported in Table 6.4.

Table 6.4: **Annual mean disclosure and acceptability scores (%)**

Years	2002	2003	2004	2005	2006	2007	2008	2009	2010
Mean disclosure score[a]	23.895	26.771	28.669	29.503	30.212	30.340	31.227	32.232	32.979
Percentage (out of 39)	61.270	68.643	73.509	75.649	77.468	77.796	80.068	82.646	84.561
Mean acceptability score[a]	14.654	17.766	20.145	21.099	21.870	22.078	23.340	24.887	25.872
Percentage (out of 35)	41.870	50.759	57.556	60.284	62.485	63.080	66.686	71.107	73.921

a) Original (unrounded) mean scores were used for calculations.

The disclosure and acceptability scores of all firms increased rapidly over the study period. In Table 6.4, improvements of 23.291 per cent and 32.051 per cent can be seen for disclosure and acceptability respectively over the study period. This is a positive development, since the firms not only improved their corporate governance disclosure, but also had more acceptable corporate governance compliance practices at the end of the research period.

Disclosure and acceptability criteria were set for 39 corporate governance factors. In line with a recommendation of the PIC (2011) to group corporate governance factors into categories, these factors formed part of nine corporate governance categories. Instead of focusing on single factors, these categories were examined.

6.2.4   CGS categories

Some categories made a larger contribution to the total CGS than others, as indicated in Table 6.5.

Table 6.5:   **Contribution of the corporate governance categories to the total CGS**

Not indicated due to a confidentiality agreement between the researcher and the Centre for Corporate Governance in Africa at the University of Stellenbosch Business School.

Table 6.5 indicates that board-related categories and corporate culture and behaviour contributed most to the total CGS. The categories related to the board contributed 35.135 per cent in total (board composition contributed 18.919%, while board committees and individual directors each contributed 8.108%). Since the board is the focal point of corporate governance compliance (IoDSA, 2002), this high contribution is justified. Aspects related to corporate culture and behaviour (Category 8) made the second largest contribution (27.027%) to the total CGS. This high contribution is also reasonable considering that the current study was conducted in South Africa, which is characterised by many social considerations such as BBBEE and HIV and AIDS, as well as unethical behaviour such as bribery.

The annual mean category values were converted into percentages by dividing them by 74. The results are depicted in Table 6.6 and Figure 6.4.

Table 6.6:   Mean CGS categories as a percentage of the maximum CGS of 74

	Year	C1	C2	C3	C4	C5	C6	C7	C8	C9
All firms	**2002**	9.374	3.149	3.984	6.530	1.931	6.919	5.016	13.223	1.966
	2003	11.311	3.780	5.272	6.792	2.808	7.024	5.208	15.372	2.619
	2004	12.480	4.208	5.959	7.204	2.891	7.131	5.308	17.405	3.378
	2005	13.027	4.457	6.245	7.436	2.988	7.303	5.304	17.777	3.845
	2006	13.236	4.822	6.470	7.507	3.027	7.341	5.369	18.539	4.073
	2007	13.523	4.850	6.478	7.628	3.124	7.322	5.368	18.315	4.227
	2008	14.415	5.027	6.766	7.865	3.207	7.405	5.405	19.081	4.568
	2009	15.330	5.423	7.034	8.170	3.311	7.634	5.405	19.993	4.886
	2010	15.785	5.770	7.150	8.281	3.258	7.754	5.405	20.539	5.588

	Year	C1	C2	C3	C4	C5	C6	C7	C8	C9
Listed firms	**2002**	9.895	3.328	4.143	6.958	1.876	7.114	5.249	13.961	2.200
	2003	11.608	3.965	5.495	7.134	2.814	7.255	5.350	16.182	2.958
	2004	12.689	4.384	6.119	7.470	2.923	7.196	5.361	17.820	3.647
	2005	13.449	4.601	6.446	7.754	3.014	7.378	5.362	18.554	4.119
	2006	13.299	4.847	6.500	7.626	3.014	7.389	5.362	18.823	4.226
	2007	13.777	4.930	6.566	7.770	3.072	7.422	5.364	18.803	4.350
	2008	14.443	5.039	6.766	7.920	3.191	7.404	5.405	19.247	4.627
	2009	15.285	5.424	7.022	8.145	3.296	7.634	5.405	19.942	4.876
	2010	15.785	5.770	7.150	8.281	3.258	7.754	5.405	20.539	5.588

	Year	C1	C2	C3	C4	C5	C6	C7	C8	C9
Delisted firms	**2002**	8.474	2.838	3.707	5.792	2.027	6.582	4.614	11.950	1.564
	2003	10.792	3.455	4.884	6.197	2.799	6.622	4.961	13.958	2.027
	2004	11.880	3.708	5.500	6.442	2.797	6.946	5.154	16.216	2.608
	2005	11.505	3.938	5.522	6.293	2.896	7.027	5.096	14.981	2.857
	2006	12.838	4.662	6.284	6.757	3.108	7.027	5.405	16.757	3.108
	2007	11.019	4.054	5.614	6.236	3.638	6.341	5.405	13.514	3.015
	2008	13.739	4.730	6.757	6.531	3.604	7.432	5.405	15.091	3.153
	2009	17.568	5.405	7.658	9.459	4.054	7.658	5.405	22.523	5.405
	2010	n/a								
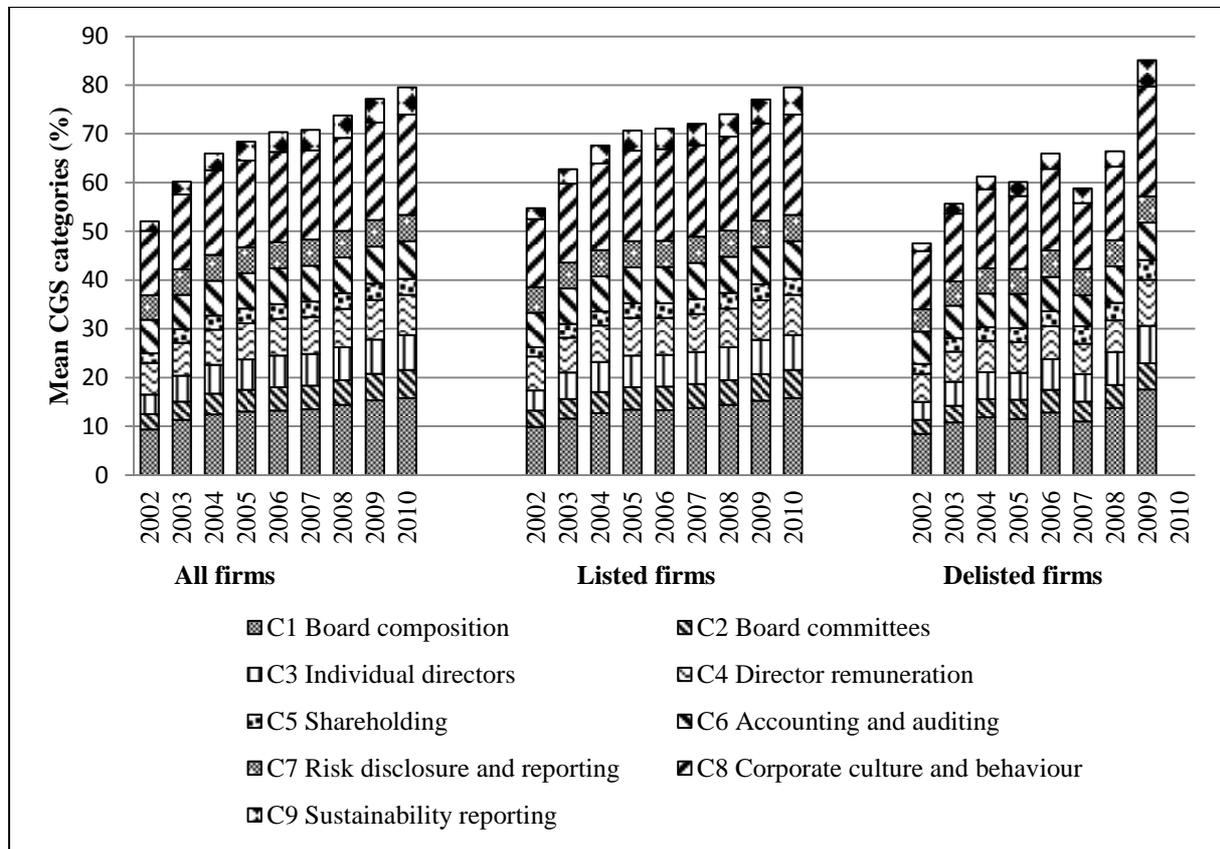
Figure 6.4: **Mean CGS categories (%) for the complete sample as well as for the sub-sets of listed and delisted firms**

As revealed in Figure 6.4, the mean category scores gradually increased over time for the complete sample and for the sub-set of listed firms. However, the mean category values of the delisted firms fluctuated over time. In comparison to the delisted firms, larger categorical increases can be observed for listed firms during 2002–2008.

As indicated in Table 6.5, the nine corporate governance categories did not contribute equally to the total CGS. If two firms each had a CGS of 40, it does not per se indicate that they scored equally on all categories. To determine the drivers of improvements in corporate governance compliance, the annual mean category scores for the complete sample were expressed as a percentage of the maximum total score per category. These percentages are shown in Table 6.7.

Table 6.7: **Annual mean category scores as a percentage of the maximum total score per category for the complete sample**

Category (maximum score)	2002	2003	2004	2005	2006	2007	2008	2009	2010
C1 (% out of 14)	49.550	59.786	65.964	68.857	69.964	71.479	76.193	81.029	83.436
C2 (% out of 6)	38.833	46.617	51.900	54.967	59.467	59.817	62.000	66.883	71.167
C3 (% out of 6)	49.133	65.017	73.500	77.017	79.800	79.900	83.450	86.750	88.183
C4 (% out of 7)	69.029	71.800	76.157	78.614	79.357	80.643	83.143	86.371	87.543
C5 (% out of 3)	47.633	69.267	71.300	73.700	74.667	77.067	79.100	81.667	80.367
C6 (% out of 6)	85.333	86.633	87.950	90.067	90.533	90.300	91.333	94.150	95.633
C7 (% out of 4)	92.800	96.350	98.200	98.125	99.325	99.300	100.000	100.000	100.000
C8 (% out of 20)	48.925	56.875	64.400	65.775	68.595	67.765	70.600	73.975	75.995
C9 (% out of 8)	18.188	24.225	31.250	35.563	37.675	39.100	42.250	45.200	51.688

It is evident from Table 6.7 that the firms already complied with almost 50 per cent of the stated criteria relating to the board composition (Category 1) in 2002. In addition, considerable improvements were observed for the three board-related categories (Categories 1, 2 and 3) over time. This was not surprising, since the first King Report already discussed the role and composition of the board at length. The directors of the sample firms thus had more time to comply with board-specific guidelines than "new" considerations, such as sustainability, that was introduced in the King II Report.

Many previous corporate governance researchers (such as Kiel & Nicholson, 2003; Vafeas & Theodorou, 1998) focused on board composition and reported improvements in board-related compliance over time (refer to Section 3.4 for details on these studies). As seen in Figure 6.5, the sample firms, as well as the data sub-sets of listed and delisted companies also considerably improved their compliance with the board composition criteria (out of 14) over time. By 2009, the delisted firms had higher board compliance than the listed firms. These firms' directors were probably sought-after. The three delisted firms were probably attractive take-over targets.
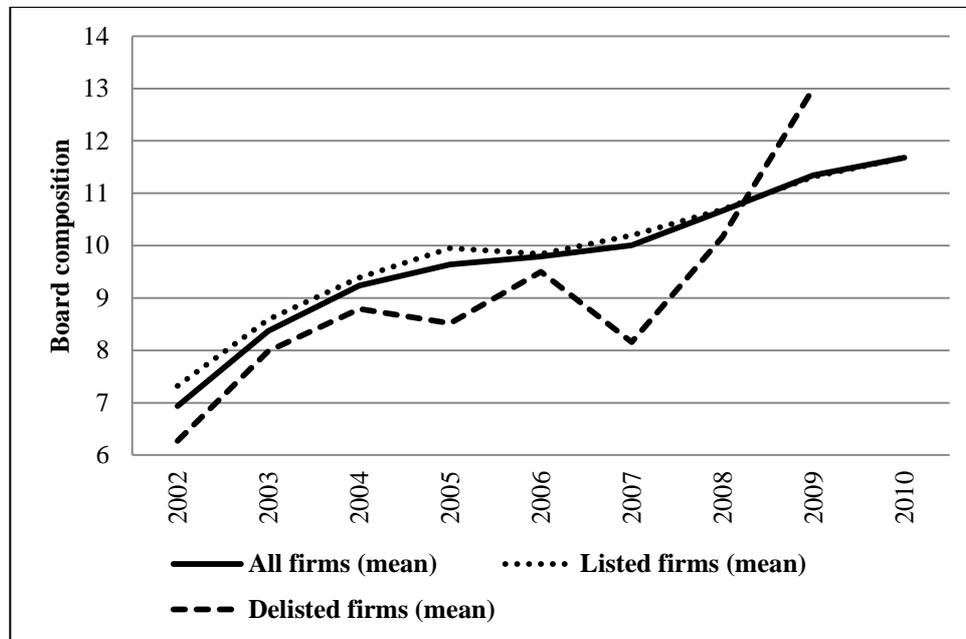
Figure 6.5: **Board composition (Category 1) for all firms as well as the sub-sets of listed and delisted firms**

It is disconcerting that so many previous corporate governance researchers tended to focus only on board-specific aspects to measure a firm's corporate governance compliance. The board consists of humans who make important decisions. These decisions can determine a firm's strategic direction and have an influence on its success (or failure). However, a number of other aspects also influence a firm's corporate governance compliance. Therefore, in this study, various other corporate governance categories were also examined to give a comprehensive overview of corporate governance compliance in South Africa.

With regard to the not board-related categories, it is evident from Table 6.7 that compliance with director remuneration (Category 4), accounting and auditing (Category 6) and risk disclosure and reporting (Category 7) criteria was already reasonably high in 2002 and further increased over the study period. The high compliance trend for Category 4 can possibly be (partly) ascribed to the role of active shareholders and the media. These role players often highlight remuneration-related issues, such as a lack of performance-related payment and excessive executive bonuses (Gardee, 2014). Enhanced shareholder activism can be a driver for future remuneration-related improvements. Revised statutory reporting requirements (such as IFRS) and the JSE Listing Requirements possibly steered firms towards high compliance with Category 6. All the firms reported on their relevant risks and the management thereof (Category 7) since 2008, the midst of the 2007–2009 global financial crisis period.

An interesting observation was that although shareholders are traditionally regarded as the most important stakeholder group, the sample firms had below average (less than 50%) compliance with Category 5 (shareholding) in 2002. Below average attention was also given to Category 8 (corporate culture and behaviour) in the same year. Both of these categories, however, showed substantial improvement over time.

Compliance with the sustainability reporting category was very low (below 20%) in 2002. By 2010, the sample firms only complied with approximately half (51.688%) of the sustainability-related criteria. Directors and managers should consider this category in more detail, especially in the light of the compulsory publishing of integrated reports since 2011. The King III Report includes a comprehensive discussion on integrated reporting.

Since the researcher attempted to provide in-depth analysis of corporate governance compliance, additional criteria were considered for three factors. Two of these factors formed part of Category 1, namely Factor 7 (board development programme) and Factor 8 (board performance evaluation). Factor 35 (anti-corruption programme) formed part of Category 8.

6.2.4.1 *Additional scores for board development programme, board performance evaluation and anti-corruption programme*

The King II Report emphasises the importance of board development and the evaluation of the board's performance. The amount of detail (no detail, only mentioned, some detail or an extensive discussion) provided on the board development programme, board performance evaluation and anti-corruption programme was examined. The allocation of additional scores based on the provided detail did not increase the firms' total CGSs. The percentage of companies within each scoring category is presented per annum in Table 6.8.

Table 6.8:   **Additional scores for Factors 7, 8 and 35**

Factor		Percentage of annual firm-specific observations that obtained a score of 0, 1, 3 or 5 for Factors 7, 8 and 35								
		n[a)]	191	192	166	161	146	141	150	151	141
		Years	2002	2003	2004	2005	2006	2007	2008	2009	2010
Board development programme (Factor 7)	Score[b)]	0	74.345	59.896	52.409	49.689	45.206	43.262	34.000	27.152	25.532
		1	19.372	25.000	22.892	26.087	25.342	29.078	33.333	33.775	29.078
		3	6.283	14.583	23.494	18.634	21.918	19.149	22.000	26.490	29.787
		5	0.000	0.521	1.205	5.590	7.534	8.511	10.667	12.583	15.603
Board performance evaluation (Factor 8)	Score[b)]	0	82.722	64.583	53.012	50.311	45.891	42.553	35.333	28.477	22.695
		1	12.042	23.438	31.325	29.193	28.767	27.660	32.000	33.775	31.206
		3	5.236	11.458	14.458	18.012	17.808	19.858	20.000	19.205	21.986
		5	0.000	0.521	1.205	2.484	7.534	9.929	12.667	18.543	24.113
Anti-corruption programme (Factor 35)	Score[b)]	0	67.539	63.541	54.217	46.584	45.890	43.262	40.667	33.113	28.369
		1	23.560	22.917	25.904	26.708	23.973	25.532	23.333	24.503	26.950
		3	8.377	11.979	16.867	19.876	21.233	19.858	22.000	24.503	24.823
		5	0.524	1.563	3.012	6.832	8.904	11.348	14.000	17.881	19.858

a) The number of annual reports considered per year

b) 0: The disclosure criterion was not met and/or the factor was not mentioned in the annual report.

  1: The factor was only mentioned in the annual report.

  3: Some detail was provided in the annual report regarding the factor.

  5: The factor was extensively discussed in the annual report.

By looking at Table 6.8, it is evident that the majority of the companies did not mention the implementation of the three factors initially (2002). Those firms that considered the factors mostly mentioned them (and obtained a score of 1) in 2002. Over time, more detail was provided on the three factors. By 2010, only 15.603 per cent of the firms provided extensive detail on their board development programme, 24.113 per cent on their board performance evaluation, and 19.858 per cent on anti-corruption programmes. Although the amount of detail increased over time, it is disconcerting that approximately a quarter of the sample firms did not even mention these factors in their annual reports by 2010.

6.2.4.2 *Researcher's category-specific observations based on the content analysis*

While the corporate governance considerations from the annual reports were quantified, the researcher also made category-specific observations, as shown in Table 6.9.

Table 6.9: **Researcher's category-specific corporate governance observations**

Categories	Researcher's observations based on content analysis
C1: **Board composition**	• Over the observed research period, the status and roles of directors changed to include more NEDs. • Despite the King II Report's recommendation that more than 50 per cent of the NEDs should be independent, a lack of independent NEDs was observed over the research period.
C2: **Board committees**	• The majority of the firms (more than 50%) had an audit committee and a remuneration committee. • The nominations committee was often combined with the remuneration committee. • General areas of non-compliance with the King II guidelines were the role of the committee's chairperson (not an independent NED) and the number of committee members (fewer than three members).
C3: **Individual directors**	• It seems to be common practice for directors to serve on a number of boards (which could lead to over-boardedness). • During the first four years of the research period, committee meeting attendance for individual members was often not disclosed.
C4: **Remuneration**	• Shareholders' approval of NEDs' remuneration was often not mentioned. • Despite the view expressed in international markets that NEDs should preferably not receive share options, share options were regularly given to NEDs, generally without shareholder approval. • During 2008–2010, the majority of firms (more than 50%) published detailed remuneration reports.
C5: **Shareholding**	• Most firms complied with the one share–one vote principle. • The disclosure of shareholding information varied considerably between firms, from a detailed analysis to merely mentioning the five largest shareholders.
C6: **Accounting and auditing**	• Even though a firm's internal auditor and the audit committee functions were both mentioned, clear indication of communication or oversight between the two parties could often not be found.
C7: **Risk disclosure and reporting**	• From 2008 (the midst of the 2007–2009 global financial crisis), all firms reported on risk management, with varying degrees of detail.
C8: **Corporate culture and behaviour**	• Most firms had a code of ethics. • The terms 'whistle-blowing' and 'whistle-blower' were rarely used, perhaps due to the social stigma that is often associated with being a whistle-blower (Uys, 2011). • The majority of firms (more than 50%) clearly mentioned their relationships with and responsibilities to their various stakeholders; although a small number of firms (fewer than 10) did not even mention the term 'stakeholder'. • Reporting on BBBEE and HIV and AIDS-related aspects in the observed annual reports increased over time.
C9: **Sustainability reporting**	• Initially, sustainability considerations were often only mentioned by a few firms (approximately 20%). The number of firms that reported comprehensively on such considerations increased over time. • Scores for this category were based on sustainability reporting in annual reports (and when available sustainability reports) and not on separate sustainability reports that were not available on McGregor BFA (2013)

Source: Researcher's own construction based on the content analysis

The annual mean CGSs and the individual category scores increased considerably for the complete sample. In addition, the disclosure of corporate governance data in the annual reports also developed over time. Investors can use such transparent corporate governance

data to make more informed investment decisions. Despite these positive observations, the researcher also has a number of compliance-related concerns.

6.4.2.3   *Corporate governance compliance concerns*

Based on the content analysis, two main corporate governance concerns were evident, namely high compliance costs and over-boardedness.

The insufficient corporate governance compliance of some of the sample firms could be ascribed to high compliance costs. Such costs can become disproportional to the incremental benefits, especially for small firms (Rezaee, 2007: 513). While conducting content analysis on the sample companies' annual reports, it was observed that, specifically in the period 2005–2010, non-compliance with specific corporate governance requirements was acknowledged, but no suggestions were provided to improve within the next year(s). Such firms thus adhered to the King II Report's "comply or explain" principle, but did not (necessarily) plan to improve their corporate governance practices.

Another corporate governance concern is that of over-boardedness, as discussed in Section 4.3.3.1. An over-boarded director serves on several boards (Harris & Shimizu, 2004: 776). Such a director could consequently struggle to give proper attention to the issues of the various firms on which boards he or she serves. Although no guideline was set for an acceptable number of board memberships for the purpose of this study, the researcher observed some "very busy" board members. Furthermore, the reporting on corporate governance considerations of some sample companies seemed very positive at first glance. However, when the researcher reflected on the corporate governance data, it seemed as if their excellent compliance was over-exaggerated. Creating false favourable impressions with investors who favour sound corporate governance is morally wrong.

According to Stürmer (2013), many JSE-listed firms' managers and directorates still only talk about sound corporate governance without truly practicing it. Although the mean CGSs of the sample firms improved over time, some firms still had a serious lack of corporate governance compliance in 2010. The researcher hence tends to agree with Stürmer (2013).

The type of industry in which a company operates and the regulation of its operations could possibly influence the extent of its corporate governance compliance (Huse, 2007: 107; Miles, 2005). The mean CGSs are hence discussed per industry in Section 6.2.5.

6.2.5   The considered industries

When the number of companies indicated in this section is summed, the number of firms (244) differs from the total number of firms in the sample (230). The reason is that some firms moved between industries. For example, a specific firm formed part of the Consumer Goods industry for two years and then moved to Industrials. Such firms were included in the number of firms that were considered per industry, but were not double counted for the sample.

Figures 6.6–6.11 contain the descriptive statistics for the six considered industries by means of box-and-whisker plots. The box extends from the 25th to the 75th percentile. The mean, median and range (denoted as min-max) are also provided.
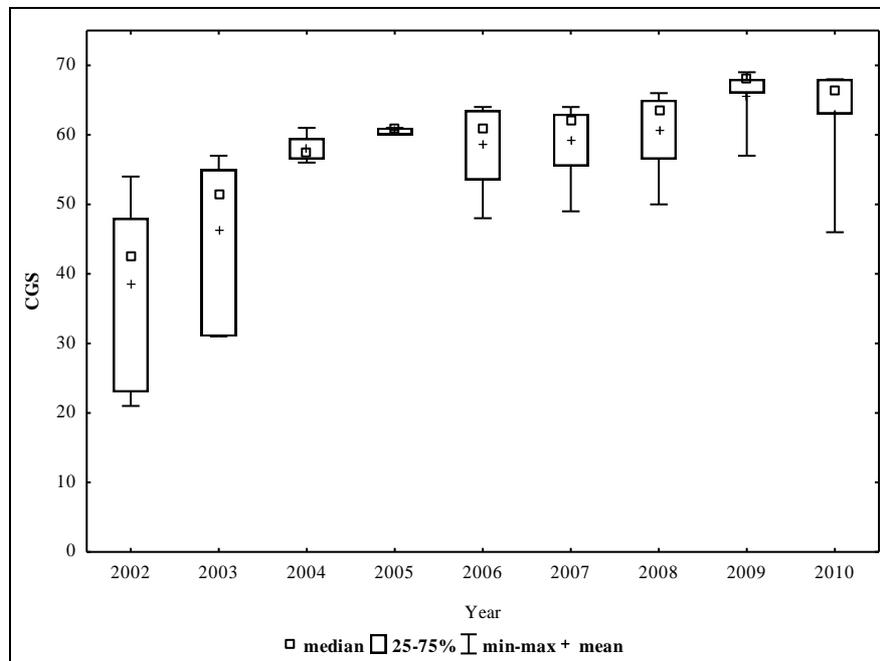
Figure 6.6:   **CGS values of the Health Care industry**

In total, nine Health Care firms (42 annual CGS observations) were considered. From Figure 6.6, it is clear that the mean and median CGSs of the Health Care firms reflected moderate to high corporate governance compliance for all the considered years (the annual mean and median CGSs were above 37). South Africans are challenged by various health care concerns, including the high prevalence of HIV and AIDS. Consequently, companies in the Health Care industry have an important role in providing pharmaceutical and biotechnological services to the public and private sector. Such firms have to comply with strict regulations

(SouthAfrica.info, 2012). The high corporate governance compliance of the Health Care firms could probably be partly ascribed to the strict regulations with which they have to comply.

Competition for capital can be fiercer if there are only a small number of competitors (Jeurissen, 2007: 101). Health Care firms that produce better annual reports could possibly be in a better position to attract capital from both mainstream and responsible investors than their counterparts. The two firms that obtained the lowest CGSs in 2002 and 2003 subsequently delisted. After these two firms delisted, the annual mean and median values improved considerably.
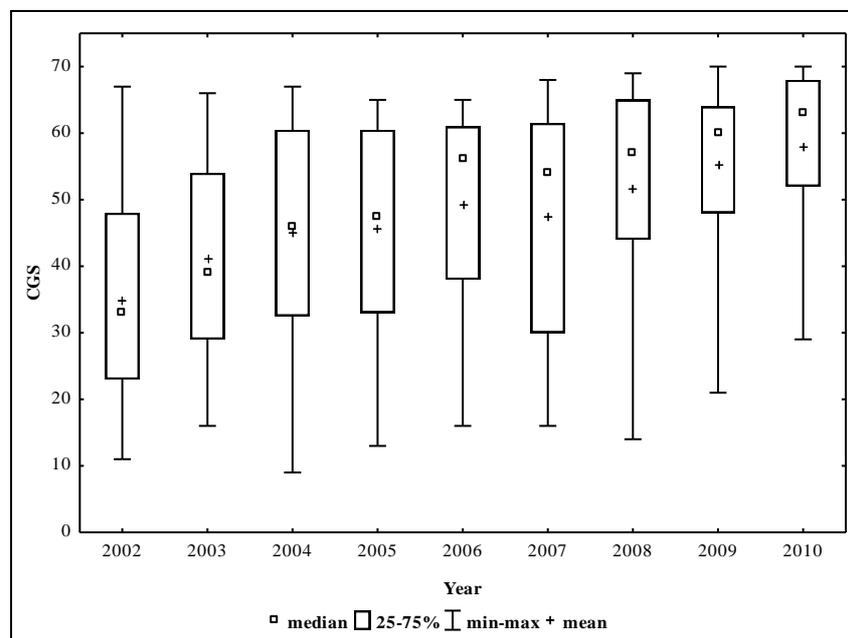
Figure 6.7:   **CGS values of the Consumer Goods industry**

Companies that produce automobiles, vehicle parts, foods, beverages, personal and household products form part of the Consumer Goods industry (JSE, 2009). During the study period, 45 Consumer Goods firms (269 annual CGSs) were evaluated. As indicated in Figure 6.7, the mean and median CGSs almost doubled over time. Consumer Goods firms seem to become more aware of the 'economics of reputation' (Sparkes, 2003). If consumers boycott companies that they regard as having inappropriate (or insufficient) ESG practices, the firms' sales could decrease (Macey, 2013). The same applies to investors who are becoming more discerning in terms of where they are investing their hard earned money.

