

THE IMPACT OF BOARD STRUCTURE ON THE FINANCIAL PERFORMANCE OF LISTED SOUTH AFRICAN COMPANIES

Erik Meyer, JHvH de Wet*

Abstract

This study focuses on the role of the corporate board of directors and the relationship between the dynamics of board structure and the financial performance of listed South African companies. The research results found that the proportion of independent non-executive directors had a significant positive effect on firm performance as measured by earnings per share and enterprise value, but had no significant effect on Tobin's Q ratio. Board ownership had a significant negative correlation with firm performance as measured by earnings per share, enterprise value and Tobin's Q ratio. The number of directors serving on the corporate board had a significant positive effect on firm performance as measured by earnings per share, enterprise value and Tobin's Q ratio. The study suggests that greater independent non-executive director representation, lower board share-ownership and larger board sizes should be encouraged to enhance firm performance.

Keywords: Board Composition, Board Ownership, Board Size, Corporate Governance, Earnings per Share, Enterprise Value, Independent Non-Executive Directors, Tobin's Q Ratio

* *University of Pretoria, Lynnwood road, Pretoria, South Africa*

Tel: 27 12 420 3731

Fax: 27 12 420 3916

E-mail: Johannes.dewet@up.ac.za

Introduction

Many of the modern-day corporations are not controlled by the people who own them. This is what sparked Berle and Means' (1932) ground-breaking study, when they warned that the growing dispersion of ownership was giving rise to a potential value-reducing separation of ownership and control. Berle and Means (1932) expected an inverse relationship between the diffuseness of shareholdings and corporate performance. Berle and Means (1932) argued that shareholder diffusion makes it difficult for the firm's equity owners to act collectively and hence to influence management to a great extent. The board of directors was therefore assigned with the fiduciary duty to act in the, now diffused, owners' best interest. However, in some cases these directors suffered from the same principal-agent problems faced by those diffused shareholders.

McEnally and Kim (2007) define corporate governance as "...the system of principles, policies, procedures, and clearly defined responsibilities and accountabilities used by stakeholders to overcome conflicts of interest inherent in the corporate form...". Studies conducted on the effect of corporate governance on firm performance by Brown and Caylor (2004) and Gompers, Ishii and Metrick (2003) found that companies with effective corporate governance systems tend to have higher measures of profitability and generate higher returns for shareholders. Ineffective corporate governance systems increase the risk to an investor, thus reducing the value of the company. Ineffective corporate governance systems could even cause a company to go bankrupt, as seen from recent examples such as the failure of the Enron Corporation, WorldCom, Tyco, Adelphia and Global Crossings.

The occurrence of major corporate scandals, such as Enron and WorldCom in America and Regal Bank and Leisurenet in South Africa, has brought increased attention to corporate governance issues and regulation aimed at improving the corporate governance environment. Poor governance, lack of oversight functions, relinquished control and lack of accountability by the board of directors are some of the reasons for those corporate failures. As a result, various corporate governance reforms such as the

Sarbanes-Oxley Act (2002) in America, the Cadbury Report (1992) in the United Kingdom and the King Report (1994) in South Africa, were issued. These corporate governance reforms specifically emphasised changes to listed firms' board structures in an attempt to reduce the likelihood of similar corporate failures occurring in the future (Abidin, Kamal & Jusoff, 2009).

The diversity of corporate practices around the world challenges a common definition for corporate governance (Aguilera & Jackson, 2003). However, the predominant role of an effective corporate governance system, as reflected in most accounting and finance literature, is to reduce the potential principal-agent problems in a firm (Desender, 2009). An agency relationship occurs when an agent acts on behalf of a principal. Such a relationship may create a potential for a principal-agent problem where the agent may act for his own well-being rather than for that of the principal. Effective corporate governance systems are primarily concerned with minimising the potential principal-agent problems between managers and shareholders and between directors and shareholders. Monitoring these principal-agent problems result in agency costs to shareholders. To reduce these costs, shareholders nominate corporate directors to monitor and prevent principal-agent problems that may arise in the firm (Shleifer & Vishny, 1997). Hence, the board of directors is at the core of ensuring that good corporate governance is practiced by a firm (Desender, 2009; Lefort & Urzúa, 2008).

