

Corporate governance mechanisms and firm financial performance in Nigeria

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AERC Research Paper 149
African Economic Research Consortium, Nairobi
March 2005

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Published by: The African Economic Research Consortium
P.O. Box 62882-00200
Nairobi, Kenya

Printed by: The Regal Press Kenya, Ltd.
P.O. Box 46166-00100
Nairobi, Kenya

ISBN 9966-944-66-4

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Acknowledgements

A number of institutions and individuals have contributed to the undertaking of this study. We are grateful to the African Economic Research Consortium for sponsoring the study under its thematic research grant scheme, and to its staff for the very efficient way they facilitated the research. We owe a great deal of gratitude to the Usmanu Danfodiyo University Sokoto for providing office, secretarial and logistical support. We acknowledge the support of the Central Bank of Nigeria, which in 2001 offered financial assistance that provided opportunity for the development of a database and for the collection of material that culminated in generating ideas for developing a proposal for this research.

We thank the participants at the December 2001, May 2002 and November/December 2003 AERC biannual research workshops held in Nairobi. The deliberations at the workshops and in particular those held by the Finance and Resource Mobilization Group were very illuminating, helping to provide useful suggestions and comments for improving the research. In this regard, particular gratitude is due to Christopher Adam, Ernest Aryeetey, Paul Collier, Lawrence Harris, Allechi M'bet, Leonce Ndikumana, Machiko Nissanke, Catherine Pattillo and Lemma Senbet. We are, however, solely responsible for any errors in the study.

Last but by no means the least, we are grateful to Rakkiya, Bilkisu, Salamatu, Hussainatu and Ibrahim and all our loved ones for their support, encouragement and understanding.

Abstract

Recent global events concerning high-profile corporate failures have put back on the policy agenda and intensified debate on the efficacy of corporate governance mechanisms as a means of increasing firm financial performance. This study attempts to address this question using pooled ordinary least squares regression analysis for a sample of 93 firms quoted on the Nigerian Stock Exchange for the period 1996–1999. While making a case for a board size of ten and for concentrated as opposed to diffused equity ownership, the results argue for the separation of the posts of Chief Executive Officer (CEO) and Chair. Moreover, although the results find no evidence to support the idea that boards with a higher proportion of outside directors perform better than other firms, there is evidence that firms run by expatriate CEOs tend to achieve higher levels of performance than those run by indigenous CEOs. In the main, the results are consistent with existing literature, but there is need to err on the side of caution in any attempt to generalize the findings as the sample selection was determined by the availability of data rather than by any probability criterion.

Key words: corporate governance; agency theory; stakeholder theory

1. Introduction

Corporate governance is concerned with ways in which all parties interested in the well-being of the firm (the stakeholders) attempt to ensure that managers and other insiders take measures or adopt mechanisms that safeguard the interests of the stakeholders. Such measures are necessitated by the separation of ownership from management, an increasingly vital feature of the modern firm. A typical firm is characterized by numerous owners having no management function, and managers with no equity interest in the firm. Shareholders, or owners of equity, are generally large in number, and an average shareholder controls a minute proportion of the shares of the firm. This gives rise to the tendency for such a shareholder to take no interest in the monitoring of managers, who, left to themselves, may pursue interests different from those of the owners of equity. For example, the managers might take steps to increase the size of the firm and, often, their pay, although that may not necessarily raise the firm's profit, the major concern of the shareholder.

Financial economists have long been concerned with ways to address this problem, which arises from the incongruence of the interests of the equity owners and managers, and have conducted significant research towards resolving it. The literature emanating from such efforts has grown, and much of the econometric evidence has been built on the theoretical works of Ross (1973), Jensen and Meckling (1976), and Fama (1980). At the initial levels of the development of the theory of agency, especially as it relates to the firm, concern seemed to focus more on the relationship between the management and shareholders than between them and other categories of stakeholders. The stakeholder theory has of late captured the attention of researchers and a survey of literature on this aspect of corporate finance can be found in the works of John and Senbet (1998). According to this theory, the firm can be considered as a nexus of contracts between management on the one hand and employees, shareholders, creditors, government and all other stakeholders on the other. Thus, from the point of view of the stakeholder theory, concern should go beyond the traditional management–shareholder relationship to include all other stakeholders such as mentioned above. The stakeholder theory has undergone some refinements in the work of Jensen (2001), who presents what he terms the “enlightened stakeholder theory”. For him, the traditional stakeholder theory encourages managers to be servants of many masters, with no clear guidance whenever trade-offs (or indeed, conflicts) occur, as they often do. He argues that the absence of any criterion for choice in cases of trade-offs (or conflicts) tends to give managers some discretionary powers to serve the master of their own choice. As we will see in a subsequent section, Jensen proposes a single criterion – addition to the long-term value of the firm – for

managers to pursue so that the interests of all key stakeholders can be served. This is based on the idea that changes in the long-term value of the firm would be difficult to materialize if the interest of a key stakeholder were not protected.

Empirical work in the area of corporate governance has undergone a remarkable growth, founded mostly on the basis of management–shareholder conflict and to a lesser but increasing extent on the stakeholder theory. Despite the volume of empirical evidence, there has been no consensus on how to resolve the problem. The lack of consensus has produced a variety of ideas (or mechanisms) on how to deal with the problem of agency. The mechanisms we are concerned with in this study can be divided into five: striking a balance between outside and inside directors; promoting insider (i.e., managers and directors) shareholding; keeping the size of the board reasonably low; encouraging ownership concentration; and encouraging the firm to have a reasonable amount of leverage in the expectation that creditors might take on a monitoring role in the firm in order to protect their debt holdings. These mechanisms are detailed in Section 6 of this paper.

To achieve the stated objective, this paper is structured into eight sections. After the introduction, we provide in Section 2 the justification of the study and its objectives. Section 3 gives an overview of the regulatory environment in which the Nigerian Stock Market operates, emphasizing the link between corporate governance and a weak stock market saddled with severe problems of low levels of liquidity and trading volumes. Section 4 is the theoretical framework for the study, while the literature review in Section 5 provides a survey of stylized facts emerging from earlier theoretical and empirical works. Section 6 details the methodology and Section 7 presents the results. The last section offers some conclusions.

2. Purpose and objectives of the study

This research is an attempt to examine the extent to which the suggested mechanisms might help reduce the agency problem in a developing stock exchange such as that of Nigeria, where there is a yawning gap between theory and evidence. We are aware of no published work in this area on the Nigerian Stock Exchange (NSE). The only unpublished work from Nigeria is a recently completed AERC-supported research by Adenikinju and Ayorinde (2001), who used data on the NSE to examine the relationship between firm performance and two of the five mechanisms listed above – insider ownership and ownership concentration. The authors reported no significant relationship between firm performance, on the one hand, and ownership concentration and managerial shareholding, on the other. Although helping to shed more light on ways to reduce the agency problem in Nigeria, Adenikinju and Ayorinde (2001) suffers from the weakness of excluding important mechanisms for addressing the agency problem. There is also a methodological loophole as their measure of ownership concentration does not allow for inter-firm comparison as the number of concentrated shareholders varied from firm to firm in their sample.

Purpose of the study

By attempting to address an important limitation of Adenikinju and Ayorinde (2001), this study aims to provide additional insights into the relationship between governance mechanisms and firm financial performance in Nigeria. Our focus is on the five dimensions of corporate governance, abstracting from other dimensions such as incentive schemes. It is hoped that the evidence would serve as important quantitative information into the cauldron of policy as well as add to the existing body of empirical literature from a developing stock exchange such as that of Nigeria. The need for a study of this kind is even more important in an environment like Nigeria's, which is characterized by growing calls for effective corporate governance, particularly for public limited liability companies. This call is understandable in view of the importance of effective governance at both microeconomic and economy-wide levels.