There was a large difference between the maximum and minimum annual CGSs of the Consumer Goods firms. The minimum values remained below 30, while the maximum values

were above or equal to 65 for all years. Seven of the eight firms that had very low compliance (CGSs below 19) delisted. In addition, one of the firms that had very low compliance used the same structure to report on corporate governance for the entire study period. For six years (2002–2007), corporate governance considerations were merely mentioned on a single page. From 2008 onwards, it was stated in its annual report that the firm complied with rule 3.84(a) of the JSE (2008b). This rule entails that a firm's board should have a formalised policy that sets out the procedures for new board appointments. It appeared as if the board members of this specific firm regarded board-specific requirements of utmost importance. Most of the other King II recommendations were ignored.
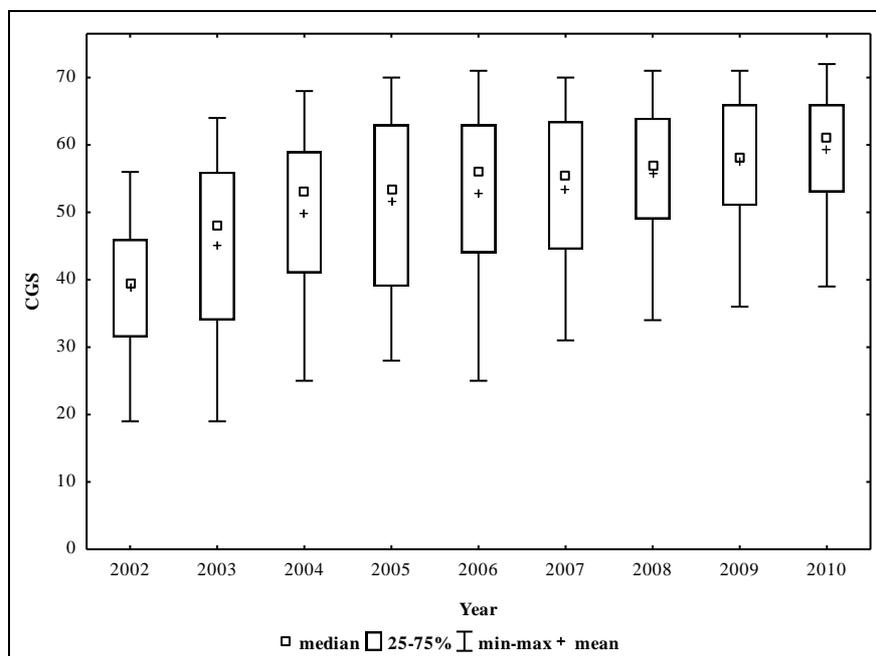
Figure 6.8:   **CGS values of the Consumer Services industry**

The Consumer Services industry consists of amongst others retailers, media, travel and leisure providers (JSE, 2009). The sample included 64 firms (373 annual CGS observations) from this industry. When comparing Figures 6.7 and 6.8, it is evident that the results for these two industries revealed similar trends. The mean and median CGSs of the Consumer Services industry also increased over time, although the improved reporting in this industry were slightly less extensive on an annual basis than for the considered Consumer Goods companies.
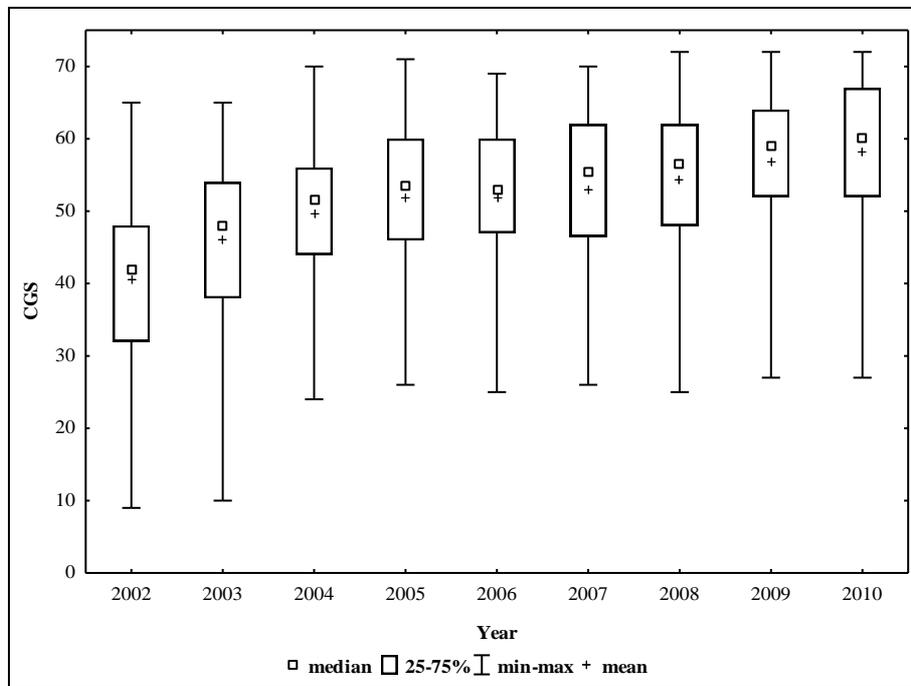
Figure 6.9: CGS values of the Industrials industry

The Industrials industry contributed the largest number of considered firms (92 firms; 553 annual CGS observations) and consists of construction, industrial goods and service providers (JSE, 2009). The mean and median CGSs gradually increased over the study period. The range was 56 in 2002 and decreased to 45 in 2010. The minimum value tripled between 2002 and 2010. These observations could be regarded as positive compliance developments.
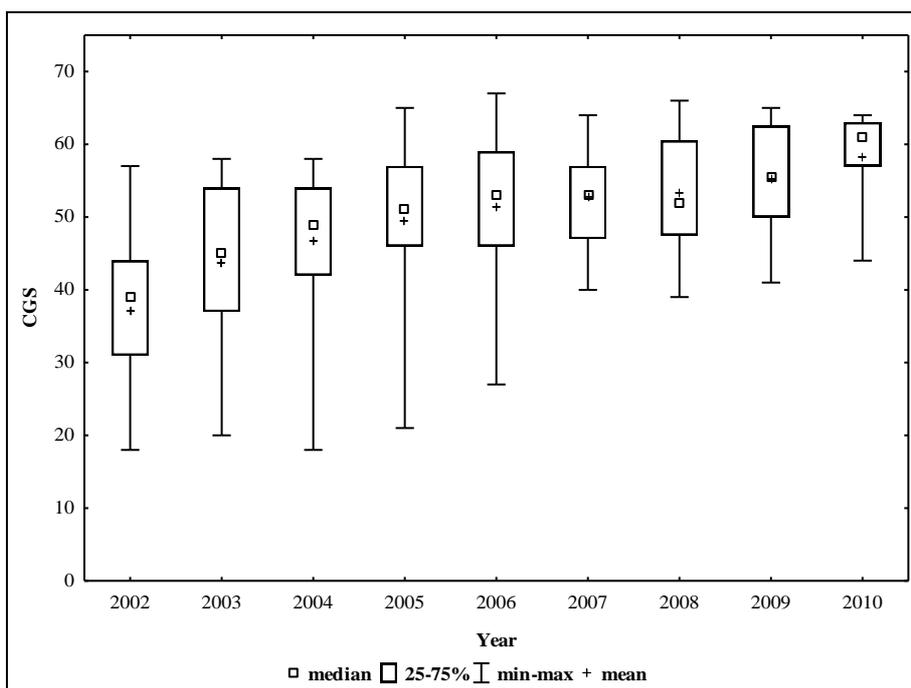
Figure 6.10: CGS values of the Technology industry

The Technology industry contributed 177 annual CGS observations originating from 29 sample firms. This industry consists of companies that provide software, computer services, hardware and equipment (JSE, 2009). The descriptive statistics showed an increasing corporate governance compliance trend for technology firms over the observed nine years. The range also decreased over the study period.

An efficient and transparent corporate governance structure is of specific importance to firms in this industry due to the nature of their activities. Technology companies typically rely heavily on initial public offerings and venture capital funds as financing sources (Ash & Greene, 2007). The boards of Technology firms probably have to adopt best practices to attract capital from institutional and foreign investors.
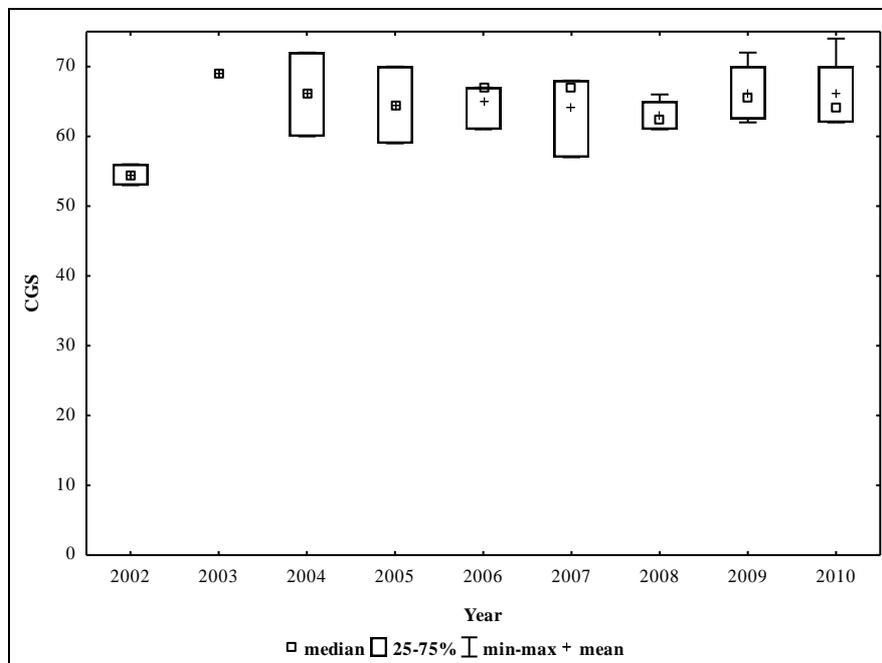
Figure 6.11:   **CGS values of the Telecommunications industry**

The Telecommunications industry provides both fixed and mobile telecommunications to South Africans (JSE, 2009). During the study period, five telecommunications companies, that contributed 25 annual CGS observations, were considered. When comparing Figure 6.11 with the figures for the other five industries, it is evident that the Telecommunications industry had the overall highest mean, median, minimum and maximum CGSs. The top scoring Telecommunications firm had 100 per cent compliance with the disclosure and acceptability criteria in 2010.

In South Africa, electricity provision and telecommunications are mainly dominated by state-owned enterprises (Chabane, 2010; DPE, 2002). Telkom, for example, is a semi-privatised company that is 39 per cent state-owned (Independent Communications Authority of South Africa, 2014). A possible reason for the high CGSs of Telecommunications firms is that since 1999, corporate governance is one of the cornerstones of the South African government's strategic vision for the restructuring of state-owned enterprises (DPE, 2002).

Companies in the Telecommunications industry also regularly engage with the government and parastatals for tender processes (Blue Label Telecoms, 2010; Stevensen & Waite, 2011). A parastatal is an organisation that serves the state indirectly (Oxford Dictionaries, 2014). Compliance with regulation and corporate governance codes is thus typically undertaken diligently by Telecommunications firms. Since there are only a few (large) companies in this industry, competition to comply with corporate governance guidelines could possibly be fiercer than in other industries.

The Consumer Goods industry showed the largest improvement in corporate governance compliance over the study period. Industrials and Consumer Goods, however, still had low to average minimum CGSs in 2010.The Telecommunications and Health Care industries had the best overall corporate governance compliance. Firms operating in these industries could provide promising investment opportunities for responsible investors.

Research by the risk solutions firm Inoxico (Stürmer, 2013) on the external directorships of selected JSE-listed companies, however, indicated that firms in the Telecommunications, Technology and Health Care Industries had high governance risk at the board level due to over-boardedness. The pool of eligible directors in South Africa is relatively small; hence directors tend to serve on (too) many boards. It is questionable whether over-boarded directors can really add to value creation if their attention is spread too widely.

The researcher has two concluding corporate governance-related remarks. Firstly, sound corporate governance compliance is about more than mere compliance on paper, i.e. reporting on the "comply or explain" principle in a firm's annual report. The directorates of some of the sample firms should learn to balance their conformance (such as compliance with legislation and corporate governance guidelines) and performance (such as strategy formulation) activities, as discussed in Section 3.3.1.4. If a company follows a "tick-box" approach to

merely comply with the (basic) King guidelines, the benefits of effective corporate governance compliance will not necessarily be obtained.

Secondly, sound corporate governance compliance is about "practicing what you preach". The corporate governance initiatives that are discussed in a firm's annual report should be implemented; if not, it is almost worthless. Window-dressing of corporate activities might seem like a viable option to impress stakeholders over the short term. However, over the longer term, active shareholders are likely to start questioning practices which seem "too good to be true".

6.3   Financial performance variables

In this section, the descriptive statistics of the financial performance variables (EPS, ROA, ROE and TSR) are discussed.

6.3.1   Accounting-based performance variables

A preliminary round of descriptive analysis was done and a few extreme data values were identified. Such extreme accounting performance values could be due to abnormal profits or losses during a specific year and/or human input error(s) in the database. These values distorted the financial dataset and were thus removed. The number of extreme values that were removed are indicated in footnotes for Tables 6.10−6.12.

6.3.1.1   EPS ratio

In Table 6.10, the descriptive statistics of the EPS ratio for the complete sample are indicated. As discussed in Section 5.9.4.3, the standardised EPS ratios that were sourced from the McGregor BFA (2013) database were determined by using the HEPS equation.

Table 6.10:   EPS values for the complete sample (cents per share)

Years	Valid *n*	Mean	Median	Minimum value	Maximum value	Standard deviation
2002	191	92.921	34.400	-759.000	1 539.000	197.537
2003	192	103.326	34.200	-870.400	2 297.000	252.726
2004	166	167.568	61.200	-179.400	2 704.000	363.082
2005	161	216.634	65.200	-114.300	2 849.000	439.201
2006	146	255.264	89.950	-816.568	3 317.000	498.813
2007	141	244.494	106.100	-297.900	2 195.000	388.705
2008	149	232.013	96.800	-362.600	1 692.800	351.891
2009	151	216.945	78.200	-316.800	1 835.669	330.009
2010	141	237.299	105.900	-220.700	1 782.394	338.246
Overall	**1 438[a)]**	**189.715**	**67.050**	**-870.400**	**3 317.000**	**359.103**

a) One extreme value was removed

Nominal values were considered

Perusal of Table 6.10 shows that the mean EPS values were substantially higher than the median values for all considered years. The mean EPS ratio increased from 2002–2006. Investors are typically interested in firms with steadily increasing EPS values, since it could be due to an improved financial position (Hall, 2012). Since the remuneration of executive directors is often linked to EPS targets, they could also benefit from high EPS ratios (Gup, 2007). It should, however, be noted that improvements in a firm's EPS ratio are not necessarily the result of good performance. Inflation can also have an impact on this ratio.

A firm's EPS ratio can increase if either its profit increases and/or its number of ordinary shares decrease. On the one hand, if an increase in EPS is due to an improvement in profit, then the firm is actually growing. On the other hand, if a firm buys back shares during a specific year, this ratio can seem better, even though the firm might not have performed better (it could even have performed worse). Investors' confidence can be lost if share buybacks are used to artificially improve a firm's EPS ratio (Hall, 2012). Value can be created for shareholders if shares are bought back "cheaply". However, if management over-pays for the shares or use expensive financing to fund it, value can be destroyed (Katsenelson, 2007).

South African companies have only been allowed to buy back their own shares since 1 July 1999. Share repurchases started slowly, but increased between 1999 and the late 2000s (Bester, Wesson & Hamman, 2010). Bester (2008: 94) found that over the period July

1999–June 2007, 121 JSE-listed firms made 312 repurchase announcements to the value of approximately R50 billion. The increasing trend in share buybacks should be kept in mind when analysing EPS ratios in South Africa.

During 2007–2009, the mean EPS values decreased. This trend could be ascribed to external factors, such as the global financial crisis and resulting recession in South Africa, and not necessarily to firm-specific actions. The standard deviations suggest that there was some variation in the EPS dataset. The negative minimum EPS values in all considered years revealed that certain firms operated at a loss. However, a negative EPS ratio should not necessarily be interpreted as a "bad sign" by investors. Start-up companies may show an initial loss, followed by profits a year or more later (Leach, 2010: 10).

The analysis presented in Table 6.10 was conducted on the complete sample. Figure 6.12 illustrates the mean EPS ratios for the data sub-sets of listed and delisted firms on an annual basis.
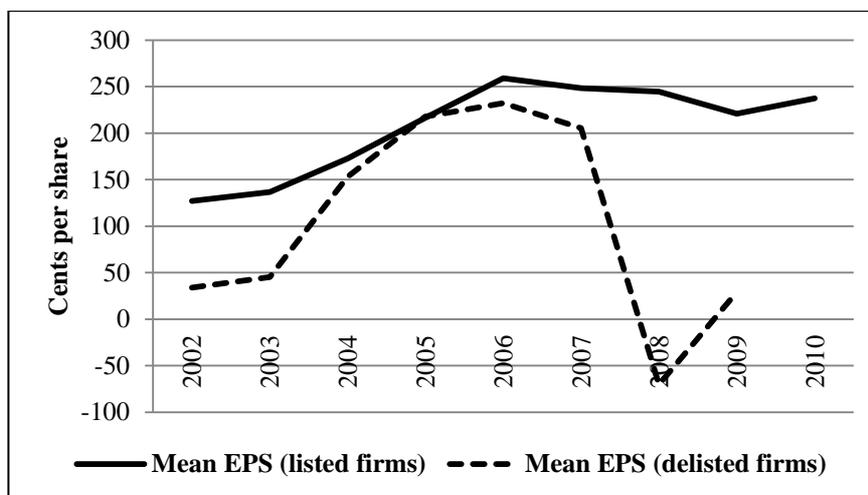
Figure 6.12:   Mean EPS values of the listed and delisted firms

As seen in Figure 6.12, the annual mean EPS values of the delisted firms were lower than those of the listed firms. Furthermore, while the listed firms' mean EPS values decreased during the 2007–2009 global financial crisis period, it was still positive. The delisted firms had a negative mean EPS value during 2008, the midpoint of this crisis. A negative EPS trend could result in investor concern and possible withdrawal of funds (Siegel & Shim, 2006: 256).

6.3.1.2   ROA and ROE profitability ratios

Tables 6.11 and 6.12 provide the descriptive statistics of the two profitability ratios.

Table 6.11:   ROA values for the complete sample (%)

Years	Valid *n*	Mean	Median	Minimum value	Maximum value	Standard deviation
2002	191	7.965	9.632	-148.000	130.610	23.269
2003	192	9.455	11.714	-147.770	54.201	19.755
2004	166	10.817	12.074	-61.606	47.539	13.400
2005	161	11.203	12.234	-66.300	67.890	14.197
2006	146	11.046	11.660	-267.353	74.124	26.550
2007	141	13.541	12.113	-16.952	104.257	12.411
2008	149	14.027	13.075	-7.419	51.932	9.606
2009	151	13.672	13.210	-48.313	102.251	13.475
2010	141	12.347	12.192	-50.506	52.148	11.508
Overall period	**1 438[a)]**	**11.372**	**11.801**	**-267.400**	**130.610**	**17.261**

a) One extreme value was removed

Table 6.12:   ROE values for the complete sample (%)

Years	Valid *n*	Mean	Median	Minimum value	Maximum value	Standard deviation
2002	187	16.889	16.345	-373.214	645.277	81.263
2003	191	12.230	16.331	-724.313	572.833	103.488
2004	166	23.602	18.338	-179.902	452.009	67.214
2005	160	24.488	22.361	-91.016	187.591	28.247
2006	146	22.027	21.993	-570.263	317.212	58.921
2007	141	26.234	23.773	-40.698	212.476	27.894
2008	150	22.742	20.065	-46.100	188.300	27.450
2009	151	12.581	18.360	-572.336	116.566	57.877
2010	141	22.664	16.512	-84.256	727.459	64.240
Overall period	**1 433[a)]**	**20.064**	**19.093**	**-724.313**	**727.459**	**64.597**

a) Six extreme values were removed

Perusal of Tables 6.11 and 6.12 shows that the mean and median ROA and ROE profitability ratios differed considerably for the overall period. As confirmed by the substantial differences between the minimum and maximum values of both ratios, the sample firms had widely

varying profits (and losses). The overall ROE values were higher than the corresponding ROA values, possibly due to financial leverage. The large decreases in the median ROA (2009–2010) and ROE (2007–2010) ratios during the crisis period was not surprising, especially since South Africa experienced a recession in the first semester of 2009 (BER, 2009).

Figure 6.13 indicates the mean ROA values and Figure 6.14 the mean ROE values for the sub-sets of listed and delisted firms.
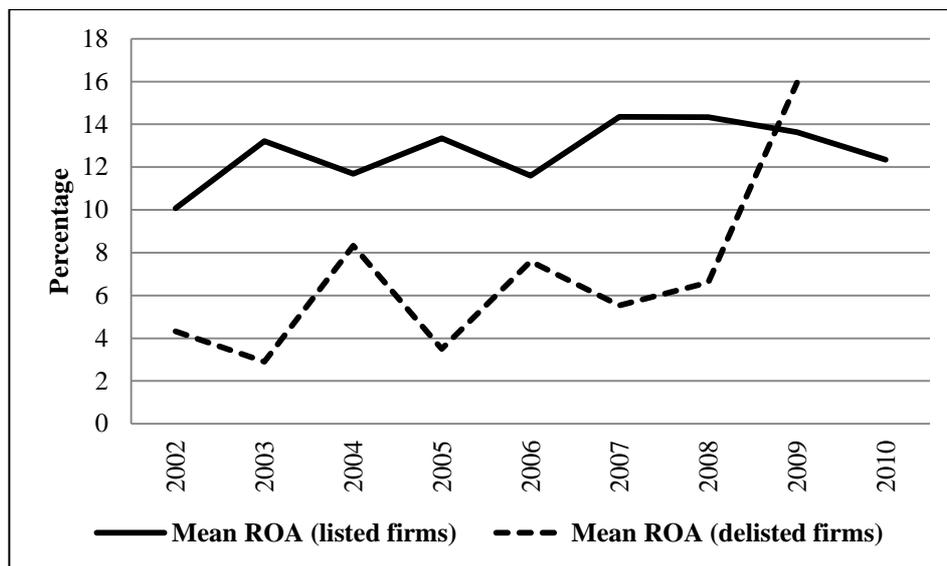
Figure 6.13:   **Mean ROA values of the listed and delisted firms**
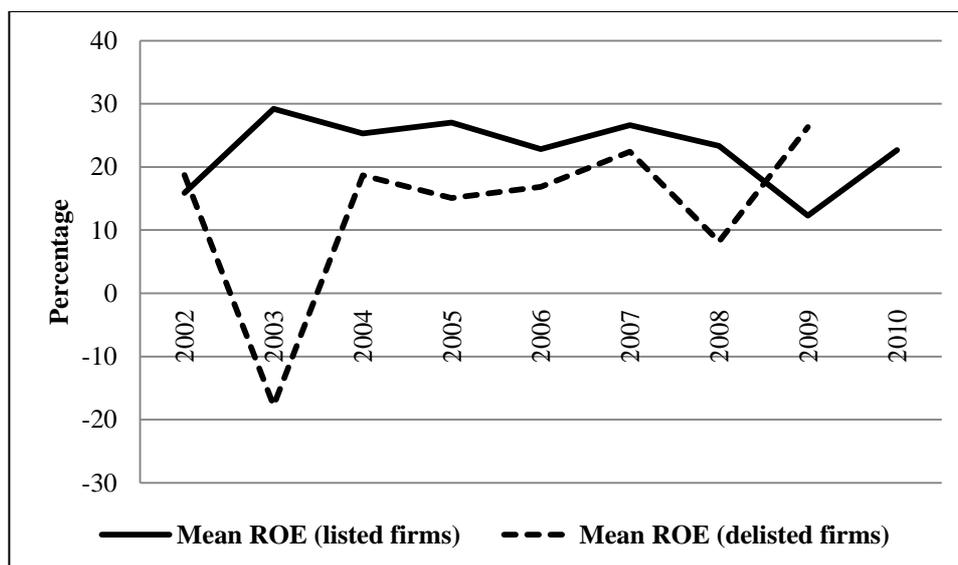
Figure 6.14:   **Mean ROE values of the listed and delisted firms**

From Figures 6.13 and 6.14, it is clear that for the largest part of the study period, the mean ROA and ROE values for listed firms were higher than those of the delisted firms. The delisted firms' ROE ratios fluctuated considerably during the study period. In 2009, the three delisted firms that were discussed in Section 6.2.2 had higher mean ROA and ROE ratios than their listed counterparts.

6.3.2   Market-based performance variable

In Table 6.13, the TSR descriptive statistics are provided for the complete sample.

Table 6.13:   TSR values for the complete sample (%)

Years	Valid *n*	Mean	Median	Minimum value	Maximum value	Standard deviation
2002	188	34.623	16.892	-89.352	933.334	95.971
2003	190	41.416	32.059	-97.931	500.000	74.962
2004	165	76.162	54.610	-70.000	1 659.755	147.652
2005	159	47.487	32.104	-62.963	840.000	98.413
2006	144	41.424	35.134	-71.333	270.588	46.300
2007	139	36.021	14.343	-73.684	820.000	107.271
2008	144	-30.500	-29.808	-98.939	73.554	29.557
2009	149	23.228	21.351	-80.769	116.497	37.021
2010	139	25.410	21.693	-78.667	248.579	41.632
Overall period	1 417[a]	**33.923**	**22.800**	**-98.939**	**1 659.755**	**89.409**

a) TSR data were only available for 227 companies on the McGregor BFA (2013) database

As reflected in Table 6.13, the mean and median TSR values of the sample firms increased between 2002 and 2004, possibly as a result of South Africa's high economic growth during this period. Economic growth could translate into higher financial performance and thus rising share prices (Fisher, 2012). The observed increases in the mean TSRs between 2002–2004 is regarded as a positive trend, since investors typically seek steadily increasing positive share returns.

The TSR dataset contained a number of extreme values. The maximum TSR in 2004 was for example ascribed to an "assets selling" strategy that the specific firm followed to return cash to shareholders (New Africa Investments Limited, 2004). The effect of these extreme values

on this study's results should be considered. In Section 7.3, the usage of winsorising to address extreme financial values is explained.

The mean and median TSR values gradually decreased in the lead-up to the 2007–2009 global financial crisis, as seen in Table 6.13. In 2008, the midpoint of this crisis, both the mean and median TSR values were negative. Between 2009 and 2010, the mean and median values rapidly increased again. The mean and median values differed considerably over the study period. The standard deviations confirmed that the sample firms had varying TSR values. The mean TSR values for the sub-sets of listed and delisted firms are indicated in Figure 6.15.
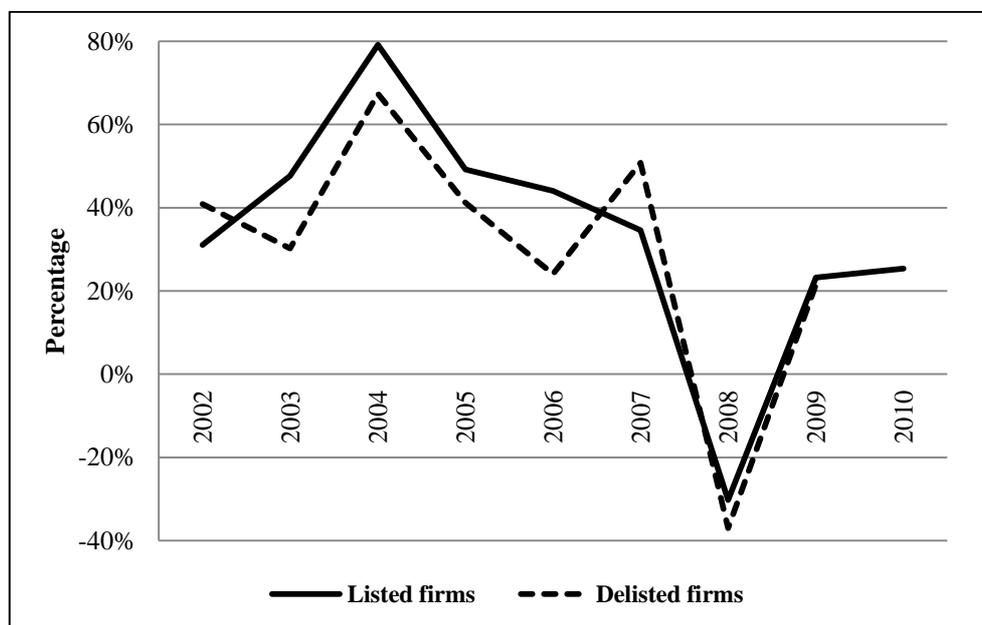
Figure 6.15:   Mean TSR values of the listed and delisted firms

Figure 6.15 illustrates that the TSRs of the listed and delisted firms decreased considerably over the study period. It should be borne in mind that a firm's share returns could be influenced by many factors, such as the market's perception of a firm's corporate governance compliance (or the lack thereof) and the implications of the 2007–2009 global financial crisis. The share returns of South African companies were severely influenced during this crisis period, resulting in negative TSR values for listed and delisted firms in 2008, as reflected in Figure 6.15. In addition to share prices, TSRs are also influenced by the size and stability of dividend payments over time (Erasmus, 2013). Companies that make losses generally do not pay dividends. The same applies to young and small firms. In South Africa, the number of firms that paid dividends decreased from 1977–2011 (Viviers, Firer & Muller, 2013).