Studies by Hermalin and Weisbach (1998) found that the one important criterion to ensure the success of the board of directors as managers of the company is to have an effective board structure in place. According to Brennan (2006) the monitoring duties of a board is influenced by factors such as board composition, board culture, board diversity, board size, CEO duality and information asymmetries. The issue of board structure and firm performance has received considerable attention in international research in recent years (Abidin *et al.*, 2009; Golmohammadi, Ranjdost & Cherati, 2012; Jackling & Juhl, 2009; Uadiale, 2010). However, these studies have yielded contradicting results, emphasising the necessity to investigate the impact of board composition on firm performance in listed South African companies.

Literature review

To gain a greater understanding of the board's role in strategic decision making, there is a need to integrate different corporate governance theories rather than to consider a single theory (Letting, Wasike, Kinuu, Murgor, Ongeti & Aosa, 2012). The most recent studies have adopted a multi-theoretical perspective by combining different theories in their approach to board research (Castro, La Concha, Dominiguez, Gravel & Perifan, 2009; Hendry & Kiel, 2004; Hillman & Dalziel, 2003; Hung, 1998; Jackling & Juhl, 2009, Letting *et al.*, 2012; Macus, 2008; Muth and Donaldson, 1998; Sundaramurthy & Lewis, 2003). Following these recent recommendations in the field of board research, this study was approached from a multi-theoretical perspective.

Agency theory of corporate governance asserts that the role of the board is to monitor management on behalf of shareholders (Fama & Jensen, 1983). Resource dependency theory posits that the role of the board is to provide valuable external resources (Pfeffer, 1973). Stakeholder theory proposes that the role of the board is to take into consideration the interests of those groups who are vital to the survival and success of the corporation (Freeman, 1984). Stewardship theory postulates that the role of the board is one of safeguarding shareholder returns, not of placing management under greater control by owners, but of empowering management to take autonomous executive action (Donaldson and Davis, 1991).

Acknowledging that a board can have multiple roles, each theory can only explain the significance of a particular role (Hung, 1998). Thus, four primary roles of the board have been established through the agency, resource dependency, stakeholder and stewardship theories. Correspondingly, the role of the corporate board is to control, link, co-ordinate and strategise. The independent non-executive director provides a mechanism for control, to monitor management on behalf of shareholders (agency theory). Large and well-diversified board sizes can provide valuable links to external resources (resource dependency theory) and can take into consideration the interests of those groups which are vital to the survival and success of the corporation (stakeholder theory). Executive directors provide a strategic benefit as they are favoured for their depth of knowledge, technical expertise and access to operating information (stewardship theory). All four of these board roles are believed to have a positive effect on firm performance and therefore each of these roles may have implications for board structure.

There are many factors that could influence company performance but within the corporate governance literature, board structure appears to be the most favoured issue examined (Othman, Ponirin & Ghani, 2009). Based on an extensive literature review (Abdullah, 2004; Abidin *et al.*, 2009; Golmohammadi *et al.*, 2012; Jackling & Johl, 2009; Othman *et al.*, 2009; Swartz & Firer, 2005; Tornyeva & Wereko, 2012; Uadiale, 2010) a company's board structure is primarily conveyed as consisting of the following elements: board composition, board ownership and board size.

Board composition is a measure of the proportion of independent non-executive directors to the total number of directors in a company. Agency theorists argued that a higher proportion of independent non-executive directors on the board will make different and perhaps better decisions than a board dominated by executive directors, potentially having a positive impact on firm performance (Fama & Jensen, 1983; Shleifer & Vishny, 1997). Resource dependency theorists argued that an ideal board should consist of individuals with varieties of external linkages that bring within the firm's reach access to essential resources (Hillman, Keim & Luce, 2001; Johnson, Daily & Ellstrand, 1996) and that appropriate representation by independent non-executive directors is likely to lead to improved firm performance (Hillman *et al.*, 2001; Johnson *et al.*, 1996; Muth & Donaldson, 1998; Nicholson & Kiel, 2007; Siciliano, 1996). However, stewardship theorists argued that executive-dominated boards should be favoured for their depth of knowledge, access to current operating information, technical expertise and commitment to the firm, potentially having a positive impact on firm performance (Helmer, 1996; Letting *et al.*, 2012; Muth & Donaldson, 1998; Nicholson & Kiel, 2007; Stiles, 2001).

