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Corporate Governance Mechanisms and Risk-taking in South Africa

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Abstract

This study examines the relationship between the quality of corporate governance score and the risk-taking behaviour of firms using data from 120 companies listed on the Johannesburg Stock Exchange (JSE) from 2010 to 2016. More specifically, this study analyses the way in which (i) compliance to corporate governance, (ii) percentage of non-executive directors on the board, (iii) total number of board members, (iv) percentage of debt and (v) firm size affect risk-taking behaviour in South African firms. Using a dynamic panel data regression model, the research found that corporate governance score and leverage are significant and negatively related with risk. This contradicts prior studies in other markets. Furthermore, the percentage of NEDS, board size and firm size, though positively related, were found to be insignificant risk factors. This can have useful implications for managers in assessing risk behaviour of South African firms.

Keywords: corporate governance; risk-taking; non-financial companies; corporate governance score; board size; percentage of NEDs; leverage; firm size; South Africa.

1. Introduction

The recent global financial crisis and earlier corporate scandals have made researchers and corporate governance advocates more interested in the study of risk management. The concept of corporate governance, risk management and compliance has been a debatable issue for a longer period of time however, it has gained more attention recently due to high profile corporate collapses and frauds, the global financial crisis and increasing regulatory compliance obligations (Hardy, 2011). This increased attention is in the interest of attempting to find the best way possible for improving accountability, transparency and putting into place best risk management strategies.

Managing corporate entities involves the integrated monitoring and management of corporate governance mechanisms. For example, Gillan (2006) observed the importance of analysing and balancing the impact of both external and internal organisational forces in order to improve performance. Risk has proven to be one of the most problematic components to manage in most corporate entities regardless of the measures in place such as financial regulations (International Accounting Standards), Companies Acts, internal and external auditors, audit committees and the corporate governance regulations.

According to Tricker (2012), risk management involves the process of identifying the risk and the threats involved, assessing the likely impact on the business, evaluating the risk, deciding on the policy or the step to be taken and then reporting to management for approval. European Commission (2010) suggests that boards face four choices in managing risk. Broadly they are; risk avoidance, risk transfer, risk reduction, and risk retention.

Prior studies have linked inadequate risk management strategies to corporate scandals (Tarraf, 2011, and Tsung, 2017). According to Reilly and Brown (2000), companies often find it difficult to strike a balance between what level of risk to accommodate and what level of return they should expect as a result. Tarraf (2011) explains that through corporate governance, managers are vested with the responsibility to make sure they assess the economic benefit of accommodating a particular risk and try to maintain a desired risk appetite level. Indeed, some managers respond differently to economic situations and are more willing to take on risky investments than others. Reilly and Brown (2000) suggest that corporate governance

mechanism is there to control such behaviour ensuring that managers take appropriate amount of risk.

Maclean (1999) observed that the Cadbury Report (1992) acts as a landmark in corporate governance and the UK has produced more reports on corporate governance since then. This has led to a number of countries adopting the UK Combined Code, which is based on a 'comply or explain' principle. Alternatively, there is a rules-based principle that uses the Sarbanes Oxley Act (SOX) (2002), followed by the USA listed companies. The difference with the UK Combined Code is that companies must comply with the regulations of the SOX otherwise they risk penalties for not complying (Salman and Carson, 2009). The purpose, of course, is transparency and accountability through flexible application of recommendations provided by the code.

Whilst these are the worlds' popular models across the globe, there is still argument for and against them. While it is generally observed that managers may tend to exploit the option of either to comply or explain under the combined code as a disadvantage, MacNeil and Li (2006), mention that flexibility in application of the UK Combined Code confer on advantage as companies are exposed to different kinds of risks and different levels of managerial complexities which may require a lot of discretion and situational decisions. The South African Corporate Governance Code, King III, agrees by stating "the danger is that the board and management may become focused on compliance at the expense of an enterprise" (p.6) (IOD, 2009). It is the duty of the board of a trading enterprise to undertake a measure of risk for reward and to try to improve the economic value of a company. If the board has a focus on compliance, the attention to its ultimate responsibility, namely performance, may be diluted (IOD, 2009). However according to Ayogu (2001), this discretion exercised by managers tends to accentuate agency conflict in a firm, discussed in the next section.

South Africa is one of the countries that have to a greater extent assimilated the UK Combined code in its application (principles based). Instead of 'comply or explain', the King III rephrased this to 'apply or explain', the argument being that mere 'compliance' may not be enough but the emphasis on how the recommendations have been 'applied' matters most (IOD, 2009). The

latest version, King IV¹, adopts the “apply and explain” approach, which requires companies to apply all principles and also to explain how the principles are applied.

2. Risk, Governance and the SA Corporate Context

South Africa has a unique history of corporate practice and governance with the influence of Dutch and English settlers to the concentration of ownership in the hands of a minority white population (Nag, 2015). Similar to most of the Commonwealth countries, the corporate governance practices are adopted from the UK. However, South Africa also have a number of other laws which companies are expected to comply with. These laws are passed by the African National Congress (ANC) (Ntim, 2013)². According to Ntim (2013), the application of these laws makes the nature of business management in South African companies different from most of the European countries. This creates a unique context in the presence of compliance to King III (and now King IV) Corporate Governance Code to investigate the compliance to corporate governance and managers’ risk-taking behaviour, and therefore makes it unique to be examined. Furthermore, authors such as Vaughn and Ryan (2006) suggests that corporate governance in South Africa has a big implication on the African continent.