As discussed in Section 6.2, the sample firms' CGSs gradually improved over the study period. However, the 2007–2009 global financial crisis seemed to have impacted negatively on the performance variables, especially TSR. The influence of this crisis on the South African economy is considered in more detail in Section 6.4.

6.4 The impact of the 2007–2009 global financial crisis on the South African economy

Listed shares are amongst the most closely observed financial indicators in the global economy. The share market is a leading indicator of the business cycle (Tainer, 2006: 5). Past share market movements can be used to predict a country's business cycle as part of a composite economic indicator (Bluedorn, Decressin & Terrones, 2014). In Section 6.4.1, trends in the gross domestic product (GDP) are examined, followed by a discussion on the FTSE/JSE All Share Index. This was done to determine when the negative effects of the economic disruption in the USA initially showed on the South African share market.

6.4.1 GDP in South Africa

The South African GDP average quarter-on-quarter growth rate over the period 2002–2010 is shown in Figure 6.16.
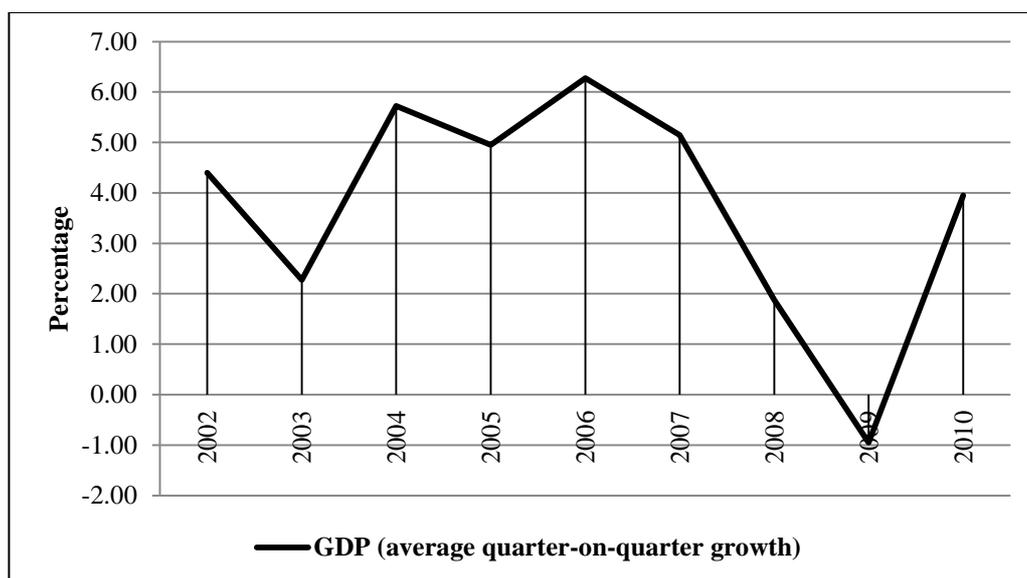
Figure 6.16: **GDP growth in South Africa over the period 2002–2010**

Source: Researcher's own construction based on data provided by the BER (2013)

Figure 6.16 shows that the study period included a cycle of economic growth (2002–2006), followed by the global financial crisis (2007–2009) and the beginning of a recovery period (2010). In the first semester of 2009, the South African economy had a negative GDP growth rate.

The 2007–2009 global financial crisis period was expected to have an effect on the sample firms' profitability and share performance. Even the best firms in terms of corporate governance compliance experienced share returns decreases and declines in their accounting-based performance measures. Such declines were not necessarily due to bad management or because their corporate governance compliance had declined, but were rather due to the impact of the 2007–2009 global financial crisis.

6.4.2   Changes in the FTSE/JSE All Share Index

In 2013, the FTSE/JSE All Share Index (also known as the 'ALSI' or 'J203') included 160 JSE-listed firms that represented about 99 per cent of the JSE's total market capitalisation (JSE, 2013). This share market index is weighted by the market capitalisation of each included share. The FTSE/JSE All Share Index values for the period 2002–2010 are provided in Figure 6.17 to consider the effect of the crisis on the JSE.
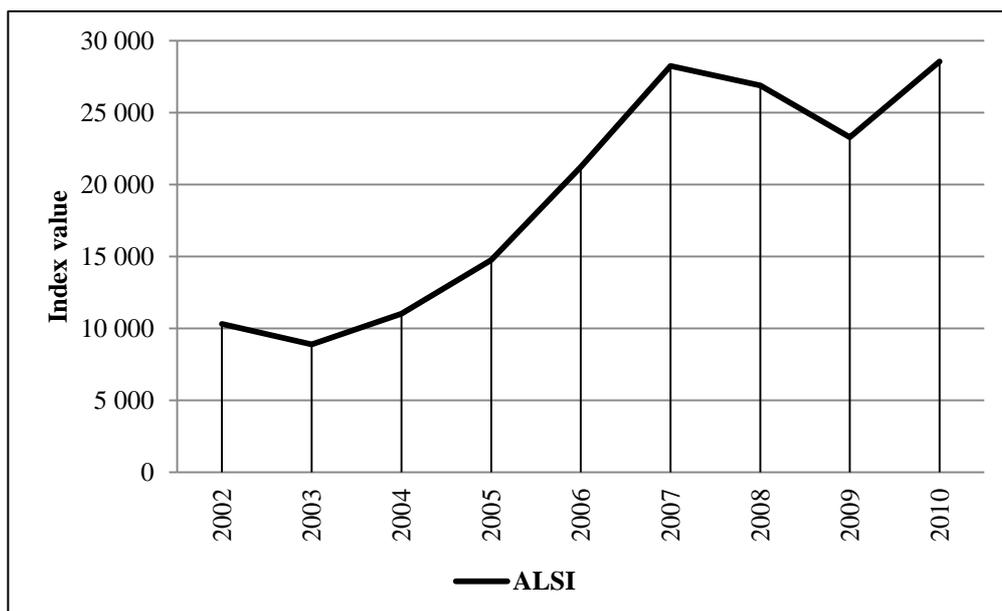
Figure 6.17:   The ALSI over the period 2002–2010

Source: Researcher's own construction based on data provided by the BER (2013)

Figure 6.17 shows that the FTSE/JSE All Share Index increased between 2003 and 2007. However, during 2008 and 2009, a decreasing trend was observed. Figure 6.18 illustrates the extent of the changes in the ALSI over the considered time period.
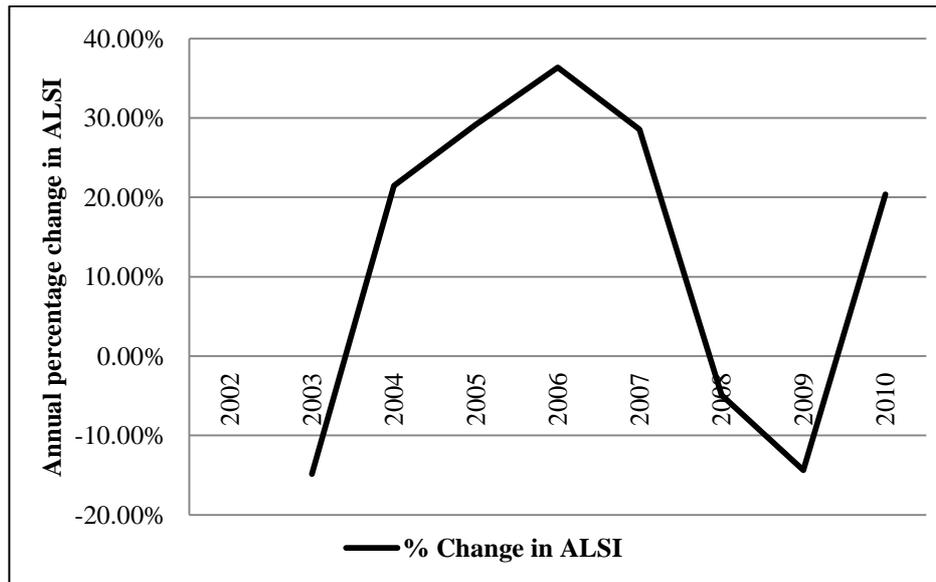
Figure 6.18:   Percentage change in the ALSI over the period 2002–2010

Source: Researcher's own construction based on data provided by the BER (2013)

As seen in Figure 6.18, the considered time period was extremely volatile. The South African economy responds to both external shocks, such as a sudden increase in financial uncertainty, and internal shocks. On initial reaction, real share prices tend to decrease transitorily, followed by large "depressions" over the medium term (Ncube & Ndou, 2013: 170).

The observed lag in the performance downturns (for EPS, ROA and ROE as indicated in Tables 6.10–6.12) relative to TSR (Table 6.13) can be explained by the link between GDP and accounting-based financial performance. The ROA, ROE and EPS ratios were generated by the firms' operations. Changes in the economic environment can positively or negatively affect the operating conditions of companies and resultantly their financial performance.

The researcher realised that there was an important link between the FTSE/JSE All Share Index and the sample firms' TSRs. Therefore, the FTSE/JSE All Share Index and the TSR values were included in the CAPM and Fama–French three-factor regression analyses, as reported in Section 7.5. When interpreting the regression results in Chapter 7, the influence of the 2007–2009 global financial crisis on the sample firms' financial performance was also borne in mind.

6.5   Summary and conclusions

The mean and median CGSs of the complete sample, as well as those of the listed and delisted firms increased considerably over the study period. As noted in some of the annual reports, it takes time to design and implement acceptable corporate governance mechanisms and practices. In 2002, the disclosure dimension of the research instrument contributed the largest percentage to the mean CGS. Towards 2010, is seemed as if more firms had acceptable corporate governance compliance than in 2002. These positive results are encouraging for mainstream and responsible investors who want to include corporate governance when making investment decisions.

Although an increasing number of firms voluntarily complied with the corporate governance guidelines, the overall mean CGS was below 68 per cent. As expected, firms tended to comply with the more "easy" guidelines, such as board composition and explained their non-compliance with "tougher" aspects such as sustainability. There is still considerable scope for improvement, especially regarding compliance with Category 8 (corporate culture and behaviour) and Category 9 (sustainability reporting). JSE-listed firms could consider appointing an internal compliance officer and/or a corporate governance consultant to assist them in this regard. Some directors also require additional training to properly apply the King guidelines. Corporate governance compliance should not be considered a "tick-box" exercise of these guidelines, but rather as a means to improve corporate governance in practice.

Six industries were examined in this study. The Telecommunications and Health Care firms had the best overall corporate governance compliance. Firms operating in these industries could provide promising investment opportunities for responsible investors. On average, the corporate governance compliance of the sample firms seemed to have increased, despite the global financial crisis of 2007–2009.

For the largest part of the study period, delisted firms had lower accounting-based ratios than their listed counterparts. In terms of the market-based TSR measure, it was evident that the firms' share prices performed better before 2007, compared to after 2009. The extensive decrease in the TSRs could possibly be, in part, ascribed to the 2007–2009 global financial crisis. The results of the inferential statistics are presented in the following chapter.

CHAPTER 7

EMPIRICAL RESULTS: INFERENTIAL STATISTICS

7.1 Introduction

"Facts are stubborn, but statistics are more pliable."

This quote by Mark Twain (1835–1910) (in Feinberg, Kinnear & Taylor, 2013) shows that it can be difficult to interpret raw data (facts). Therefore, researchers typically use statistics to transform data into a more interpretable format. Various statistical analyses were conducted to achieve the research objectives of this study.

As discussed in Section 3.4, there is inconclusive evidence in literature regarding the nature of the relationship between corporate governance and financial performance. Corporate governance was first entered in the preferred regression model as the independent variable and then as the dependent variable. Consideration was also given to whether the relationship(s) between the considered variables were not observed immediately, but perhaps only after some time. One-year lag periods were accordingly built into the regression models. In addition to the realised TSRs that were used for the panel regression analysis, risk-adjusted abnormal returns (Jensen's alphas) were estimated for four corporate governance portfolios. These portfolios were compiled based on the sample firms' CGSs. Both the CAPM and the Fama–French three-factor models were applied to estimate the alphas.

In the remainder of this chapter, the results of the mixed-model ANOVA analyses are firstly presented, followed by the results of the panel regression analyses. In the third section, the results of the Chow test (used to establish a structural break in the financial dataset) are reported. The estimated risk-adjusted abnormal returns are discussed in Section 7.5. A comparison of the regression results for corporate governance and the market-based performance measures are provided in Section 7.6.

7.2   Mixed-model ANOVA

Two specific research questions related to the CGSs of the sample firms were only in part answered by the descriptive analysis, namely:

- What was the corporate governance compliance trend in the sample of JSE-listed companies over the research period?

- Are there differences between the corporate governance compliance of JSE-listed companies and that of delisted companies?

Based on the descriptive statistics reported in Section 6.2.1, it seemed as if the mean CGSs of the complete sample increased steadily over the study period. The mean CGSs of the listed and delisted firms also appeared to differ (refer to Section 6.2.2). A mixed-model ANOVA was therefore used to determine the significance of the observed trend in the CGSs over time, and the perceived differences between the CGSs of the listed and delisted companies.

The mixed-model ANOVA includes both fixed effects (between subjects) and random effects (within subjects) factors (Reinard, 2006). For the purpose of the current study, the considered fixed effects factors were 'year', 'listed/delisted' and 'year listed/delisted interaction' (denoted as 'year*listed/delisted'). The random effects factor was 'company'.

A restricted maximum likelihood solution with type *III* decomposition was performed to estimate the variance components of the random effects in the model (O'Connell & McCoach, 2008: 247). The type *III* decomposition (also referred to as the 'type *III* sum of squares') of an effect is determined by adjusting for any other terms that do not contain it (Sahai & Ageel, 2000).

One of the assumptions of the mixed-model ANOVA is that the dependent variable is approximately normally distributed. The financial dataset contained a number of outlier values and was hence winsorised. This technique improved the deviation from the normality assumption.

The results of the mixed-model ANOVA conducted on the mean CGSs are provided in Table 7.1. This model was used to consider differences over the entire study period. To determine whether the mean CGSs differed significantly from one year to the next, Fisher's LSD test was used. The results of this test are shown in Table 7.2.

Table 7.1: **Results of the mixed-model ANOVA conducted on the mean CGS data**

Effect	Numerator degrees of freedom	Denominator degrees of freedom	*F*-value	*p*-value
Year	7	1 037	**112.629**[**]	0.000
Listed/delisted	1	225	**11.484**[**]	0.001
Year*listed/delisted	7	1 037	1.110	0.354

** Significant at the 1% level   * Significant at the 5% level
Conducted for the period 2002–2009 (since there were no delisted companies in the sample for 2010)

Table 7.2: **Fisher's LSD test for the mean CGSs over time**

Year	2002	2003	2004	2005	2006	2007	2008	2009	2010
2002		0.000[**]	0.000[**]	0.000[**]	0.000[**]	0.000[**]	0.000[**]	0.000[**]	0.000[**]
2003			0.000[**]	0.000[**]	0.000[**]	0.000[**]	0.000[**]	0.000[**]	0.000[**]
2004				0.000[**]	0.000[**]	0.000[**]	0.000[**]	0.000[**]	0.000[**]
2005					0.171	0.001[**]	0.000[**]	0.000[**]	0.000[**]
2006						0.065[**]	0.000[**]	0.000[**]	0.000[**]
2007							0.002[**]	0.000[**]	0.000[**]
2008								0.000[**]	0.000[**]
2009									0.000[**]
2010									

** Significant at the 1% level   * Significant at the 5% level

As seen in the first row of Table 7.1, the mean CGSs of the firms differed significantly over the entire study period. Furthermore, review of Table 7.2 shows that all the annual increases in the mean CGSs were statistically significant, except for the annual increase from 2005 to 2006. In the second row of Table 7.1, a significant difference was also observed between the CGSs of the listed and delisted firms.

These results were not surprising. As time progressed, South African firms probably became more familiar with the recommendations of the King II Report. In addition, the JSE Listing Requirements (JSE, 2005) obligate listed companies to disclose their compliance with the King II Report's guidelines or to explain non-compliance. Firms that remained listed were thus expected to improve their corporate governance compliance over time.

Given the steady increases in the mean CGSs over time, it seems as if the firms' corporate governance compliance were not negatively influenced by the global financial crisis of 2007–2009. However, this crisis had an effect on the financial performance of the sample firms, as reflected by the lower mean financial performance variables during this period (see Section 6.3). In the following section, the relationship between CGS and the financial performance variables (EPS, ROA, ROE and TSR) are examined by means of panel regression analysis.

7.3 Analysis of panel data

Annual CGS observations were available for 230 firms. The required financial data were, however, only available for 227 of these firms (1 417 annual observations). In addition, the descriptive statistics revealed that the financial data included extreme values. Winsorising (as described by Vinzi et al., 2010) was hence used to adjust these values. Any value in excess of three standard deviations from the mean was classified as an outlier value and was replaced by a value equal to the mean ± three standard deviations. All the inferential statistics were conducted on the winsorised dataset, henceforth referred to as the complete sample.

Fixed effects and random effects regression models are commonly used to analyse panel data (Hassett & Paavilainen-Mäntymäki, 2013: 45). The choice between the two models depends on the nature of a study's dataset. Both the *F*-test for fixed effects and the Hausman test for random effects were thus applied in the current study to determine the appropriate regression model for each analysis. In addition, the Breusch–Pagan test was employed to test for possible heteroskedastic specification error.

Both simple and multiple regression analyses were conducted. The independent and dependent variables had to be clearly defined. As indicated earlier, previous corporate governance researchers found inconclusive evidence on the nature (positive or negative) of the relationship between corporate governance and financial performance. To investigate this relationship, separate regression analyses were conducted on CGS as the independent and dependent variable respectively.

7.3.1 Regression analysis results for the complete sample

Firstly, CGS was entered as the independent variable in the preferred regression model. Thereafter, financial performance was considered as the independent variable.

7.3.1.1 Corporate governance as the independent variable

Four separate regression analyses were conducted on the complete sample with CGS as the independent variable and EPS, ROA, ROE and TSR respectively as the dependent variable. The results of these regression analyses are provided in Tables 7.3–7.6.

Table 7.3:   Regression analysis results for EPS and CGS

Model summary			
Preferred model	**Test for fixed effects (F)**	**Hausman test for random effects (F)**	**Fit of the model F (df)**
Fixed effects	**13.15****	**13.52****	**60.96** (1, 1 102)**

Regression coefficient	**Standard error**	**t-value**	**Pr > $|t|$**
3.802**	0.487	**7.808****	0.000

Breusch−Pagan test for heteroskedasticity (BP)	**t-value adjusted for heteroskedasticity**
2007.67**	**5.117****

** Significant at the 1% level   * Significant at the 5% level
R-squared = 0.05
The quality of fit of the preferred fixed effects regression model was significant.

Table 7.4:   Regression analysis results for ROA and CGS

Model summary			
Preferred model	**Test for fixed effects (F)**	**Hausman test for random effects (F)**	**Fit of the model F (df)**
Fixed effects	**10.71****	**7.49****	**5.20* (1, 1 102)**

Regression coefficient	**Standard error**	**t-value**	**Pr > $|t|$**
0.033*	0.015	**2.279***	0.023

Breusch−Pagan test for heteroskedasticity (BP)	**t-value adjusted for heteroskedasticity**
589.69**	1.773

** Significant at the 1% level   * Significant at the 5% level
R-squared = 0.00
The quality of fit of the preferred fixed effects regression model was significant.

Table 7.5:   Regression analysis results for ROE and CGS

Model summary			
Preferred model	**Test for fixed effects (F)**	**Hausman test for random effects (F)**	**Fit of the model F (df)**
Fixed effects	**3.60****	**6.57****	1.83 (1, 1 102)

Regression coefficient	**Standard error**	**t-value**	**Pr > $|t|$**
0.169	0.125	1.352	0.177

Breusch−Pagan test for heteroskedasticity (BP)	**t-value adjusted for heteroskedasticity**
2 349.01**	1.093

** Significant at the 1% level   * Significant at the 5% level
R-squared = 0.00
The quality of fit of the preferred fixed effects regression model was not significant.

A highly statistically significant positive regression coefficient was observed in Table 7.3. Based on this finding, it can be inferred that firms that had high CGSs also reported high EPS ratios. Investors are, in general, interested in EPS as a measure of accounting-based performance (Shim & Lansner, 2001: 227).

The positive association between CGS and EPS was not entirely unexpected, as both variables can be influenced by management. The EPS ratio can, for example, be "inflated" by using share buybacks, without improving the firm's actual financial performance (Shim & Lansner, 2001: 227). The CGSs of firms could also be artificially improved by employing window-dressing practices. The positive relationship between these two variables should hence be cautiously interpreted.

A fixed-effects regression analysis was also conducted on CGS and the inflation-adjusted EPS. A significant positive relationship was observed between CGS and the real EPS. Nominal EPS values were used for the panel regression analyses reported in the following sections.

The relationship between CGS and the market-based TSR variable was also examined. The results of this regression analysis are reported in Table 7.6.

Table 7.6:   Regression analysis results for TSR and CGS

Model summary			
Preferred model	**Test for fixed effects (F)**	**Hausman test for random effects (F)**	**Fit of the model F (df)**
Fixed effects	**1.35**[**]	**20.53**[**]	**12.46**[**] **(1, 1 102)**

Regression coefficient	**Standard error**	***t*-value**	**Pr > |t|**
-0.006[**]	0.002	**-3.530**[**]	0.000

Breusch−Pagan test for heteroskedasticity (BP)	157.43

** Significant at the 1% level   * Significant at the 5% level
R-squared = 0.01
The quality of fit of the preferred fixed effects regression model was significant.
No adjustment was made for heteroskedasticity, since the Breusch−Pagan test statistic was not significant.

A highly significant negative regression coefficient can be seen in Table 7.6. A well-functioning capital market requires a robust corporate governance framework that rewards shareholders for their (competent) monitoring of managers' actions (OECD, 2012b). This negative relationship was hence unexpected.

The TSRs of firms could be directly influenced by increases and decreases in share prices, dividend pay-outs or both. Officer (2006) reported that companies with weak corporate governance compliance are more likely to pay out cash dividends. Such firms often experience positive share price reactions to dividend announcements, leading to an increase in their TSRs. Firms with low CGSs that pay out cash dividends can hence report high TSRs.

This argument might explain the negative relationship observed between CGS and TSR in this study. The sample firms with low CGSs could possibly have used their dividend policy to compensate investors for agency problems.

On the other hand, badly governed firms could reinvest all attributable profits in positive NPV projects. This could be done in an attempt to limit the need for additional external capital and scrutiny by (new) investors. If attributable profit was reinvested in positive NPV project(s), a firm's share price could increase, since future dividends might be high(er) (Officer, 2006). Accordingly, the TSRs of badly governed firms (with low CGSs) could be high.

Four other explanations for the reported negative association between CGS and TSR were considered, namely high corporate governance compliance costs, window-dressing practices, herding theory and the study period. Firstly, it was evident from the content analysis that the implementation of compliance mechanisms was costly, both in terms of time and money allocated. For example, director development and HIV and AIDS programmes could take years to yield returns. Such programmes are also typically costly to implement.

Discussions with market leaders and board members confirmed that corporate governance compliance is often viewed as being too costly and time-consuming (Krige, 2014; Schenk, 2014). Some investors also regard (expensive) corporate governance initiatives as unnecessary. As a result, the share market could penalise firms with high CGSs. According to this argument, the share market probably did not appreciate the corporate governance initiatives undertaken by the sample firms over the research period, resulting in the negative association between CGS and TSR.

Secondly, some firms could engage in corporate governance window-dressing practices, while simultaneously hiding corporate governance risks and failures. Firms that employed such practices could have obtained higher CGSs than those which they actually "deserved". Mistrust in the accuracy of the reported corporate governance practices and/or the information content thereof (in relation to the large amounts of money and time spend) could possibly have led to low share prices and hence low TSRs of (some) firms with high CGSs.

In addition, some shareholder activists, such as Theo Botha, publicly criticise the poor (or inappropriate) corporate governance practices of certain South African firms (Planting, 2012; Steyn, 2011). Bhana (2010) considered the effect of Botha's public criticism on the share prices of a sample of JSE-listed firms for the period January 2003–June 2006. He found that

the firms' share prices reacted negatively to Botha's criticism. The negative effect was immediate and could last for up to a year. Shareholders could also have observed the high compliance costs of (some) firms and poor corporate governance compliance and window-dressing practices of others. These observations could have made their perceptions regarding the corporate governance compliance of South African companies even more negative.

Thirdly, while managers could have a considerable influence on EPS, TSR is mainly determined by the market. Herding theory (see Section 2.4.1), suggests that, if some market participants reacted negatively to high compliance costs of (some of) the sample firms, the corporate governance-related perceptions of other shareholders could be negatively influenced. Such negative perceptions could result in decreases in share prices and hence lower TSRs. Especially during the 2007−2009 period, investors acted very irrationally and many market participants have engaged in herding behaviour (Mitchell & Wilmarth, 2010).

Fourthly, with regard to the considered study period, an increasing trend was observed in the mean CGSs. The mean TSRs were, however, negatively affected by the 2007−2009 global financial crisis. These contrasting trends make it difficult to determine whether the negative relationship between CGS and TSR was observed due to the market's lack of appreciation of corporate governance compliance initiatives (or even penalisation for such initiatives) or due to the changes in these two variables over the examined time period.

Table 7.7 provides a summary of the regression results reported in this section.

Table 7.7:   **Summary of the reported regression results (CGS as the independent variable)**

Dependent variable	Reported regression coefficient (adjusted for heteroskedasticity where applicable)
Accounting-based measure EPS	**Positive (significant at the 1% level)**
Accounting-based measure ROA	Positive (not significant)
Accounting-based measure ROE	Positive (not significant)
Market-based measure TSR	**Negative (significant at the 1% level)**

Disparate results were reported in Table 7.7. A significant positive relationship was perceived between CGS and the accounting-based EPS ratio. In contrast, a negative association was observed between CGS and the market-based TSR measure. Although the positive association between CGS and EPS is encouraging, an increase in the EPS ratio does not necessarily result

in additional shareholder value creation. For example, if a firm uses additional debt financing to repurchase shares, its EPS could improve. Such an increase does not per se compensate shareholders for the additional risk associated with increased leverage (Cahill, 2010; Kapil, 2011: 258).

7.3.1.2   *Corporate governance as the dependent variable*

To determine whether the CGSs of the sample firms were perhaps related to their annual financial performance, regression analyses were conducted with CGS as the dependent variable. The results of the multiple regression analysis conducted on CGS and EPS, ROA and ROE are reported in Table 7.8.

Table 7.8:   **Regression analysis results for CGS and the accounting-based variables EPS, ROA and ROE**

Model summary			
Preferred model	**Test for fixed effects (*F*)**	**Hausman test for random effects (*F*)**	**Fit of the model *F* (*df*)**
Fixed effects	**18.22**[**]	**174.88**[**]	**20.42**[**] **(3, 1 100)**

Regression coefficients		**Standard error**	***t*-value**	**Pr > |*t*|**
EPS	**0.014**[**]	0.002	**7.446**[**]	0.000
ROA	-0.042	0.069	-0.609	0.543
ROE	0.002	0.008	0.317	0.752

Breusch−Pagan test for heteroskedasticity (*BP*)		***t*-value adjusted for heteroskedasticity**
EPS		**4.662**[**]
ROA	**441.96**[**]	-0.488
ROE		0.265

** Significant at the 1% level   * Significant at the 5% level
R-squared = 0.05
The quality of fit of the preferred fixed effects regression model was significant.