Board ownership is the proportion of the total number of common shares owned by the board of directors to the total number of common shares outstanding. Berle and Means (1932) ignited the principal-agent problem when they argued that the separation of ownership and control of modern corporations naturally reduces management incentives to maximise corporate efficiency. Despite several theoretical models and a great deal of empirical research, there is an apparent lack of agreement regarding the nature and validity of the hypothesised relationship between ownership concentration and firm performance. The incentive alignment theory (Jensen & Meckling, 1976) suggested that agency cost would be reduced if those who owned the company also managed the company and to maximise corporate value, those who control the firm should have a large ownership stake in the companies they serve. The entrenchment argument theory (Fama & Jensen, 1983) posited that when insiders obtain relatively large ownership they may possess sufficient power to overcome governance mechanisms which would allow insiders to act in their own interest with little fear of removal or sanctions, so they would become "entrenched". The combined argument theory (Morck, Shleifer & Vishny, 1988) which was simply the incentive alignment theory combined with the effects of the entrenchment argument theory and finally, the natural selection theory (Demsetz, 1983; Demsetz & Lehn, 1985; Kole & Lehn, 1997), suggesting no relationship between ownership and firm performance.

Board size is the total number of head counts of directors seated on the company's board. Agency theorists favoured larger board sizes as manipulation by those smaller groups of self-interested managers is expected to become less manipulative (Agrawal & Knoeber, 1996; Baysinger & Hoskisson, 1990; Bhagat & Black, 2002; Dalton, Daily, Ellstrand & Johnson, 1998; Hesterly & Coles, 2000; Pearce & Zahra, 1992; Petrovic, 2008; Rechner & Dalton, 1991; Shleifer & Vishny, 1997). Resource dependency theorists favoured larger board sizes due to the increase in the diversification of resources and quality of argument that larger boards can provide the firm (Booth & Deli, 1996; Dalton, Daily, Johnson & Ellstrand, 1999; Pfeffer, 1973; Provan, 1980). Stakeholder theorists advocated for a large and well-diversified board of directors which can accommodate the interest of each stakeholder, especially those that create value to the firm, in order to realise success in driving firm performance (Ayuso & Argandoña, 2007; Clarkson, 1995; Evan & Freeman, 1993; Hillman *et al.*, 2001; John & Senbet, 1998; Zingales & Rajan, 1998). However, stewardship theorists argued that smaller board sizes promotes increased participation and social cohesion whereas larger board sizes inhibits the board's ability to reach consensus on important decisions (Muth & Donaldson, 1998; Yermack, 1996).

According to Jackling and Johl (2009) the differences in empirical findings have in part been attributed to the differences in the theoretical bases of investigation. Othman Ponirin & Ghani (2009) argued that one of the possible reasons for the mixed findings on board structure and firm performance could be attributed to the sample used. Some studies focused on examining only large listed companies (Dalton & Kesner, 1987; Pfeffer 1973) and other studies exclusively focused on a particular industry (Semosa, 2012; Tornyeva & Wereko, 2012; Van Ees, Postma & Sterken, 2003). Therefore, these studies could not

represent other groups of companies, such as small listed companies or listed companies in different industries. Another reason for the difference in empirical findings linking board structure to firm performance is due to the different setting in which these studies are conducted (Othman *et al.*, 2009:3). Significant differences exist in enforcement standards, ownership structures and business practices between different economies. Some economies have difficulties in enforcing compliance with security market regulation, particularly in areas such as price manipulation and insider trading (Bose, 2005). Therefore, empirical research findings on board structure and firm performance will be unique to the setting of each country. However, research on the relationship between board structure and firm performance, conducted on South African listed firms are under-researched. What follows is a review of South African literature on board structure and firm performance.

The only research on the subject of board structure and firm performance conducted on South African listed firms are those by Ntim (2011), Khumalo (2011) and Semosa (2012). Ntim (2011) studied the association between the presence of independent non-executive directors and firm performance in a sample of 169 companies listed on the Johannesburg Stock Exchange in South Africa from 2002 to 2007. Ntim (2011) found a statistically significant positive relationship between the presence of independent non-executive directors and firm performance. Tobin's Q ratio and return on assets (ROA) served as proxies for firm performance. The study by Ntim (2011) was one of the first attempts to examine the relationship between the presence of independent non-executive directors and firm performance of South African listed firms and as a result, contributed significantly to the literature in this field of study. However, the study by Ntim (2011) only investigated the effect of board composition on firm performance and did not consider the effect of board size and board ownership on firm performance. The study by Ntim (2011) was conducted on data from 2002 to 2007, and as a result reflects currently outdated corporate governance practises due to the implementation of the new Companies Act of 2008 and the latest publication of the King Report (2009) on Corporate Governance (King III). Therefore, this study investigated the relationship between board structure (as represented by board composition, board ownership and board size) and firm performance based on data over the years 2010 to 2012.