The South African Government has seen corporate governance emerging since 1994 when they introduced the King I report. This was then followed by King II in 2002, King III in 2009 and most recently the current King IV report in 2016. The first King report played a pivotal role in corporate practice and governance in South Africa after the political and economic changes in the mid-1990s. With successive updates of King reports, corporate governance practices have been improving overtime. Rossouw et al. (2002) suggests that the independence in 1994 and the subsequent assumption of power by the ANC led to a change of many Government policies in South Africa. These changes brought a number of uncertainties (risks) in business

¹ On 1 November 2016, the King Committee published the King IV Report on Corporate Governance for South Africa. The new King IV replaces King III entirely and is effective for financial years starting on or after 1 April 2017. The new report emphasises the importance of risk management and recommends that the risk committee comprises a majority of non-executive members of governing body. This recommendation goes beyond what was required in King III. The current study focuses on King III as the data investigated in this article relates to the King III report. Furthermore, it appears that the new King IV report adopts a similar stance overall as the previous King III report. Hence, the new King IV is not significantly or fundamentally different from King III. Moreover, it is likely that firms take several years to achieve complete application of all the principles and best practice recommendations of the new King IV report.

² One such example is the Black Economic Empowerment, Employment Equity, Environment and HIV/AIDS (B.E.E.E)

operations, justifying the evolution of the King reports in order to meet both national and international standards. The laws are still being refined until now, and they still have a special bearing (effect) on how a company should be managed³. According to Ntim:

“Historically, South Africa’s CG model has predominantly been Anglo-American (shareholding) in orientation, with firms primarily expected to serve the interests of shareholders. However, post-apartheid CG reforms, especially the 2002 King Report (King II), distinctively require SA firms to explicitly comply with a number of affirmative action and stakeholder CG provisions aimed at addressing historical socio-economic inequalities between white and non-white South Africans... This compels SA firms to depict some of the key features of both the shareholding and stakeholding (Continental Europe-Asia) models of CG in their annual reports, and thus explicitly makes the South African CG model a hybrid and unique within the Anglo-American world” (Ntim, 2013 p.149).

South Africa has its fair share of corporate scandals due to failure in its corporate practices and governance. Fidentia, MacMed, Randgold, Regal Bank and Saambou are some examples of corporate failures (Nag, 2015; Waweru, 2014)⁴. Moreover, Ntim et al. (2013) state that the recent financial crisis has reinstated the importance for effective corporate governance through proper risk management within organisations. Effective corporate governance should provide an adequate management of risk as set out in the King III report. In King III report, South Africa incorporated a whole chapter on risk management⁵, and placed the entire responsibility for risk management on the board of directors. Considering the fact that directors are either busy or, in most cases, are independent non-executives (INED) who may not be in a position to attend to business matter on a day-to-day basis, the report gives authority for directors to delegate some of these responsibilities to committees and management.

³ For example, Black Empowerment Act, 2003 requires South African corporations to, as far as possible, acquire their raw materials from a non-white supplier irrespective of costs. Effectively, these laws can arguably impact differently on the relationship between firm value and corporate governance compared to other developed nations (Ntim, 2013). This may also be true between the relationship with compliance to corporate governance and risk taking behaviour.

⁴ Studies such as Mangena and Chamisa (2008) have blamed poor corporate governance structures for corporate failures.

⁵ Risk management has been defined by the King III as: “the identification and evaluation of actual and potential risk areas as they pertain to the company as a total entity, followed by a process of either avoidance, termination, transfer, tolerance, exploitation, or mitigation of each risk, or a response that is a combination or integration” (p. 123) (IOD, 2009).

3. Theoretical Literature Review

Various studies have described corporate governance using various theoretical models; most commonly, the Agency theory and the stakeholder model (West, 2006). According to Dharmastuti and Wahyudi (2013), the separation of ownership and control will result in the agency relationship when the principal delegates their authority towards the agent to carry out some services of the principal that are conceptualised in a series of contracts. Such separation can lead towards conflicts as a result of the conflict of interests which generally occur in almost all individual activities in the principal – agency hierarchy. This conflict of interest results in agency costs which necessitate the availability of sound governance mechanisms to act as a control mechanism to ensure that managers act in the interests of shareholders.

Studies such as Jensen and Meckling (1976); Eisenhardt (1989) and Fama (1980) show that agency costs arise due to asymmetric information between managers and the principal and also the possibility of conflict or divergence of interests between the principal and the agent. Saunders and Cornett (2008) and Amihud and Lev (1981) observe that agency problems could arise where there are conflicting investment decisions between shareholders and management. Tricker (2012) suggests that agency theory encourages principals (shareholders) not to trust their agents (managers). Due to this trust issue, firms spend dearly on monitoring management, whereas the stewardship theory considers, why the company should make a double spending on monitoring when it has already spent on monitoring, by employing management who are there to monitor the company. Ho (2005) explains that the theory rests on the fact that managers are stewards of the company and therefore they have a fiduciary duty towards their principals, and if they can be trusted and delegate with sufficient powers to control the company they become intrinsically motivated to accomplish organisational goals, rather than their personal goals.

Davis et al. (1997) state, managers (stewards) have the professional instinct to protect and maximise a firm's value through performance, because this is how they maximise their utility functions. Furthermore Tricker (2012) also states that the theory upholds the understanding that an entity is an artificial person that is governed and controlled by state laws. Therefore managers are there to control the company according to the law and if managers act against society or the owners during the course of managing the company, then the law will take its course.

More recently, Barney and Hesterley (2008) explain that the stewardship theory aims at empowering the employees (via benefits, rewards and proper training etc.) and enriching them with enough authority, built upon trust and encourages board members to act more responsibly, professionally and autonomously in order to improve corporate value. In doing so the stewardship theory attempts to mitigate the agency costs

The stakeholder concept is another framework discussed in literature with regards to governance of corporations. This theory is holistic in its application; it looks at a company as a dependent variable that depends upon a number of factors for its survival. It desires to take into consideration all the parties that are impacted by the existence of the company but also all parties that impact on the company. This understanding of the stakeholder theory led to the definition of a stakeholder as, “any group or individual who can affect, or is affected by, the achievement of an organisation’s objectives” (Freeman, 1994 p.46).