At the level of the firm, it offers the promise of a fair return on capital invested through improved efficiency (Metrick and Ishii, 2002). It also has some implications for the ongoing privatization programme that the Government of Nigeria is currently undertaking. Grosfeld (2002), citing the works of other scholars, indicated that the effectiveness of privatization is greater when corporate governance works well. Moreover,

by helping to promote firm performance and the protection of stakeholder interest, corporate governance encourages investment and stock market development, which Demircuc-Kunt and Levine, (1996) have associated with improved macroeconomic growth. Further, recent evidence in the work of Klapper and Love (2002) suggests that firm-level corporate governance provisions matter more in countries with weak legal (or regulatory) environments, implying that “firms can partially compensate for ineffective laws and enforcement by establishing good corporate governance and providing credible investor protection” (Abstract).

Study objectives

Given the overall objective of examining the relationship between corporate governance mechanisms and firm financial performance in Nigeria, this study had several specific objectives. In particular the study sought to:

- Examine the extent to which insider shareholding may be related to firm financial performance;
- Ascertain the influence of the composition of board members on firm performance;
- Investigate the relationship between board size and firm performance;
- Assess the influence of block holdings or ownership concentration on firm performance;
- Examine whether or not the separation of the posts of CEO and Board Chair is of any value in the promotion of firm performance;
- Examine whether or not the appointment of an expatriate CEO has any role to play in the promotion of stakeholder interest; and
- Examine whether, within a certain range, a positive relationship exists between debt and firm performance.

In line with these objectives, the hypotheses to be tested in this study are as well divided into seven, as follows:

- There is a positive relationship between insider shareholding and firm performance.
- There is a positive relationship between the proportion of outside directors on the board and the performance of the firm.
- There is a significant relationship between firm performance and the size of the board.
- There is a positive relationship between ownership concentration and firm performance.
- Firms in which the posts of CEO and Chair are separated tend to perform better than those with a combined role for the two posts.
- Firms with expatriate CEOs tend to perform better than those with indigenous CEOs.
- Within a certain range of leverage, a positive relationship exists between debt and firm performance.

3. The operating environment of the Nigerian Stock Exchange

The Nigerian Stock Exchange, which until 1977 was known as the Lagos Stock Exchange, came into being in 1960, but started operations with less than ten stocks in 1961. At age 43 in 2003, the exchange boasted about 200 stocks, quite a remarkable growth rate considering the number at the initial stage, but well below the figure of over 600 in each of the Malaysian, South African and South Korean exchanges. The discrepancy is even more pronounced with respect to the market capitalization of these other stock exchanges. According to Standard and Poor's (2000), as at 1999, the market capitalization for the Nigerian Stock Exchange stood at US\$2.94 billion. This compares with US\$145.445 billion for the Malaysian exchange, US\$262.478 billion for South Africa's and US\$308.534 billion for South Korea's. In relative terms, as at 1999, the market capitalization of the Nigerian stock exchange was equivalent to only 2%, 1.1% and 0.9% of that of the Malaysian, South African and South Korean stock exchanges, respectively. In fact, if account were taken of the fact that the 20 largest stocks on the NSE together account for 73.8% of the market capitalization (Nigerian Stock Exchange, 2001), the very small size of most of the stocks on the NSE would be better appreciated.

The small number and value of stocks listed on the exchange are probably a manifestation of severe problems affecting the exchange. Such problems include a serious liquidity problem, low demand for securities and low trading volume. Liquidity of a stock exchange is concerned with the ease of trading in shares on the market. A liquid stock exchange allows for easier access to debt (debenture) and bank loans (through the use of stocks as collaterals). Writing on the Nigerian Stock Exchange, Emenuga (1998) noted that the liquidity of the market averaged just 2%, well below the average for many African bourses, and a very far cry from the average for Taiwan (174.9%) and South Korea (97.8%)! These problems may not be unrelated to the weak regulatory environment in which the market has operated.

Although the stock exchange began operations in 1960, a regulatory body, the Securities and Exchange Commission (SEC), was established almost two decades later, in 1979. It took another two decades for the Securities and Investment Act (1999) to come into being. The Act was the first comprehensive legal document providing rules and regulations for the conduct of operators in the exchange. Thus, the stock exchange operated for almost two decades without a regulatory organ, and for another two with a regulatory organ weakened by the absence of a comprehensive legal framework for the discharge of its regulatory duties. Emenuga (1998) gives an account of some of the shady practices that prevailed in the exchange, and it may not be an overstatement to link at least some of them to a weak regulatory environment.

Previous research has suggested a link between corporate governance and the development of a legal/regulatory environment. Klapper and Love (2002), for example, report that firms in countries with weak overall legal systems have on average lower governance rankings. In addition, they find that good governance is positively correlated with market valuation and operating performance, which implies a positive correlation between the effectiveness of the regulatory environment and the performance of firms. They also observe that in countries with weak laws the degree of flexibility of firms to affect their own governance is likely to be smaller (i.e., the firm is likely to be constrained by the country-level legal provisions). Garcia and Liu (1999) have also attempted to provide a link between the regulatory environment and governance mechanisms. A regulatory environment that encourages mandatory disclosure of reliable information about firms may enhance investor participation. Moreover, regulations that instil investors' confidence in brokers have the capacity to encourage investment and trading in the stock exchange. In a study on the Ukrainian stock exchange, Dean and Andreyeva (2001) report that the regulatory environment can in fact have an important consequence for the kind of governance structures that emerge. The authors found that the weak regulatory and legal environment of Ukraine tended to favour concentrated over diffused ownership structures.

4. Theoretical framework

The theoretical framework upon which this study is based is the agency theory, which posits that in the presence of information asymmetry the agent (in this case, the directors and managers) is likely to pursue interests that may hurt the principal, or shareholder (Ross, 1973; Fama, 1980). At first the theory was applied to the relationship between managers and equity holders with no explicit recognition of other parties interested in the well-being of the firm. Subsequent research efforts widened the scope to include not just the equity holders but all other stakeholders, including employees, creditors, government, etc. This approach, which attempts to align the interests of managers and all stakeholders, has come to be regarded as the stakeholder theory.

The stakeholder theory has been a subject of some investigation. John and Senbet (1998) provide a comprehensive review of corporate governance, with a particular focus on the stakeholder theory. The authors note the presence of many parties interested in the well-being of the firm and that these parties often have competing interests. While equity holders might welcome investments in high yielding but risky projects, for example, such investments might jeopardize the interests of debt holders especially when the firm is teetering on the edge of bankruptcy. The review also emphasizes the role of non-market mechanisms, citing as an example the need to determine an optimal size of the board of directors especially in view of the tendency for board size to exhibit a negative correlation with firm performance. Other non-market mechanisms reviewed by John and Senbet include the need to design a committee structure in a way that allows the setting up of specialized committees with different membership on separate critical areas of operations of the firm. Such a structure would allow, for example, productivity-oriented committees and monitoring-oriented ones.

In an article extending the stakeholder theory, Jensen (2001) also recognizes the multiplicity of stakeholders. He concurs with John and Senbet that certain actions of management might have conflicting effects on various classes of stakeholders. This implies that the managers have a multiplicity of objective functions to optimize, something that Jensen sees as an important weakness of the stakeholder theory “because it violates the proposition that a single-valued objective is a prerequisite for purposeful or rational behaviour by any organisation” (Jensen, 2001: 10). In search of a single valued objective function that conforms with rationality, Jensen suggests a refinement of the stakeholder theory – the enlightened stakeholder theory. For him, the enlightened stakeholder theory offers at least two advantages. First, unlike the earlier version with multiple objectives, the modified form of the theory proposes only one objective that managers should pursue: the maximization of the long-run value of the firm. If the interest of any major stakeholder

was not protected, the objective of long-run value maximization would not be achieved. A second, related, appeal of the enlightened stakeholder theory is that it offers a simple criterion to enable managers to decide whether they are protecting the interests of all stakeholders: invest a dollar of the firm's resources as long as that will increase by at least one dollar the long-term value of the firm. There is an important caveat, however. Jensen himself cautions that the criterion may be weakened by the presence of a monopoly situation or externalities.

Despite its appeal, the stakeholder theory of the variety proposed by Jensen has not been subjected to much empirical evaluation. At least two factors might have contributed to the gap between theory and evidence. The first, already alluded to, concerns the prevalence of externalities and monopoly situation. The second is the problem of measurement, especially in view of the problems associated with getting an accurate measure of the long-term value of the firm.