Khumalo (2011) investigated the effect of board size on firm performance in a sample of 28 dual-listed South African companies over a four-year period (2005-2008). Khumalo (2011) found no evidence of any association between board size and firm performance, as measured by the return on equity (ROE) and Tobin's Q ratio, but found evidence that independent directors are negatively associated with firm performance. However, a limitation to the study conducted by Khumalo (2011) is that of the dual-listed companies used in the study sample. South African JSE listed companies that have additional listings outside of South Africa are subject to other listing regulations and corporate governance codes. These foreign regulations and codes of best practises caused those dual-listed companies to adjust their board structure and composition to comply with both countries' regulations and codes (Khumalo, 2011). Therefore, the board structure of a dual-listed company may be influenced by foreign complexities and as a result may not provide an accurate representation of South African board structure regulations.

Semosa (2012) conducted a study on five South African platinum mining companies listed on the Johannesburg Stock Exchange to identify the impact of board composition and board size on firm performance, as measured by ROA, ROE, Tobin's Q ratio and economic value added (EVA). Semosa (2012) found that there is a statistically significant positive relationship between board size and EVA and also between the proportion of independent non-executive board members and EVA. However, Semosa (2012) only analysed five firms in the platinum industry which limits comparability to South African firms other than platinum firms and the small size of the sample raises questions about the quality of empirical evidences.

Since the studies by Barr and Gerson (1991) and Louw (1995) there has been no know research on ownership structure and firm performance of South African companies, until Cameron (2011) reinvestigated this issue. Cameron (2011) emphasised the importance of reassessing the controversial relationship between ownership and firm performance in South Africa, because of the important structural changes South Africa experienced since those (Barr & Gerson, 1991; Louw, 1995) previous studies. Over the past 18 years, South Africa's ownership structures have change noticeably. Changes to regulation and legislation have brought about a change in the ownership structures of South African listed firms.

Cameron (2011) argues that the issues of efficient ownership structures and corporate performance have become a significant public issue in South Africa. Cameron (2011) conducted an investigation into the

ownership concentration and financial performance of listed South African industrial companies. Cameron (2011) investigated the relationship between the top 5 and top 10 shareholders of a firm and how these ownership concentrations influence a firm's performance, as measured by Tobin's Q ratio and return on capital employed (ROCE). However, the top 5 or top 10 shareholders in a firm, used as independent variables in Cameron's (2011) study, does not distinguish between the different types of owners. Therefore, Cameron (2011:70) recommended that further investigation between the different types of ownership (such as board ownership) and firm performance require assessment, since no recent studies have been performed in this field based on South African companies. Cameron (2011:70) also stated "... no recent studies have been performed in this field [types of ownership and enhanced firm performance] and the results of this study infer (though not prove) a possible relationship between managerial control and enhanced financial performance [stewardship theory] ..."

Due to the limited research on the relationship between board structure and firm performance conducted on South African listed firms, this study empirically investigated the relationship between board structure (as represented by board composition, board ownership and board size) and firm performance.

Research design

South African companies listed on the JSE and grouped under the sectors: Consumer Goods, Consumer Services, Healthcare Services, Industrials, Technology Services and Telecommunications which reported financial year end results for the years 2010 to 2012 formed the target population. Companies in the Basic Materials, Financials, Oil & Gas and Utilities sectors are excluded due to the differences in the nature of their business and the difference in accounting conventions (Demsetz & Lehn, 1985). Companies from these sectors may be subject to special regulations which mask efficiency differences across firms, potentially rendering governance mechanisms less important (Vafeas & Theodorou, 1998). In addition to the above-mentioned difficulties regarding these sectors, their exclusion would allow this study to be more comparable to prior studies where these sectors were also excluded (Abdullah, 2004; Abidin, 2009; Ntim, 2011; Jackling & Johl, 2009; Othman *et al.*, 2009; Swartz & Firer, 2005; and Uadiale, 2010).