A significant positive EPS regression coefficient can be seen in Table 7.8. The observed positive association between CGS and EPS shows that firms with high accounting-based earnings had high CGSs. Such firms probably had more profits available to invest in corporate governance compliance mechanisms. (Simple regression analyses were also conducted for each of the individual accounting-based variables. The results were similar to those shown in Table 7.8).

In addition to the three accounting-based measures, the market-based TSR variable was added to the regression model, as indicated in Table 7.9.

Table 7.9:   Regression analysis results for CGS and EPS, ROA, ROE and TSR

Model summary			
Preferred model	**Test for fixed effects (F)**	**Hausman test for random effects (F)**	**Fit of the model F (df)**
Fixed effects	**18.46**[**]	**2 065.78**[**]	**18.62**[**] **(4, 1 099)**

Regression coefficient		Standard error	t-value	Pr > |t|
EPS	**0.014**[**]	0.002	**7.323**[**]	0.000
ROA	-0.024	0.069	-0.343	0.731
ROE	0.004	0.008	0.488	0.625
TSR	**-1.933**[**]	0.545	**-3.547**[**]	0.000

Breusch–Pagan test for heteroskedasticity (BP)		t-value adjusted for heteroskedasticity
EPS		**4.770**[**]
ROA	**445.04**[**]	-0.279
ROE		0.406
TSR		**-3.741**[**]

** Significant at the 1% level   * Significant at the 5% level
R-squared = 0.06
The quality of fit of the preferred fixed effects regression model was significant.

Table 7.9 displays similar significance levels and signs of the accounting-based measures' regression coefficients than those reported in Table 7.8. In addition, the negative TSR regression coefficient was highly significant. It thus seems as if an inverse relationship indeed existed between CGS and TSR, where the dependent variable was high when the independent variable was low and vice versa. The same reasons provided in Section 7.3.1.1 for the observed relationships hold here as well.

The regression analyses that were reported in Section 7.3.1 were conducted on the complete sample. The dataset was subsequently divided into two data sub-sets according to the listing status of the sample firms. Regression analyses were also conducted on these two data sub-sets. This was done to determine whether the associations observed between CGS and the financial performance measures differed between listed and delisted firms.

7.3.2   Regression analysis results for the data sub-set of listed firms

In accordance with the regression analysis conducted on the complete sample, separate analyses were conducted on CGS as the independent and dependent variable respectively.

7.3.2.1   *Corporate governance as the independent variable*

Tables 7.10–7.12 contain the results of the regression analyses for listed firms with EPS, ROA and ROE respectively as the dependent variable.

Table 7.10: **Regression analysis results for the sub-set of listed firms (EPS as the dependent variable)**

Model summary			
Preferred model	**Test for fixed effects (F)**	**Hausman test for random effects (F)**	**Fit of the model F (df)**
Fixed effects	**14.64**[**]	**9.69**[**]	**55.34**[**] **(1, 973)**

Regression coefficient	**Standard error**	**t-value**	**Pr > |t|**
3.838[**]	0.516	**7.439**[**]	0.000

Breusch−Pagan test for heteroskedasticity (BP)	**t-value adjusted for heteroskedasticity**
1 356.08[**]	**4.742**[**]

** Significant at the 1% level   * Significant at the 5% level

R-squared = 0.05

The quality of fit of the preferred fixed effects regression model was significant.

Table 7.11: **Regression analysis results for the sub-set of listed firms (ROA as the dependent variable)**

Model summary			
Preferred model	**Test for fixed effects (F)**	**Hausman test for random effects (F)**	**Fit of the model F (df)**
Fixed effects	**12.06**[**]	**5.86**[*]	2.24 (1, 973)

Regression coefficient	**Standard error**	**t-value**	**Pr > |t|**
0.022	0.015	1.497	0.135

Breusch−Pagan test for heteroskedasticity (BP)	**t-value adjusted for heteroskedasticity**
479.47[**]	1.175

** Significant at the 1% level   * Significant at the 5% level

R-squared = 0.00

The quality of fit of the preferred fixed effects regression model was not significant.

Table 7.12: **Regression analysis results for the sub-set of listed firms (ROE as the dependent variable)**

Model summary			
Preferred model	**Test for fixed effects (F)**	**Hausman test for random effects (F)**	**Fit of the model F (df)**
Fixed effects	**4.08**[**]	**8.05**[**]	0.07 (1, 973)

Regression coefficient	**Standard error**	**t-value**	**Pr > |t|**
-0.033	0.12	-0.272	0.786

Breusch−Pagan test for heteroskedasticity (BP)	**t-value adjusted for heteroskedasticity**
2 375.52[**]	-0.234

** Significant at the 1% level   * Significant at the 5% level

R-squared = 0.00

The quality of fit of the preferred fixed effects regression model was not significant.

Perusal of Tables 7.10–7.12 shows that only one regression model was significant and warrant discussion. In line with the regression analysis conducted on the complete sample (Table 7.3), a highly significant positive regression coefficient was also reported in Table 7.10. A positive association was thus once again observed between CGS and EPS. Table 7.13 provides the results of the regression analysis conducted on the market-based TSR variable and CGS.

Table 7.13: **Regression analysis results for the sub-set of listed firms (TSR as the dependent variable)**

Model summary			
Preferred model	**Test for fixed effects (F)**	**Hausman test for random effects (F)**	**Fit of the model F (df)**
Fixed effects	**1.35**[**]	**23.04**[**]	**13.67**[**] **(1, 973)**

Regression coefficient	**Standard error**	***t*-value**	**Pr > |t|**
-0.006[**]	0.002	**-3.698**[**]	0.000

Breusch–Pagan test for heteroskedasticity (BP)	128.79

** Significant at the 1% level   * Significant at the 5% level
R-squared = 0.01
The quality of fit of the preferred fixed effects regression model was significant.
No adjustment was made for heteroskedasticity, since the Breusch–Pagan test statistic was not significant.

A significant negative regression coefficient is reported in Table 7.13. This result is also in line with the negative relationship reported between CGS and TSR for the complete sample.

7.3.2.2   *Corporate governance as the dependent variable*

The results of the regression analysis conducted with CGS as the dependent variable are reported in Table 7.14.

Table 7.14: **Regression analysis results for the sub-set of listed firms (CGS as the dependent variable)**

Model summary			
Preferred model	**Test for fixed effects (F)**	**Hausman test for random effects (F)**	**Fit of the model F (df)**
Fixed effects	**18.49**[**]	**35.70**[**]	**17.88**[**] **(4, 970)**

Regression coefficient		**Standard error**	**t-value**	**Pr > |t|**
EPS	**0.015**[**]	0.002	**7.284**[**]	0.000
ROA	-0.053	0.075	-0.696	0.487
ROE	-0.010	0.009	-1.106	0.269
TSR	**-2.032**[**]	0.589	**-3.448**[**]	0.001

Breusch−Pagan test for heteroskedasticity (BP)		**t-value adjusted for heteroskedasticity**
EPS		**4.654**[**]
ROA	**398.73**[**]	-0.578
ROE		-1.002
TSR		**-3.652**[**]

** Significant at the 1% level   * Significant at the 5% level
R-squared = 0.07
The quality of fit of the preferred fixed effects regression model was significant.

As seen in Table 7.14, TSR had a significant negative regression coefficient and EPS a significant positive one. These results were comparable to the significant regression results reported for the complete sample. Furthermore, irrespective of whether CGS was the dependent or independent variable in the preferred regression model, the sign of the relationships observed between CGS and EPS (positive) and CGS and TSR (negative) stayed the same.

In Section 7.3.3, the researcher considers the sub-set of delisted firms to establish whether the regression results differed from those reported in Sections 7.3.1 (for the complete sample) and 7.3.2 (for the sub-set of listed firms).

7.3.3   Regression analysis results for the sub-set of delisted firms

The majority of the sample firms (69.13%) remained listed on the JSE during the study period. Almost a third of the sample (30.87%), though, delisted. These delisted firms could have influenced the regression results. Regression analyses were hence conducted for the sub-set of the sample containing only those firms that delisted from the JSE during the study period. Corporate governance was first used as the independent variable in the preferred regression model, as reported in Section 7.3.3.1. Thereafter, it was used as the dependent variable, as reflected in Section 7.3.3.2.

7.3.3.1 Corporate governance as the independent variable

In contrast to the previous two sections, where the results of fixed effects regression models were reported, random effects regression models were considered as the appropriate models for most of the analyses reported in this section. As discussed in Section 5.10.2.5, the fixed effects regression model controls for omitted variables in panel data that are constant over time and vary across the cross-sectional units (Gossy, 2008: 126; Yang & Miller, 2008: 584). In contrast, the random effects regression model allows for the inclusion of time-invariant variables as well as variation between and within the considered units (Dwyer et al., 2012: 130–131; Torres-Ryna, 2013), as explained in Section 5.10.2.6.

The results of the regression analyses conducted on CGS and EPS, ROA, ROE and TSR respectively for the sub-set of delisted firms are provided in Tables 7.15–7.18.

Table 7.15: Regression analysis results for the sub-set of delisted firms (EPS as the dependent variable)

Model summary			
Preferred model	**Test for fixed effects (F)**	**Hausman test for random effects (F)**	**Fit of the model F (df)**
Random effects	**6.35**[**]	2.40	**20.76**[**] **(1, 158)**

Regression coefficients		Standard error	*t*-value	Pr > |*t*|
Intercept	**-137.344**[**]	51.739	**-2.655**[**]	0.009
CGS	**4.999**[**]	1.102	**4.538**[**]	0.000

Breusch–Pagan test for heteroskedasticity (*BP*)		*t*-value adjusted for heteroskedasticity
Intercept	**862.38**[**]	**-3.351**[**]
CGS		**3.905**[**]

** Significant at the 1% level   * Significant at the 5% level
R-squared = 0.12
The quality of fit of the preferred random effects regression model was significant.

Table 7.16: **Regression analysis results for the sub-set of delisted firms (ROA as the dependent variable)**

Model summary			
Preferred model	**Test for fixed effects (*F*)**	**Hausman test for random effects (*F*)**	**Fit of the model *F* (*df*)**
Random effects	**5.36**[**]	0.11	**13.78**[**] **(1, 158)**

Regression coefficients		**Standard error**	***t*-value**	**Pr > |*t*|**
Intercept	**5.366**[**]	1.777	**3.019**[**]	0.003
CGS	**0.122**[**]	0.038	**3.206**[**]	0.002

Breusch−Pagan test for heteroskedasticity (*BP*)		***t*-value adjusted for heteroskedasticity**
Intercept	**98.80**[**]	**2.775**[**]
CGS		**2.620**[**]

** Significant at the 1% level   * Significant at the 5% level
R-squared = 0.08
The quality of fit of the preferred random effects regression model was significant.

Table 7.17: **Regression analysis results for the sub-set of delisted firms (ROE as the dependent variable)**

Model summary			
Preferred model	**Test for fixed effects (*F*)**	**Hausman test for random effects (*F*)**	**Fit of the model *F* (*df*)**
Random effects	**2.13**[**]	3.30	**14.44**[**] **(1, 158)**

Regression coefficients		**Standard error**	***t*-value**	**Pr > |*t*|**
Intercept	**-40.998**[**]	14.148	**-2.898**[**]	0.004
CGS	**1.177**[**]	0.309	**3.809**[**]	0.000

Breusch−Pagan test for heteroskedasticity (*BP*)		***t*-value adjusted for heteroskedasticity**
Intercept	**158.01**[**]	**-2.702**[**]
CGS		**3.895**[**]

** Significant at the 1% level   * Significant at the 5% level
R-squared = 0.08
The quality of fit of the preferred random effects regression model was significant.

Table 7.15 indicates that the positive CGS regression coefficient was statistically significant. The positive regression coefficient shows that delisted firms with high CGSs had high EPS ratios. This result is in line with the results indicated for both the complete sample and the sub-set of listed companies.

A significant positive CGS regression coefficient was reported in both Tables 7.16 and 7.17. In contrast to these significant regression coefficients reported for the delisted firms, both ROA and ROE for the sub-set of listed firms did not have significant regression coefficients. It thus seems as if the observed relationships between CGS and the ROA and ROE ratios respectively were of more significance for delisted firms than for their listed counterparts.

Less profitable delisted firms possibly had less profit to plow back into projects, including corporate governance initiatives, than their more profitable counterparts.

Table 7.18: **Regression analysis results for the sub-set of delisted firms (TSR as the dependent variable)**

Model summary		
Preferred model	**Test for fixed effects (F)**	**Fit of the model F (df)**
Pooled OLS	1.31	0.91 (1, 158)

Regression coefficients		**Standard error**	**t-value**	**Pr > |t|**
Intercept	0.164	0.101	1.627	0.106
CGS	0.002	0.002	0.953	0.342

Breusch–Pagan test for heteroskedasticity (BP)	32.22

** Significant at the 1% level   * Significant at the 5% level

R-squared = 0.01

The quality of fit of the preferred pooled OLS regression model was not significant.

No adjustment was required for heteroskedasticity, since the Breusch–Pagan test statistic was not significant.

If the F-test statistic for fixed effects is not significant, as indicated in Table 7.18, the data are poolable (Park, 2011). A pooled OLS regression model was hence used. The regression coefficients of such a model are constant across time periods and units (Menard, 2008: 234). However, the quality of fit of this model was not significant.

Many researchers exclude delisted firms from their samples, as some databases do not provide this data. However, the researcher is of the opinion that future corporate governance researchers should also include delisted firms in their samples, especially in the aftermath of the 2007–2009 global financial crisis and more recent turmoil in Europe. Since such firms provided contrasting results compared to the listed firms, the exclusion of delisted firms could expose the results of a similar study to survivorship bias.

7.3.3.2 *Corporate governance as the dependent variable*

The results of the regression analysis conducted with CGS as the dependent variable and financial performance as the independent variable are provided in Table 7.19.

Table 7.19: **Regression analysis results for the sub-set of delisted firms (CGS as the dependent variable)**

Model summary			
Preferred model	**Test for fixed effects (F)**	**Hausman test for random effects (F)**	**Fit of the model F (df)**
Fixed effects	**17.51**[**]	**12.84**[*]	**4.52**[**] **(4, 125)**

Regression coefficients		**Standard error**	**t-value**	**Pr > |t|**
EPS	0.009	0.005	1.866	0.064
ROA	0.112	0.154	0.732	0.465
ROE	**0.038**[**]	0.014	**2.769**[**]	0.006
TSR	-1.096	1.362	-0.805	0.423

Breusch−Pagan test for heteroskedasticity (BP)		**t-value adjusted for heteroskedasticity**
EPS		**2.455**[*]
ROA	**54.55**[**]	0.570
ROE		**2.110**[*]
TSR		-0.791

** Significant at the 1% level   * Significant at the 5% level
R-squared = 0.13
The quality of fit of the preferred fixed effects regression model was significant.

As indicated in Table 7.19, the positive regression coefficients of both EPS and ROE were significant. It hence seems as if delisted firms with high accounting-based performance (specifically measured by EPS and ROE) had high CGSs. It also implies that delisted firms with low profit levels might possibly spend less money on corporate governance initiatives, resulting in low CGSs.

The CGS and financial performance variable(s) of only the current year were included in the regression analyses reported in Sections 7.3.1–7.3.3. To consider whether the relationship between corporate governance and financial performance takes time to be reflected, CGS was lagged for a period of one year.

7.3.4   Regression analysis results for the lagged CGS

The inclusion of one-year lagged variables (denoted as 'lag1') resulted in similar regression results as those reported in Section 7.3.1 for the complete sample.

7.3.4.1   Lagged CGS as the independent variable

The results of the regression analysis conducted on the lagged CGS as the independent variable and EPS, ROA, ROE and TSR respectively are reported in Tables 7.20–7.23.

Table 7.20:   Regression analysis results for the lagged CGS (EPS as the dependent variable)

Model summary			
Preferred model	**Test for fixed effects (F)**	**Hausman test for random effects (F)**	**Fit of the model F (df)**
Fixed effects	**14.46**[**]	**13.03**[**]	**43.89**[**] **(1, 897)**

Regression coefficient	**Standard error**	**t-value**	**Pr > |t|**
3.553[**]	0.536	**6.625**[**]	0.000

Breusch−Pagan test for heteroskedasticity (BP)	**t-value adjusted for heteroskedasticity**
1 516.81[**]	**4.879**[**]

** Significant at the 1% level   * Significant at the 5% level
R-squared = 0.05
The quality of fit of the preferred fixed effects regression model was significant.

Table 7.21:   Regression analysis results for the lagged CGS (ROA as the dependent variable)

Model summary			
Preferred model	**Test for fixed effects (F)**	**Hausman test for random effects (F)**	**Fit of the model F (df)**
Fixed effects	**12.52**[**]	**20.34**[**]	2.65 (1, 897)

Regression coefficient	**Standard error**	**t-value**	**Pr > |t|**
-0.025	0.015	-1.628	0.104

Breusch−Pagan test for heteroskedasticity (BP)	**t-value adjusted for heteroskedasticity**
535.92[**]	-1.152

** Significant at the 1% level   * Significant at the 5% level
R-squared = 0.00
The quality of fit of the preferred fixed effects regression model was not significant.

Table 7.22:   Regression analysis results for the lagged CGS (ROE as the dependent variable)

Model summary			
Preferred model	**Test for fixed effects (F)**	**Hausman test for random effects (F)**	**Fit of the model F (df)**
Fixed effects	**4.16**[**]	**8.08**[**]	0.01 (1, 897)

Regression coefficient	**Standard error**	**t-value**	**Pr > |t|**
-0.013	0.125	-0.103	0.918

Breusch−Pagan test for heteroskedasticity (BP)	**t-value adjusted for heteroskedasticity**
1 797.19[**]	-0.082

** Significant at the 1% level   * Significant at the 5% level
R-squared = 0.00
The quality of fit of the preferred fixed effects regression model was not significant.

A significant positive regression coefficient can be observed in Table 7.20. Some of the sample firms with high corporate governance compliance in year$_{t-1}$ thus had high EPS ratios in year$_t$. Given that JSE-listed firms are expected to comply (or explain their non-compliance) with the King guidelines, it is encouraging to see that corporate governance compliance had a significant positive association with EPS, both in the given year and one year later.

Table 7.23:   Regression analysis results for the lagged dataset (TSR as the dependent variable)

Model summary			
Preferred model	**Test for fixed effects (F)**	**Hausman test for random effects (F)**	**Fit of the model F (df)**
Fixed effects	**1.52****	**63.48****	**57.20**** **(1, 897)**

Regression coefficient	**Standard error**	***t*-value**	**Pr > |*t*|**
-0.014**	0.002	**-7.563****	0.000

Breusch−Pagan test for heteroskedasticity (BP)	130.10

** Significant at the 1% level   * Significant at the 5% level
R-squared = 0.06
The quality of fit of the preferred fixed effects regression model was significant.
No adjustment was made for heteroskedasticity, since the Breusch−Pagan test statistic was not significant.

When the CGS was lagged for one year, a significant negative regression coefficient was reported in Table 7.23. This observation is in line with the significant negative relationship that was observed between CGS and TSR for the complete sample. The negative relationship hence still held, even after one year.

7.3.4.2   *CGS as the dependent variable*

The relationship between CGS as the dependent variable and the lagged performance variables (respectively EPS_lag1, ROA_lag1, ROE_lag1 and TSR_lag1) was also considered. This was done to determine whether the firms' financial performance in the previous year was related to their CGSs in the current year.

Table 7.24: **Regression analysis results for the lagged financial performance variables (CGS as the dependent variable)**

Model summary			
Preferred model	**Test for fixed effects (F)**	**Hausman test for random effects (F)**	**Fit of the model F (df)**
Fixed effects	**32.86**[**]	**87.34**[**]	**11.72**[**] **(4, 894)**

Regression coefficients		Standard error	t-value	Pr > |t|
EPS_lag1	**0.008**[**]	0.002	**4.807**[**]	0.000
ROA_lag1	0.100	0.058	1.713	0.087
ROE_lag1	-0.007	0.007	-0.966	0.334
TSR_lag1	**-1.382**[**]	0.45	**-3.070**[**]	0.002

Breusch–Pagan test for heteroskedasticity (BP)		t-value adjusted for heteroskedasticity
EPS_lag1		**3.340**[**]
ROA_lag1	**541.74**[**]	1.319
ROE_lag1		-0.711
TSR_lag1		**-2.865**[**]

** Significant at the 1% level   * Significant at the 5% level
R-squared = 0.05
The quality of fit of the preferred fixed effects regression model was significant.

A significant positive regression coefficient can be observed in Table 7.24 for the lagged EPS. Based on this finding, high EPS in year$_{t-1}$ was positively related to the sample firms' CGSs in year$_t$. A possible explanation for this result is that firms that reported high accounting-based performance in the previous year could plow back more profit into, inter alia, corporate governance compliance initiatives in the following year. It should, however, be noted that the firms' EPS ratios could also have increased due to inflation, while the annual CGSs improved irrespective of what was happening in the South African economy during the study period.

The observed negative relationship between CGS and TSR_lag1 could suggest that, if TSR was negative in year$_{t-1}$ (the shareholders' value hence decreased), the firm's board could have attempted to increase their corporate governance compliance in the following year. The board could do this without realising that it would not (necessarily) be positively perceived by the market. In line with the arguments presented earlier that the market could regard corporate governance compliance as too costly and time-consuming, such compliance attempts could be associated with low (rather than high) TSRs.

In conclusion, a negative association was observed between TSR and CGS, irrespective of whether CGS was considered as the dependent or independent variable. The lagging of the variables also revealed similar results. Despite these negative observations, the researcher believes that if a firm's directorate effectively oversees the appointed managers, possible

value decreasing activities could be timeously recognised and addressed. The South African market is perhaps not yet properly educated regarding the role and importance of the board as well as corporate governance compliance mechanisms in this regard.

To shed light on the negative association between CGS and TSR and to reflect on the possible effect of a crisis period on the relationship between corporate governance and financial performance, the association between these two variables during the 1997–1998 Asian crisis were investigated.

7.3.5   Corporate governance ratings and share price performance during the 1997–1998 Asian crisis

In 2001, Credit Lyonnais Securities Asia (in Leong, 2005), Asia's leading independent brokerage and investment group, reported on the corporate governance ratings and five-year share price performance of selected emerging Southeast Asian countries. The research period included the 1997–1998 Asian crisis. The results are provided in Table 7.25.

Table 7.25:   **Credit Lyonnais Securities Asia corporate governance rating and share price performance of selected emerging Southeast Asian countries**

Country	Overall corporate governance rating (%)	Five-year share price performance (%) (1996–2000)
Indonesia	37	-61.4%
Malaysia	57	-40.1%
Philippines	44	-61.4%
Singapore	65	62.7%
Thailand	55	-41.9%

Source: Leong (2005)

As seen in Table 7.25, emerging countries such as Singapore, Malaysia and Thailand, reported above-average corporate governance ratings (more than 50% compliance) over the period 1996–2000. In the current study, average corporate governance compliance of 67.568 per cent was reported over the period 2002–2010. The corporate governance ratings in both studies hence reflected above-average compliance, despite the fact that both periods included a financial crisis.

In contrast to the above-average corporate governance compliance, most of the emerging countries reported negative share price performance over the period 1996–2000. The 2007–2009 global financial crisis also had a negative effect on the mean TSRs of the sample firms in this study. During 2008, the midpoint of the recent crisis period, a negative mean TSR was reported. Both the 1997–1998 Asian crisis and the 2007–2009 global financial crisis thus had a negative influence on the share performance of firms operating in emerging markets, including South Africa (Madubeko, 2010; Stalls, 1999).

7.4   The 2007–2009 global financial crisis period

According to Boorman and Christensen (2010), the 2007–2009 global financial crisis started to have an effect on emerging African economies by the middle of 2007. The researcher determined the specific month during this crisis period that the negative effects of the economic disruption in the USA showed on the FTSE/JSE All Share Index values as discussed in Section 6.4.2. It was accordingly determined that the substantial decrease in the share prices of JSE-listed companies started during May 2008.

A Chow test was used to determine whether a statistically significant structural break occurred in the financial dataset in 2008. The Durbin–Watson test statistic indicated that significant positive autocorrelation was present in the financial dataset. The SAS AUTOREG procedure was hence applied, since it can estimate time-series regression models when errors are autocorrelated (SAS Institute, 2014). The results of the Chow test are provided in Table 7.26.

Table 7.26:   Results of the Chow test for a structural break in the financial dataset at 2008

Dependent variable	Durbin–Watson test for autocorrelation (d)	F-value	$\text{Pr} > F$
EPS	1.159	0.81	0.495
ROA	1.612	3.87	0.097
ROE	0.739	19.86	**0.004**[**]
TSR	1.804	8.80	**0.023**[*]

** Significant at the 1% level   * Significant at the 5% level
Numerator degrees of freedom: 2; Denominator degrees of freedom: 5

Table 7.26 shows that a statistically significant structural break was noted in 2008 for the ROE and TSR variables respectively. While the average CGSs consistently increased over the

study period (as seen in Section 6.2.1), the ROE and TSR financial performance variables were not stable before or after 2008.

In Section 7.3, a negative association was reported between CGS and TSR. This market-based performance measure is, however, rather unsophisticated. The TSR measure does not incorporate the risk associated with a firm's shares (Kroumova, Sesil, Kruse & Blasi, 2002: 87). It was therefore decided to use both the single-factor CAPM and the Fama–French three-factor model to estimate risk-adjusted abnormal returns for four corporate governance portfolios. These portfolios were compiled based on the sample firms' CGSs.

Regression analyses, based on these two models, were firstly conducted on the complete sample. As discussed in this section, May 2008 was identified as the month during which the substantial decrease in the share prices of JSE-listed companies started (as a result of the global financial crisis). Regression analyses were thus also conducted for the periods before and after May 2008. These analyses were done to determine whether or not corporate governance compliance was equally important to investors during the period that preceded the crisis as well as the period thereafter.

7.5   Estimating risk-adjusted abnormal returns

The risk-adjusted abnormal return (denoted by Jensen's alpha or α) can be determined by comparing the TSR of a share or portfolio with its expected return (Jensen, 1968). A positive alpha indicates that a portfolio has realised a return in excess of the market (Erasmus, 2013). For the purpose of this study, four corporate governance (CG) portfolios were constructed. All firms that provided corporate governance data during a given month were considered for inclusion in the monthly portfolio. The firms were then ranked according to their CGSs. Thereafter, the 25th and 75th percentiles were calculated, in line with French (2013). All companies with a CGS within one of these two quartiles were included in portfolios CG 1 (firms with the lowest CGSs) or CG 4 (firms with the highest CGSs) respectively. Portfolio CG 2 consisted of firms within quartile 2 and portfolio CG 3 of companies within quartile 3.

For estimation purposes, a proxy for the market return had to be identified. The researcher considered two proxies used by previous South African researchers (Strugnell et al., 2011; Van Rensburg & Robertson, 2003; Ward & Muller, 2012), namely the monthly return on the FTSE/JSE All Share Index (J203) and the monthly return on an equally-weighted portfolio.

The monthly equally-weighted portfolio returns were determined by considering all sample firms that provided a share return for a given month. The average for this entire group of firms was then calculated and used as a proxy for the market return.

7.5.1   Application of the CAPM

In this section, the application of a regression model based on the CAPM is discussed. This regression model was used to estimate risk-adjusted abnormal returns for each of the four CG portfolios. Both the statistical and economic significance of the results were considered. The economic significance of a finding relates to whether a specific result could indicate that a theory is useful or whether an abnormal return could be regarded as substantial, even though it was not statistically significant (McCloskey & Ziliak, 1996). The monthly return on an equally-weighted portfolio was firstly used as a proxy for the market return (Table 7.27), followed by the return on the J203 (Table 7.28).