5. Literature review

The literature suggests that both market and non-market mechanisms could be used to promote the alignment of interest of managers and stakeholders. The managerial labour market and the market for corporate takeover tend to exert pressures both within and outside the firm in order to achieve such an alignment of interest. Fama (1980) asserts that a firm can be viewed as a team, whose members realize that in order for the team to survive, they must compete with other teams, and that the productivity of each member has a direct effect on the team and its members. Thus, within the firm, each manager has the incentive to monitor the behaviour of other managers, whether subordinates or superiors. Secondly, Fama (1980) argues that the firm is in the market for new managers and the reward system must be based on performance in order for it to attract good managers or even to retain existing ones.

Demsetz and Lehn (1985) provide an explanation for the weakness of the market-induced mechanisms as a means of protecting stakeholder interests. They observe that the free rider problem tends to prevent any of the numerous owners of equity from bearing the cost of monitoring the managers.

Empirical works abound on the mechanisms aimed to help reduce the agency problem. Abstracting from other dimensions of corporate governance (such as incentive schemes) we focus on five mechanisms – insider shareholding, board composition, board size, ownership concentration and debt.

Insider shareholding and firm value

The first argument to address the problem of agency concerns the use of insider shareholding. Several researchers (DeAngelo and DeAngelo, 1985; McConnell and Servaes, 1990; Loderer and Martin, 1997; Nor et al., 1999; Yeboah-Duah, 1993) have undertaken research on this aspect, reporting very conflicting results. In particular, McConnell and Servaes (1990) find a significant curvilinear relationship between insider ownership and firm performance. While Loderer and Martin (1997) find no significant relationship, Nor et al. (1999) reported a non-linear relationship, drawing conclusions contrary to those of Yeboah-Duah (1993).

Composition of board members

The composition of board members is also proposed to help reduce the agency problem (Weisbach, 1988; Hermalin and Weisbach, 1991). A positive relationship is expected between firm performance and the proportion of outside directors sitting on the board. Unlike inside directors, outside directors are better able to challenge the CEOs. It is perhaps in recognition of the role of outside directors that in the UK a minimum of three outside directors is required on the board; in the US, the regulation requires that they constitute at least two-thirds of the board (Bhagat and Black, 2001).

Empirical evidence has grown but the results are very conflicting. Studies by Weisbach (1988), Mehran (1995) and Pinteris (2002) have produced evidence in support of a positive role for outside directors on firm performance. John and Senbet (1998) in a survey of corporate governance reported that the work of Fosberg (1989) was in support of this positive role.

Other works have reported no evidence of a significant relationship between firm performance and the proportion of outside directors on the board (Bhagat and Black, 1999, 2000; Hermalin and Weisbach, 1991; Yermack, 1996; and Metrick and Ishii, 2002). In fact Weir and Laing (2001) reported a negative relationship!

John and Senbet (1998) stress the role of committee structure as a means of increasing the independence of the board. They refer to the work of Klein (1998) and argue for the need to set up specialized committees on audit, remuneration and appointment.

Unlike the preceding argument in support of board structures, Laing and Weir (1999) play down their importance, stressing instead the importance of business experience and entrepreneurship. According to them, firms managed by dynamic CEOs tend to perform better than other categories of firms. On the assumption that foreign firms are managed by more experienced CEOs, Estrin et al. (2001) test whether foreign firms perform better than domestic ones in Bulgaria, Romania and Poland. Using panel data for the three countries for the period 1994–1998, they find x^* at irrespective of the estimation technique, foreign firms perform better than private domestic firms. They attribute this finding to the possibility that foreign firms might have some superior knowledge, which leads them to be more efficient. A common theme running through the two studies is the important role that the experience and skills of chief executives could play as a means for improving firm performance.

Board size

The third mechanism proposed to deal with the agency problem is board size. There are arguments in favour of small board size. First, Yermack (1996), in a review of the earlier work of Monks and Minow (1995), argues that large boardrooms tend to be slow in making decisions, and hence can be an obstacle to change. A second reason for the support for small board size is that directors rarely criticize the policies of top managers and that this problem tends to increase with the number of directors (Yermack, 1996; Lipton and Lorsch, 1992).

Yermack (1996) examines the relation between board size and firm performance, concluding that the smaller the board size the better the performance, and proposing an optimal board size of ten or fewer. John and Senbet (1998) maintain that the findings of Yermack have important implications, not least because they may call for the need to depend on forces outside the market system in order to determine the size of the board.

Block holdings or ownership concentration

The fourth element of governance mechanism examined in this study is ownership concentration, which refers to the proportion of a firm's shares owned by a given number of the largest shareholders. A high concentration of shares tends to create more pressure on managers to behave in ways that are value-maximizing. In support of this argument, Gorton and Schmid (1996), Shleifer and Vishny (1997), Morck et al. (1988), and Wruck (1989) suggest that at low levels of ownership concentration, an increase in concentration will be associated with an increase in firm value, but that beyond a certain level of concentration, the relationship might be negative.

Other studies such as Renneboog (2000) reported results not totally in agreement with the hypothesis of a positive relationship. Using a set of variables suggested by Agrawal and Knoeber (1996), the author reported no evidence to support the hypothesis of a positive relationship between firm performance and ownership concentration. Holderness and Sheehan (1988) find little evidence that high ownership concentration directly affects performance.

The Role of Debt

Finally, debt owed to large creditors such as banks is also believed to be a useful tool for reducing the agency problem. Large creditors, like large stakeholders, also have interest in seeing that managers take performance-improving measures. Empirical evidence seems to be in support of this assertion. Shleifer and Vishny (1997) in a review article, cite the works of Kaplan and Minton (1994) and Kang and Shivdasani (1995), who found higher incidence of management turnover in Japan in response to poor performance in companies that have a principal banking relationship relative to companies that do not.

Another form of agency problem, known as debt agency, arises when there is a conflict of interests between stockholders and debt holders. Debt holders are entitled to claims and these have the tendency to rise at low levels of firm performance, and to remain constant beyond a certain level of that performance. Thus, good performance benefits the stockholders more than it does debt holders, but this is not true when performance is very low. In fact, as the firm moves towards bankruptcy, equity holders face the risk of losing only their shareholdings, passing the burden of such bankruptcy to the debt holders. Taken together, these outcomes encourage managers working to protect the interest of equity holders to embark on risky, high-return projects. This could lead to economic

inefficiency since “projects that are otherwise profitable may be foregone [*sic*] in exchange for high risk but inferior counterparts” (John and Senbet, 1998: 378).

The literature seems to present no unanimous position on the role of debt. Although some see it as having the potential to induce the right steps by the board to protect shareholder interests, other scholars point to the emergence of debt agency and to the need to constitute boards in ways that would protect both shareholder and creditor interests. To achieve this, it is suggested that the board should have a representation from the creditors, as is often the case in Japan and Germany where banks have significant debt holding interests.

6. Methodology

The data used for this study were derived from a number of sources. Data on directors' shareholding were obtained from the database of a Lagos-based stock broking firm, which provided for each firm used in the sample, a list of directors, the number of shares of the firm owned by each director and the number of outstanding shares. The second set of data was extracted from Nigerian Stock Exchange (2000). This set comprises the value of total assets, value of share capital and earnings for the year, as measured by profit after tax. Information on board size and board composition was obtained from Genmax (1998). This source also provided information on the status of CEOs, whether Nigerian or expatriate. The annual report of the Securities and Exchange Commission of Nigeria provided for each firm year-end market capitalization and the price-earnings (PE) ratio. The sample covered the period 1996 through 1999. This period coincides with the computerization of records and the associated increase in the reliability and availability of data. In all, 180 companies were listed on the NSE at the time of data collection. A non-probability sampling technique was adopted as only firms with the required information were selected in the study. Table 1 provides a list of variables, their definitions and method of computation. The Appendix lists the sample used in this study of 93 firms drawn from the 14 sectors of the exchange.

Unlike Adenikinju and Ayorinde (2001), who did not include banking and insurance firms in their sample and analysis, we did include financial firms and analysed them together with other firms. There were two reasons for doing so. First, we assumed that including them would increase our sample size, which might lead to better results. Second, we included dummy variables in our model for the sectors included in our sample to control for sectoral variations.