Companies which are under suspension, for which no reliable financial information could be found and/or have their primary listing outside of South Africa (British American Tobacco PLC., CAFCA Limited, Compagnie Financiere Richemont, NET1 UEPS Technologies Inc., SABMiller PLC., and Wilderness Holdings Limited) were excluded from the research sample. Companies of which their primary listing falls outside of South Africa were excluded, as the financial performance of local operations was not easily distinguishable from their global operations, and their foreign corporate governance practices could not be seen as a fair representation of local corporate governance practices.

In 2009, the Institute of directors published a new King report on corporate governance (King III) which was effective from 1 March 2010. This change in corporate governance setting (from King II to King III) signalled a warning for non-stationary in data prior to 2010, which was under the old King II corporate governance regime. As a result of only using data after 2009, the study investigated the relationship between board structure and firm performance under the King III corporate governance setting. Data after 2012 were not available yet for all the companies. Thus, the research was performed over a three year period, 2010 to 2012, which is considered sufficient to show the relationship between board structure and firm performance. Previous studies have also used a three year period to investigate the relationship between board structure and firm performance, (Abdullah, 2004; Othman *et al.*, 2009; Wen, Rwegasira & Bilderbeek, 2002).

For this study, board structure is represented by the following three elements: board composition (BCOMP), board ownership (BOSHIP) and board size (BSIZE). These three elements were set as independent variables to proxy board structure. As with board structure, multiple variables were used to proxy firm performance because of the inherent limitations in any single financial measure (Muth & Donaldson, 1998). The use of multiple performance measures has strongly been endorsed in the literature (Dalton & Kesner, 1987) as multiple measures produce a more accurate description of performance (Rechner & Dalton, 1991).

Therefore, earnings per share (EPS) was used as accounting based performance measure and Tobin's Q ratio (TQ) and enterprise value (EV) was used as market based performance measures for this study.

This study used earnings per share (EPS) as accounting based performance measure. Tobin's Q ratio (TQ) was used as market based performance measure since TQ was found to be the most frequently used market based measure of financial performance, in this subject area of study. In addition to TQ, a second market based performance measure was considered in order to improve the diversity of the performance measures used. Cameron (2011) investigated the relationship between ownership concentration and firm performance of listed South African industrial companies and abandoned economic value added (EVA) as performance measure as there was concern about the reliability and comparability of the EVA information provided by McGregor BFA. Enterprise value (EV) had no reliability issues and was therefore used as additional market based performance measure. EV is a measure of what the market believes a company's on-going operations are worth (McGregor BFA, 2013).

Input data for the years 2010 to 2012 was collected for all 126 of the companies included in the research sample. Except for the two variables BCOMP and BSIZE; all the input data was sourced from McGregor BFA. Data for the variables BCOMP and BSIZE was sourced from each company's annual report over the period 2010 to 2012. The data used in this study is available to the public and has not been produced exclusively for this study and for this reason the data is classified as secondary data. The fields in Table 1 constitute the data extracted from McGregor BFA and each company's annual report. The data collected provided a panel of cross-sectional (six sectors) and time-series (three year period) observations available for empirical analysis.

Table 1. Summary of data collected

Dependent variables collected for the period 2010 to 2012:			
Variable	Formula	Description	Source
Earnings per share (EPS)	(Net Income – Dividends on Preferred Stock) / Average Common Shares.	Accounting based performance measure. Earnings per share.	McGregor BFA
Enterprise value (EV)	Market Capitalisation + Debt + Preference Shares – Cash and Cash Equivalents.	Market based performance measure	McGregor BFA
Tobin's Q (TQ)	Value of Debt and Equity / Replacement Cost of Assets.	Market based performance measure	McGregor BFA
Independent variables collected for the period 2010 to 2012:			
Variable	Abbreviation	Description	Source
Board composition (BCOMP)	Number of Independent Non-Executive Directors / Total Number of Directors.	Proportion of independent non-executive directors to the total number of directors.	Annual Report
Board ownership (BOSHIP)	Number of Shares Owned by Directors / Total Number of Shares Outstanding.	The total number of common shares owned by the board of directors to the total number of common shares outstanding.	McGregor BFA
Board size (BSIZE)	Total Number of Directors.	Total number of head counts of directors seated on the company's board.	Annual Report