Table 7.27:   Results of the four CG portfolios (CAPM; monthly returns on an equally-weighted portfolio)

CG portfolio	Mean CGS	Mean TSR	Estimate of α	Estimate of β	R-squared	Standard error	F-value
1 (very low)	35	4.140%	**0.812%**[*]	**0.907**[**]	0.611	0.034	**166.211**[**]
2 (low to average)	49	0.385%	-0.792%	**1.222**[**]	0.603	0.046	**160.928**[**]
3 (moderate)	56	1.463%	-0.327%	**0.989**[**]	0.667	0.033	**212.124**[**]
4 (high)	64	2.450%	0.331%	**0.885**[**]	0.713	0.026	**263.218**[**]

** Significant at the 1% level   * Significant at the 5% level
Degrees of freedom: 1; 106
The quality of fit of all models was significant.
The following regression equation was estimated based on monthly data (t) for each of the four CG portfolios (p) (Lee et al., 2009):

$$\left(R_{pt} - R_{ft} \right) = \alpha_p + \beta_p \left(R_{mt} - R_{ft} \right) + \epsilon_p$$

where:
R_{pt} is the return on portfolio p during month t
R_{ft} is the monthly risk-free rate (as measured by the return on the R186)
R_{mt} is the return on an equally-weighted portfolio consisting of all the shares in the dataset during the month
α_p is the estimated risk-adjusted abnormal return generated by portfolio p
β_p is the systematic risk of portfolio p
ϵ_p is the error term

As seen in Table 7.27, the mean TSR of the portfolio that contained the firms with the lowest CGSs (CG 1) was higher than the mean TSR of the portfolio compiled of the firms with the highest CGSs (CG 4). This result is in line with the argument presented in Section 7.3.1 that

the market seemed to have reacted negatively towards the (reporting of) corporate governance initiatives of firms with high CGSs. Such firms typically spend a considerable amount of time and money on corporate governance initiatives, while the firms in portfolio CG 1 most likely spend very little time and money on such mechanisms. If the market's perception with regard to corporate governance compliance was negative (based on the reasoning that resources could be "better employed" to improve share prices and dividends), firms in portfolio CG 4 could possibly be "penalised" for their high compliance, resulting in low(er) TSRs.

A positive, but not significant alpha can be observed for Portfolio CG 4 in Table 7.27. In contrast, a significant positive alpha was reported for portfolio CG 1. The significant alpha of portfolio CG 1 was disconcerting. Based on this result, it appeared as if the companies with the lowest CGSs were good investment options in terms of risk-adjusted performance. Specific consideration was hence given to the firms that were included in this portfolio.

Portfolio CG 1 comprised some delisted and well-known listed firms that showed little interest in corporate governance compliance. This observation was based on the content analysis of the firms' annual reports. The researcher is of the opinion that some of these firms regarded corporate governance compliance as a "tick-box exercise", which does not necessarily enhance actual corporate governance practices.

A comparison of the beta (systematic risk) estimates and alphas revealed an interesting observation. Even though the alpha of portfolio CG 1 was higher than the alpha reported for portfolio CG 3, the beta values of these two portfolios were almost the same. This observation was contrary to the common expectation that return would increase when risk increases. Previous researchers (Strugnell et al., 2011; Van Rensburg & Robertson, 2003) reported that the beta estimates of South African firms could be inversely related to their returns. The interpretation of beta values should thus be conducted with care within the South African corporate context (Erasmus, 2013).

The equally-weighted return that was used for the regression estimation reported in Table 7.27 only included the sample firms. The reported alphas thus related to outperformance against a group of pre-selected firms. The use of equally-weighted returns could thus have had an impact on the reported regression results.

In the original CAPM equation, the return on the total market portfolio, consisting of all assets in the investment universe, is considered (Ho & Lee, 2004: 36). As it is practically

impossible to hold the entire market portfolio, the return on the J203 was used as an alternative estimate for the South African market portfolio, as reported in Table 7.28.

Table 7.28:   Results of the four CG portfolios (CAPM; monthly returns on the J203)

CG portfolio	Mean CGS	Mean TSR	Estimate of α	Estimate of β	R-squared	Standard error	F-value
1 (very low)	35	4.140%	**1.757%**[**]	**0.586**[**]	0.234	0.047	**32.356**[**]
2 (low to average)	49	0.385%	0.606%	**0.486**[**]	0.087	0.070	**10.143**[**]
3 (moderate)	56	1.463%	0.654%	**0.759**[**]	0.360	0.045	**59.693**[**]
4 (high)	64	2.450%	**1.250%**[**]	**0.580**[**]	0.281	0.041	**41.374**[**]

** Significant at the 1% level   * Significant at the 5% level
Degrees of freedom: 1; 106
The quality of fit of all models was significant.
The following regression equation was estimated based on monthly data (t) for each of the four CG portfolios (p) (Lee et al., 2009):

$$\left(R_{pt} - R_{ft}\right) = \alpha_p + \beta_p \left(R_{mt} - R_{ft}\right) + \epsilon_p$$

where:
R_{mt} is the monthly return on the J203

The results reported in Table 7.28 differ from those shown in Table 7.27 in two ways. Firstly, the positive alpha of portfolio CG 4 is now significant. The positive risk-adjusted return reported for this portfolio could be seen as a reward for investors who invested in the companies with the highest CGSs. Secondly, the alphas reported in Table 7.28 are larger than those reported in Table 7.27. It hence seems as if the four corporate governance portfolios outperformed the J203 by more than the equally-weighted index.

Although the CAPM has certain limitations (refer to Section 2.4.3), the model was used for its explanatory power. In addition to this single-factor model, the Fama–French three-factor model was also used to estimate risk-adjusted abnormal returns.

7.5.2   Application of the Fama–French three-factor model

Fama and French (1992; 1993) argue that the spread in returns between small and large firms as well as the spread in returns between value and growth shares should be considered in addition to the CAPM market risk estimate. The regression analyses based on the Fama–French three-factor model was conducted on the same four CG portfolios as discussed earlier.

The firms were also sorted based on their market capitalisation. The companies in the lowest market capitalisation quartile were defined as small and the firms in the highest market capitalisation quartile were defined as big. Thereafter, the average monthly TSRs for the big

quartile were subtracted from the average monthly TSRs for the small quartile (defined as the SMB factor) for each of the observed 108 months.

The companies were then also ranked based on their BE/ME ratios. The firms above the 70th percentile were defined as value shares, while the firms included in the 1st to the 30th percentiles were defined as growth shares. The average monthly TSR for the growth shares (low) was subtracted from the average monthly TSR for the value shares (high) for each of the considered months to obtain the HML factor. The regression results, based on the Fama–French three-factor regression model, are provided in Table 7.29. Three betas are reported, namely beta$_1$ (the systematic risk), beta$_2$ (the sensitivity of the portfolio to the size factor) and beta$_3$ (the sensitivity of the portfolio to the value/growth factor).

Table 7.29: **Results of the four CG portfolios (Fama–French three-factor model; monthly returns on an equally-weighted portfolio)**

CG portfolio	Mean CGS	Mean TSR	Estimate of α	Estimate of β$_1$	Estimate of β$_2$	Estimate of β$_3$	Adjusted R-squared	Standard error	F-value
1 (very low)	35	4.140%	-0.027%	0.939[**]	-0.216[**]	0.504[**]	0.851	0.021	204.228[**]
2 (low to average)	49	0.385%	-0.209%	1.077[**]	0.515[**]	-0.093	0.801	0.033	144.713[**]
3 (moderate)	56	1.463%	-0.169%	1.037[**]	-0.121[**]	-0.210[**]	0.735	0.029	100.015[**]
4 (high)	64	2.450%	0.478%[**]	0.955[**]	-0.184[**]	-0.245[**]	0.883	0.017	270.179[**]

** Significant at the 1% level   * Significant at the 5% level
Degrees of freedom: 3; 104
The quality of fit of all models was significant.
The following regression equation was estimated based on monthly data (*t*) for each of the four CG portfolios (*p*) (Fama & French, 1992):

$$\left(\mathrm{R}_{pt} - \mathrm{R}_{ft}\right) = \alpha_p + \beta_{p1}\left(\mathrm{R}_{mt} - \mathrm{R}_{ft}\right) + \beta_{p2}\mathrm{SMB} + \beta_{p3}\mathrm{HML} + \epsilon_p$$

where:
R_{pt} is the return on portfolio *p* during month *t*
R_{ft} is the monthly risk-free rate (as measured by the return on the R186)
R_{mt} is the return on an equally-weighted portfolio consisting of all the shares in the dataset during the month
α_p is the estimated risk-adjusted abnormal return generated by portfolio *p*
β_{p1} is the systematic risk of portfolio *p*
β_{p2} is the sensitivity of portfolio *p* to the size factor
β_{p3} is the sensitivity of portfolio *p* to the value/growth factor
SMB is the size factor
HML is the value/growth factor
ϵ_p is the error term

When the size and value/growth factors were entered in the regression model, only portfolio CG 4 had a significant positive alpha, as shown in Table 7.29. This is an encouraging result,

since those investors who considered the CGSs of the sample firms when constructing their investment strategy would have been rewarded in risk-adjusted terms.

Except for beta$_3$ of portfolio CG 2, all other betas were statistically significant. A negative size beta, as observed for portfolios CG 3 and CG 4, indicates that returns tend to fall when the outperformance of small relative to large shares increase (Estrada, 2011). Rezaee (2011) and Solomon (2007) note that smaller firms could experience more corporate governance compliance difficulties than their larger counterparts. Portfolios CG 3 and CG 4 reported significant negative value/growth betas, while portfolio CG 1 had a significant positive beta$_3$. These negative betas indicate that growth shares have outperformed value shares (Estrada, 2011). Growth shares typically have above-average earnings growth and pay little (or no) dividends. Growth firms typically prefer to reinvest earnings to fund growth opportunities rather than to pay out dividends (Besley & Brigham, 2008: 268). Such firms could thus have more funds available to invest in corporate governance initiatives, than their counterparts that pay out dividends. The results of the regression analysis with the inclusion of the monthly return on the J203 as the market return proxy are reported in Table 7.30.

Table 7.30:   Results of the four CG portfolios (Fama–French three-factor model; monthly returns on the J203)

CG portfolio	Mean CGS	Mean TSR	Estimate of α	Estimate of β$_1$	Estimate of β$_2$	Estimate of β$_3$	Adjusted R-squared	Standard error	F-value
1 (very low)	35	4.140%	**1.061%**[**]	**0.593**[**]	-0.039	**0.495**[**]	0.448	0.040	**29.952**[**]
2 (low to average)	49	0.385%	**1.065%**[*]	**0.609**[**]	**0.712**[**]	-0.102	0.478	0.053	**33.677**[**]
3 (moderate)	56	1.463%	**0.993%**[*]	**0.768**[**]	0.084	**-0.220**[**]	0.385	0.044	**23.315**[**]
4 (high)	64	2.450%	**1.595%**[**]	**0.572**[**]	-0.006	**-0.254**[**]	0.342	0.039	**19.499**[**]

** Significant at the 1% level   * Significant at the 5% level
Degrees of freedom: 3; 104
The quality of fit of all models was significant.
The following regression equation was estimated based on monthly data (t) for each of the four CG portfolios (p) (Fama & French, 1992):

$$\left(R_{pt} - R_{ft}\right) = \alpha_p + \beta_{p1}\left(R_{mt} - R_{ft}\right) + \beta_{p2}\mathrm{SMB} + \beta_{p3}\mathrm{HML} + \epsilon_p$$

where:
R_{mt} is the monthly return on the J203

Perusal of Table 7.30 reveals that Portfolio CG 4 once again had the highest significant alpha. The reported alphas were also larger than those shown in Table 7.29. The risk-adjusted

abnormal returns yielded above the J203 thus seemed to be higher than those yielded above the equally-weighted index. This comment is in line with the observation that the reported alphas were higher in Table 7.28 (when the J203 was used as the market proxy) than in Table 7.27 for the CAPM-based regression analyses.

As seen in Table 7.30, only one $beta_2$ estimate was significant. In contrast, all $beta_2$ estimates reported in Table 7.29 were significant. When the J203 was used as a proxy for the market return, it thus seemed as if the size of the firms had a less significant effect on the regression results. A possible reason for this observation is that, since the J203 is weighted according to market capitalisation, companies' sizes were already accounted for (Ward & Muller, 2012).

Lee and Yeh (2004) suggested that firms with low corporate governance compliance are likely to be affected more during economic downturns than their counterparts with high compliance. As explained in Section 7.4, May 2008 was identified as the month during which the global financial crisis started to show a substantial impact on the South African share market. Hence, the trends in the alphas up to May 2008 (denoted as 'before May 2008') and from May 2008 until the end of the study period (denoted as 'after May 2008') were examined.

7.5.3   Regression analyses conducted for the periods before and after May 2008

In line with the CAPM and Fama–French three-factor regression analyses reported in the previous two sections, the monthly equally-weighted portfolio return and the monthly return on the J203 were respectively used as a proxy for the market return. Table 7.31 provides the pre-May 2008 CAPM-based regression results, whereas Table 7.32 indicates the post-May 2008 regression results.

Table 7.31:   Results of the four CG portfolios (CAPM; before May 2008)

Market proxy: monthly equally-weighted portfolio returns							
CG portfolio	Mean CGS	Mean TSR	Estimate of α	Estimate of β	R-squared	Standard error	F-value
1 (very low)	31	5.560%	**1.363%**[**]	**0.900**[**]	0.569	0.036	**99.028**[**]
2 (low to average)	46	0.390%	-0.983%	**1.234**[**]	0.608	0.046	**116.482**[**]
3 (moderate)	54	1.625%	-0.495%	**0.973**[**]	0.616	0.035	**120.135**[**]
4 (high)	62	2.731%	0.080%	**0.895**[**]	0.734	0.025	**207.181**[**]
Market proxy: monthly returns on the FTSE/JSE All Share Index							
CG portfolio	Mean CGS	Mean TSR	Estimate of α	Estimate of β	R-squared	Standard error	F-value
1 (very low)	31	5.560%	**2.528%**[**]	**0.563**[**]	0.162	0.050	**14.531**[**]
2 (low to average)	46	0.390%	0.874%	**0.457**[*]	0.061	0.071	**4.863**[*]
3 (moderate)	54	1.625%	0.634%	**0.763**[**]	0.276	0.049	**28.649**[**]
4 (high)	62	2.731%	**1.166%**[*]	**0.644**[**]	0.278	0.041	**28.884**[**]

** Significant at the 1% level   * Significant at the 5% level

Degrees of freedom: 1; 75

The quality of fit of all models was significant.

The following regression equation was estimated based on monthly data (t) for each of the four CG portfolios (p) (Lee et al., 2009):

$$\left(R_{pt} - R_{ft}\right) = \alpha_p + \beta_p \left(R_{mt} - R_{ft}\right) + \epsilon_p$$

t = months 1–77

Table 7.32:   Results of the four CG portfolios (CAPM; after May 2008)

Market proxy: equally-weighted monthly portfolio returns							
CG portfolio	Mean CGS	Mean TSR	Estimate of α	Estimate of β	R-squared	Standard error	F-value
1 (very low)	44	0.194%	-0.457%	**0.789**[**]	0.741	0.022	**85.732**[**]
2 (low to average)	57	-0.918%	-0.627%	**1.303**[**]	0.601	0.050	**45.223**[**]
3 (moderate)	63	0.881%	0.245%	**1.043**[**]	0.809	0.024	**127.193**[**]
4 (high)	68	1.575%	1.000%	**0.886**[**]	0.673	0.029	**61.679**[**]
Market proxy: monthly returns on the FTSE/JSE All Share Index							
CG portfolio	Mean CGS	Mean TSR	Estimate of α	Estimate of β	R-squared	Standard error	F-value
1 (very low)	44	0.194%	-0.314%	**0.500**[**]	0.404	0.033	**20.376**[**]
2 (low to average)	57	-0.918%	-0.600%	0.412	0.082	0.076	2.673
3 (moderate)	63	0.881%	0.468%	**0.726**[**]	0.533	0.037	**34.303**[**]
4 (high)	68	1.575%	1.119%	**0.480**[**]	0.268	0.044	**10.995**[**]

** Significant at the 1% level   * Significant at the 5% level

Degrees of freedom: 1; 30

The quality of fit of all models was significant, except for the regression analysis conducted for portfolio CG 2 (J203 data were used).

The following regression equation was estimated based on monthly data (t) for each of the four CG portfolios (p) (Lee et al., 2009):

$$\left(R_{pt} - R_{ft}\right) = \alpha_p + \beta_p \left(R_{mt} - R_{ft}\right) + \epsilon_p$$

t = months 77–108

As expected, the mean CGSs of the four CG portfolios differed for the periods before (Table 7.31) and after May 2008 (Table 7.32). The mean TSR of portfolio CG 1 (comprising firms with the lowest CGSs) was higher than the mean TSR of portfolio CG 4 (compiled of the firms with the highest CGSs) in the period before May 2008. However, after May 2008, the opposite situation occurred. During and after the crisis, investors seemed to have benefitted in market-based terms if they had invested in the sample firms with high corporate governance compliance.

An important difference was observed regarding the risk-adjusted abnormal returns reported in Tables 7.31 and 7.32. Portfolio CG 1 reported the highest significant alpha before the crisis started, irrespective of the market proxy. (The reported alphas were, however, higher when the J203 was employed). Although none of the alphas reported in Table 7.32 were statistically significant, the signs were of economic significance. In the period after May 2008, portfolio CG 1 had a negative alpha, while portfolio CG 4 now reported a positive alpha (for both market proxies).

A probable reason for this encouraging turn of events is that corporate governance was perhaps not important to investors before the start of the financial crisis. However, once the crisis had commenced, the sound corporate governance compliance of the firms included in portfolio CG 4 possibly helped them to "weather the financial storm better" (as predicted in the literature). Their counterparts with the lowest CGSs (portfolio CG 1) reported negative alphas. During the crisis period, the corporate governance "under-performers" hence seemed to also under-perform in risk-adjusted terms.

The Fama–French three-factor model was also employed to conduct regression analyses on the pre- and post-May 2008 data, as reported in Tables 7.33 and 7.34.

Table 7.33:   Results of the four CG portfolios (Fama–French three-factor model; before May 2008)

Market proxy: monthly equally-weighted portfolio returns									
CG portfolio	**Mean CGS**	**Mean TSR**	**Estimate of α**	**Estimate of β_1**	**Estimate of β_2**	**Estimate of β_3**	**Adjusted R-squared**	**Standard error**	***F*-value**
1 (very low)	31	5.560%	-0.388%	**0.962**[**]	**-0.208**[**]	**0.577**[**]	0.840	0.022	**133.765**[**]
2 (low to average)	46	0.390%	-0.148%	**1.080**[**]	**0.454**[**]	-0.137	0.774	0.034	**87.768**[**]
3 (moderate)	54	1.625%	0.178%	**1.003**[**]	-0.073	**-0.281**[**]	0.686	0.032	**56.346**[**]
4 (high)	62	2.731%	0.409%	**0.962**[**]	**-0.187**[**]	**-0.196**[**]	0.877	0.017	**181.896**[**]
Market proxy: monthly returns on the FTSE/JSE All Share Index									
CG portfolio	**Mean CGS**	**Mean TSR**	**Estimate of α**	**Estimate of β_1**	**Estimate of β_2**	**Estimate of β_3**	**Adjusted R-squared**	**Standard error**	***F*-value**
1 (very low)	31	5.560%	0.820%	**0.662**[**]	-0.039	**0.597**[**]	0.427	0.041	**19.910**[**]
2 (low to average)	46	0.390%	1.421%	**0.545**[**]	**0.636**[**]	-0.133	0.401	0.056	**17.989**[**]
3 (moderate)	54	1.625%	**1.390%**[*]	**0.736**[**]	0.105	**-0.256**[*]	0.301	0.048	**11.930**[**]
4 (high)	62	2.731%	**1.676%**[**]	**0.608**[**]	-0.020	-0.181	0.290	0.040	**11.347**[**]

** Significant at the 1% level   ** Significant at the 5% level

Degrees of freedom: 3; 73

The quality of fit of all models was significant.

The following regression equation was estimated based on monthly data (*t*) for each of the four CG portfolios (*p*) (Fama & French, 1992):

$$\left(R_{pt} - R_{ft} \right) = \alpha_p + \beta_{p1} \left(R_{mt} - R_{ft} \right) + \beta_{p2} SMB + \beta_{p3} HML + \epsilon_p$$

where *t* = months 1–77

Table 7.34:   Results of the four CG portfolios (Fama–French three-factor model; after May 2008)

Market proxy: equally-weighted monthly portfolio returns									
CG portfolio	Mean CGS	Mean TSR	Estimate of α	Estimate of β_1	Estimate of β_2	Estimate of β_3	Adjusted R-squared	Standard error	F-value
1 (very low)	44	0.194%	-0.003%	0.880**	-0.261**	0.354**	0.876	0.015	73.910**
2 (low to average)	57	-0.918%	0.112%	1.142**	0.759**	0.016	0.907	0.024	101.615**
3 (moderate)	63	0.881%	0.011%	1.117**	-0.329**	0.037	0.915	0.016	112.768**
4 (high)	68	1.575%	-0.070%	0.870**	-0.143**	-0.475**	0.927	0.014	133.174**
Market proxy: monthly returns on the FTSE/JSE All Share Index									
CG portfolio	Mean CGS	Mean TSR	Estimate of α	Estimate of β_1	Estimate of β_2	Estimate of β_3	Adjusted R-squared	Standard error	F-value
1 (very low)	44	0.194%	-0.071%	0.508**	0.034	0.105	0.361	0.034	6.837**
2 (low to average)	57	-0.918%	0.026%	0.665**	1.143**	-0.308	0.652	0.046	20.398**
3 (moderate)	63	0.881%	-0.027%	0.740**	0.068	-0.290	0.537	0.037	12.988**
4 (high)	68	1.575%	-0.133%	0.512**	0.151	-0.722**	0.576	0.033	15.040**

** Significant at the 1% level   * Significant at the 5% level
Degrees of freedom: 3; 28
The quality of fit of all models was significant.
The following regression equation was estimated based on monthly data (*t*) for each of the four CG portfolios (*p*) (Fama & French, 1992):

$$\left(R_{pt} - R_{ft}\right) = \alpha_p + \beta_{p1}\left(R_{mt} - R_{ft}\right) + \beta_{p2}\text{SMB} + \beta_{p3}\text{HML} + \epsilon_p$$

where *t* = months 77–108

As indicated in Table 7.33, when the equally-weighted index was employed, portfolio CG 4 had a positive alpha, albeit not significant, while portfolio CG 1 had a not significant negative alpha. In addition, portfolio CG 4 had a significant positive alpha in the before May 2008 period when the J203 was used. Investors who had invested in the firms with the highest CGSs (portfolio CG 4) would hence have earned positive risk-adjusted abnormal returns during the before May 2008 period.

With regard to the betas reported in Table 7.33, the negative value/growth betas that were indicated for the majority of the portfolios could be an indication that growth shares outperformed value shares over the period January 2002 to May 2008.

It is of economic significance that the risk-adjusted abnormal returns of the sample firms with the lowest and highest CGSs (portfolios CG 1 and CG 4 respectively) were both negative during the after May 2008 period, as reported in Table 7.34. The global financial crisis hence seemed to have had a negative impact on the risk-adjusted financial performance of the sample firms.

In the broader ESG context, the EDHEC-Risk Institute (Amenc & Le Sourd, 2010) evaluated the performance of RI investments over the period 2002–2009. They also applied the Fama–French three-factor model and mostly reported statistically not significant negative alphas. These authors also (partly) ascribed the negative results to the impact of the 2007–2009 global financial crisis period.

When the results of the regression analyses conducted on CGS and TSR (Section 7.3) as well as the reported risk-adjusted abnormal returns (Sections 7.5) were examined, contrasting outcomes were noted. A comparison of the results for these two market-based measures is provided in Section 7.6.

7.6   Comparison of the regression analyses results for CGS and the market-based performance measures

The panel regression analysis conducted on CGS and TSR for the complete sample revealed a negative relationship between these two variables. This negative association prevailed, irrespective of whether TSR was entered as the dependent or independent variable in the preferred regression model. In addition, when TSR and CGS respectively were lagged, a negative association was still observed.

Although the negative TSR and CGS regression coefficients were significant, low R-squared values were reported. The majority of the variance in the share returns was thus explained by other factors, including the 2007–2009 global financial crisis. It should also be noted that the relatively unsophisticated TSR measure is not adjusted for risk. Risk-adjusted abnormal returns were hence estimated. A summary of the resultant alphas reported in Sections 7.5.1–7.5.3 for portfolios CG 1 and CG 4 is provided in Table 7.35.

Table 7.35: **Summary of the alphas reported for portfolios CG 1 (firms with the lowest CGSs) and CG 4 (firms with the highest CGSs)**

Portfolio[a]	Entire study period (2002−2010)		Before May 2008		After May 2008	
	CAPM					
	Panel A		Panel B		Panel C	
	Equally weighted index	J203	Equally weighted index	J203	Equally weighted index	J203
CG 1	Positive; significant	Positive; significant	Positive; significant	Positive; significant	Negative; not significant	Negative; not significant
CG 4	Positive; not significant	**Positive; significant**	Positive; not significant	**Positive; significant**	Positive; not significant	Positive; not significant
Portfolio[a]	Fama−French three-factor model					
	Panel D		Panel E		Panel F	
	Equally weighted index	J203	Equally weighted index	J203	Equally weighted index	J203
CG 1	Negative; not significant	Positive; significant	Negative; not significant	Positive; not significant	Negative; not significant	Negative; not significant
CG 4	**Positive; significant**	**Positive; significant**	Positive; not significant	**Positive; significant**	Negative; not significant	Negative; not significant

a) The quality of fit of all models was significant.

As seen in Panel A of Table 7.35, investors who invested in portfolio CG 4 (consisting of the firms with the highest CGSs) received positive abnormal returns when the CAPM was applied. The alpha of this portfolio was, however, only significant when the J203 was employed as the market proxy.

When the Fama−French three-factor regression model was applied, portfolio CG 4 had a statistically significant positive alpha (Panel D), irrespective of the considered market proxy. These results are in contrast to the negative relationship reported between CGS and the non-risk-adjusted TSR measure for the complete sample. Investors could thus have earned positive risk-adjusted abnormal returns if they invested in the sample firms with the highest CGSs over the research period.

With regard to the before May 2008 CAPM regression analyses (Panel B), a significant, positive alpha was reported for portfolio CG 4 when the J203 was employed. A positive, but not significant alpha was noted when the equally-weighted index was considered. As seen in Panel C, portfolio CG 1 had a negative alpha and portfolio CG 4 a positive alpha, irrespective of the considered market proxy in the after May 2008 period. None of the results reported in Panel C were, however, significant.

When the Fama–French three-factor regression model was employed, portfolio CG 4 had a positive alpha in the before May 2008 period (Panel E). The risk-adjusted abnormal return was, however, only significant when the J203 was used as the market proxy. The results of the Fama–French three-factor regression model (Panels D and E) hence show that investors could have benefitted, in risk-adjusted terms, if they had invested in the firms included in portfolio CG 4, both over the entire study period and before May 2008.

No significant alphas were reported for the after May 2008 period (Panel F) when the Fama–French three-factor model was used. The negative alphas of both portfolios CG 1 and CG 4 probably showed that the 2007–2009 global financial crisis had a negative effect on the financial performance of (almost) all the sample firms.

The researcher realises that other factors (besides corporate governance compliance) could have influenced the reported risk-adjusted abnormal returns of the four portfolios. Hence, it is difficult to isolate the possible contribution of corporate governance compliance. In practice, it is also challenging to assess whether the implementation of corporate governance guidelines is truly a sign of sound corporate governance compliance, or merely window-dressing (Kouwenberg & Phunnarungsi, 2013). Although there could be other factors that had an influence on the alphas, the results still suggest that investors could benefit, in risk-adjusted market-based terms, by investing in firms with the highest corporate governance compliance.

7.7   Summary and conclusions

In Table 7.36, this study's research questions and hypotheses are linked to the most important outcomes of the statistical analyses.

Table 7.36:   Summary of the most important outcomes of the statistical analyses

Hypotheses	Outcome
H_{01}: There is no relationship between corporate governance and the accounting-based performance of JSE-listed companies.	Reject H_{01} A significant positive relationship was observed between CGS and EPS, irrespective of whether CGS was considered to be the dependent or independent variable. This positive relationship could, however, be influenced by the actions of the sample companies' managers, as managers typically have direct control over both corporate governance compliance and EPS. No significant relationships were reported between CGS and the ROA and ROE profitability ratios respectively.
H_{02}: There is no relationship between corporate governance and the market-based performance of JSE-listed companies.	Reject H_{02} A significant negative association was found between CGS and TSR. This relationship prevailed when CGS was entered as the dependent variable (rather than the independent variable) in the preferred regression model. The TSR measure is, however, not risk-adjusted. In contrast, positive risk-adjusted abnormal returns were reported for the firms with the highest CGSs (portfolio CG 4). These encouraging risk-adjusted market-based results were observed for the regression analyses based on both the CAPM and Fama-French three-factor models over the entire study period.