Data on ownership concentration were not available, so a proxy for it had to be calculated. Genmax reported data on the proportion of shares owned by the largest shareholders for each of the firms in the sample. To be useful for our purposes, the data had to be refined as the number of largest shareholders varied across firms, making inter-firm comparison difficult. To overcome this weakness the proportion of shares owned by the largest shareholders was divided by the number of largest shareholders. This provided a crude (but so far the best) measure of ownership concentration.

In all, a total of eight equations were estimated. Equation 1 specifies four independent variables: director shareholding (DIRSHARE), number of directors on the board (BOARDSIZE), the proportion of outside directors sitting on the board (OUTSIDE) and the extent of ownership concentration (CONCENT).

Table 1: Variable definitions and measurement

Variable	Definition	Measurement
PE Ratio	Price–Earning ratio	Ratio of share price to earning per share.
ROA	Returns on assets	Net profit as a percentage of the total assets.
ROE	Returns on equity	Net profit as a percentage of equity value.
Tobin's Q	Modified Tobin's Q	Year-end market capitalization divided by the book value of total assets. And the sum of the market value of equity and the book value of debt divided by the book value of total assets.
DIRSHARE	Directors shareholding	Total number of shares owned by directors of a given firm as a percentage of the outstanding shares of the firm (the higher percentage, the greater the director shareholding).
BOARDSIZE	Board size	Number of directors on the board.
OUTSIDE	Number of outside directors on the board	Proportion of outside directors sitting on the board.
CONCENT	Ownership concentration	The proportion of shares owned by the largest shareholders divided by the number of largest shareholders.
Debt	Leverage	The ratio of debt to share capital.
FIRMSIZE	Firm size in terms of total assets owned	The natural log of total assets.
CEOSTATUS	Role of CEO	A dummy variable, taking a value of 0 for firms with CEO as Chair, and 1 otherwise.
DIRSHSQUARE	Quadratic term	Square of directors shareholdings.
BDSIZESQUARE	Quadratic term	Square of board size.
CEOFOREIGN	A firm that has a foreign CEO	A dummy variable taking a value of 0 for firms with Nigerian CEOs, and 1 otherwise.
CONCENTSQ	Quadratic term	Square of ownership concentration.
SD _{ji}	Sectoral dummies	Dummy variables for all but the automobile sector in the sample, which is taken as a base.

$$\text{FIRMPERFORM}_i = \alpha_0 + \alpha_1 \text{DIRSHARE}_i + \alpha_2 \text{BOARDSIZE}_i + \alpha_3 \text{OUTSIDE}_i + \alpha_4 \text{CONCENT}_i + \mu_i \quad (1)$$

Four alternative measures of firm performance (the dependent variable in Equation 1) were computed: ROA, ROE, PE ratio and Tobin's Q (hereafter, Q). Data on PE ratio were readily available so no additional computation was needed; the original Tobin's Q, named after James Tobin, is defined as the ratio of market value of debt and equity of the firm to the replacement cost of the firm (Nor et al., 1999). Replacement cost information could not be found in the Nigerian context as in Malaysia, however, so a modified form of Q was calculated by dividing year-end market capitalization by the book value of total assets. The modification was adopted from the works of Nor et al. (1999) on Malaysia and Demircuc-Kunt (1992). Estimates of all the parameters (except α_2) in Equation 1 are expected to be positive. Equation 1 was therefore estimated three times: once each for the ROA, ROE and PE ratio. In the case of Q, ownership concentration was dropped from the equation as its inclusion led to unstable estimates.

Equation 2 was obtained by taking the natural logs of all but one variable (BOARDSIZE) in Equation 1 and estimated four times.

$$\text{FIRMPERFORM}_i = \beta_0 + \beta_1 \text{DIRSHARE}_i + \beta_2 \text{BOARDSIZE}_i + \beta_3 \text{OUTSIDE}_i + \beta_4 \text{CONCENT}_i + \mu_i \quad (2)$$

Equation 3 was obtained by adding the natural logs of total assets to Equation 2 in order to control for firm size. Equation 3 was also estimated four times, once each for the four measures of firm performance.

$$\text{FIRMPERFORM}_i = \phi_0 + \phi_1 \text{DIRSHARE}_i + \phi_2 \text{BOARDSIZE}_i + \phi_3 \text{OUTSIDE}_i + \phi_4 \text{CONCENT}_i + \phi_5 \text{FIRMSIZE}_i + \mu_i \quad (3)$$

The relationship between firm performance and certain governance variables has been reported in the literature to exhibit a non-linear relationship, tending to rise at low levels, achieve a maximum and then decline thereafter. There is also a debate concerning the need to separate the functions of CEO and Chair. To capture the effects of non-linearity as well as examine the effects of the separation of the roles of CEO and Chair, Equation 4 was obtained by adding to Equation 3 the squared values of *DIRSHARE* and *BOARDSIZE* as well as the status of CEO (*CEOSTATUS*), a dummy variable, taking a value of zero for firms with CEO Chair, and 1 otherwise. Although running a non-parametric estimate can capture non-linearity, it is not used in this study owing to the weakness of the estimate. Parametric estimates are considered more powerful compared with non-parametric ones (Pallant, 2004). Furthermore, non-parametric estimates may not detect differences or relationships, even when they actually exist (Pallant, 2004; Gupta, 1999).

$$\text{FIRMPERFORM}_i = \lambda_0 + \lambda_1 \text{OUTSIDE}_i + \lambda_2 \text{DIRSHARE}_i + \lambda_3 \text{DIRSHSQUARE}_i + \lambda_4 \text{BOARDSIZE}_i + \lambda_5 \text{CEOSTATUS}_i + \lambda_6 \text{BDSIZESQUARE}_i + \lambda_7 \text{CONCENT}_i + \lambda_8 \text{FIRMSIZE}_i + \mu_i \quad (4)$$

Equation 4 was also estimated four times, one each for the four measures of firm performance.

As indicated in the literature review, some researchers such as Laing and Weir (1999) and Estrin et al. (2001) emphasize the importance of business experience and entrepreneurship especially for the chief executives. To examine the extent to which business experience and skills of CEOs play an important role in affecting firm performance, we made a simplifying assumption that in Nigeria, compared with their local counterparts, foreign CEOs have more experience in modern management techniques and have greater international exposure. Therefore, in order to test whether the business experience and skills of the CEO are related to firm performance, we divided the firms in the sample into those with foreign and those with local CEOs. Equation 5 was therefore obtained by adding a dummy variable, *CEOFOREIGN*, to Equation 4.

$$\text{FIRMPERFORM}_i = \delta_0 + \delta_1 \text{OUTSIDE}_i + \delta_2 \text{DIRSHARE}_i + \delta_3 \text{DIRSHSQUARE}_i + \delta_4 \text{BOARDSIZE}_i + \delta_5 \text{CEOFOREIGN}_i + \delta_6 \text{CEOSTATUS}_i + \delta_7 \text{BDSIZESQUARE}_i + \delta_8 \text{CONCENT}_i + \delta_9 \text{FIRMSIZE}_i + \mu_i \quad (5)$$

The dummy variable took a value of zero for Nigerian CEOs and 1 otherwise. Equation 5 was then estimated four times, once each for the four measures of firm performance.