For this study, board structure was characterised by multiple elements (board composition, board ownership, board size). These multiple elements served as proxy for board structure in examining the relationship between board structure and firm performance. A tool that permits investigation of the linear relationship between multiple independent variables and a dependent variable is recognised as a multiple linear regression model (Djordjevic, 2002). The relationship between board structure and firm performance was tested using the following regression model:

$$PERFORM_{jt} = \beta_0 + \beta_1 BCOMP_{jt} + \beta_2 BOSHIP_{jt} + \beta_3 BSIZE_{jt} + \epsilon_{jt}$$

Where:

- PERFORM_{jt} = performance of firm *j* in time *t*;
 β₀ = intercept coefficient;
 β₁, β₂, β₃ = slope coefficient for each of the independent variables;

BCOMP_{*jt*} = proportion of non-executive directors to the total number of directors of firm *j* in time *t*;
 BOSHIP_{*jt*} = proportion of total equity owned by the total number of directors of firm *j* in time *t*;
 BSIZE_{*jt*} = total number of directors on the board of firm *j* in time *t*; and
 ε_{*jt*} = error term of firm *j* in time *t*.

The purpose of this study was to empirically investigate the relationship between board structure and firm performance of listed South African companies in the Consumer Goods, Consumer Services, Healthcare Services, Industrials, Technology Services and Telecommunications sector. Board structure was expressed as three elements (board composition, board ownership and board size) and each of these elements were set as independent variable in explaining the relationship between board structure and firm performance (as measured by EPS, TQ and EV).

The literature review created a foundation of knowledge on: board composition, board ownership and board size, and how each relates to firm performance. However, due to the mix of theoretical arguments and empirical findings on the relationship between different board elements and firm performance, this study has not taken any prior stance to which relationship was more likely to prevail. Instead, this study considered the relationship between the different board elements and firm performance an empirical issue which required investigation in a South African context. Therefore, each hypothesis in null form expects no significant relationship between the independent variable and the dependent variable.

In order to investigate and understand the impact of board structure on firm performance, the following three hypotheses were formulated:

(H₀): Hypothesis 1: There is no significant relationship between board composition and firm performance.

(H₁): Hypothesis 1: There is a significant relationship between board composition and firm performance.

(H₀): Hypothesis 2: There is no significant relationship between board ownership and firm performance.

(H₁): Hypothesis 2: There is a significant relationship between board ownership and firm performance.

(H₀): Hypothesis 3: There is no significant relationship between board size and firm performance.

(H₁): Hypothesis 3: There is a significant relationship between board size and firm performance.

Research analysis – presentation of results

The total population of this study was 180 companies from six sectors (Consumer Goods, Consumer Services, Healthcare Services, Industrials, Technology Services and Telecommunications). However, after applying the previously mentioned sample selection criteria a total of 54 companies were excluded from the sample. Amongst the 54 excluded companies, 17 companies was excluded due to unpublished or unaudited annual reports resulting in non-reliable information, 12 companies were under suspension by the JSE, 10 companies recently delisted from the JSE, 8 companies recently listed on the JSE, 6 companies have their primary listings abroad and 1 company had a change in financial year end. Therefore, a total of 126 companies were included in the study sample. The frequency of the companies included in the sample as classified by sector is provided in Table 2 below.

Table 2. Sample count by sector

Sector	Population	Sample	Frequency
Consumer Goods	26	15	0.1190
Consumer Services	41	33	0.2619
Health Care	8	6	0.0476
Industrials Industry	76	56	0.4444
Technology Services	24	12	0.0952
Telecommunication	5	4	0.0317
Total	180	126	1.0000

Data was collected over the period 2010 to 2012 which provided the study with sufficient observations to be statistically robust. In achieving the empirical investigation into the subject matter of this study, data on variables believed to proxy board structure and firm performance were obtained from McGregor BFA and from each of the 126 companies' annual reports. Descriptive statistics of the variables were created to quantitatively assess the main features of the collected data. The research sample of 126 companies provided a total of 378 observations for each input variable. Table 3 summarises the descriptive statistics of the independent and dependent variables.