Porter (1980) acts as one of the accelerators of the idea that an organisation does not exist to fulfil the economic interest of only one group (shareholders), but also for other interested parties which need to be taken into consideration when formulating the corporate strategies. This view is also consistent with the King III (and now King IV) that believes that, shareholders are imperative but in order to create value for them, there is need to consider the four drivers of a successful business: how good the company is at involving and motivating its staff, the relationship with its customers; how well a firm relates with its suppliers, and how the company’s image is perceived within the community.

However Ansoff (1987), makes a distinction between a corporation’s responsibilities to a wide range of interested parties and the objectives that guide management in fulfilling the company’s purpose and define its goals. The author argues that it is important to consider all stakeholders but that the ultimate goal should not be compromised, which is to maximise shareholders value. Since if anything goes wrong, it is the shareholder’s funds which are at stake and therefore it makes sense to give them the primary consideration when making decisions including decisions that affect profits. Therefore, whilst the stakeholder theory looks rational when considering all stakeholder interests, Tricker (2012) poses an argument that it is flawed in its practical sense because it is really difficult to meet the needs of all stakeholders without unreasonably risking the shareholders' funds.

West (2006) suggested that the corporate governance can be categorised as either Anglo-American or European where the Anglo-American approach is skewed towards the agency theory whilst the European approach is more in line with the stakeholder model. South Africa adopted most of its corporate practice from the UK and hence its Anglo-American approach to corporate governance. However, the various successive versions of the King reports, with their “inclusive” approach suggest that corporate governance in South African is moving towards a stakeholder approach with a particular focus on groups such as employees, environment, health and safety and society more generally (Rossouw, 2002; West, 2006; Masegare and Ngoepe, 2018)⁶.

4. Empirical Literature Review and Hypotheses Development

As explained earlier, different countries have different corporate governance codes depending upon the requirements of the national context in which the code applies. Tricker (2012) highlighted that due to different economic growth levels and changes in technology, businesses are exposed to different kinds of risks which may affect the way businesses are conducted. Therefore, the codes are subjected to changes from time to time in order to fit and provide the necessary controls at the time they are being applied.

With all the governance and risk structures companies are employing, one wonders why the financial crisis was not properly foreseen. This alerts corporate bodies to avoid being complacent with their current risk measures that they have in place (Meyer, 2006). Hence the overwhelming interest in risk management which has seen most countries incorporating a risk committee as part of the board to manage risk related cases as they arise as part of their governance code.

King III vests in the board the responsibility for risk governance, management, response, assessment, monitoring, assurance and disclosure. As part of risk-management enhancement, South Africa has incorporated a whole chapter in King III on risk management, and placed the entire responsibility for risk management on the board of directors.

⁶ The current King IV defines corporate governance as the exercise of ethical and effective leadership by the governing body towards the achievement of four governance outcomes: Ethical culture; Good performance; Effective control and Legitimacy (King IV p.20).

Table 1: Section IV of King III: The Governance of Risk

Sub section	Governance Element	Required Principle
4.1	The board's responsibility for risk governance	The board should be responsible for the governance of risk
4.2	The board's responsibility for risk governance	The board should determine the levels of risk tolerance
4.3	The board's responsibility for risk governance	The risk committee or audit committee should assist the board in carrying out its risk responsibilities
4.4	Management's responsibility for risk management	The board should delegate to management the responsibility to design, implement and monitor the risk management plan
4.5	Risk assessment	The board should ensure that risk assessments are performed on a continual basis
4.6	Risk assessment	The board should ensure that frameworks and methodologies are implemented to increase the probability of anticipating unpredictable risks
4.7	Risk response	The board should ensure that management considers and implements appropriate risk responses
4.8	Risk monitoring	The board should ensure continual risk monitoring by management
4.9	Risk assurance	The board should receive assurance regarding the effectiveness of the risk management process
4.1	Risk disclosure	The board should be responsible for information technology (IT) governance

Note: This table presents an extract on risk from Section IV of King III: The Governance of Risk report.

Source: from the Institute of Directors (2009)

As stated in the IOD (2009) report, while efforts are continuously being made to derive a better strategy for risk management, new developments are still being discovered, with the notable ones being: Enterprise Risk Management (hereafter, ERM), and Business Continuity Planning (hereafter, BCP). In contrast to audit committees, Onder and Ergin (2012) explains that ERM takes the holistic approach in risk management and does not look at only the financial context of risks but assess risks of all types and from all angles of the organisation. ERM formulate plans and strategies of how to tolerate and overcome risks, the strategies are evaluated and reviewed for effectiveness to make sure only the desired levels of risks are accommodated and relevant reports should be submitted.

Furthermore, there appears to be very limited literature on the relationship between corporate risk taking and corporate governance in emerging markets and more importantly, there is almost no literature considering such relationship in South Africa. Most studies in South Africa have concentrated on the relationship between firm value and corporate governance. Furthermore, the evidence from previous literature documents mixed findings and contradicting views.

4.1 Corporate Governance Score

Demetriades and Auret (2014) suggest that a positive impact on firm value can only be achieved by the board if it makes every stakeholder understand the intrinsic merit of

compliance, otherwise it becomes the box-ticking approach type of compliance. With this understanding, the current structure of corporate governance through King III report emphasises that “the board should act as a focal point for and custodian of corporate governance” (pg. 29) (IOD, 2009). This is because it is the board that enforces and decides on compliance in an organisation and at the same time also decides on what sort of risk to accommodate.

Studies such as Pathan (2009) and Fortin et al. (2010) indicate that firms with proper governance and monitoring structures have high risk-taking initiative because they are able to take calculated and well-assessed risks in which they have strong belief of success. In contrast, Koerniadi et al. (2013), find a negative relationship between risk taking and corporate governance (board size and multiple large shareholders) in New Zealand firms. Consistent with Koerniadi et al. (2013), Helland and Sykuta (2005) also found a negative relationship between risk taking and corporate governance in banks. Reilly and Brown (2000) explain that the challenge is to reduce risk and promote value or take on risk and promote value otherwise firms may reduce risk and also reduce value because some managers are just risk-averse. More recently, John et al. (2008) identify that corporate risk taking and firm growth rates are positively related to the quality of investor protection.