Research questions	Outcome
How important was sound corporate governance compliance for the sample firms?	The CGSs of the sample firms ranged from high (CGS above 75%) to very low (CGS equal to or below 25%). It hence seems as if corporate governance compliance was not equally important to all the firms. In addition, based on the content analysis, some well-known listed firms and delisted firms appeared to regard compliance with the King guidelines as a mere "tick-box exercise" which does not per se enhance corporate governance compliance in practice. Although the annual mean CGSs increased over time, the overall level of compliance was 67.568 per cent. In general, the corporate governance compliance of JSE-listed firms could (and should) thus still improve. Recommendations to train and educate directors (amongst others) to improve the corporate governance compliance of JSE-listed firms are provided in Section 8.5.
What was the corporate governance compliance trend in the sample of JSE-listed companies over the research period?	A statistically significant increasing compliance trend was observed over the study period. In addition, the Fisher's LSD test showed that all but one of the annual increases in the mean CGSs were statistically significant.
What was the trend in the disclosure and acceptability dimensions of the CGSs over the research period?	The contribution of the acceptability dimension to the annual mean CGSs increased over time. This is an encouraging sign, since the sample firms did not only improve their corporate governance disclosure, but also complied in a more acceptable manner with the King II guidelines at the end of the study period. If investors realise that, over time, the sample firms complied in a more acceptable manner with the corporate governance guidelines, instead of merely "ticking off" their disclosure (or the lack thereof) with the King guidelines, their perceptions with regard to corporate governance compliance could become more positive in future. This is of importance, since firms have to attract capital from an increasingly discerning group of investors.

Research questions	Outcome
Are there differences between the corporate governance compliance of JSE-listed companies and that of delisted companies?	A statistically significant difference was observed between the mean CGSs of listed companies and those of delisted companies. The JSE Listing Requirements (JSE, 2005) oblige listed firms to comply with the King II guidelines or explain non-compliance. It was hence expected that firms that remained listed would have better compliance than their counterparts that delisted. However, it should be noted that not all firms necessarily delist due to a lack of corporate governance compliance. In 2009, three delisted firms had high CGSs (above 75%). Two of these firms delisted after they were combined with other companies by means of a merger and takeover. The third company delisted since the market sentiment towards small JSE-listed firms was not regarded as favourable, specifically in the aftermath of the 2007−2009 global financial crisis.
Are there differences between the corporate governance compliance of companies listed in different JSE industries?	It is promising to note that the corporate governance compliance of all six considered JSE-industries improved over time. The Health Care and Telecommunications industries had the highest corporate governance compliance. Both of these industries are heavily regulated and consisted of only a small number of firms (nine Health Care and five Telecommunications firms). Competition to comply with the King guidelines could possibly be severer in these two industries than in the other four industries.
Was the relationship between corporate governance and financial performance noticeable immediately (in the given year) or only after a period of time?	Firms with high CGSs had a positive association with EPS, both in the given year and one year later. On the other hand, a negative relationship was reported between CGS and TSR in the given year as well as for the lagged variables. The relationships between CGS and EPS and TSR respectively were thus immediately noticeable (and did not change when the variables were lagged).
Was there an association between the corporate governance compliance of the top CGS firms in the sample and their risk-adjusted financial performance?	Both the CAPM and the Fama−French three-factor regression models indicated significant positive alphas for portfolio CG 4 (consisting of the firms with the highest CGSs) when the J203 was used as the market proxy. These encouraging results were observed over the entire study period and for the period before May 2008.
Does 2008, the midpoint of the 2007−2009 global financial crisis, represent a structural break in the financial dataset?	The significant Chow test results showed that 2008 indeed represented a structural break in the financial dataset (specifically with regard to ROE and TSR).
What was the effect of the 2007−2009 global financial crisis on the financial performance of JSE-listed companies included in the sample?	Based on the descriptive statistics, it seemed as if the 2007−2009 global financial crisis had a negative effect on the EPS, ROA, ROE and TSR performance variables. Negative TSR values were noted in 2008, the midst of the crisis period. In addition, when the Fama−French three-factor model was applied, negative (not significant) alphas were reported for both portfolio CG 1 (consisting of the firms with the lowest CGSs) and portfolio CG 4 (compiled out of the firms with the highest CGSs) for the period after May 2008. These results possibly reflected the negative effect of the crisis on the market-based performance of the sample firms.

In summary, a positive association was noted between EPS and CGS in this study. Despite the observed negative association between TSR and CGS, positive risk-adjusted abnormal returns were reported for the portfolio consisting of the firms with the highest CGSs over the entire study period. In addition to deriving long-term value from their investments, responsible investors also aim to drive improvements in investee companies' corporate governance (and social and environmental) practices (Krosinsky, Robins & Viederman, 2012; US SIF, 2014).

Such investors typically "put their money where their morals are" (Fehrenbacher, 2001), by deriving both financial and non-financial utility from their investments. If there are enough responsible investors, they might affect share pricing, irrespective of whether investments in firms with high corporate governance compliance are financially (more) beneficial in comparison to mainstream investments (Fehrenbacher, 2001; Manescu, 2010b).

During the research period, there was a lack of ESG information that investors could use when evaluating JSE-listed firms. The researcher is of the opinion that shareholder activism in South Africa could increase in future if ESG reporting improves, if more measuring instruments are developed and if more reliable ESG data are made publicly available (at a reasonable cost). An extensive discussion on the study's findings will be provided in the final chapter. Conclusions will also be reported and recommendations made for future research, based on the identified limitations.

CHAPTER 8

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

8.1   Introduction

Corporate governance initially gained attention in South Africa with the publication of the first King Report in 1994. The boards and managers of JSE-listed firms were guided by this report and the subsequent King Reports to commence with and improve their corporate governance compliance. The King guidelines, however, received criticism for encouraging a tick-box compliance mentality (Heath, 2014; Morar Incorporated, 2014). Furthermore, some corporate governance compliance initiatives require a considerable amount of time and money. High compliance costs might prevent firms from effectively implementing the King guidelines. Such costs could also have an influence on investors' perceptions of corporate governance. Investors could perceive corporate governance as an "unnecessary expense" that reduces their investee firms' ability to pursue profitable opportunities.

Most investors are mainly interested in whether or not they can make money from a specific investment. Some investors also take non-financial factors, such as corporate governance compliance, into account when analysing investment opportunities and exercising their ownership rights (Micharikopoulos & Danalis, 2010; Roy & Gitman, 2012). Such responsible investors are not merely concerned about an investment's potential risk and return; they aim to "do well by doing good" (Laszlo, 2008: 22). In line with this motto, responsible investors typically employ their money to drive ESG-related changes in investee companies.

The question could accordingly be asked whether attention to ESG, and specifically corporate governance aspects, poses a threat to financial success, or whether non-financial aspects offer valuable opportunities for investors. Previous researchers reported inconclusive evidence on the relationship between corporate governance and financial performance (see Section 3.4 for more details). The question remains whether investors could be rewarded, after taking risk and return into account, from investing in firms with high levels of corporate governance

compliance. In the current study, the relationship between corporate governance and financial performance was examined in the South African context.

The remainder of this chapter comprises six sections. The first section provides a brief overview of the study, followed by the main findings from the literature review and empirical investigation. In the fourth section, recommendations for various stakeholders are discussed, followed by the limitations of the research, and recommendations for future research. Finally, some concluding remarks are provided.

8.2   Overview of the study

In this section, the purpose of the research, the objectives that were formulated and the methodology that was used are briefly summarised.

8.2.1   Purpose of the research

If it could be established that there is a positive relationship between corporate governance and financial performance in the South African context, investors might be more likely to invest in firms with high corporate governance compliance. Two potential benefits associated with increased investor interest are that both the cost of capital and the need for legislation might be reduced. If more investors become interested in firms with sound corporate governance compliance, the demand for such firms' shares might increase. If their share prices increase as a result of the increasing demand, their cost of capital might decrease, *ceteris paribus* (Soh, 2011).

The enforcement of regulated corporate governance compliance in future could lead to higher compliance costs than what is currently the case. If companies realise that high corporate governance compliance is associated with high financial performance, they might have a material motive to comply with the voluntary King guidelines. As a result, enforcing corporate governance legislation might not be necessary in future.

To make informed investment decisions, investors in general and responsible investors in particular need information regarding companies' ESG practices. When this study commenced in 2010, there was a lack of publicly available, standardised ESG information for JSE-listed firms. Given the comprehensive South African corporate governance framework provided by the King Reports, the G-component of ESG (namely corporate governance) was

examined in the current study. The corporate governance compliance of the sample firms had to be measured. For this purpose, an existing research instrument was refined and used to gather comparable corporate governance data. The financial performance of the firms was evaluated by employing accounting-based and market-based measures favoured by previous corporate governance researchers as well as shareholders and managers.

The current study was undertaken to investigate the relationship between corporate governance and the financial performance of selected JSE industries for the period 2002–2010. This period coincided with the publication of the King II Report in 2002 and included the 2007–2009 global financial crisis. This study hence contributed to an improvement in the paucity of research on corporate governance and financial performance in the emerging market context.

8.2.2   Research objectives

In line with the problem statement, the primary research objective was to investigate the relationship between corporate governance and the financial performance of selected JSE industries. To give effect to the primary objective, the following secondary research objectives were formulated:

- to conduct a thorough review of the literature on corporate governance, financial performance and financial crises;

- to select the most appropriate research design and methodology for this study based on the primary research objective;

- to formulate research hypotheses;

- to refine the PIC Corporate Governance Rating Matrix to compile annual CGSs for each of the companies in the sample by means of content analysis;

- to collect and analyse secondary data for this study; and

- to provide pertinent conclusions and recommendations based on the literature review and empirical findings.

8.2.3   Research design and methodology

As explained in Section 5.2, a nine-step research approach was followed. The current study was quantitative in nature. A combination of judgement and convenience sampling was used to gather the required data. The researcher used her judgement to draw a sample from six of the ten JSE industries. Firms that were listed in the Oil and Gas, Basic Materials and Financials industries were excluded from the sample. The reasons for the exclusion were that the format of the annual statements and the nature of the activities of these firms differed from those of the considered firms. The Financials industry is also more regulated than the considered industries. During the study period, no firms were listed in the Utilities industry. Listed firms and firms that delisted during the period under review were included in the sample to avoid survivorship bias. The complete sample consisted of 1 417 annual CGS observations for 227 firms.

The required corporate governance data were not readily available. The researcher had to compile annual CGSs for each of the sample firms by means of content analysis of their annual reports. A refined research instrument, based on the recommendations of the King II Report and the PIC (2011) was used. See Chapter 4 for a detailed discussion of this instrument, which comprised nine categories and 39 factors. Due care was taken whilst compiling the CGSs, considering both reliability and validity aspects. To the best of the researcher's knowledge, she completed the most comprehensive South African corporate governance database for an academic study to date.

The ROA, ROE and EPS accounting-based ratios and two market-based measures, namely TSR and risk-adjusted abnormal return were used as proxies for the financial performance of the sample firms. The financial data were sourced from McGregor BFA (2013) and the BER (2013). See Sections 5.9.4–5.9.5 for a detailed discussion of these financial performance variables.

The secondary data were analysed by means of both descriptive and inferential statistics. Descriptive statistics, such as the mean, median and standard deviation, were employed to describe the dataset. A mixed-model ANOVA was used to determine whether the observed differences between the annual mean CGSs for the complete sample and for the two data sub-sets (listed and delisted firms) were significant. Simple and multiple panel regression models (fixed effects, random effects and pooled OLS) were used to examine the relationship

between CGS and EPS, ROA, ROE and TSR respectively. Where applicable, adjustments were made for heteroskedasticity. Panel regression analyses were firstly conducted on the complete sample, followed by analyses on the two data sub-sets. Thereafter, one-year lag periods were built into the preferred regression models. This was done to determine whether the relationship between CGS and financial performance was perhaps not observed immediately, but only after a period of time.

The TSR measure is not adjusted for risk. Risk-adjusted abnormal returns (alphas) were hence also considered as a market-based performance measure. Both the CAPM and Fama–French three-factor model were employed to estimate alphas for four corporate governance-sorted portfolios. The FTSE/JSE ALSI (J203) revealed that a substantial decrease in JSE-listed firms' share prices started during May 2008 as a result of the global financial crisis. The study period was hence divided into two sub-periods, namely the period before May 2008 and the period after May 2008. Alphas were also estimated for the four corporate governance portfolios for these two sub-periods. Specific attention was paid to whether the portfolio consisting of firms with the highest CGSs had positive alphas over the entire study period and for the two sub-periods.

8.3   Main findings from the literature review

Three main constructs were considered in this study, namely corporate governance, financial performance and the 2007–2009 global financial crisis.

8.3.1   Corporate governance, financial performance and the 2007–2009 global financial crisis

Corporate governance is positioned in the field of RI. Mainstream and responsible investors should realise that, by owning a security and earning a return on it, they implicitly approve the actions of the investee firm's managers. The approval of inappropriate actions in this capacity is, in effect, immoral (Larmer, 1997). As mentioned earlier, a growing number of investors are beginning to consider ESG aspects when making investment decisions and exercising their ownership rights. Corporate governance is often the first level of ESG engagement for investors (World Federation of Exchanges, 2010: 2).

An important objective of sound corporate governance is to ensure that financiers, such as shareholders, receive a sustainable return on their investment (Jostarndt, 2007; Shleifer & Vishny, 1997). Previous studies (conducted by, amongst others, Babatunde & Olaniran, 2009; Klapper & Love, 2004; Ramdani & Van Witteloostuijn, 2010; Sanda et al., 2005; Velnampy, 2013) considered whether there are financial benefits associated with corporate governance compliance. These studies yielded inconclusive evidence on the relationship between corporate governance and various financial performance measures.

Most of the above-mentioned studies were conducted in developed countries. South Africa has a well-developed corporate governance framework to aid corporate governance research in the emerging market context. Former African researchers (see Ehikioya, 2009; Kajola, 2008; Sanda et al., 2005) mainly focused on board-specific variables when conducting corporate governance research. In contrast, the researcher used a comprehensive corporate governance research instrument to compile CGSs for each of the considered JSE-listed firms over the period 2002–2010.

The study period was marked by sound economic growth during the early 2000s, followed by a financial crisis period that started in 2007. Previous researchers found that sound corporate governance mechanisms mitigated the negative effects of a crisis (Chang et al., 1998; Moody-Stewart, 2009). Unfortunately, inefficient corporate governance compliance was cited as one of the factors contributing to the 2007–2009 global financial crisis (Kirkpatrick, 2009). This crisis had a negative influence on the share performance of firms globally, including South Africa (Madubeko, 2010). The impact of the 2007–2009 crisis period on the considered relationship between corporate governance and financial performance could hence not be ignored.

8.3.2 The South African regulatory environment

The JSE Listing Requirements (JSE, 2005; 2012) oblige listed firms to disclose their compliance (or explain non-compliance) with the voluntary King guidelines in their annual reports. Not all stakeholders are, however, satisfied with the King Reports' voluntary compliance approach. Theo Botha, a prominent South African shareholder activist, claimed in 2009 that the (then newly released) King III Report is "too much carrot [voluntary principles] and not enough stick [legislation]" (Carte, 2009).

The South African regulatory environment has, in fact, changed rapidly since the publication of the King III Report. For example, Regulation 28 of the Pensions Fund Act (Act No. 24 of 1956) was amended in 2011 to promote the inclusion of ESG considerations in pension funds' investment analysis and ownership practices (Compliance Institute of South Africa, 2011). In the same year, the CRISA was introduced to provide institutional investors with guidance to give effect to the recommendations of the King III Report, as well as the UN PRI principles (IoDSA, 2011). As the South African regulatory environment is evolving rapidly, JSE-listed firms have to continue to adapt accordingly to survive and prosper.

8.4   Main findings from the empirical investigation

In this section, the main empirical findings of the study are summarised.

8.4.1   Corporate governance compliance of the complete sample

In 2002, the mean CGS was 39 (out of a maximum score of 74). By 2010, the mean CGS was 59. The sample firms' compliance with the King II guidelines thus improved substantially over time. A possible reason for this trend could be attributed to the JSE that enforced compliance, and the explanation of non-compliance with the King II guidelines through its 2005 listing requirements. It should be noted that some sample companies might have employed corporate governance initiatives that were not specifically recommended by the King II Report or the PIC (2011). Compliance initiatives that did not form part of the discussed corporate governance categories were not scored.

An encouraging result was that the disclosure and acceptability dimensions of the CGS more equally contributed to the mean score by 2010 than in 2002. Over time, the sample companies thus improved both their disclosure of corporate governance practices and the acceptability thereof. It is possible that some sample firms already had moderate corporate governance compliance at the beginning of the study period. Over time, these firms' corporate role players could have learned how to disclose compliance practices properly in their annual reports. As a result, such firms could have received higher CGSs towards 2010. The actual corporate governance practices of such firms did not necessarily improve, but their disclosure did. Although the average CGSs and the disclosure and acceptability dimensions improved over the study period, the sample firms, on average, only complied with approximately 68 per cent of the corporate governance criteria for the overall period.

Firms that operated in the smaller, more regulated industries, namely Health Care and Telecommunications, seemed to have higher overall average compliance than firms listed in the large industries. Competition to comply with the King guidelines to attract investor attention might possibly be fiercer in small industries than in large industries. The mean CGSs of all six industries revealed an increasing trend. Consumer Goods and Industrials firms, however, had large persisting differences between their maximum and minimum CGSs. Some of the firms operating in these two industries showed a disconcerting lack of compliance at the end of the study period.

8.4.2   Corporate governance compliance of the two data sub-sets

Previous researchers (such as Chiraz & Anis, 2013: 125; Serve et al., 2012) found that delisted firms generally had weaker and less effective corporate governance mechanisms compared to listed firms. In line with this finding, in the current study, the sub-set of listed firms had higher mean CGSs for the largest part of the study period than their delisted counterparts. Some companies that remained listed perhaps had sufficient financial resources available to fund costly corporate governance initiatives, resulting in high average CGSs. On the other hand, some firms' efficient corporate governance compliance could have resulted in improved financial performance. As a result, such firms "survived" and remained listed.

Not all the sample firms were, however, interested in complying with the King guidelines. In the annual reports of some well-known listed and delisted firms, managers and directors questioned whether a "tick-box" compliance approach really aided corporate governance in practice. It was also questioned whether the standardised King guidelines are actually applicable to all firms. These are valid concerns.

It was evident from the content analysis that corporate governance was regarded by some listed and delisted companies as red tape that costs them "unnecessary" time and money. If compliance initiatives are too costly, firms might decide not to comply with some of the King guidelines. As a result, companies might even decide to delist from the JSE. If the market also perceives corporate governance compliance as unnecessarily costly, shareholders' perceptions with regard to high compliance firms could become negative. Such negative perceptions might have an adverse impact on TSRs.

8.4.3   Corporate governance compliance concerns

It was apparent that certain companies presented their compliance initiatives in a very favourable light (perhaps too favourable). Despite a recommendation by the King II Report that corporate decision-makers should be credible and responsible individuals, it seemed as if not all managers and board members behaved in a truly responsible manner. The apparent lack of integrity of some sample firms' directors and managers is disconcerting.

Since 2011, the legal liability of directors increased, mainly as a result of the requirements of the new Companies Act (Act No. 71 of 2008). Directors can now be held personally liable for losses incurred through knowingly carrying on the firm's operations recklessly or with the intent to defraud stakeholders (Levenstein, 2011; Marx, 2014). Corporate role players are thus forced to take responsibility for their actions. If an ethical business climate is cultivated, the need for more enforcing legislation might decrease in future.

Most NEDs and executives have a finance background, as indicated in their CVs that are published in the sample firms' annual reports. Such individuals often tend to measure corporate inputs and outputs only in monetary terms. However, the value of corporate governance compliance is difficult to measure. The author of the book *Common stocks and uncommon profits*, Philip Fisher (1996), claimed, "the share market is filled with individuals who know the price of everything, but the value of nothing". Being a financial management academic herself, the researcher can associate with some board members' and managers' observed initial lack of understanding and appreciation of the possible value that corporate governance compliance can add to a firm and its relevant stakeholders.

In line with Fisher's remark, the 2012 Investment Solutions survey (conducted for 28 local and 17 global investment managers) (Investment Solutions, 2012) revealed a lack of clarity and frustration amongst respondents on the practicality of implementing ESG initiatives. Furthermore, the readiness of investors to accept that an ESG focus requires a shift from a short-term to a long-term view was doubted. The question could accordingly be asked whether the insufficient corporate governance compliance of some sample firms should be ascribed to the managers' and directors' reluctance to allocate time and money to compliance initiatives, and/or to a lack of understanding and appreciation by investors.

Some managers, directors and shareholders seemed not to understand that, if sustainable corporate practices are put into place, they can "do well by doing good" (The Nielsen Company, 2014). Furthermore, some investors might not have recognised or appreciated the reduction in risk that is associated with sound corporate governance compliance.

The researcher believes that corporate governance (and environmental and social) compliance is of critical importance to the long-term sustainable performance of companies. Based on the findings of the current study, it is clear that investors and corporate decision-makers ought to reflect in more detail on the benefits of effective corporate governance compliance. Investors and corporate decision-makers should realise that the associated benefits are often not seen over the short term, but rather over a longer-term period.

8.4.4   A relationship or not: that is the question

The descriptive statistics showed that the mean EPS values were positive for all considered years. During the 2007–2009 global financial crisis, a slight decrease was observed in the mean EPS values. Irrespective of the crisis period, a positive relationship was observed between CGS and the accounting-based EPS measure, irrespective of whether CGS was considered the dependent or independent variable. When these variables were lagged, the positive relationship prevailed.

A potential explanation for the positive lagged association is that more profitable firms could plow back more earnings into projects, including corporate governance initiatives, in the following year than their less profitable counterparts. It should be noted that a firm's managers have some control over both EPS and the level of corporate governance compliance. The positive association between CGS and EPS could partly be ascribed to the actions of managers.

In contrast to the above-mentioned positive association, a negative relationship was reported between CGS and the market-based TSR measure. The negative relationship prevailed irrespective of whether TSR was entered as the dependent or independent variable in the preferred regression model. The relationship also remained negative despite the lagging of the CGS and TSR variables.

A surprising result was that no significant relationship was reported between CGS and TSR for the data sub-set of delisted firms. This result was in contrast to the significant negative

association reported between these two variables for the listed firms. The observed relationship between CGS and TSR was thus of more significance for listed firms than for delisted companies. Since the delisted companies provided such contrasting results compared to their listed counterparts, the exclusion of delisted firms could possibly expose the results of future corporate governance researchers to survivorship bias.

Four possible explanations were considered for the negative relationship between CGS and TSR for the complete sample. Firstly, as mentioned in Section 8.4.2, corporate governance compliance can be costly, both in terms of time and money allocated to compliance initiatives. The market could perceive such costs as "unnecessary expenses". Furthermore, certain sample firms probably employed window-dressing practices. Some shareholder activists are rather sceptical about the true nature of many JSE-listed firms' compliance practices. The combination of high compliance costs and perceived window-dressing activities might have affected the market's perception of corporate governance compliance.

Thirdly, investors often follow the proverbial herd. Behavioural finance theory suggests that investors can influence each other's perceptions, e.g. of a specific firm or industry's corporate governance compliance practices, in a positive or negative manner. Herding behaviour is especially apparent during crisis periods. During the 2007–2009 global financial crisis, some of the sample firms probably continued to spend money on corporate governance practices, despite the fact that their performance declined. If an increasing number of investors perceived high CGSs in a negative light, mainly due to the considerable amount of time and money allocated to compliance initiatives, others might have followed. The mean TSRs were negatively affected by the 2007–2009 global financial crisis, while the CGSs continued to improve despite the crisis. As a fourth reason, it could be difficult to infer whether the observed negative relationship was due to the market's negative reactions and a lack of appreciation for the firms' corporate governance initiatives, or rather due to changes in the CGS and TSR variables over the study period.

Erkens et al. (2012) reported results in line with the observation that the crisis possibly affected the association between TSR and CGS. These authors found that firms with more independent boards (a favourable corporate governance measure) sampled from 30 countries had significantly lower TSRs compared to other firms during this crisis period. They ascribed this result to the risk that firms with high institutional ownership took prior to the crisis

period. The firms' risk-taking behaviour possibly resulted in large shareholder losses during the crisis.

When interpreting the relationship between CGS and the considered financial performance measures, it should be noted that the TSR market-based measure is not adjusted for risk. Both the CAPM and Fama–French three-factor model were hence employed to estimate risk-adjusted abnormal share returns for four corporate governance-sorted portfolios.

In an encouraging change of events, the CAPM-based regression revealed significant positive alphas for portfolio CG 4 (compiled of the firms with the highest CGSs) over the entire study period, as well as for the period before May 2008 (when the J203 was employed as the market proxy). When the Fama–French three-factor model was used, portfolio CG 4 also had significant positive alphas for both the aforementioned periods. Drobetz et al. (2004) also applied the Fama–French three-factor model and found a positive relationship between the corporate governance compliance and firm valuation of a sample of German firms over the period January 1998–March 2002.

The CAPM-based regression analyses showed significant positive alphas for portfolio CG 1 (consisting of the firms with the lowest CGSs) for the period before May 2008. While the economy was doing well, investors who invested in portfolio CG 1 thus received positive risk-adjusted abnormal returns, despite the firms' lack of corporate governance compliance. This situation, however, changed during the period after May 2008. The CAPM regression analysis for the period after May 2008 showed that portfolio CG 1 had a not significant negative alpha. On the other hand, portfolio CG 4 (including firms with the highest compliance) had a positive, albeit not significant, alpha.

When the size and value/growth factors were taken into account, the Fama–French three-factor analyses showed negative not significant alphas for both portfolios CG 1 and CG 4 after May 2008. The risk-adjusted returns of almost all the sample firms were hence negatively affected during the crisis period.

In conclusion, both hypotheses (refer to Section 1.4.4) were rejected based on the empirical evidence.

8.5   Recommendations

Based on the main findings, a number of recommendations are now presented for various stakeholder groups, namely directors and managers, private sector training providers and consultants, educators, investors, the media, policymakers and lobby groups, the King Committee and the PIC as well as ESG data providers.

8.5.1 Recommendations for directors and managers

It was evident from the content analysis that the philosophy behind the King Reports was not yet "sold" to the board members and managers of all the sample firms. Inefficient corporate governance compliance practices were furthermore observed in some annual reports. The researcher is thus of the opinion that directors and managers could benefit from corporate governance training on the correct and most efficient application of the King guidelines in practice.

Although in-house training and development of directors increased over the research period, as reported in Table 6.8, approximately a quarter of the firms still had no board development programme by 2010. Furthermore, in cases where director development was offered, it was mostly offered to new and inexperienced directors. As the business environment is constantly changing, directors' behaviour should be evaluated regularly to assess their specific training needs. The researcher recommends that firms consider bi-annual training or when necessitated due to the publication of new corporate governance guidelines or legislation. Firms could also consider providing training for the entire directorate and not just for inexperienced members.

Some directors and managers are making a conscious effort to implement sustainable ESG-practices. These corporate role players realise that sound ESG compliance might enhance their firms' reputation (The Nielsen Company, 2014). On the other hand, inappropriate actions of managers and directors might damage a company's reputation (Sweeting, 2011: 109). If directors and managers are properly trained, they might be able to act more appropriately when faced with various challenges, including those in the corporate governance arena. Possible reputational damage might then be reduced.

8.5.2 Recommendations for private sector training providers and consultants

Training for directors and managers is offered by various private sector training providers and consultants in South Africa. The IoDSA (2014) offers a range of workshops to equip directors with the necessary skills to carry out their responsibilities effectively. The Ethics Institute of South Africa (2014b) provides ethics-related training to managers. Common topics included in their training sessions are ethical decision-making, whistle-blowing and the prevention of corruption. It is recommended that more ethics-related training be provided to directors and managers. The focus should be placed on cultivating a credible, ethical and accountable corporate culture. The leaders of a firm determine its ethical climate. If a director or a manager acts contrary to the firm's ethical values, his or her contract should not be renewed (or should even be terminated if the case warrants it).

Training activities should ideally be customised to suit the needs of a specific firm. Based on the compliance concerns highlighted in Chapter 6, the following training topics are suggested: the role of independent NEDs, the risks of over-boardedness and the nature of non-financial reporting. As mentioned in Section 4.3.4, the increasing wage gap in South Africa has been drawing the attention of various stakeholders, most notably employees and trade unions. The growing gap between the remuneration of executives and other employees can have serious negative consequences, as illustrated by the Marikana incident in 2012.

A firm's remuneration committee is supposed to give shareholders confidence in the outcomes of the executive emolument process. This committee's members should all be NEDs, of which more than 50 per cent should be independent. The committee's chair should also be an independent NED (IoDSA, 2002). In addition to their important role on the remuneration committee, NEDs are also supposed to monitor executive directors' actions and remove incompetent board members (Krantz, 2010). A lack of independent NEDs, both on boards and on committees, was unfortunately observed throughout the study period. The role and importance of independent NEDs could be highlighted during training sessions.