Table 3. Descriptive statistics

Independent Variables (Board Structure)						
Variables	N	Min.	Max.	Median	Mean	Std. Dev.
BCOMP	378	0.000	0.846	0.455	0.473	0.157
BOSHIP	378	0.000	0.770	0.058	0.146	0.187
BSIZE	378	4.000	24.000	9.000	10.090	3.152
Dependent Variables (Firm Performance)						
Variables	N	Min.	Max.	Median	Mean	Std. Dev.
EPS	378	-5.050	17.607	1.065	2.380	3.317
TQ	378	0.130	8.050	1.090	1.456	1.136
LNTQ	378	-2.040	2.086	0.086	0.149	0.654
EV (R'000)	378	17 218	354 019 796	2 836 426	14 563 879	35 396 518
LNEV	378	9.754	19.685	14.858	14.960	1.856

Board structure was represented by board composition (BCOMP) board ownership (BOSHIP) and board size (BSIZE). The mean BCOMP of 0.446 in 2010 increased to 0.473 in 2011 and further increased to 0.498 in 2012. The mean BOSHIP of 0.151 in 2010 has decreased to 0.148 in 2011 and further decreased to 0.141 in 2012. The mean BSIZE of 10.008 in 2010 has increased to 10.238 in 2011 and then decreased to 10.024 in 2012.

Firm performance was measured by earnings per share (EPS), Tobin's Q ratio (TQ) and enterprise value (EV). From the descriptive statistics it was found that all three variables used as proxies for firm performance increased over the period 2010 to 2012. The mean EPS of R2.18 in 2010 increased to R2.35 in 2011 and further increased to R2.61 in 2012. It was found that the TQ and EV data was positively skewed. In order to provide more meaningful and usable information, the TQ and EV variables were transformed by taking the natural logarithm of each observation. Log transformations make positively skewed distributions more normal. Unlike EPS which can produce negative or zero values, the value of TQ and EV and will always be greater than zero, for any actively traded firm. Therefore, transforming the observations by taking their natural logarithms was advisable.

The mean LNTQ of 0.106 in 2010 increased to 0.148 in 2011 and further increased to 0.193 in 2012. The mean LNEV of 14.815 in 2010 has increased to 14.952 in 2011 and further increased to 15.112 in 2012. Table 4 presents a summary of the research findings.

Table 4. Summary of the research findings

Dependent variable:	Linear Regression Model:		
	EPS	LNTQ	LNEV
Observations	378	378	378
Adjusted R ²	0.213	0.074	0.539
F-value	34.929*	11.024*	148.117*
Intercept	-2.589*	-0.002	10.548*
Independent variables:			
BCOMP			
Coefficient	3.798*	-0.001	2.815*
Standardised Coefficient	0.180*	0.000	0.232*
Pearson Correlation	0.247*	0.078	0.339*
BOSHIP			
Coefficient	-2.495*	-0.761*	-1.983*

Standardised Coefficient	-0.140*	-0.217*	-0.199*
Pearson Correlation	-0.311*	-0.259*	-0.468*
BSIZE			
Coefficient	0.351*	0.026*	0.334*
Standardised Coefficient	0.333*	0.126*	0.568*
Pearson Correlation	0.392*	0.199*	0.650*

* Indicates that the value is different from 0 at a significance level $\alpha=0.01$ (2-tailed).

From the research analysis it was found that when the natural logarithm of Tobin's Q (LNTQ) was used as dependent variable, BCOMP made no significant contribution in explaining the variation in the dependent variable LNTQ as reflected in the very low standardised coefficient of -0.000302634 for BCOMP. From the linear regression model (LNTQ) the coefficient for BCOMP was, although not significant, negative 0.001258670. However, BCOMP's Pearson correlation coefficient reported a positive, but not significant, positive correlation with LNTQ. The difference in the direction of the relationship between BCOMP and LNTQ from the results of the Pearson correlation and the regression model was not a concern for the study since neither of the findings was significant.

BCOMP had a significant positive correlation with firm performance as measured by EPS and the natural logarithm of enterprise value (LNEV). BOSHIP had a significant negative correlation with firm performance as measured by EPS, LNTQ and LNEV. Finally, BSIZE had a significant positive correlation with firm performance as measured by EPS, LNTQ and LNEV.

From the goodness of fit statistics (Table 4) it was found that the linear regression model (LNEV) had the highest adjusted R^2 followed by the linear regression model (EPS). Therefore, the independent variables in the linear regression model (LNEV) explained the highest percentage of variation in the dependent variable, followed by the linear regression model (EPS) and finally by the linear regression model (LNTQ).

With EPS and LNEV set as dependent variable, BSIZE was found to have the highest absolute standardised coefficient value in the linear regression models and as a result it can be said that BSIZE contributed the most towards explaining the variance in firm performance as measured by EPS and LNEV. BCOMP was found to have the second highest absolute standardised coefficient value in the linear regression models (EPS and LNEV) and as a result it can be said that BCOMP contributed the second most towards explaining the variance in firm performance as measured by EPS and LNEV.