The nature of corporate governance in South Africa has dramatically changed. Ntim (2013) and Kakabadse and Korac-Kakabadse (2002) suggest that there is a positive relationship between corporate governance and firm value whilst IOD (2009) and Kakabadse and Korac-Kakabadse (2002) emphasise that King III has improved its application by clearing up many of the inconsistencies which generally made King I, and King II lacking in some areas. Some of the examples of improvements made to King III are: the explicit clarification of the roles of directors and the requirements for the non-executive directors (NEDs) and independent directors which were not clear in King I (Ntim, 2011). IOD (2009) explains that there is also an introduction of the business rescue function, enhancement to risk management (including information technology risk assessment) and reporting, enhancement to the code of ethics which also include some of the affirmative values, sustainability and integrated reporting.

With all these improvements to corporate governance in South Africa, compliance with corporate governance may result in improved monitoring of firms by the directors. As discussed in Section 2, the agency theory suggests that improved monitoring reduces

aggressive risk taking (Eisenhardt, 1989; Fama, 1980; West, 2009; Fama and Jensen, 1983) our first hypothesis will be:

H1: There is a negative relationship between the corporate governance score and risk taking in South African firms.

4.2 Percentage of Non-Executive Directors

It is clear from a review of the King reports that an inclusive approach of all stakeholders has gained prominence. King III requires that the majority of the board members should be NEDs and the majority of the NEDs should be independent. It also stipulates that one third of the NEDs should rotate every year. This is to promote independence of the board in its decision making.

Commentators have argued for and against whether the NEDs provide effective monitoring and promote firm value. Durbach and Parker (2009), Bozec (2005) and Gupta and Fields (2009) argue that it is not always the NEDs that act independently; at times, they have significant conflict of interest due to relationships and connections with inside executives and thereby compromise their independence. When the independence is affected, these directors lose their monitoring effectiveness and this can lead to a decrease in company value.

Weir and Laing (2000) argue that the outside directors have little knowledge about the firm and therefore find it relatively difficult to effectively monitor and advise the executive directors. Bozec (2005) supports the argument by suggesting that this is because the directors do not spend most of their time at the company, in fact most of them work in different companies, giving them little time for monitoring. Furthermore, Pfeffer (1973) noted that boards dominated by independent non-executive directors' exhibit a tendency to suppress initiative and strategic thinking which reduces strategic risk taking by executives; because of excessive managerial supervision. However, Vafeas and Theodorou (1998) and Bhagat and Black (2002) argue that the NEDS have the advantage of greater independence compared to inside directors, because they act without fear and favour, their independence improves the quality of advice, monitoring and discipline provided to management which has a great positive impact on firm value. Furthermore, Haniffa and Hudaib (2006) suggests that the NEDs act as

a source of experience, expertise and business opportunities which are of more significance to value creation in an organisation.

The point raised by Haniffa and Hudaib (2006) is important, considering the South African context, where the need to balance the political needs and the needs of other stakeholders at large (in form of the affirmative values and laws for example, the B.E.E.E⁷), against the company's goals becomes crucial (Kakabadse and Korac-Kakabadse, 2002). This leads to the thought that in South Africa the presence of NEDS should lead to more scrutinised and calculated risk.

Prior literature generally supports the notion that the higher percentage of NEDS leads to better management of risk (Ntim et al., 2013). NEDS play a crucial role in challenging the board on its management of risk. This is consistent with both the Agency theory and the Stakeholder theory since NEDS add independence and greater accountability which encourages a holistic stakeholder approach. Empirical studies such as Abraham and Cox (2007), Elzahar and Hussainey (2012) and Ntim et al. (2013) suggest that there is positive relationship between NEDs and risk disclosures.

Summarising the above discussion, and considering the nature of South Africa where stakeholder theory is important as indicated in Section 2, leads to the second hypothesis that is:

H2: There is a positive relationship between the percentage of NEDS and risk taking in South African firms.

4.3 Board Size

Agency theory suggests that boards greater in size will incorporate a variety of expertise which will lead to effective monitoring (Elzahar and Hussainey, 2012). Prior literature also suggests that the number of directors has an impact on the effectiveness and independence of the board. It is interesting to note that the King III does not give a specific number of directors to be the best fit but rather leaves it to the discretion of the members to decide by stating “every board

⁷ B.E.E.E stands for Black Economic Empowerment, Employment Equity, Environment and HIV/AIDS.

should consider whether its size, diversity and demographics make it effective” (pg. 39) (IOD, 2009). This is to allow for flexibility as indeed one size does not fit all.

For this reason, the current study analyses the relationship between the board size and the firm’s risk-taking behaviour. Previous literature on this subject is inconclusive. Hermalin and Weisbach (2003) argue that smaller boards tend to give high incentive pay to their CEOs that acts as a drive to take on more risky investments in order to compensate through high performance. However, Sah and Stiglitz (1986, 1991) argue that larger boards are associated with less risky decisions because the risk is averaged out amongst the large number of people deliberating on the topic. Moreover, Klein (2002) suggests that larger boards may be more effective due to enough committees, which are also rightly chaired because of the availability of enough directors on the board. Most recently, Tricker (2012) argue that larger boards may be necessary in big and widely diversified firms, in which the complexity of the organisation justifies the need for a large number of the director whilst Elzahar and Hussainey (2012) and Ntim et al. (2013) report that board size has a positive effect on corporate risk disclosure.

Generally, the above studies suggests that smaller boards may take uncalculated risk due to insufficient stakeholder representation and contribution towards a particular decision as opposed to larger boards. For example, Wang (2012) found a negative relationship between board size and risk taking. The author reported that that small boards give CEOs larger incentives to take more risk than larger boards. Koerniadi et al. (2013) found a negative relationship between board size and risk taking whilst investigating New Zealand firms. The authors suggest that large boards are associated with decreased levels of risk taking. In line with this argument, we develop our third hypothesis:

H3: Board size is negatively related to risk taking behaviour in South African firms.