The relationship between firm performance and ownership concentration has been suggested to take a non-linear form, tending to be positive only within a certain range of ownership concentration. To examine the relevance of this argument, Equation 6 was obtained by including a quadratic term in Equation 5.

$$\text{FIRMPERFORM}_i = \varphi_0 + \varphi_1 \text{OUTSIDE}_i + \varphi_2 \text{DIRSHARE}_i + \varphi_3 \text{DIRSHSQUARE}_i + \varphi_4 \text{BOARDSIZE}_i + \varphi_5 \text{CEOFOREIGN}_i + \varphi_6 \text{CEOSTATUS}_i + \varphi_7 \text{BDSIZESQUARE}_i + \varphi_8 \text{CONCENT}_i + \varphi_9 \text{COCENTSQ}_i + \varphi_{10} \text{FIRMSIZE}_i + \mu_i \quad (6)$$

Because the firms in the sample for this study were drawn from 14 different sectors of the exchange, there was need to incorporate sector dummies in order to account for risk differences. Equation 7 was therefore obtained by adding to Equation 6 a set of 13 sector dummy variables.

$$\text{FIRMPERFORM}_i = \theta_0 + \theta_1 \text{OUTSIDE}_i + \theta_2 \text{DIRSHARE}_i + \theta_3 \text{DIRSHSQUARE}_i + \theta_4 \text{BOARDSIZE}_i + \theta_5 \text{CEOFOREIGN}_i + \theta_6 \text{CEOSTATUS}_i + \theta_7 \text{BDSIZESQUARE}_i + \theta_8 \text{CONCENT}_i + \theta_9 \text{COCENTSQ}_i + \theta_{10} \text{FIRMSIZE}_i + \sum_j \theta_j D_{ji} + \mu_i \quad (7)$$

where ΣD_{ij} are 13 dummy variables for all but the automobile sector in the sample, $i = 1, \dots, 93$, $j = 11, \dots, 23$.

There are two major loopholes in the approach thus far. The first concerns the need to incorporate leverage into the computation of Tobin Q. In the absence of market value of debt, we utilize its book value to further compute a modified form of the Tobin Q. Therefore, Tobin's Q is further modified as the sum of the market value of equity and the book value of debt divided by the book value of total assets. This was adopted from the work of Oxelheim and Randoy (2001). The second loophole concerns the need to incorporate debt as a governance mechanism, requiring its inclusion amongst the set of regressors. Thus, Equation 8 was obtained by modifying Equation 7 to account for these two considerations.

$$\begin{aligned} \text{FIRMPERFORM}_i = & \omega_0 + \omega_1 \text{OUTSIDE}_i + \omega_2 \text{DIRSHARE}_i + \\ & \omega_3 \text{DIRSHSQUARE}_i + \omega_4 \text{BOARDSIZE}_i + \omega_5 \text{CEOFOREIGN} \\ & + \omega_6 \text{CEOSTATUS}_i + \omega_7 \text{BDSIZESQUARE}_i + \omega_8 \text{CONCENT}_i + \\ & \omega_9 \text{COCENTSQ}_i + \omega_{10} \text{FIRMSIZE}_i + \omega_{11} \text{Debt}_i + \Sigma \theta_j D_{ji} + \mu_i \end{aligned} \quad (8)$$

7. Results

The results for all these equations are divided into two types, descriptive results and those obtained from the regression analysis. The Statistical Package for the Social Sciences, SPSS, was used for both types of analysis.

Descriptive statistics

The analysis begins by examining the basic features of the data using the descriptive statistics as a starting point. Averages were obtained for market capitalization, total assets and net profit. The firms in the sample reported an average market capitalization of ₦2.49 billion, equivalent to US\$29.29 million. The average value of total assets was computed at ₦6.78 billion (or US\$79.76 million), while that for net profit was found to be ₦637 million (or US\$7.49 million). Given that the sample contained a substantial proportion of large firms, the averages reported here are expected to be above the market average. Nonetheless, these measures of firm size are a clear pointer to the small size of the firms operating in the Nigerian Stock Exchange.

The analysis also examined data for certain governance variables. Of the 93 firms in the sample, 13 (or 14%) of them had CEO chairs, and 86% of them had separate roles for the two posts. A majority of the firms in the sample were run by indigenous CEOs, as only 37% of them had foreign chief executives. Further examination of the data showed a high degree of ownership concentration, with the largest shareholders owning on average 32.65% of equity. This compares with an average of 13.42% of shares owned by directors. Other governance variables examined at this stage were board size, for which an average of 8.45 was obtained, compared with the average of 6.29 for inside directors and 2.41 for outside directors. The data also revealed that directors on average own 13.42% of equity but this average masks a great deal of variation across the sample firms. Half of the firms reported director shareholding of less than 5% of equity; 4% of the firms in the sample reported average director shareholding of 62% of equity.

As will be seen in a subsequent section of this paper, an optimal size of ten was obtained for board size. Interestingly, an examination of the data further revealed that only 15.1% of the firms had the recommended board size, while 62 (or 66.7%) had board membership below and 17 (or 18.3%) above the optimum level.

A descriptive analysis of this sort may be helpful in offering some insight into the basic outlines of the underlying data upon which the analysis was based. By its nature, however, descriptive analysis has a major limitation – it does not lend itself to statistical

tests and consequently cannot be used to draw general conclusions about firms outside the sample or indeed about the same firms over a different time period.

Regression results

We start by examining the effects of internal control mechanisms (director shareholding, board size, ownership concentration, outside directors and leverage) on firm performance. The results are presented in Table 2. Column 1 of the table shows the results obtained by regressing the four governance mechanisms on an important measure of firm performance, ROA. Both director shareholding and board size show no significant relationship with return on assets.

Table 2: Coefficient estimates for Equation 1

	Dependent variable			
	ROA	ROE	Tobin-Q	PE ratio
Director shareholding	-0.005968 (-1.232)	-0.026374 (-0.348)	-0.00001 (-1.062)	-0.069 (-1.1)
Board size	0.036345 (.577)	-0.562231 (-0.571)	0.003803 (5.700)**	0.423 (0.497)
Outside directors	-0.097689 (-1.66)*	0.947748 (1.029)	-0.002724 (-3.95)***	0.14 (0.18)
Ownership concentration	0.005488 (1.459)	0.00387 (0.066)	—	0.011 (.215)
R ²	0.05	0.01	0.12	0.02
F	2.33*	0.36	11.78***	0.66

Significant at 10% (*); 5% (**); 1% (***).

A similar set of results (presented in the second column of the table for ROE and the fourth column for PE ratio) was obtained when the equation was estimated using ROE or PE ratio as the measure of firm performance. When ownership concentration was dropped and the equation estimated using the Tobin-Q as the measure of firm performance, the results differed from those for other measures. Column 3 shows that board size is significantly positively related to firm performance while the ratio of outside directors has the opposite effect.

These results show no discernible pattern and we are inclined to attribute this to a number of loopholes inherent in the specifications. Chief among the weaknesses is the failure to undertake a logarithmic transformation of the data before the application of

regression analysis. Logarithmic transformation has the advantage of dealing with the problems of heteroscedasticity. The exclusion of other variables is another. The results presented in Table 3 were obtained to address the first concern.

Table 3: Coefficient estimates for Equation 2

Independent variables	Dependent variable			
	ROA	ROE	Tobin Q	PE ratio
Director shareholding	-0.058446 (-1.064)	-0.034103 (-.640)	-0.19819 (-5.1)***	-0.0642 (-2.7)***
Board size	0.044463 (0.713)	0.202393 (3.35)***	0.028863 (0.634)	0.0429 (1.574)
Outside directors	-0.878889 (-1.551)	-0.263542 (-0.479)	-0.310642 (-0.769)	-0.0756 (-0.296)
Ownership concentration	0.015664 (2.348)**	0.01358 9(2.100)**	0.0159 (3.32)***	-0.0019 (-0.678)
R ²	0.07	0.09	0.25	0.07
F	2.10**	3.89***	12.69***	2.86**

Significant at 10% (*); 5% (**); 1% (***).

As in Table 2, the results in Table 3 show that four alternative measures of firm performance were regressed against a set of four governance variables. In a number of ways, the logarithmic transformation has achieved some remarkable change in the results. For one, the F-statistic is significant at 5% or better. Secondly, ownership concentration has a significant positive effect in all but one case, PE ratio, where it is found not to be significant. This result does not support Adenikinju and Ayorinde (2001), who found no significant relationship between firm performance and ownership concentration. The conflicting results are perhaps due to the differences in the methods we use in measuring ownership concentration and in sample size taken. We took a sample size of 93 firms, while their sample numbered 73 firms.

Turning to individual coefficient estimates for each of the regressors, a clear pattern is observable. Director shareholding is significantly negatively related to firm performance in two of the four cases. This compares with outside directors and ownership concentration, which are not significant in all cases. This finding also does not support Adenikinju and Ayorinde (2001), who saw no significant relationship between firm performance and insider ownership. Again, the conflicting results are perhaps due to the differences in the methods we use in measuring ownership concentration and in sample size taken. In computing directors' shareholdings, we included only the shareholding of directors while they included those of directors and all other staff of the firms.