Conclusion

The aim of this study was to empirically examine the relationship between board structure and firm performance of South African listed companies. Data was collected over the period 2010 to 2012 for a total of 126 companies from six sectors (Consumer Goods, Consumer Services, Healthcare Services, Industrials, Technology Services and Telecommunications). The time period coincides with the new King report on corporate governance (King III) which has been in effect from 2010. Therefore, this study can be used to examine the effects of King III on board structure and firm performance.

Results from the study indicate that there is a significant negative relationship between the proportion of independent non-executive directors and the percentage shares owned by board members, as well as a significant negative relationship between the number of directors serving on the corporate board and the percentage shares owned by board members. This finding suggests that the higher the independence of the board of directors and the more directors serving on the corporate board, the lower the proportion of share ownership by board members. In contrast to the above significant relationship findings, no significant relationship between the number of directors and the proportion of independent non-executive directors serving on the corporate board was found. Therefore, a statement claiming that larger boards have room to support more independent non-executive directors has no statistical support. The proportion of independent non-executive directors are therefore not affected by the amount of directors serving on the corporate board and therefore no corporate board, big or small, should have reason not to have sufficient independent non-executive director representation.

In South Africa corporate governance guidelines such as King III require boards to be comprised of a majority of non-executive directors, of whom the majority should be independent (KPMG, 2009). Since no significant relationship between board size and the proportion independent non-executive directors was found, claiming non-complaint board independence as a result of having a small board of directors has no validity. Therefore, compliance to the proposal by King III that the majority of non-executive directors should be independent should not be a problem to any corporate board.

As far as it could be established, this study is the first undertaken amongst listed South Africa firms that examines the relationship between board ownership and firm performance. The research findings failed to provide significant evidence to support the incentive alignment theory (Jensen & Meckling, 1976) the combined argument theory (Morck *et al.*, 1988) and the natural selection theory (Demsetz, 1983; Demsetz & Lehn, 1985; Kole & Lehn, 1997). However, the results from the correlation analysis were more in line with the entrenchment argument theory (Fama & Jensen, 1983) which suggests a negative relationship between board ownership and firm performance.

The first hypothesis suggests that the proportion of independent non-executive directors has a significant effect on firm performance. The research results found that the proportion of independent non-executive directors had a significant positive effect on firm performance as measured by EPS and LNEV, but no significant effect on LNTQ. Therefore, the results show that increasing the proportion of independent non-executive directors that serve on a corporate board may improve firm performance. The research findings provided sufficient evidence to reject the stewardship theory (Helmer, 1996; Letting *et al.*, 2012; Muth & Donaldson, 1998; Nicholson & Kiel, 2007; Stiles, 2001) since no significant negative relationship between the proportion independent non-executive directors and firm performance was found. It is therefore recommended that the proportion of independent non-executive directors on corporate boards should be increased in order to improve corporate governance by the board of directors and to also improve firm performance.

The second hypothesis suggests that the proportion of shares owned by board members has a significant impact on firm performance. The research results found that board ownership had a significant negative correlation with firm performance as measured by EPS, LNTQ and LNEV. Therefore, the results show that decreasing the proportion of shares owned by board members may improve firm performance. The research findings showed evidence consistent to that of the entrenchment argument theory (Fama & Jensen, 1983) which suggests a negative relationship between board ownership and firm performance. It is therefore recommended that the proportion of shares owned by board members should be reduced in order to improve corporate governance by the board of directors and to also improve firm performance.

The third hypothesis suggests that the amount of directors serving on the corporate board has a significant impact on firm performance. The research results found that the number of directors serving on the corporate board had a significant positive effect on firm performance as measured by EPS, LNTQ and LNEV. Therefore, the results show that increasing the number of directors serving on the corporate board may improve firm performance. The research findings provided sufficient evidence to reject the stewardship theory (Muth & Donaldson, 1998; Yermack, 1996) since larger board sizes were found to improve firm performance. It is therefore recommended that the number of directors serving on the corporate board should be increased in order to improve corporate governance by the board of directors and to also improve firm performance.

A key finding in this study is that board structure does play an important role in influencing firm performance. The evidence in this study points to that fact that there is a need to monitor and organise the different elements of a corporate board to ensure good corporate governance practises are upheld.

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