The second training need is related to over-boardedness. Many of the observed directors seemed very "busy". The problems associated with over-boardedness, such as schedule conflict and a lack of adequate involvement could hence be explained during training sessions.

The last training recommendation is related to integrated reporting. The sample firms obtained the lowest overall mean scores for the sustainability reporting category (see Table 6.7) relative to the other eight categories. This observation is disconcerting, especially in the light of the required publication of integrated reports since 2011. Managers hence need to be trained in terms of how to report properly on their firms' financial and on non-financial (ESG) considerations.

8.5.3   Recommendations for educators

Educators in commerce programmes mainly teach students core financial concepts. Unfortunately, very little attention is currently given to non-financial ESG considerations in mainstream financial and investment management modules, both at undergraduate and post-graduate level. Commerce students thus typically lack knowledge and an understanding of ESG aspects. They should therefore receive exposure to topics such as responsible investing, the morality of incorporating ESG considerations into investment analysis and ownership practices, and the investment-related risks associated with poor corporate governance compliance. Since students are likely to become the next generation of shareholders, managers, directors, fund managers and pension fund trustees in South Africa, it is of the utmost importance that they be properly educated on financial, ESG and ethical considerations.

Investors could be of the opinion that a firm and its operations should be viewed in an ethically neutral manner. Such individuals exhibit amoral behaviour when it comes to ESG considerations. An amoral individual is neither moral nor immoral and lacks moral standards and knowledge (Rossouw & Van Vuuren, 2013: 44–45). Commerce educators typically teach large groups of students. They consequently have a considerable opportunity to change perceptions relating to the importance of ESG considerations as factors influencing sustainable returns. Education might sway students from being amoral to being moral when acting as shareholders, auditors, managers or directors of South African or global companies in future.

8.5.4   Recommendations for investors

In this study, the question was asked whether there is an association between corporate governance and financial performance. A negative relationship was reported between CGS

and TSR. It is possible that investors ignored the risks associated with low corporate governance compliance. The returns of firms with low CGSs are most likely less sustainable than the returns of high compliance firms. Rossouw and Van Vuuren (2013: 44) noted that shareholders are often amoral and consequently not very concerned about how ethically or sustainably their returns are generated. Corporate governance failures might thus partly be blamed on "absent" shareholders and their lack of monitoring managers' actions (Heath, 2014).

On a more positive note, the researcher found that, when risk-adjusted market-based performance was considered, a portfolio of firms with the highest CGSs delivered a significant positive alpha over the nine-year study period. These encouraging results were reported for both the CAPM and Fama–French three-factor estimations. Investors could have benefitted in risk-adjusted terms if they invested in the sample firms with sound corporate governance compliance practices over the study period.

In addition to financial gains, shareholders can also derive non-financial benefits from their investment activities. Shareholders can promote changes in their investee firms by applying several mechanisms. They could, for example, engage in private negotiations, which is often the case in South Africa. Shareholders could also file shareholder resolutions, vote at AGMs and/or divest by selling all their shares in a specific firm. However, given the relatively small size of the JSE, divesting is not always a viable option for institutional investors in South Africa (Leeman, 2003). Baue (2002) explains that the exclusion of certain JSE-listed firms or entire industries will significantly reduce the investment universe and will result in poorly diversified portfolios.

Engagement usually takes place behind closed doors (Bauer & Viehs, 2012). This is also the case in South Africa. Given the lack of transparency, more public engagement between shareholders, managers and directors should be encouraged. Solutions for corporate governance concerns might be found collectively. Despite the fact that South African shareholders are still relatively passive (Ernst & Young, 2007; OECD, 2012b), the researcher expects that shareholder activism will increase in future. Shareholder activists might then steer boards in the right compliance direction. The main driver of shareholder activism is likely to come from making current and future investors aware of the phenomenon and the different strategies available to them through education and the media.

8.5.5   Recommendations for the media

A critical part of good corporate governance is good reporting (Hanks & Gardiner, 2012). Listed firms should therefore follow rigorous corporate governance compliance and reporting procedures. According to media reports (Heath, 2014; Lipton, 2013; Morar Incorporated, 2014), the "obsession with tick-box compliance" can destroy room for corporate governance compliance flexibility in practice. An example is a CEO who also serves as chairperson and who delivers outstanding service. Some shareholders, directors and managers have also publicly questioned whether compliance with the King guidelines is truly an efficient measure of sound corporate governance practices.

The media play an important informative role in South Africa (Lekhesa, 2009) and closely monitor the corporate governance compliance (or the lack thereof) of listed companies. Focus is, however, often placed on disclosure and not necessarily on the acceptability of the reported corporate governance practices. The media can also be used to promote discussions on the acceptability or unacceptability of the currently used corporate governance guidelines.

Shareholder activists, such as Theo Botha, often employ the media to highlight corporate governance failures. Although such exposure in the media serves a purpose to inform the market of inappropriate actions, the market's perception of corporate governance could be unduly affected by the inappropriate actions of a few firms. As part of its informative role, the media could also report on corporate governance success stories. Shareholders might then become familiar with and invest in well-governed firms. They can accordingly vote with their heads, instead of merely voting with their feet by selling the shares of poorly governed firms (Bauer & Guenster, 2003).

8.5.6   Recommendations for policymakers and lobby groups

The sample firms only complied with approximately 68 per cent of the corporate governance guidelines for the overall study period. The lack of compliance among some companies could lead to the question whether voluntary compliance guidelines, such as the King Reports, are sufficient in South Africa, or whether these guidelines should be legislated. If the observed lack of compliance continues in future, policymakers might have to consider the implementation of legislation to ensure corporate governance compliance.

On the other hand, the Greek philosopher Plato observed in 402 BC that "good people [firms] do not need laws to tell them to act responsibly, while bad people [firms] always find a way around the law" (cited in Parsons, 2004). In line with Plato's argument, the researcher is of the opinion that legislation will not necessarily improve South African firms' corporate governance compliance. She rather recommends corporate governance education and training to address insufficient and ineffective compliance practices.

Lobby groups, such as the Association for Savings and Investment South Africa (2014), could exert more pressure on asset owners and managers to consider and evaluate the voluntary corporate governance compliance practices of JSE-listed firms. If the association determines that a specific investee company has insufficient corporate governance compliance practices, the lobby group should engage with the firm's managers and directors to address the observed lack of compliance.

8.5.7   Recommendations for the King Committee and the PIC

In this study, it was evident that some directors held a considerable number of directorships. There was, however, a lack of guidelines to evaluate directors' over-boardedness over the study period. The King III Report (IoDSA, 2009) only mentions that directors should not hold more directorships than is reasonable for them to exercise due care, skill and diligence. It is therefore recommended that the King Committee include a more detailed discussion on over-boardedness and the associated risks in the forthcoming King IV Report. A specific limit could be provided on the maximum number of directorships that one director may hold.

The King III Report refers only briefly to the interests of asset managers and institutional investors. In future King Reports, more details on the interests of these stakeholders could be provided. Furthermore, although the concept 'integrated report' is explained in the third King Report (IoDSA, 2009), limited reference is made to environmental and social considerations and guidelines. In practice, there is, however, considerable pressure on institutional investors and asset managers to consider ESG aspects when making investment decisions. Regulation 28 of the Pensions Fund Act (Act No. 24 of 1956), for example, promotes the inclusion of ESG considerations in pension funds, investment analysis and ownership practices. It thus seems as if there is a gap between the theoretical King guidelines and the practical requirements. The King Committee should engage more closely with asset managers and

institutional investors to determine their specific corporate governance (as well as environmental and social) needs and concerns.

The King II and III Reports and the PIC (2011) focused on corporate governance compliance. Both the King Committee and the PIC could extend their guidelines in future to include a detailed discussion on the value and possible measurement of social and environmental considerations as well.

8.5.8   Recommendations for ESG data providers

To date, a major limitation for responsible investors and researchers in South Africa has been a lack of available and verified ESG data (US SIF, 2009). The researcher also experienced this obstacle. Since there are only a few such data providers at present, including Bloomberg and MSCI, the costs associated with providing ESG data are high. Although institutional investors could possibly gain access to such data, individual investors might struggle to obtain access to ESG databases. The researcher therefore recommends that more data providers investigate the provision of ESG data for JSE-listed companies.

8.6   Limitations of the research and recommendations for future research

Four limitations became evident as this study unfolded. These are discussed in detail in the following section.

8.6.1 Limitations of the research

Firstly, the sample only included firms from six JSE industries. Three industries (Basic Materials, Oil and Gas and Financials) were excluded due to the nature of these firms' financial reporting and activities that differ from those of the sample firms. Furthermore, the Financials industry is heavily regulated. During the research period, no firms were listed in Utilities, and this industry was therefore also omitted. Basic Materials and Financials are two large industries in the South African economy. The firms that were listed in the excluded industries could possibly have provided results that differed from those of the considered industries. The size of the excluded firms could have had an impact on the results.

Secondly, CGSs were compiled for the firms over a limited period of nine years (2002–2010). For this purpose, a comprehensive research instrument was developed, focusing on the G-component of ESG, namely corporate governance. However, social and environmental factors might also influence investors' decisions. There was a lack of reliable instruments to measure the environmental and social compliance of JSE-listed firms in 2010, when this study commenced. The researcher was thus limited to the inclusion of only corporate governance considerations, based on the recommendations of the King II Report and the PIC. It should be noted that the limited timeframe excluded the possible effect of the King III Report on issues such as integrated reporting.

Thirdly, only the annual reports that were available on the McGregor BFA (2013) database were considered. Some firms might have published separate sustainability reports or unaudited sustainability-related information on their websites. For consistency purposes, only the data that were available on the McGregor BFA (2013) database were examined. The possible exclusion of separate sustainability reports could have affected the scores that were allocated for the sustainability reporting category.

Lastly, focus was placed on specific accounting-based and market-based financial performance measures. These measures were selected based on previous research. There are different types of performance that could be evaluated by employing various performance measures. The inclusion of other performance measures might have resulted in different findings.

Despite the acknowledged limitations, the research findings still contribute considerably to the body of knowledge regarding the relationship between corporate governance and financial performance.

8.6.2   Recommendations for future research

The researcher assessed the corporate governance compliance of a sample of JSE-listed firms by means of content analysis. Future researchers could conduct interviews with some of the firms' managers and directors to determine their perceptions of value-adding corporate governance initiatives. This may be supplemented by interviews with local investment managers and institutional investors to determine how they perceive JSE-listed firms' corporate governance compliance and what they regard as acceptable compliance practices.

The CGSs and the discussed corporate governance issues and recommended initiatives could then be compared to identify specific compliance areas that should be addressed.

Future researchers could develop a questionnaire to determine the nature of the ESG data that institutional investors require. The research instrument that was used in the current study could then be adapted, in line with these recommendations and the King guidelines. The identified needs could also be communicated to data providers to address the lack of required data.

Other corporate governance researchers could conduct a study, similar to this PhD, for the period after 2010. They could base their compliance criteria on the recommendations of the King III Report. Afterwards, they could compare their results with the results of the current study to determine whether the observed negative relationship between CGS and TSR and the positive relationship between CGS and EPS still prevail in "normal" market conditions.

In the current study, very low and low to average minimum CGSs were observed for firms listed in the Consumer Goods and Industrials industries. Further investigation is required to determine the possible reasons for these firms' observed lack of compliance. The researcher also observed some possibly over-boarded directors. Stürmer (2013) confirms that some JSE-listed firms' directors are indeed over-boarded. Other researchers might consider the relationship between over-boardedness and value-based performance. The excluded industries (Basic Materials, Oil and Gas and Financials) could furthermore be considered separately in future research to determine the relationship between their financial performance and corporate governance.

8.7   Concluding remarks

In the introduction to this study, Schopenhauer (1788–1860) was cited as saying, "there are three steps in the revelation of any truth, firstly, it is ridiculed; secondly, it is resisted and thirdly, it is considered self-evident" (cited in Viviers et al., 2009: 3). Based on the observed negative association between CGS and TSR, it seemed as if corporate governance compliance is, to a certain extent, not properly understood or appreciated. However, if more shareholders come "on board" by realising and appreciating the possible benefits associated with sound corporate governance compliance, such as positive risk-adjusted returns, the need to legislate corporate governance compliance in future could be avoided.

Directors, managers and stakeholders should realise that sound corporate governance compliance is essential – and not optional – to firms' long-term success. Corporate governance education and training, alongside increased awareness created by the media, might change the mind-sets of corporate role players. They might then consider the valuable opportunities that corporate governance compliance might offer to them, rather than regarding such compliance as a mere obligation. As a result, acceptable corporate governance compliance might be considered self-evident in future.

The researcher would like to conclude with the words of the executive Kitty D'Alessio who said, "Open the [corporate] windows, let in the year that we are living in" (QFINANCE, 2014b). We are living in a time when sustainable performance is of the utmost importance for the long-term survival and prosperity of firms and their stakeholders.

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APPENDIX 1

SUMMARY OF THE RESEARCH INSTRUMENT

Not indicated due to a confidentiality agreement between the researcher and the Centre for Corporate Governance in Africa at the University of Stellenbosch Business School.

APPENDIX 2

FTSE GLOBAL CLASSIFICATION SYSTEM AND THE ICB

The FTSE Global Classification System consisted of three tiers. Table 1 provides a breakdown of the three tiers into 10 economic groups, 36 industry sectors and 102 industry sub-sectors (JSE, 2004).

Table 1:   FTSE Global Classification System

Economic group	Industry sectors	Industry sub-sectors
Resources	Mining	(Coal)[*]; Gold Mining; (Platinum); Mining Finance; (Diamond); Other Mineral Extractors & Mines
	Oil & Gas	Oil & Gas – Exploration & Production; Oil – Services; Oil – Integrated
Basic Industries	Chemicals	Chemicals – Commodity; Chemicals – Advanced materials; Chemicals – Speciality
	Construction & Building Materials	Builders Merchants; Building & Construction Materials; House Building; Other Construction
	Forestry & Paper	Forestry; Paper
	Steel & Other Metals	Non-ferrous Metals; Steel
General Industrials	Aerospace & Defence	Aerospace; Defence
	Diversified Industrials	Diversified Industrials
	Electronic & Electrical Equipment	Electrical Equipment; Electronic Equipment
	Engineering & Machinery	Commercial Vehicles & Trucks; Engineering – Contractors; Engineering Fabricators; Engineering – General
Cyclical Consumer Goods	Automobiles & Parts	Automobiles; Auto Parts; Tyres & Rubber; Vehicle Distribution
	Household Goods & Textiles	Clothing & Footwear; Furnishings & Floor Coverings; Household Appliances & Housewares; Leisure Equipment; Other Textiles & Leather Goods; Consumer Electronics
Non-cyclical Consumer Goods	Beverages	Beverages – Brewers; Beverages – Distillers & Vintners; Soft Drinks
	Food Producers & Processors	Farming & Fishing; Food Processors
	Health	Health Maintenance Organisations; Hospital Management & Long Term Care; Medical Equipment & Supplies; Other Health Care
	Personal Care & Household Products	Household Products; Personal Products
	Pharmaceuticals & Biotechnology	Pharmaceuticals; Biotechnology
	Tobacco	Tobacco

Economic group	Industry sectors	Industry sub-sectors
Cyclical Services	General Retailers	Discount & Super Stores & Warehouses; Retailers e-Commerce; Retailers – Hardlines; Retailers – Multi Department; Retailers – Soft Goods
	Leisure & Hotels	Gambling (Gaming); Hotels; Leisure Facilities; Restaurant & Pubs; (Home Entertainment, other than those classified in the Media & Photography Sector)
	Media & Photography	Television, Radio & Filmed Entertainment (Broadcasting Contractors); Subscription Entertainment Network (Cable & Satellite); Media Agencies; Photography; Publishing & Printing
	Support Services	Business Support Services; *Delivery Services*; Education, Business Training & Employment Agencies; Environmental Control; *Transaction & Payroll Services*; Security & Alarm Services; (Funerals & Cemeteries); (Laundries & Cleaners)
	Transport	Airlines & Airports; Rail, Road & Freight; Shipping & Ports
Non-cyclical Services	Food & Drug Retailers	Food & Drug Retailers
	Telecommunication Services	Fixed-line Telecommunication Services; Wireless Telecommunication Services
Utilities	Electricity	Electricity
	Utilities – other (Gas Distribution; Water)	Water; Gas Distribution; *Multi-Utilities*
Financials	Banks	Banks
	Insurance	Insurance Brokers, Insurance – Non-Life; Re-insurance; Other Insurance
	Life Assurance	Life Assurance
	Investment Companies	Investment Companies (eligible for index inclusion)
	Real Estate	Real Estate Holding & Development; Property Agencies; *Real Estate Investment Trusts*
	Speciality & Other Finance	Asset Managers; Consumer Finance; Investment Banks; Mortgage Finance; Other Financial
	Investment Entities	Investment Entities (eligible for index inclusion)
Information Technology	Information Technology Hardware	Computer Hardware; Semiconductors; Telecommunications Equipment
	Software & Computer Services	Computer Services; Internet; Software

[*] The FTSE/JSE Global Classification System as used by the JSE (2002) differed slightly from the FTSE Global Classification System (FTSE, 2003). Differences are indicated in Table 1:

- industry sub-sectors indicated by the JSE, but not by the FTSE Global Classification System are indicated in brackets;

- if the JSE indicated a different name for a specific industry sub-sector, the name is indicated in brackets next to the name used by the FTSE Global Classification System; and

- if the FTSE Global Classification System mentioned an industry sub-Sector, which was not indicated by the JSE, it is indicated in italics (FTSE, 2003).

Source: FTSE (2003); JSE (2002)

The ICB (JSE, 2004), which is currently used by the JSE, comprises four tiers, consisting of 10 industries (previously known as "economic groups"), 18 super-sectors, 39 sectors

(previously "industry sectors") and 104 sub-sectors (previously "industry sub-sectors"), as indicated in Table 2.

Table 2:   ICB industries, super-sectors, sectors and sub-sectors

Industry	Super-sector	Sector	Sub-sector
Oil & Gas	Oil & Gas	Oil & Gas Producers	Exploration & Production; Integrated Oil & Gas
		Oil Equipment, Services & Distribution	Oil Equipment & Services; Pipelines
		Alternative Energy	Renewable Energy Equipment; Alternative Fuels
Basic Materials	Chemicals	Chemicals	Commodity Chemicals; Specialty Chemicals
	Basic Resources	Forestry & Paper	Forestry; Paper
		Industrial Metals & Mining	Aluminium; Nonferrous Metals; Iron & Steel
		Mining	Coal; Diamonds & Gemstones; General Mining; Gold Mining; Platinum & Precious Metals
Industrials	Construction & Materials	Construction & Materials	Building Materials & Fixtures; Heavy Construction
	Industrial Goods & Services	Aerospace & Defence	Aerospace; Defence
		General Industrials	Containers & Packaging; Diversified Industrials
		Electronic & Electrical Equipment	Electrical Components & Equipment; Electronic Equipment
		Industrial Engineering	Commercial Vehicles & Trucks; Industrial Machinery
		Industrial Transportation	Delivery Services; Marine Transportation; Railroads; Transportation Services; Trucking
		Support Services	Business Support Services; Business Training & Employment Agencies; Financial Administration; Industrial Suppliers; Waste & Disposal Services
Consumer Goods	Automobiles & Parts	Automobiles & Parts	Automobiles; Auto Parts; Tires
	Food & Beverage	Beverages	Brewers; Distillers & Vintners; Soft Drinks
		Food Producers	Farming & Fishing; Food Products
	Personal & Household Goods	Household Goods & Home Construction	Durable Household Products; Nondurable Household Products; Furnishings; Home Construction
		Leisure Goods	Consumer Electronics; Recreational Products; Toys
		Personal Goods	Clothing & Accessories; Footwear; Personal Products
		Tobacco	Tobacco
Health Care	Health Care	Health Care Equipment & Services	Health Care Providers; Medical Equipment; Medical Supplies
		Pharmaceuticals & Biotechnology	Biotechnology; Pharmaceuticals
Consumer Services	Retail	Food & Drug Retailers	Drug Retailers; Food Retailers & Wholesalers

Industry	Super-sector	Sector	Sub-sector
		General Retailers	Apparel Retailers; Broadline Retailers; Home Improvement Retailers; Specialised Consumer Services; Specialty Retailers
	Media	Media	Broadcasting & Entertainment; Media Agencies; Publishing
	Travel & Leisure	Travel & Leisure	Airlines; Gambling; Hotels; Recreational Services; Restaurants & Bars; Travel & Tourism
Telecommunications	Telecommunications	Fixed Line Telecommunications	Fixed Line Telecommunications
		Mobile Telecommunications	Mobile Telecommunications
Utilities	Utilities	Electricity	Conventional Electricity; Alternative Electricity
		Gas, Water & Multi utilities	Gas Distribution; Multi utilities; Water
Financials	Banks	Banks	Banks
	Insurance	Nonlife Insurance	Full Line Insurance; Insurance Brokers; Property & Casualty Insurance; Reinsurance
		Life Insurance	Life Insurance
	Real Estate	Real Estate Investment & Services	Real Estate Holding & Development; Real Estate Services
		Real Estate Investment Trusts	Industrial & Office REITs; Retail REITs; Residential REITs; Diversified REITs; Specialty REITs; Mortgage REITs; Hotel & Lodging REITs
	Financial Services	Financial Services	Asset Managers; Consumer Finance; Specialty Finance; Investment Services; Mortgage Finance
		Equity Investment Instruments	Equity Investment Instruments
		Nonequity Investment Instruments	Nonequity Investment Instruments
Technology	Technology	Software & Computer Services	Computer Services; Internet; Software
		Technology Hardware & Equipment	Computer Hardware; Electronic Office Equipment; Semiconductors; Telecommunications Equipment

Source: JSE (2009)

For the purposes of this study, during the period 2002–2005, the FTSE Global Classification System was used to group firms. During 2006–2010, the firms' ICB classification was considered. Thereafter, the period 2002–2005 was compared with the period 2006–2010, in order to determine whether firms moved amongst the economic groups (or industries) during the nine-year study period. In Table 3, changes between the two classification systems that were of specific importance to this study are indicated.

Table 3:   Considerable changes between the FTSE/JSE Global Classification System and the ICB

FTSE/JSE Global Classification System	ICB
Construction	Renamed Construction and Materials, move to Industrials
General Industrials	Renamed Industrials
Cyclical and Non-cyclical Consumer Goods	Merged; new sector Consumer Goods
Health, Pharmaceuticals and Biotechnology	Move from Non-cyclical Consumer Goods; Health Care become new industry
Cyclical and Non-cyclical Consumer Services	Merged; new sector Consumer Services
Telecommunication Services formed part of Non-cyclical Consumer Services	Telecommunications new industry
Information Technology	Renamed Technology
Support Services	Moves from Cyclical Services to Industrials
Construction and Building Materials	Renamed Construction and Materials, moved from Basic Industries to Industrials
Transport	Renamed Industrial Transportation, moves to Industrials; Tourist and Consumer-related Transport firms move to the Travel and Leisure sector in the Consumer Services Industry

Source: JSE (2006)

APPENDIX 3

COMPANIES CONSIDERED IN THIS STUDY: 2002–2010

Companies considered[a]	Listed/ Delisted	Industry	Years considered[b]	Number of annual observations	Additional comments
Acuity Group Holdings (Acuity)	0	6	2003–2002	2	2004 data not available on McGregor BFA (2013) Gandalf Trust took over control of the company on 18 March 2002 Year end changed in 2002 (15 months)
Adcock Ingram Holdings (Adcock)	1	1	2010–2009	2	List 25 August 2008
Adcorp Holdings (Adcorp)	1	6	2010–2008; 2006–2002	8	Year end changed in 2008 (14 months) No 2007 report
Admiral Leisure World (Admiral)	0	3	2003–2002	2	Year end changed in 2003 (16 months)
Advtech Group (Advtech)	1	6; 3	2005–2002 2010–2008; 2006	8	2010–2008 and 2006 Consumer services 2007 data not completely available on McGregor BFA (2013) 2005–2002 Industrials
Africa Glass Industries/AG Industries (AGI)	1	6	2009–2008; 2006–2002	7	2010 data not available on McGregor BFA (2013) 2007 annual report not completely available on McGregor BFA (2013) Renamed in 2002 to AG Industries
African & Overseas Enterprises (Af & Ovr)	1	3	2010–2002	9	2010–2003 reported together with Rex Trueform Clothing Company (principal operating subsidiary)
African Media Entertainment (AME)	1	3	2010–2009; 2007–2002	8	Year end changed in 2009 (17 months)
Afrimat	1	6	2010–2007	4	List 7 November 2006
AfroCentric Investment Corporation (Afro-C)	1	2; 1	2010–2007	4	List 19 May 2006 2009–2007 Consumer Goods 2010 Health Care

Companies considered[a]	Listed/ Delisted	Industry	Years considered[b]	Number of annual observations	Additional comments
Afrox Healthcare (Ahealth)	0	1	2004–2002	3	2001 Chemicals
Alex White Holdings (Alexwyt)	0	6	2005–2002	4	
Alliance Pharmaceuticals (Alliance)	0	1	2003–2002	2	Forim Holdings is the holding company
Allied Electronics Corporation (Altron)	1	6	2010–2008; 2006–2002	8	Complete 2007 report not available on McGregor BFA
Allied Technologies (Altech)	1	6; 5	2010–2002	9	2010–2006 Telecommunications 2005–2002 Industrials
Amalgamated Appliance Holdings (Amaps)	1	2	2010–2002	9	Changed name to Home of Living Brands in 2013 Year end changed in 2004 (16 months)
Amalgamated Beverage Industries (ABI)	0	2	2003–2002	2	Sold to SAB in 2004
Amalgamated Electronics Corporation (Amecor)	1	6	2010–2006	5	List 29 August 2005
Anbeeco Investment Holdings (Anbeeco)	0	2	2005–2004; 2002	3	2007–2006 moved to Financials Year end changed in 2004 (18 months)
Anglovaal Industries (AVI)/AVI	1	2	2010–2002	9	Changed name in 2003 to AVI
ARB Holdings (ARB)	1	6	2010–2008	3	List 20 November 2007
Argent Industrial (Argent)	1	6	2008–2002	7	2010–2009 Basic materials
Aspen Pharmacare Holdings (Aspen)	1	1	2010–2002	9	
AST Group (AST)/Gijima AST Group (Gijima AST)/Gijima Group (Gijima)	1	4	2010–2002	9	Changed name in 2005 to GijimaAst and to Gijima Group in 2010
Astral Foods (Astral)	1	2	2010–2002	9	
Astrapak	1	6	2010–2002	9	
Austro Group (Austro)	1	6	2010–2008	3	List 1 February 2007
Avis Southern Africa (Avis)	0	6	2003–2002	2	
Avusa	1	3	2010–2009	2	List 31 March 2008 Complete 2009 data not available on McGregor BFA (2013) Formerly known as Johnnic Communications Unbundled in 2008 from ElementOne
Awethu Breweries (Awethu)	1	2	2010–2002	9	
Barloworld (Barworld)	1	6	2010–2002	9	
Basil Read Holdings (Basread)	1	6	2010–2002	9	
Bearing Man (Bearman)	0	3	2004–2002	3	
Bell Equipment (Bell)	1	6	2010–2002	9	
Blue Label Telecoms (Bluetel)	1	5	2010–2008	3	List 14 November 2007