To address the issue of controlling for firm size, we included total assets as a control variable. The literature has advocated the use of total assets as a control variable (see, for example, Mayers et al. 1997; Sanders, 1998; Bhagat and Black, 2000). The results, as presented in Table 4, were obtained with total assets featuring as a control variable. In column 1, all the five variables with exception of outsider director are significant at the 5% level or better. In particular, director shareholding is negatively related to performance as measured by ROA. Similarly, board size is significant and positively related to firm performance as is ownership concentration. In column 3 it can be seen that director shareholding is significantly negatively related to Q. Both board size and ownership concentration exhibit a positive relationship to firm performance, but outside directors show no significant relationship. When the PE ratio was used as a measure of firm performance, the results (in column 4) show significant relationship to board size and a negative one to director shareholding.

Table 4: Coefficient estimates for Equation 3

Independent variables	Dependent variable			
	ROA	ROE	Tobin-Q	PE ratio
Director shareholding	-0.115544 (-2.223)**	-0.030733 (-0.562)	-0.258685 (-7.414)***	-0.072490 (-2.997)***
Board size	0.184279 (2.907)**	0.194139 (2.913)***	0.163717 (3.767)***	0.060589 (2.025)**
Outside directors	-0.760303 (-1.449)	-0.270543 (-0.490)	-0.237647 (-0.681)	-0.088727 (-0.348)
Ownership concentration	0.014893 (2.412)**	0.013635 (2.100)**	0.014714 (3.546)***	-0.002178 (-0.760)
Total assets	-0.526620 (-5.324)***	0.031088 (0.299)	-0.487051 (-7.264)***	-0.065844 (-1.411)
R ²	0.21	0.09	0.44	0.09
F	8.44***	3.11***	24.16***	2.70**

Significant at 10% (*); 5% (**); 1% (***).

Effects of non-linearity

Extending the model in order to examine the effects of non-linearity as well as those of board independence, we modified the model in two ways. The first involved quadratic terms for board size and director shareholding, and the second involved two measures of board independence. The first measure of board independence is a dummy variable, taking a value of 0 for firms having a CEO Chair, and 1 otherwise. The results are presented in Table 5, divided into four columns, one each for alternative measures of firm performance.

Table 5: Coefficient estimates for Equation 4

Independent variables	Dependent variable			
	ROA	ROE	Tobin-Q	PE ratio
Outside director	-0.166984 (-0.248)	0.484363 (0.692)	-0.434273 (-1.017)	-0.258913 (-0.813)
Director shareholding	-0.116299 (-2.259)**	-0.026241 (-0.490)	-0.241464 (-7.149)***	-0.072582 (-2.976)***
Director shareholding	-0.00781 (-0.331)	-0.005008 (-0.204)	-0.002968 (-0.195)	-0.006714 (-0.611)
Board size	0.515857 (1.006)	0.597944 (1.121)	1.188012 (3.383)***	-0.142838 (-0.553)
CEO status	0.824726 (1.692)*	1.04082 (2.052)**	-0.105101 (-0.341)	-0.279897 (-1.271)
Board size squares	-0.019250 (-0.669)	-0.02339 (-0.781)	-0.057693 (-2.949)***	0.011829 (0.825)
Concentration	0.493277 (2.586)***	0.52868 (2.66)***	0.605746 (4.886)***	-0.028144 (-0.318)
Total assets	-0.5473 (-5.43)***	0.0058 (0.056)	-0.473662 (-7.151)***	-0.058268 (-1.215)
R ²	0.23	0.13	0.5	0.11
F	5.84***	2.95***	18.26***	2.12***

Significant at 10% (*); 5% (**); 1% (***).

A number of observations can be made concerning the results. First, in all cases, the F-statistic is significant at the 1% level, with R² varying from 0.11 for PE Ratio to 0.50 for Q. Second, one of the measures of board independence, outside directors, is not significant; the other measure, *CEOSTATUS*, is significant in two out of four cases and in both of those cases the dummy variable has a positive coefficient estimate, suggesting the need for separation of offices of CEO and Chair. Third, ownership concentration turned out to be significant in three out of four cases. It is striking that in each case the coefficient estimate is positive, implying that firms with concentrated ownership tend to perform better than those with diffused ownership. The results on Q, presented in column 3, require a close examination in view of certain peculiarities. Five out of eight variables are significant at the 1% level. In particular, both measures of board size are significant, with the quadratic one having a negative sign. In other words, the relationship between firm performance and board size is positive up to a point. Taking partial derivatives and solving for optimal values gave results suggesting an optimal value of ten for board size.¹ Beyond this level a negative relationship is predicted to set in.

Managerial skills

Do firms in Nigeria with higher managerial skills and international exposure record better levels of performance than other firms in the country? On the assumption that a foreign CEO would bring those attributes, we introduced a dummy variable taking a value of 1 for firms with expatriate CEOs, and 0 otherwise. The results are given in Table 6.

Table 6: Coefficient estimates for Equation 5

	ROA	ROE	Tobin-Q	PE ratio
Outside director	0.67028 (1.020)	1.059945 (1.517)	-0.118332 (-0.260)	-0.329075 (-0.984)
Director shareholding	-0.07368 (-1.476)	0.027874 (0.525)	-0.219761 (-6.165)***	-0.049454 (-1.920)*
Director shareholding squares	-0.00459 (-0.208)	-0.004109 (-0.175)	-0.004920 (-0.314)	-0.01483 5(-1.310)
Board size	-0.34837 (-0.574)	0.132308 (0.205)	0.935705 (2.175)**	0.180188 (0.580)
CEO foreign	1.76286 (6.453)***	1.707217 (5.879)***	0.539628 (2.783)***	-0.03279 (-0.229)
CEO status	1.53158 (3.319)***	1.633460 (3.330)***	0.154363 (0.483)	-0.30036 (-1.325)
Board size sq	0.03119 (0.925)	0.005379 (0.150)	-0.043851 (-1.828)*	-0.00729 (-0.421)
Concentration	-0.126776 (-0.634)	-0.104089 (-0.490)	0.400093 (2.812)***	-0.05621 (-0.549)
Total assets	-0.477933 (-5.09)***	0.090546 (0.908)	-0.445569 (-6.583)***	-0.02821 (-0.578)
R ²	0.39	0.28	0.5	0.07
F	10.52***	6.44***	15.62***	1.13

Significant at 10% (*); 5% (**); 1% (***)

A number of observations can be made from the results in Table 6. We find that in three out of four cases, the coefficient estimate of the Foreign CEO dummy variable is positive and significant at the 1% level. This implies that firms with foreign CEOs tend to perform better than those with indigenous CEOs, a conclusion consistent with the works of Laing and Weir (1999) and Estrin et al. (2001), who stress the importance of managerial skills and business experience as a means of promoting firm performance. It

may also be that foreign CEOs would have internalized commonly accepted norms of international business practices, whereas indigenous CEOs would not have had the chance to do so. A closer look at the results also shows that despite the inclusion of an additional variable, the results bear a striking similarity to those presented in Table 5. Most of the coefficient estimates retained their signs and levels of significance. Further, the inclusion of the Foreign CEO dummy tended to improve the overall explanatory power of the model, with R^2 in most cases showing some improvements, as well as retaining its significance.

Ownership concentration: A double edged sword?

The issue of a non-linear relationship between firm performance and ownership concentration has been stressed in the literature. Is the implied stylized fact upheld by the data in Nigeria? This question was taken up by including a quadratic term for ownership concentration amongst the set of regressors; the results are presented in Table 7.

We focus attention on one measure of ownership performance – Q – for a couple of reasons. Except for this measure of performance, the parameter estimates for the other measures are not stable; in fact, they tend to wander rather erratically. Moreover, the explanatory power of the model for each of the other measures of performance is well below that of the Q. From the results, seven of the nine parameter estimates are significant at 1%, with the adjusted R^2 computed at 55.6%. We also observe a statistically significant negative relationship between director shareholding and firm performance, an unexpected finding considering the predicted positive relation between the two variables. The results also uphold the prediction that financial performance is better in firms run by foreign CEOs (who are assumed to have better international exposure and skills in modern management techniques). This conclusion seems to be in agreement with the findings of Laing and Weir (1999), who emphasize the importance of skills and entrepreneurship.