4.4 Leverage

Agency theory argues that the use of leverage⁸ is a positive step in alleviating agency costs (Jensen and Meckling 1976). Leverage ratio indeed becomes another crucial element affecting

⁸ Leverage has been defined as the percentage ratio of short term and long term book value of debt to total equity of the company.

risk levels due to agency conflicts. This proposition is highlighted on the understanding that leverage changes the ownership structure by introducing bond holders or creditors who for fear of losing their invested funds, have a keen interest in monitoring the performance of the firm. This monitoring by the external stakeholders encourages the managers to reach their expectations. On a similar note, managers develop an interest in working hard and repaying the capital and interest attached to the debt contracts because this reflects directly on their performance (John and Senbet, 1998; Jensen, 2003).

Furthermore, the use of debt financing has a tax advantage on the interest on debt that makes debt financing more desirable than equity financing (Berk and DeMarzo, 2014). However there are costs associated with debt. This is consistent with the dynamic trade off theory as applied by Morellec et al. (2012) which finds that agency conflicts affect the leverage targeted ratio. The more the information asymmetry (conflicts) the wider the distance from the target ratio and the higher the risk⁹. Secondly, the benefit of debt is traded off against the cost of debt, implying that debt will be beneficial to a limit whereas beyond that point the cost of debt becomes unfavourable. This suggests that taking on more debt will risk financial distress, giving a positive relationship between debt and risk taking. This allows us conclude that higher debt is associated with greater risk taking. Therefore the fourth hypothesis is formulated as follows:

H4: Leverage is positively associated with risk taking in South African firms

4.5 Firm Size

The current study controls for firm size because according to Singh and Davidson (2003) larger firms are subject to greater scrutiny by stakeholders than smaller firms. Studies suggest that total assets of a company are the best indicator of a firm size. The rate of growth and total assets can indicate the maturity stage of the company. Nurainy et al., (2013) explain that usually mature companies portray a stable and steady flow of profit because they are able to forecast a potential (future) profit with a higher degree of certainty than smaller firms.

⁹ Wang (2012) also finds a positive relationship between leverage and risk taking.

Anderson (2009) observes that larger firms have more resources, and also take on bigger risks. With enough resources, if such firms have proper management structures, they are able to counter the risk. The results are higher yields for smaller firms, since higher risk leads to greater returns. Therefore, this suggests that companies with relatively large total assets can operate with a greater percentage of efficiency than a company whose total assets are low. Thus, firms with large total assets have the potential to manage a higher degree of risk. Therefore, one would expect to find a positive relationship between firm size and risk taking in South African companies. Therefore, we set our fifth hypothesis as follows:

H5: Firm size is positively associated with risk taking in South African firms

Thus, it has been observed that prior studies have been conducted on: firm value and corporate governance; risk taking and foreign investors; risk taking and corporate governance (board size and multiple large shareholders); corporate governance and the cost of capital. However, none has specifically examined the relationship between risk taking and compliance to corporate governance score in South Africa. This research aims to fill this gap by considering the governance score as the independent variable for the analysis. Furthermore, the study takes account of percentage of NEDs, board size, leverage and firm size in an emerging market of South Africa.

5. Research Design

Data has been sourced from the DataStream, with an original sample of 341 firms listed on the JSE from the start of 2010 until the end of 2016 (a 7-year time period). After filtering out firms which had missing data within the time period of this study, 120 firms remained. Table 2 presents information of the industries the sample firms come under.

Table 2: Firm's Industrial Classifications

Industries	Number of firms
Automobile, Real Estate and Finance	32
Chemicals, Oil and Gas, Pharmaceuticals, Health Services and Biotechnology	10
Food and Beverages production and Retailing	23
Industrial, Manufacturing and Distribution	26
Mining	11
Personal and others	12
Technology and Telecommunication	6
TOTAL	120

Note: this table provides information on the industries the sample firms belong to and the number of firms in each industry category.

This study uses panel data regression for its investigation. According to Lewellyn and Muller-Kahle (2012), who also applied a similar approach, explained that the use of panel data has become popular in strategic management research. This is due to the intrinsic advantages of the approach, which include: controlling for unobserved heterogeneity, improving statistical estimates by enlarging sample size, and capturing both average effects for individual units and dynamic effects for an entire sample (Hitt et al., 1998). The following dynamic fixed-effect panel regression model is applied for this investigation.

$$Beta_{it} = \alpha_{it} + \beta_1 CGS_{it} + \beta_2 NEDS_{it} + \beta_3 BS_{it} + \beta_4 LEV_{it} + \beta_5 FS_{it} + \sum \beta_6 Tau_{2010-2016} + F_i + \varepsilon \quad (1)$$

The variables in the above equation are defined in Table 3. Beta (*Beta*) in the above equation is the dependent variable that measures the risk of the sample firms whereas the firm size is a control variable and considered in the research as the logarithm of the total firm size.

Table 3: A Summary of the Variables

Symbol	Variable name	Definition
CGS_{it}	Corporate Governance Score	The score for each company from DataStream, representing how best a company complied with Corporate Governance.
$NEDS_{it}$	Non-Executive Directors	Percentage of non-executive directors on the board at the end of the financial year.
BS_{it}	Board Size	The total number of board members at the end of the financial year.
LEV_{it}	Leverage	Percentage of total debts (long term and short term) to total equity.
FS	Firm size	Natural logarithm of total assets.
$Beta_{it}$	Beta	Firm specific risk obtained by regressing a company stock price against the index. This is the predicted value.
ε	Error	A variable that explains that the model does not fully represent the actual relationship between the independent variable(s) and the dependent variable.
α	Constant term	The value of risk that is fixed.
Tau	Temporal effect	Time series effect dummy for years from 2010–2016.
$\beta_1 \dots \beta_6$	The gradient of the independent variables	The gradient, measuring the change in independent variables.