Companies considered[a]	Listed/ Delisted	Industry	Years considered[b]	Number of annual observations	Additional comments
Bowler Metcalf (Bowcalf)	1	6	2010–2004; 2002	8	2003 data not available on McGregor BFA (2013) Year end changed in 2004 (18 months)
Brandcorp Holdings (Brandco)	0	3	2006–2002	5	
Bridgestone Firestone Maxiprest (Bridgestn)	0	2	2004–2002	3	
British American Tobacco Plc (BATS)	1	2	2010–2009	2	List 28 October 2008
Buildmax	1	6	2010–2002	9	Year end changed in 2008 (11 months)
Burlington Industries (Burlingt)	0	2	2003–2002	2	2004 data not available on McGregor BFA (2013)
Business Connexion Group (BCX)	1	4	2010–2005	6	List 24 May 2004 Year end changed in 2009 (15 months)
Bytes Technology Group (BTG)	0	4	2007–2002	6	BTG is part of the Altron Group
Cafca/Bicaf/Bicc Cafca (Cafca)	1	6	2010; 2008; 2004–2002	5	2009 and 2007–2005 data not available on McGregor BFA (2013)
Cargo Carriers (Cargo)	1	6	2010–2002	9	
Cashbuild (Cashbil)	1	6; 3	2010–2002	9	2005–2002 Industrials 2010–2006 Consumer Services
Ceramic Industries (Ceramic)	1	6	2010–2002	9	
City Lodge Hotels (Cityldg)	1	3	2010–2002	9	
Comair	1	3	2010–2002	9	2005–2002 Cyclical Services Tourist and Consumer-related transport moved to Consumer Goods
Combined Motor Holdings (CMH)	1	3; 2	2010–2002	9	2005–2002 Consumer goods 2010–2006 Consumer Services
Command Holdings (Command)	1	6	2009–2002	8	2010 data not available on McGregor BFA (2013) Year end changed in 2003 (15 months) Year end changed in 2009 (18 months)
Compagnie Financiere Richemont SA (Richemont)	1	3; 2	2010–2002	9	2010–2009 2007–2002 Consumer Goods Consumer Services 2008 Proposed in 2002 that Compagnie Financière Richemont AG relocate to Geneva, Switzerland
Comparex Holdings (Comparex)	0	4	2003–2002	2	
Compu-Clearing Outsourcing (Compclear)	1	4	2010–2002	9	
Conafex Holdings Société Anonyme (Conafex)	0	2	2008–2005; 2003–2002	6	Year end changed in 2003 (11 months) Year end changed in 2006 (13 months)

Companies considered[a]	Listed/ Delisted	Industry	Years considered[b]	Number of annual observations	Additional comments
Concor	0	6	2005–2002	4	
Connection Group Holdings (Connect)	0	3	2004–2002	3	Year end changed in 2003 (15 months)
Control Instruments Group (Control)	1	6	2010–2002	9	
Country Bird Holdings (CBH)	1	2	2010–2008	3	List 3 May 2007
Crookes Brothers (Crookes)	1	2	2010–2002	9	
CS Computer Services Holdings (CSholding)	0	4	2003–2002	2	2004 data not available on McGregor
CTP Holdings (CTP)/Caxton and CTP Publishers and Printers (Caxton)	1	3	2010–2002	9	2003 pyramid structure eliminated Caxton became wholly owned subsidiary of CTP Holdings (Caxton delist from JSE)
Cullinan Holdings (Culinan)	1	3	2010–2009; 2007–2002	8	2008 data not available on McGregor BFA (2013)
Datacentrix Holdings (Dcentrix)	1	4	2010–2002	9	
Datatec	1	4	2010–2002	9	Year end changed in 2003 (11 months)
Delta EMD/Delta Electrical Industries (Delta)	1	6	2008–2002	7	2010–2009 Basic Materials
Digicore Holdings (Digicore)	1	6	2009–2002	8	Complete 2010 report not available on McGregor BFA (2013)
Dimension Data Holdings plc (Didata)	0	4	2009–2002	8	
Distell Group (Distell)	1	2	2010–2002	9	
Distribution and Warehousing Network (DAWN)	1	6	2010–2002	9	
DNA Supply Chain Investments (DNA Sup)	0	6	2003–2002	2	2004 data not available on McGregor BFA (2013) Year end changed in 2003 (18 months)
Dorbyl	1	6; 2	2010–2002	9	2006–2002 Industrials 2010–2007 Consumer Goods
Edgars Consolidated Stores (Edcon)	0	3	2006–2002	5	2005 Year end 2 April All other years 30 March
Elb Group (Elbgroup)	1	6	2010–2002	9	
Electronic Media Network (M-Net) and Supersport International Holdings (SS) (Mnet/SS)	0	3	2003–2002	2	M-Net and SS jointly listed
Elexir Technology Holdings (Elexir)	0	4	2005; 2003–2002	3	Reverse list in 2006 as PSV Holdings on Altx Year end changed in 2005 (18 months)
Ellerine Holdings (Elerine)	0	3	2006–2002	5	2007 data not available on McGregor BFA (2013)
Enaleni Pharmaceuticals (Enaleni)/Cipla Medpro South Africa (Ciplamed)	1	1	2010–2006	5	List 10 June 2005 Changed name in 2008
Enviroserv Holdings (Enserv)	0	6	2007–2002	6	
EOH Holdings (EOH)	1	4	2010–2002	9	

Companies considered[a]	Listed/ Delisted	Industry	Years considered[b]	Number of annual observations	Additional comments
Eqstra Holdings (Eqstra)	1	6	2010–2009	2	List 12 May 2008
Erp.com Holdings (Erp.com)/SecureData Holdings (Secdata)	1	4	2010–2002	9	Changed name in 2007 to SecureData Holdings
Esorfranki (Esorfrank)	1	6	2010–2009	2	2008–2006 AltX
Excellerate Holdings (Excell)	1	6	2010–2002	9	
Faritec Holdings (Faritec)	1	4	2009–2002	8	2010 data not available on McGregor BFA (2013)
Forim Holdings (Forim)	0	1	2003–2002	2	2001 Property
Global Technology (Glotec)	0	4	2003–2002	2	2004 data not available on McGregor BFA (2013)
Global Village Holdings (Glovil)	0	6; 3	2005–2002	4	2005–2003 Industrials 2008–2006 and 2002 Consumer services 2008–2006 data not available on McGregor BFA (2013)
Glodina Holdings (Glodina)	0	2	2003–2002	2	
Gold Reef Casino Resorts (Goldreef)	1	3	2009–2002	8	Renamed to Tsogo Sun Holdings on 5 August 2011 2010 report based on merger (reported until February 2011)
Grindrod	1	6	2010–2002	9	
Grintek	0	6	2004–2002	3	
Group Five (Group5)	1	6	2010–2002	9	
Heritage Collection Holdings (Hercol)	0	3	2005–2002	4	
Howden Africa Holdings (Howden)	1	6	2010–2002	9	
Hudaco Industries (Hudaco)	1	6	2010–2002	9	
Idion Technology Holdings (Idion)	0	4	2005–2002	4	
IFA Hotels & Resorts (IFA)	1	3	2010–2007	4	List 27 February 2006
Iliad Africa (Iliad)	1	6	2010–2002	9	
Illovo Sugar (Illovo)	1	2	2009–2002	8	2010 data not available on McGregor BFA (2013)
Imperial Holdings (Imperial)	1	6	2010–2002	9	2010–2008 separate sustainability reports available on company website Sustainability section in annual reports
Infowave Holdings (Infowave)/Adaptit Holdings (Adaptit)	1	4	2010–2009; 2007; 2005	4	Infowave Holdings merged with Adaptit Holdings in November 2007 2008 data not available on McGregor BFA (2013) Infowave 2006 Venture Capital, 2004–2002 Development Capital Year end changed in 2010 (16 months)
Inmins	0	3	2003–2002	2	2004 data not available on McGregor
Intertrading (Intrading)	1	2	2010–2002	9	Delisted after 2010

Companies considered[a]	Listed/ Delisted	Industry	Years considered[b]	Number of annual observations	Additional comments
Intervid International (Intervid)	0	4	2003–2002	2	
Invicta Holdings (Invicta)	1	6	2010–2002	9	
Italtile (Itltile)	1	6; 3	2010–2002	9	2005–2002 Industrials 2010–2006 Consumer services
Ixchange Technology Holdings (Ixchange)/Frontrange (Frontrnge)	0	4	2005–2002	4	Changed name in 2002 to Frontrange Year end changed in 2005 (10 months)
Jasco Electronics Holdings (Jasco)	1	6	2010–2002	9	Year end changed in 2009 (16 months)
JD Group (Jdgroup)	1	3	2010–2002	9	
Johnnic Communications (Johncom)	0	3	2006–2002	5	Changed name to Avusa (which listed in 2008) which unbundled from Elementone
Johnnic Holdings (Johnnic)	0	5; 3	2004–2002	3	2007–2005 Financials 2002 Telecommunications 2004–2003 Consumer services
Kagiso Media (KGmedia)	1	3	2010–2002	9	
Kairos Industrial Holdings (Kairos)	1	6	2010–2002	9	Delisted after 2010
Kaydav Group (Kaydav)	1	6	2010–2008	3	List 15 November 2007
Kelly Group (Kelly)	1	6	2010–2008	3	List 3 April 2007 Previously known as Logical Options (Pty) Ltd
Kersaf Investments (Kersaf)/Sun International (Sunint)	1	3	2010–2002	9	Renamed to Sun International in 2004 2010–2008 separate sustainability reports
King Consolidated Holdings (Kingco)	0	3	2008–2002	7	
Kolosus Holdings (Kolosus)/Kap International Holdings (KAP)	1	6; 2	2010–2007; 2005–2004; 2003–2002	8	2003–2002 Consumer goods Year end changed in 2004 (2004 report for a year) / Year end changed in 2007 (18 months) 2010–2004 Industrials
KWV Beleggings (KWV Bel)/Capevin Investments (Capevin)	1	2	2010–2002	9	Changed name in 2009 to Capevin Investments
L.A. Group (LA Group)	0	3	2005–2002	4	
Lewis Group (Lewis)	1	3	2010–2005	6	List 4 October 2004
Masonite (Africa) (Masnite)	1	6	2010–2002	9	
Massmart Holdings (Massmart)	1	3	2010–2002	9	
Mathomo Group (Mathomo)	0	3	2005; 2003–2002	3	Year end changed in 2005 (17 months)
Maxtec	0	4	2003–2002	2	
Mazor Group (Mazor)	1	6	2010–2009	2	2008–2007 AltX List 21 November 2007
McCarthy (McCar)	0	2	2003–2002	2	
M-Cell/MTN Group (MTN Group)	1	5	2010–2002	9	Changed name in 2003 to MTN Group 9 months report published

Companies considered[a]	Listed/ Delisted	Industry	Years considered[b]	Number of annual observations	Additional comments
					December 2005 Year end changed in 2006 (12 months) Separate sustainability report 2010–2007
Medi-Clinic Group (Medclin)	1	1	2010–2002	9	
Metair Investments (Metair)	1	2	2010–2002	9	
Metro Cash and Carry (Metcash)	0	3	2003–2002	2	
MGX Holdings (MGX)/Metrofile Holdings (Metrofile)	1	6; 4	2010–2002	9	2010–2005 Industrials Changed name to Metrofile Holdings in 2005 2004–2002 Technology
MICROmega Holdings (MMG)/(Micromega)	1	6	2010–2007	4	2006–2002 Financials
Million Air Charter (Millair)	0	3	2003–2002	2	2006–2004 data not available on McGregor BFA (2013) Tourist and consumer-related transport moved to Consumer Goods
Mobile Industries (Mobile)	1	6	2010–2002	9	Mobile and Trencor reported together Mobile pyramid company of Trencor
Moneyweb Holdings (Moneywb)	1	3	2005–2002	4	2010–2006 moved to AltX
Monteagle Holdings Société Anonyme (Monte)/Marshall Monteagle Holdings Société Anonyme (Martel)/(Marshall)	1	6	2010–2002	9	Changed name in 2006 to Marshall Monteagle Holdings Société Anonyme Delisted after 2010
Moribo Leisure (Moribo)	0	3	2004–2002	3	2005 data not available on McGregor BFA (2013)
Mr Price Group (Mr Price)	1	3	2010–2002	9	
Murray & Roberts Holdings (M&R Hld)	1	6	2010–2002	9	
Mustek	1	4	2010–2002	9	
Mvelaphanda Group (Mvela Grp)	1	6	2010–2005	6	Changed name in November 2004 to Mvelaphanda Group after merger with Mvelaphanda Holdings (Pty) Limited Rebserve Holdings delisted and Mvelaphanda Group listed in 2004 Changed name in 2012 to New Bond Capital
Namibian Sea Products (Namsea)	0	2	2005–2002	4	2006 data not available on McGregor BFA (2013)
Nampak	1	6	2010–2002	9	
Naspers	1	3	2010–2002	9	Separate sustainability report 2008–2010

Companies considered[a]	Listed/ Delisted	Industry	Years considered[b]	Number of annual observations	Additional comments
Net 1 Ueps Technologies, Inc. (Net1ueps)	1	6	2010–2009	2	List 8 October 2008
Network Healthcare Holdings (Netcare)/Netcare (Netcare)	1	1	2010–2002	9	Changed name during 2008 to Netcare
New Africa Investment (NAIL)	1	3	2008–2002	7	2010 and 2009 data not available on McGregor BFA (2013) Delisted after 2010
New Clicks Holdings (Nuclicks)/Clicks Group (Clicks)	1	3	2010–2002	9	Changed name to Clicks Group in 2009
Nictus Group (Nictus)	1	3	2010–2002	9	
Nu-world Holdings (Nuworld)	1	2	2010–2002	9	
Oceana Group (Oceana)	1	2	2010–2002	9	
Onelogix Group (Onelogix)	1	6	2003–2002	2	2010–2004 AltX
OTK Holdings (Afgri)/Afgri	1	2	2010–2002	9	Changed name in 2002 to Afgri Year end changed in 2008 (16 months)
Pals Holdings (Pals)	0	2	2007–2002	6	2008 data not available on McGregor BFA (2013)
Paracon Holdings (Paracon)	1	4	2010–2002	9	Delisted after 2010
Pasdec Resources SA (Pasdec)	0	6	2005–2002	4	2006 data not available on McGregor BFA (2013)
Phumelela Gaming and Leisure (Phumelela)	1	3	2010–2003	8	List 14 June 2002
Pick n Pay stores (Pick n Pay)	1	3	2010–2002	9	Report together as a group for Pick n Pay stores and Pick n Pay holdings (Pikwik)
Pinnacle Technology Holdings (Pinnacle)	1	4	2010–2002	9	
Pioneer Food Group (Pnr Foods)	1	2	2010–2009	2	List 22 April 2008
Pretoria Portland Cement Company (PPC)	1	6	2010–2002	9	
Primedia	0	3	2006–2002	5	
Primeserv Group (Primeserv)	1	6	2009–2002	8	2010 data not available on McGregor BFA (2013) Year end changed in 2006 (18 months)
Prism Holdings (Prism)	0	4	2005–2002	4	
Protech Khuthele Holdings (Protech)	1	6	2010–2008	3	List 7 August 2007
Putco	0	6	2004–2002	3	
Quyn Holdings (Quyn)/Colliers South Africa Holdings (Colliers)	1	6	2006–2003	4	2010–2007 Financials Year end changed in 2003 (17 months) Changed name in 2007 to Colliers South Africa Holdings Changed name after 2010 to Adrenne Property Group
Rainbow Chicken (Rainbow)	1	2	2010–2002	9	
Raubex Group (Raubex)	1	6	2010–2008	3	List 20 March 2007

Companies considered[a]	Listed/ Delisted	Industry	Years considered[b]	Number of annual observations	Additional comments
Rebserve Holdings (Rebserv)	0	6	2003–2002	2	Delisted in 2004 Changed name to Mvelaphanda Group after unconditional merger in November 2004 with Mvelaphanda Holdings (Pty) Limited
Relyant Retail (Relyant)	0	3	2004–2002	3	
Remgro	1	6	2010–2007	4	2006–2002 Financials
Reunert	1	6	2010–2002	9	
Rex Trueform Clothing Company (Rex True)	1	3	2010–2002	9	2010–2003 reported with African and Overseas Enterprises 2004–2003
SABMiller plc (SAB)	1	2	2010–2002	9	
SAIL Group	0	3	2003–2002	2	2004 data not available on McGregor BFA (2013)
Sanyati Holdings (Sanyati)	1	6	2010–2008	3	2007–2006 AltX List 2 June 2006
Sasani	0	3	2004–2002	3	
Sea Kay Holdings (Seakay)	1	6	2010–2008	3	List 16 August 2007
Seardel Investment Corporation (Seardel)	1	2	2010–2002	9	Year end changed in 2009 (9 months)
Sekunjalo Investments (Sekunjalo)	1	6	2008–2002	7	2010–2009 Financials
Set Point Technology Holdings (Sethold)/Set Point Group (Setpoint)	0	6	2009–2002	8	Changed name in 2009 to Set Point Group
Shoprite Holdings (Shoprit)	1	3	2010–2002	9	
Sizafika Property Investments (Sizafika) / Adonis Knitwear Holdings (Adonis)/Emergent Properties (Emergent)	0	2	2007; 2005–2002	5	2009–2008 data not available on McGregor BFA (2013) 2006 Financials
South Ocean Holdings (S.Ocean)	1	6	2010–2008	3	List 28 February 2007
Sovereign Food Investments (Sovfood)	1	2	2010–2002	9	
Spescom	0	4	2009–2002	8	Merged in 2010 with Jasco Spescom delisted
Spur Corporation (Spurcorp)	1	3	2010–2002	9	
Square One Solutions Group (Sqone)	1	4	2008–2002	7	2010–2009 data not available on McGregor BFA (2013)
Steers Holdings/Famous Brands (Fambrands)	1	3	2010–2002	9	2003–2002 known as Steers Holdings Changed name in 2004 to Famous Brands
Stefanutti & Bressan (S&B)/Stefanutti Stocks Holdings (Stefstock)	1	6	2010–2008	3	List 3 August 2007 Changed name in 2008 to Stefanutti Stocks Holdings
Steinhoff International Holdings (Steinhoff)	1	2	2009–2002	8	2010 separate sustainability report not available on McGregor BFA (2013)
Sun International (South Africa) (SISA)	0	3	2003–2002	2	

Companies considered[a)]	Listed/ Delisted	Industry	Years considered[b)]	Number of annual observations	Additional comments
Super Group (Suprgrp)	1	6	2010–2002	9	2010–2009 separate sustainability reports Sustainability section in annual reports Year end changed in 2006 (15 months)
TeliMatrix (Matrix)/Mix Telematics (Mixtel)	1	6	2010–2008	3	List 12 November 2007 Changed name in 2009 to Mix Telematics Complete 2008 data not available on McGregor
Telkom SA (Telkom)	1	5	2010–2004	7	List 4 March 2003 2010–2006 separate sustainability reports available on McGregor BFA (2013)
The Aveng Group (Aveng)	1	6	2010–2002	9	
The Bidvest Group (Bidvest)	1	6	2010–2002	9	Separate sustainability reports available on McGregor BFA (2013)
The Cementation Company (Africa) (Cemenco)	0	6	2003–2002	2	Reported together with Cementation Mining Skanska (Pty) Limited
The Don Group (Don)	1	3	2010–2002	9	
The Foshini Group (TFG)	1	3	2010–2002	9	
The House of Busby (Busby)	0	2	2007–2002	6	
The Spar Group (Spar)	1	3	2010–2005	6	List 18 October 2004
The Tongaat-Hulett Group (Tongaat)/Tongaat Hulett (Tongaat)	1	2	2010; 2008–2002	8	Restructuring in 2007 Unbundled from Hulamin Changed name to Tongaat Hulett Year end changed in 2010 (15 months)
Tiger Brands (Tigbrands)	1	2	2010–2002	9	
Tiger Wheels (Tiwheel)	0	2	2006–2002	5	2008–2007 data not available on McGregor BFA (2013) Tiger Automotive debundled Listed in 2006
Tourism Investment Corporation (Tourvst)	0	3	2007–2002	6	
Tradehold (Tradeh)	1	3	2009–2002	8	Year end changed in 2003 (eight months) 2010 moved to Financials Investment holding company 2009–2002 report with Brown & Jackson plc (B&J)/Instore plc, principle business indirect holding
Transpaco (Trnpaco)	1	6	2010–2002	9	
Trencor	1	6	2010–2002	9	Mobile and Trencor reported together Mobile pyramid company of Trencor
Truworths International (Truwths)	1	3	2010–2002	9	
UCS Group (UCS)	1	4	2010–2002	9	Changed name in 2011 to Capital Eye Investments
United Service Technologies/UTI Worldwide Inc. (Uniserv)	0	6	2004–2002	3	Investment holding company of UTI Worldwide Inc.

Companies considered[a]	Listed/ Delisted	Industry	Years considered[b]	Number of annual observations	Additional comments
Unitrans (Unitran)	0	6	2006–2002	5	
Universal Industries Corporation (Universal)	1	6	2010–2008	3	List 29 November 2007 Delisted after 2010
Vaalauto (Valauto)	0	2	2003–2002	2	Valauto and Valcar reported together
Vaaltrucar (Valcar)	0	2	2003–2002	2	Valauto and Valcar reported together
Value Group (Value)	1	6	2010–2002	9	
Venter Leisure and Commercial Trailers (Ventel)	/	6; 2	2007–2002	6	2008 data not available on McGregor BFA (2013) 2007–2006 Industrials 2005–2002 Consumer Goods
Verimark Holdings (Verimark)	1	3	2010–2006	5	List 11 July 2005 Nova Education and Technology holdings (Edutech) Reverse takeover Creditvision holdings (not listed on the main board)
Vesta Technology Holdings (Vesta)/ConvergeNet Holdings (Converge)	1	4	2010–2002	9	Disposed of business in Vesta Technology Holdings and changed name in 2007
WB Holdings (Wbhold)	0	2	2005–2002	4	Year end changed in 2002 (6 months)
Wesco Investments (Wescob)	0	2	2008–2003	6	Year end changed in 2003 (15 months) 2009 Year end not listed 2009 data available on McGregor BFA (2013)
Wilson Bayly Holmes-Ovcon (WBHO)	1	6	2010–2002	9	
Winhold Group (Winhold)	1	6; 3	2010–2002	9	2005–2002 Consumer Services 2010–2006 Industrials
Wooltru	0	3	2006–2002	5	2009–2007 moved to Financials 2002 unbundled from Massmart, Truworths and Woolworths Now known as PBT Group
Woolworths Holdings (Woolies)	1	3	2010-2002	9	Separate sustainability report 2010–2006
Ythrk (Y3K) / ISA Holdings (ISA)	1	4	2004-2002	3	2010–2005 ISA Holdings on AltX

a)   As most companies had their primary listing on the JSE, Ltd was not shown.

b)   The years were indicated in line with the most recent report available, followed by the preceding reports.

A firm had to be listed for at least two consecutive calendar years in order to form part of the sample. The 2001 information was used to determine whether the firms had already been listed at the end of 2001.

Source: Researcher's own construction based on the listing information published in a local newspaper *Die Burger* for the last trading day of 2001 to 2010.

APPENDIX 4

COMPANIES NOT CONSIDERED IN THIS STUDY: 2002–2010

Companies not considered[a]	Listed/Delisted	Industry	Years that could be considered[b]	Reason for not considering the company
1time Holdings (1time)	1	3	2010	2009–2007 AltX; 2010 Main Board Only one year
Accord Technologies (Accord)	0	2	2002	Only one year Data not available on McGregor BFA (2013)
Advanced Technical Systems (Advanced)	0	6	2004–2002	Data not available on McGregor BFA (2013)
Afribrand Holdings (Afbrand)	0	2	2002	Only one year Data not available on McGregor BFA (2013)
Amlac	0	2	2006–2002	No data available on McGregor BFA (2013)
Bioscience Brands (Biosci)	1	2	2008	Main Board 2008 Data for 2006–2010 Other years AltX
CCN Holdings (CCN)	0	6	2003	Only one year
Choice Holdings/Mighty Meat (Choice)	0	2	2004–2002	Data not available on McGregor BFA (2013)
CIC Holdings (CIC)	0	6	2009	2008–2007 AltX Listed 30 November 2007
Clover Industries (Clover)	1	2	2010	List 14 December 2010 Only one year
Consol	0	6	2006–2005	List 4 March 2005
Consolidated Infrastructure Group (CIL)/Buildworks Group	1	6	2010	2009–2007 AltX
Crux Technologies (Crux)	0	4	2002	Only one year Data not available on McGregor BFA (2013)
Dynamo Retail (Dynamo)	0	3	2004–2002	Data not available on McGregor BFA (2013)
Elementone (Element1)	0	3	2009–2008	List 18 March 2008 Data only available for one year Formerly Johnnic Communications
Ellies Holdings (Ellies)	1	6	2010	2009–2008 AltX
Fashion Africa (Fashaf)	0	3	2004–2002	2004–2003 data not available on McGregor BFA (2013)
Forza Group (Forza)	0	2	2002	Only one year Data not available on McGregor BFA (2013)
Gubb and Ings (Gubbings)	0	2	2002	Only one year
Home Choice Holdings (Homechoice)	0	3	2002	Only one year
IST Group (IST)	0	6	2003–2002	2002 data not available on McGregor BFA (2013)
Kwikspace Modular Buildings (Kwikspace)	0	6	2008	2007 AltX Only one year
Leisurenet (Lesrnet)	0	3	2004–2002	Data not available on McGregor BFA (2013)

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Companies not considered[a)	Listed/Delisted	Industry	Years that could be considered[b)	Reason for not considering the company
Life Healthcare Group Holdings (Life HC)	1	1	2010	List 10 June 2010 Only one year Previously known as Afrox Healthcare (changed name 2005)
Malbak	0	6	2002	Only one year
Metje & Ziegler (Metje)	0	3	2002	Only one year
Metoz Holdings (Metoz)	0	3	2004	Only one year Data not available on McGregor BFA (2013)
Mvelaserve (Mvelasv)	1	6	2010	Only one year Unbundled from Mvela Group
Myriad Medical Holdings (Myriad)/Litha Healthcare Group (Litha)	1	1	2010–2006	2009–2006 AltX Only one year on the Main Board Changed name in 2010 to Litha
Namibian Fishing Industries (Namfish)	0	2	2002	Only one year Data not available on McGregor BFA (2013)
Nando's Group Holdings (Nando's)	0	3	2002	Only one year
Natural Health Holdings	0	1	2002	Only one year
Nei Africa Holdings (Nei Afr)	0	6	2008–2002	Data not available on McGregor BFA (2013)
Net 1 Applied Technology Holdings (Aplitec)	0	4	2003–2002	Complete 2003 report not available on McGregor BFA (2013)
Netactive (Netact)	0	4	2002	Only one year
Ninian and Lester Holdings (Ninian)	0	2	2002	Only one year Data not available on McGregor BFA (2013)
Oakfields Thoroughbreds and Leisure Industries (Oakflds)/Goodhope Diamonds	0	3	2008–2002	Only listed in Consumer Services for 2002 Other years listed in Mining
Omega Alpha Int Info Technology Holdings (OAI)	0	4	2005–2002	Data not available on McGregor BFA (2013)
OSI Holdings (OSI)	0	4	2002	Only one year
Ozz	0	6	2002	Only one year
PBT Group (PBT)	1	4	2010	List 15 November 2010 Only one year
Peermont Global (Peermont)	0	3	2006–2004	2006 data not available on McGregor BFA (2013) List 9 September 2004
Pepkor	0	3	2003–2002	Complete 2003 data not available on McGregor BFA (2013)
Planit Technology Holdings (PTH)	0	4	2002	Only one year Data not available on McGregor BFA (2013)
Profurn	0	3	2002	Only one year
Queensgate Hotels and Leisure (Qleisure)/Cyberhost	1	4	2008	Only listed on the Main Board for one year 2007–2002 Venture Capital 2010–2009 AltX
Retail Apparel Group (RAG)	0	3	2006–2002	Data not available on McGregor BFA (2013)
Shawcell Telecommunications (Shawcell)	0	5	2006–2002	Data not available on McGregor BFA (2013)
Siltek	0	4	2004–2002	Data not available on McGregor BFA (2013)
Softline	0	4	2002	Only one year
Stocks Hotels & Resorts (Stochot)	0	3	2006–2002	Data not available on McGregor BFA (2013)
Sweets from Heaven (Heaven)	0	3	2002	Only one year

Companies not considered[a]	Listed/Delisted	Industry	Years that could be considered[b]	Reason for not considering the company
Terexko	0	3	2006–2002	Data only available for 2002 2006–2003 data not available on McGregor BFA (2013)
Terrafin Holdings (Ter-fin)	0	6	2006–2002	Data not available on McGregor BFA (2013)
The Laser Group (Laser)	0	6	2002	Only one year
Tiger Automotive (Tiauto)	0	3	2007	Only one year
Top Info Technology Holdings (Top-tech)	0	4	2006–2002	Data not available on McGregor BFA (2013)
TWP Holdings (TWP)	0	6	2008–2007	2007 data not available on McGregor BFA (2013)
Union Alliance Media (UAM)	0	3	2002	Only one year
Universal Growth Holdings (Unigro)	0	2	2004–2002	Data not available on McGregor BFA (2013)
Vodacom Group (Vodacom)	1	5	2010–2009	List 18 May 2009
Wetherleys Investment Holdings (Wethlys)	0	3	2002	Only one year

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b)   The years were indicated in line with the most recent report available, followed by the preceding reports.

A firm had to be listed for at least two consecutive calendar years in order to form part of the sample. The 2001 information was used to determine whether the firms had already been listed at the end of 2001.

Source: Researcher's own construction based on the listing information published in a local newspaper *Die Burger* for the last trading day of 2001 to 2010.