The finding that director shareholding is negatively related to firm performance is puzzling and one wonders what might have accounted for this unexpected result. There is the tendency for director shareholding to prevent takeover of the firm even when there is the need for this. We also take a cue from a newspaper (*The Punch*, 2003) report that some directors owed their firms hefty amounts and that a significant proportion of such amounts faced the prospects of turning into bad loans. If company shares were part of a portfolio of assets owed by directors to their firms, that might offer another piece of explanation for the puzzling finding. The omission of variables, especially sector dummy variables to capture the effects of variations across sectors, may be another reason for the unexpected results.

Table 7: Coefficient estimates for Equation 6

Regressors	Dependent variable			
	ROA	ROE	Tobin-Q	PE ratio
Outside directors	-0.0951 (-0.151)	0.723 (1.167)	-0.469 (-1.208)	-0.142 (-0.459)
Director shareholding	-0.0887 (-1.704)*	-0.01832 (-0.357)	-0.237 (-7.27)***	-0.0717 (-2.87)***
Director shareholding squares	-0.0103 (-0.441)	-0.00433 (-0.189)	0.00154 (0.106)	-0.006787 (-0.603)
Board size	0.361 (0.676)	0.346 (0.656)	1.045 (3.120)***	-0.08453 (-0.319)
Board size squares	-0.0063 (-0.214)	-0.005 (-0.172)	-0.04551 (-2.438)**	0.007448 (0.507)
Expatriate CEOs	1.436 (5.55)***	1.444 (5.7)***	0.572 (3.506)***	0.06793 (0.530)
CEO status	-0.737 (-1.633)	-1.040 (-2.3)**	0.246 (0.885)	0.285 (1.352)
Ownership concentration	0.791 (0.428)	2.32 (1.27)	4.355 (3.680)***	2.037 (2.268)**
Ownership concentration squares	-0.123 (-0.431)	-0.36 (-1.27)	-0.606 (-3.33)***	-0.325 (-2.348)**
Total assets	-0.527 (-5.3)***	-0.0227 (-0.232)	-0.556 (-8.96)***	-0.0646 (-1.350)
R ²	0.346	0.261	0.553	0.042
F	9.401***	6.62***	19.811***	1.636

Significant at 10% (*); 5% (**); 1% (***).

Accounting for industry variations

The relationship between firm performance and governance mechanisms might well vary from one sector of the exchange to another. To address this issue, 13 dummy variables were included to account for possible variations in the relationship because of the differences in risk exposures of firms operating in the 14 different sectors from which the sample was drawn. The results are presented in Table 8.

Table 8: Coefficient estimates for Equation 7

Regressors	Dependent variable			
	ROA	ROE	Tobin-Q	PE ratio
Outside directors	-1.064 (-1.306)	-0.664 (-0.810)	-1.44 (-3.26)***	0.226 (0.544)
Director shareholding	-0.06539 (-0.896)	-0.0302 (-0.411)	-0.191 (-4.78)***	-0.07715 (-2.1)**
Director shareholding squares	0.05045 (1.597)	0.0304 (0.957)	0.03915 (2.25)**	-0.0029 (-0.179)
Board size	-0.183 (-0.264)	-0.499 (-0.71)	1.330 (3.23)***	0.252 (0.63)
Board size squares	0.0208 (0.555)	0.0418 (1.106)	-0.065 (-2.92)***	-0.011 (-0.5)
Expatriate CEO	1.345 (3.9)***	1.315 (3.4)***	0.251 (1.16)	0.213 (1.04)
CEO status	-0.983 (-1.47)	-0.654 (-0.97)	0.629 0.629(1.74)*	-0.326 (-0.96)
Ownership concentration	-0.005 (-0.003)	1.504 (0.731)	3.791 (3.32)***	2.56 5(2.39)**
Ownership concentration squares	0.0494 (0.16)	-0.229 (-0.73)	-0.547 (-3.18)***	-0.42 (-2.6)**
Total assets	-0.73 (-4.6)***	-0.00516 (-0.032)	-0.585 (-6.68)***	-0.142 (-1.71)*
Banking	-1.41 (-1.87)*	-1.447 (-1.92)*	-0.779 (-1.85)*	0.628 (1.56)
Breweries	-1.49 (-1.4)	-1.711 (-1.62)	0.135 (0.2)	0.436 (0.82)
Building	-2.15 (-2.6)***	-1.800 (-2.2)**	-1.077 (-2.43)**	0.248 (0.610)
Conglomerates	-2.342 (-2.59)**	-2.079 (-2.3)**	-2.22 (-4.6)***	0.292 (0.67)
Construction	-2.337 (-2.56)**	-1.233 (-1.3)	-1.185 (-2.4)**	-0.104 (-0.22)
Food and beverages	-1.054 (-1.338)	-0.22 (-0.3)	-0.033 (-0.078)	0.230 (0.59)
Health	-2.405 (-2.13)**	-1.461 (-1.29)	-0.835 (-1.357)	0.659 (1.11)
Industrial	-3.544 (-3.6)***	-1.993 (-2.0)**	0.0612 (0.112)	0.653 (1.29)

Continued

Table 8, continued

Regressors	Dependent variable			
	ROA	ROE	Tobin-Q	PE ratio
Insurance	-1.632 (-2.32)**	-0.635 (-0.9)	-1.35 (-3.48)***	0.0784 (0.22)
Packaging	-3.976 (-4.4)***	-2.19 (-2.4)**	-1.669 (-3.43)***	0.376 (0.81)
Petroleum	-0.816 (-0.92)	0.168 (0.19)	0.589 (1.24)	0.0874 (0.20)
Textiles	-3.152 (-3.1)***	-1.695 (-1.64)	-1.432 (-2.54)**	-0.58 (-1.03)
R ²	0.48	0.379	0.741	0.099
F	7.161***	5.083***	19.2***	1.663**

Significant at 10% (*); 5% (**); 1% (***).

In three important ways, the inclusion of sector dummies offered further insights into the nature of the relationship between governance variables and firm financial performance. First, the automobile sector showed a better level of performance than the textile, conglomerate, insurance, construction and packaging sectors of the exchange. A second result is that despite the extension of the model, the nature of the relationship between board size and firm performance has remained unchanged, with the results predicting an optimal size of ten board members.

A more interesting insight offered by the inclusion of sector dummies in the regression analysis concerns the relationship between firm performance and governance variables, notably ownership concentration and director shareholding. As in the previous results, a statistically significant relationship is found between firm performance and the two governance variables. Given the negative coefficient estimate of the quadratic term for the concentration variable, performance is predicted to rise within a certain range and fall thereafter. Given the positive sign of the coefficient estimate for the quadratic term for director shareholding, it is predicted that beyond a certain level of director shareholding, further ownership of shares by directors would lead to improvements in performance. This would seem rather perplexing, for the literature suggests a limit within which such a positive relationship can be expected to hold.

Do the results therefore run counter to theoretical expectation? To answer this question we refer to the coefficient estimates of the two quadratic terms in the model. A negative coefficient estimate for the quadratic term for ownership concentration implies an inverted U- shape for the relationship between concentration and firm performance. Taking partial derivatives and solving for optimal values we obtained results implying that beyond an ownership concentration of 32.46%, a negative relationship will set in. By the same

token, a positive coefficient estimate for the quadratic term for director shareholding implies a U-shaped relationship between director shareholding and firm performance. Taking partial derivatives and solving for optimal values we obtained results indicating that beyond director shareholding of 8.94%, a positive relationship is predicted between firm performance and director shareholding. In view of this, we propose that there is a limit to which this relationship might hold, although the U-shaped nature of the function suggests otherwise. As directors own more and more shares, this will increase ownership concentration. If the level of director shareholding continued to rise and thereby caused the level of ownership concentration to rise beyond the threshold of 32.46%, would the relationship between director shareholding still be positive in view of the U-shaped nature of the function?