Note: this table provides the name and definition of the variables used in the model. Beta is the dependent variable, Governance score is the independent variable, per cent non-executive directors, board size, leverage and firm size are other independent.

A number of diagnostic tests were conducted in order to understand the characteristics of the data set to assist in selecting the most appropriate model for the current investigation. Initially, it was deemed appropriate to observe the individual and joint effects as the data is in panel format. Therefore, F test on the joint significant on the temporal effect (τ) was observed. This was followed by looking at the variance and mean of beta between individual (cross-sectional) and temporal (time series) effect. Both effects were found to be significant. This finding casts doubt on the appropriateness of previous research which has ignored the temporal effect when analysing the risk-taking behaviour of the firms listed in South African.

For the purpose of estimations, a number of initial regression approaches were carried out which involved the pool OLS, random and fixed effect estimation. Furthermore, through the assumptions related to the error components, the selection of panel model was determined. In particular, the final model selection was based on the lowest value of root-mean-square error (RMSE) and the highest R-squared. The results suggested that the pool OLS approach was not appropriate and therefore either the random effect or the fixed effect model¹⁰ would be a better fit. To test if the fixed effect or random effect model was appropriate, Hausman test was conducted. A P-value of less than 0.05 suggested that the fixed effect model is appropriate for this investigation.

Furthermore, the dispersion in relation to between (firms) and within (time) variation was also tested. Overall, most of the variation (*CGS*, *NEDS*, *BS* and *FS*) of the standard deviation spread between (firms) variables rather than within (time) variations except for leverage (*LEV*). Further analysis revealed that time dummy seems to be significant, suggesting that the variation of the data is between firms (cross sectional effect) and within time (temporal effect). Therefore, it was deemed reasonable to include the time dummy in a full model.

The elements of panel data are derived by the ability to isolate the effects of either time or a unit variability in order to make reasonable intuitions. When each of these elements are subject to within and between variations, the heterogeneity issue becomes essential to be dealt with in order to have unbiased and efficient estimators. A heteroscedasticity test revealed that the variance was not constant, thereby implying heteroscedasticity. To confirm this, a White test

¹⁰ Individual fixed effect model (time period fixed effect) requires a lot of time dummy variables in the model. In the current investigation, 6 dummies as there are 7 years, which can affect the degrees of freedom and increase the standard errors.

was carried out. The p-value was below 0.05 confirming heteroscedasticity in the data. To confirm the presence of individual heterogeneity, the Bruesh pagan test was conducted on the estimate to see if it was different from zero. The results suggest that heterogeneity was present¹¹. Therefore, to take account for heteroscedasticity, the cluster-robust standard errors for FE was estimated as the final model. Equation (1) is the final model applied for the current investigation which is deemed to be the most suitable model.

6. Empirical Results and Discussion

This section presents the descriptive statistics of all individual variables, the correlation matrix that tests the collinearity of the variables and finally the regression analyses reporting how each variable is related to the dependent variable, whilst also showing how efficient the model is at predicting the behaviour of risk in South African companies.

Table 4: Summary of Statistics

Variables	BETA	GVSC	NEDS	BS	LEV	FS
N	840	840	840	840	840	840
Mean	0.67	58.20	53.29	11.42	112.45	16.67
SD	0.39	20.84	15.69	3.13	991.06	1.53
Minimum	-0.78	3.34	12.55	3.00	0.00	13.16
Maximum	2.61	94.75	83.22	23.00	2756.47	21.48
Sum	132.72	10653.16	8297.90	1991.00	8391.29	1199.35

Note: In Table 4 independent variables are Corporate governance score (GVSC), leverage (LEV), percentage of non-executive directors (NEDS), board size (BS) and Firm size (FS) while BETA is dependent variable. N stands for the number of observations.

Table 4 presents the descriptive statistics, reporting the mean, standard deviation, maximum, minimum, mode and median values of all individual variables. A visual inspection of Table 4 suggests that the average risk in South African companies in the years 2010 to 2016 was 0.67. This means that companies took a relatively lower risk level compared to the market which is estimated at a benchmark of 1. The standard deviation of 0.39 demonstrates the amount of risk changes or deviation from the mean. The maximum and minimum risks are 2.61 and -0.78 respectively. The standard deviation of 0.39 indicates a relatively high level of volatility. This is also evident in the gap between the maximum and minimum values (3.39).

¹¹ These results are not presented in this paper and are available upon request.

Corporate governance score has an average of 58.20 with a standard deviation of 20.84, and a maximum and minimum of 94.75 and 3.34, respectively. This implies that most companies were at almost 60 per cent compliance level. However, with a standard deviation of 20.084 and a minimum value of 3.34 it is possible to conclude that some companies' compliance level was relatively low.

NEDS has an average of 53.29 per cent with a standard deviation of 15.69 per cent, and a maximum and minimum of 83.22, 12.55. According to IOD (2009), this is a concern considering the requirements of King III report requires the majority of the board members to be NEDS. In this case, it seems the number of NEDS and executives is just about equal (53.29 per cent). However, this finding agrees with the UK Corporate Governance Code, which says that at least 50 per cent of the board members should be NEDS (FRC, 2012).

Board size has a mean of 11.42 with a standard deviation of 3.13. The maximum and minimum values of 23 and 0, respectively. This is slightly higher according to Lipton and Lorsch (1992) who suggested that board size should range between eight and nine directors. However, in South Africa according to IOD (2009), this is not an issue of concern since King III report recommends the board size to be discretionary.

Leverage has an average percentage value of 112.45 with a standard deviation of 991.06, and a maximum and minimum of 2756.47 and 0, respectively. This means that most companies had a balanced proportion between debt and equity. The standard deviation, maximum and minimum also indicates that some companies were either fully debt financed or fully equity financed.

Finally, the firm size reports a mean value of 16.67 with a standard deviation of 1.53. The maximum and minimum were 21.48, 13.16, respectively. It appears there were no large variations among firm size.

Table 5 reports the Correlation Matrix of all the variables and indicates how the variables are correlated in this study. According to Field (2009), multicollinearity exists when there is strong correlation between two or more predictors in a regression model. Multicollinearity between predictors makes it difficult to assess the individual importance of a predictor. If the predictors are highly correlated, and each accounts for similar variance in the outcome, then ranking the

variables in terms of impact on the outcome becomes difficult (Field, 2009). It simply implies that the variables can be used interchangeably.

Table 5: Correlation Matrix

	BETA	GVSC	NEDS	BS	LEV	FS
BETA	1.000	0.295**	0.247	0.091	-0.248*	-0.206
GVSC	0.295**	1.000	0.288**	0.173	-0.039	0.080**
NEDS	0.247	0.288**	1.000	-0.585*	-0.491	0.486*
BS	0.091	0.173	-0.585*	1.000	-0.283	0.672**
LEV	-0.248*	-0.039	-0.491	-0.283	1.000	-0.276
FS	-0.206	0.080**	0.486*	0.672**	-0.276	1.000

Note: In Table 5 the independent variables are Corporate governance score (GVSC), leverage (LEV), percentage of non-executive directors (NEDS) and board size (BS). Firm size (FS) is a control variable while BETA is dependent variable. Worth noting is that a correlation between the independent variables of greater than 0.9 adversely affect the interpretation of the results on the dependent variable. The stars (*) and (**) denotes the correlation significance at 5 per cent and 1 per cent, respectively.

Field (2009) argues that a correlation coefficient of above 0.8 and 0.9 between the independent variables can adversely influence the results of the regression model. In Table 5 the highest correlation is of 0.672 between firm size and board size which is significant at 1 per cent. This means the level of collinearity in this model is low enough to conclude that the independent variables account for the variability on the dependent variable.

As seen in Table 5, corporate governance score is positively correlated with firm size with a coefficient of 0.080 and significant at 1 per cent. This finding confirms the findings of Ntim (2011) suggesting that adherence to governance standards in South African companies improves firm value or growth.

Interestingly, NEDs ratio is negatively related to board size with a coefficient of -0.585 (significant at 5 per cent). This is an interesting discovery in South African firms as it assumes smaller boards are willing to accommodate more NEDs than larger boards. Furthermore, firm size is positively related to NEDS with a coefficient of 0.486 and significant at 5 per cent. Since firm size is associated with firm growth, the findings support the results presented by Tricker (2012) that outside directors improve a firm's growth due to external resources like business opportunities and expertise they bring to the business.

The results from Table 6 suggests that is a correlation coefficient of 0.3110 between beta and all independent variables while the R square indicate that the model is accountable for 7.52 per cent of the variation in the dependent variable. The difference between the adjusted R square and R square is only 0.0127 suggesting that if the model was applied to the whole population

rather than the sample, only 1.2 per cent predictive power would have been gained; therefore, the variability found by the model can also be applied to the whole population.

An inspection of Table 6 indicates that the corporate governance score is significant and negatively related to risk taking with a coefficient of -0.0030 (significant at 1 per cent). This implies that a negative change in corporate governance score by a unit, will lead to a decrease in risk of 0.0030. Therefore we accept our first hypothesis which stated that corporate governance score is negatively related to risk taking. This finding is consistent with the findings of Helland and Sykuta, (2005) who found a negative relationship between the two. Perhaps this is reflective of King III adopting various changes in order to meet international standards, political and affirmative value requirements (Rossouw et al. 2002). KPMG (2009) supports the observation by stating that due to higher costs and greater uncertainties involved with these changes, its application will take some time to be cost effective.

Table 6: Panel Least Square Regression Results

Variable	Expected Correlation	Coefficient	Std. Error	Prob
C	N/A	-1.4082	0.5614	0.012
GVSC	Negative	-0.0030**	0.0007	0.006
NEDS	Positive	-0.1580	0.0032	0.232
BS	Negative	0.0120	0.0068	0.079
LEV	Positive	-0.0007*	0.0001	0.038
FS	Positive	0.1152	0.1048	0.701
<i>Tau</i> 2010		0.1412	0.0361	0.062
<i>Tau</i> 2011		0.1490	0.0344	0.059
<i>Tau</i> 2012		0.0691*	0.0318	0.049
<i>Tau</i> 2013		0.0522*	0.0304	0.039
<i>Tau</i> 2014		0.0198*	0.0292	0.021
<i>Tau</i> 2016		0.1028*	0.0306	0.026
R	0.3110			
R-squared	0.0625			
Adjusted R-squared	0.0752			
F-statistic	4.3000			
Prob(F-statistic)	0.0000			

Note: This table shows the results of the regression model. The variables are Constant (C), Corporate governance score (GVSC), percentage of non-executive directors (NEDS), board size (BS), leverage (LEV) and Firm size (FS). * and ** denotes significance at 5 per cent and 1 per cent, respectively. *Tau*2015 was omitted due to collinearity.

On the contrary, the findings contradict the research by Pathan (2009) and Fortin et al. (2010) who also found a positive relationship between good corporate governance and risk taking. Barney and Hesterley (2008) also suggested that when managers are provided with necessary resources, they are intrinsically motivated to achieve a company's goals which includes taking calculated risks that enhance shareholders value. Taking an alternative view, it is important to note that South Africa has added many provisions in the King III as indicated in Section 2 and that the implementation of these provisions will take time to be cost effective (KPMG, 2009). This implies a higher level of costs and uncertainties in the early years of its application which may also help to explain the negative relationship between risk taking and corporate governance score.

The second hypothesis states that the percentage of NEDS is positively related to risk taking in South African firms. The results disagree with the hypothesis (negative coefficient of -0.1580) however it is not significant at any required level. Since the result does not show any significance, this study supports the findings of Coles et al. (2001), who suggested that there is no link between excessive risk taking and the percentage of external board members.