The answer depends on whether performance is falling (owing to concentration effects) faster than it is rising (owing to director shareholding effect). The coefficient estimates of the two quadratic terms indicate that the absolute value for concentration is higher than that of director shareholding. Thus, after ownership concentration of 32.46%, the negative effects will outweigh the positive effect of director shareholding. Hence the negative effects of concentration seem to prevent director shareholding from having an unlimited range within which to exhibit a positive correlation with performance. These results are tentative and further investigation is required to address these and related issues. Such issues include, for example, the need to estimate the level of director shareholding required to raise the level of ownership concentration to the threshold level.

The results brought about major, unexpected changes in the coefficient estimate. Director shareholding is significant (at 10%), although exhibiting a linear relationship; *CEO STATUS* has a negative and significant coefficient estimate; outside directors shows a significant and positive relationship with performance. Interestingly, debt turns out to be significant and positively associated with performance. This is expected as supported by the literature. An R^2 value of 92% is very worrying for this sort of data, however, and we are inclined to believe that the book value of debt used to compute the revised Q could be the source of these unexpected results. The results therefore strengthen the case for further research.

Effects of leverage

The regression analysis was also extended to incorporate two new elements. The first was the need to consider leverage in the computation of the Q and the second was to include debt as a control variable. The results are presented in Table 9.

Table 9: Coefficient estimates for Equation 8

Outside directors	2.052 (3.116)***
Director shareholding	0.177 (1.827)*

Continued

Table 9, Continued from

Director shareholding squares	-0.02105 (-0.668)
Board size	-2.074 (-3.023)***
Board size squares	0.121 (3.122)***
Expatriate CEO	3.125 (4.686)***
CEO status	-2.017 (-2.659)***
Ownership concentration	4.817 (2.514)**
Ownership concentration squares	-1.028 (-3.712)***
Total assets	-1.292 (-9.318)***
Debt	0.446 (7.176)***
Banking	1.958 (2.951)***
Breweries	-1.144 (-1.345)
Building	5.023 (5.664)***
Conglomerates	3.015 (3.784)***
Construction	-0.902 (-1.164)
Industrial	1.107 (1.836)*
Insurance	0.05269 (0.128)
Packaging	1.498 (2.465)**
Petroleum	-0.134 (-0.204)
Textiles	1.255 (0.783)
R ²	0.919
F	46.533***

Significant at 10% (*); 5% (**); 1% (***).

8. Concluding remarks

There has been a renewed interest within academic circles as well as amongst policy makers in both government and industry in the need to strengthen mechanisms to ensure that managers and directors take measures to protect the interest of a firm's stakeholders. The events at Enron and other cases of spectacular failure have helped to bring to the limelight the important role that the strengthening of governance mechanisms could play to improve firm performance. This study uses pooled OLS regression analysis on panel data for the period 1996 through 1999 for a sample of 93 firms listed on the Nigerian Stock Exchange to examine the relationship between internal governance mechanisms and firm financial performance.

Apart from supporting the view that separating the posts of CEO and Chair works in favour of the firm, our results support the need to maintain a board size of ten persons, in line with findings from other countries. The results have the implication that regulatory agencies should encourage firms that have not already done so to separate the two posts. There is also need to encourage firms to achieve a reasonable board size since overly large boards may be detrimental to the firm.

The results of the study point to the need for a reasonable number of individuals and/or corporate bodies with more than a typical share of equity of the firm as this will encourage them to undertake the monitoring process. Unlike the findings in developed countries, our results show no significant evidence to support the idea that outside directors help promote firm performance. This suggests the need for the regulatory authorities to reassess the procedures for the appointment of outside directors in order to remove the influence of CEOs from the appointment process.

Another feature of our results is the finding that firms run by expatriate CEOs tend to perform better than those run by indigenous ones. We are inclined to attribute this finding to the tendency for foreign CEOs to have better managerial and administrative skills, and this has the implication for the need to pursue policies to improve the managerial and administrative skills of indigenous CEOs in a bid to bring them into parity with their foreign counterparts.

Our results also show that leverage has significant positive influence on firm performance, indicating the tendency for firms with higher levels of debt as a proportion of equity to perform better, a finding that is consistent with the literature.

On the whole, the results of this study come out best for a capital market based measure of performance (Q). This is understandable because, unlike the capital market based measure, other measures of performance are subject to accounting artefacts and do not account for risk differences.

These results are by no means conclusive for a couple of reasons. First the sample itself was determined by data availability, not by a probability criterion. A second limitation concerns the method of statistical analysis, which relied on the standard OLS regression rather than on the more robust, quintile regressions or even panel data analysis. These limitations should be borne in mind in any attempt to undertake research in this area on the Nigerian Stock Exchange.

Note

1. If Y = firm performance, X = board size and X^2 = board size squared, and taking the coefficients of X and X^2 under Q specification, then: $Y = 1.188012X + (-0.057693X^2)$. $\frac{dy}{dx} = 1.188012 + 2(-0.057693X) = 1.188012 - 0.115386X$. Now solving for optimal value: $1.188012 - 0.115386X = 0$, $-0.115386X = -1.188012$, then, $X = -1.188012/-0.115386 = 10.30^a$ 10.

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Appendix: List of companies used in the sample

Aba Textiles Plc	Guinea Insurance Plc
Aboseldehyde Laboratories plc	Guinness Nigeria Plc
Afprint Nigeria Plc	Hallmark Bank Plc
African Petroleum Plc	Inland Bank Plc
A.G. Leventis (Nigeria) Plc	Intra Motors Plc
Agip (Nigeria) Plc	John Holt Plc
AllCO Insurance plc	Julius Berger Plc
Aluminium Extrusion Industries	LASACO Insurance Plc
Alumaco Plc	Law Union & Rock Insurance Plc
Amicable Assurance Plc	Lever Brothers Nigeria Plc
Arbico PLC	Liberty Bank Plc
Ashaka Cement Plc	Lion Bank of Nigeria Plc
Avon Crowncaps & Containers Plc	May & Baker Nigeria Plc
Benue Cement Company Plc	Mobil Oil Nigeria Plc
BCN Plc	Morison Industries Plc
BOC Gases Plc	NAL Merchant Bank Plc
Cappa & D'Alberto Plc	National Oil & Chemical Marketing Company Plc
Carnaudmetalbox Plc	NCR (Nigeria) Plc
Cement Company of Northern Nigeria Plc	Neimeth Intl Pharmaceuticals Plc
Chartered Bank Plc	Nem Insurance Plc
Cornerstone Insurance Plc	Nestle Foods Nigerian Plc
Costain (West Africa) Plc	Niger Insurance Plc
Crusader Insurance Plc	Nigerian Bottling Company Plc
Delta Glass Plc	Nigerian Breweries Plc
Dumez Plc	Nigerian Wire & Cable Plc
Dunlop Nigeria Plc	Nigerian Wire Industries Plc
Ekocorp Plc	Niyamco Plc
Eko International Bank Plc	Northern Nigeria Flour Mills Plc
Enpee Plc	Paterson Zochonis Industries Plc
Evans Medical Plc	PharmaDeko Plc
First Aluminium Nigeria Plc	Poly Products Nigeria Plc
First Bank of Nigeria Plc	Prestige Assurance Plc
Flour Mills of Nigeria Plc	P.S. Mandrides Plc
FSB International Bank Plc	Royal Exchange Assurance Plc
G. Cappa Plc	R.T. Briscoe Nigeria Plc
Golden Guinea Breweries Plc	Seven-up Bottling Company Plc
Grommac Industries Plc	
Guaranty Trust Bank Plc	

SmithklineBeecham Plc
Sun Insurance Plc
Texaco Nigeria Plc
Total Nigeria Plc
Towergate Insurance Plc
Trans International Bank Plc
Tripple Gee & Company Plc
UAC of Nigeria Plc
Unic Insurance Plc
Union Dicon Salt Plc
Unipetrol Nigeria Plc
United Nigeria Textile Mills Plc
Universal Trust Bank Plc
Van Leer Containers Plc
Vitafoam Nigeria Plc
Wema Bank Plc
West African Portland Cement Plc
WAPIC Insurance Plc
WTN Plc

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