Though the coefficient from the regression test is not significant at any level, the study found significant positive correlation between corporate governance score and NEDS (0.247) in Table 5 (Correlation Matrix). This may suggest that in South African firms, the NEDS are vital in ensuring governance compliance while at the same time the nature of King III does not make the NEDS (managers) risk-averse due to the autonomous power and responsibility given to them through the 'apply or explain' principle. According to Cohen, et al. (2013), this is in contrast with the USA after the financial crisis where risk taking is found to be negatively related with compliance to SOA 2002 because managers tend to avoid risky investments for fear of litigation and personal liability.

The third hypothesis states that board size is negatively related to risk taking. According to the results of the coefficient, BS is positive instead of the expected negative value (0.0120). This could be because IOD (2009) states that South African companies are required to rotate one third of NEDS every year. This could be a reason for the positive relationship as shown in Table 6 because the larger the board, and the greater the number of directors to be rotated every

year, the higher the costs¹². The finding contradicts with Wang (2012) and Koerniadi et al. (2013) who found a negative relationship between board size and risk taking. Nevertheless the coefficient was not significant and therefore hypothesis three failed to be accepted.

In the South African context, IOD (2009) requires that one third of the non-executive directors should rotate every year and that directors must be given enough training at the start of their job. KPMG (2009) reported that the training for directors can be costly. This means that the rotation of directors every year is even more costly. Moreover, rotation of the directors may reduce efficiency because every year the company has new people with new changes and thereby increasing risk. This also implies that the greater the number of directors a company rotates the greater the cost and the risk involved. This may also explain why larger boards are associated with more risk in South African companies

The fourth hypothesis states that leverage is positively related to risk taking. The results were significant but the outcome relationship was unsupported because leverage turned out to be negatively related to risk taking (-0.0007). This is in contradiction to the findings of Wang (2012) who reported a positive relationship between leverage and risk taking.

The relationship suggests that South African companies were not heavily geared; this is evidenced from the average percentage of debt financing in Table 4 (50.86 per cent). In a South African context, this may be consistent with the trade-off theory. According to Berk and DeMarzo (2014), the trade-off theory says that there is less risk or more advantages associated with debt financing but this only applies up to a certain limit because when debt becomes excessive, the costs become more than the advantages gained. Therefore, this means that the cost of debt from the 50.86 per cent average in the South African market context was not considered as excessive debt ratio to trade off against the benefits from debt financing – hence the negative relationship.

Finally, consistent with our prediction, the results from Table 6 support the rejection of the fifth hypothesis. The results suggest that firm size as a control variable is positively related to risk taking even though it is not significant (Coefficient of 0.115240 with a P- value of 0.701). However, the relationship found agrees with Anderson (2009) that larger firms tend to attempt

¹² KPMG (2009) observed the rotation of directors to be costly.

bigger risks and with proper management they also yield more. This also justifies Tricker (2012) who said that larger board sizes are required in larger firms to match the complexity (risk) associated with such firms. Nonetheless, the result for firm size in this study is insignificant and therefore robust inferences cannot be drawn.

Thus, using a dynamic panel data regression model for a large number of firms in South Africa, the current study finds that corporate governance score and leverage are significant and negatively related with risk taking in South Africa whilst the percentage of NEDs, board size and firm size were found to be insignificant. These findings will have useful implications for managers as it will help them understand different corporate governance mechanisms and their relation with risk taking behaviour within organisations in the South African context.

7. Summary and Conclusion

Risk management has gained significant interest in recent times due to financial scandals and the global financial crisis. Corporate governance and corporate risk management are of particular concern in emerging markets. Yet, there is not much literature on the relationship between corporate risk taking and corporate governance mechanisms in South Africa. Furthermore, in light of the ongoing developments in corporate governance in South African and the unique history of corporate practice and the nature of business management in the country, the current study offers a unique context to investigate the relationship between corporate governance mechanisms and the risk taking behaviour of firms in South Africa.

This study contributes to the literature by investigating risk-taking behaviour of 120 firms listed on the JSE and taking account of the temporal (time series) effect which was ignored in prior studies. In particular, we draw from the agency theory and stakeholder theory to examine the relationship between risk taking and (i) compliance to corporate governance score, (ii) percentage of NEDs, (iii) board size, (iv) leverage and (v) firm size in the emerging market of South Africa. Authors such as Ntim et al. (2013) emphasise the importance of effective risk management for good corporate governance especially in the aftermath of the global financial crisis.

The research found that corporate governance score is significant and negatively related with risk taking whilst leverage is also significant and negatively related to risk taking. Furthermore,

although the percentage of NEDs, board size and firm size are positively related to risk taking, these variables were not significant. These findings can act as a guide for managers in decision making. The results can help managers understand which governance mechanisms will result in what type of risk behaviour for an organisation in South Africa.

Furthermore, the implementation of King III in South Africa was seen as an aspirational code and took entities several years to achieve complete application of all the principles and best practice recommendations (KPMG, 2009). The challenge consisted in ascertaining the optimal level of application required, whilst balancing the costs; and deciding on the risk levels undertaken and benefits involved, in order to meet stakeholders' expectations. It will be interesting to see how the new King IV report transforms the corporate governance quality within South Africa. The change from "apply or explain" principle in King III to "apply and explain" in King IV will require not only the application of the principles but also a narrative as to how the principles are applied. This would be an interesting future research avenue to investigate in light of the new King report.

The findings of this investigation add to the literature concerning the emerging market in South Africa. Indeed, given that South African corporate governance is influential in other African markets, these findings may be generalised for the African continent more broadly. However, we also recommend a similar set of studies with a large sample within a Sub-Saharan African Region or else in Central African countries. This may generate a broader, more comprehensive picture of results that might be generally applicable to the African market as a whole.

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