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The Impact of Corporate Board Meetings on Corporate Performance in South Africa

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Abstract

We investigate the impact of corporate board meetings on corporate performance for a sample of 169 listed corporations from 2002 to 2007 in South Africa (SA). Our findings suggest a statistically significant and positive association between the frequency of corporate board meetings and corporate performance, implying that SA boards that meet more frequently tend to generate higher financial performance. A further investigation indicates a significant non-monotonic link between the frequency of corporate board meetings and corporate performance, suggesting that either a relatively small or large number of corporate board meetings impacts positively on corporate performance. Our findings are consistent across a raft of econometric models that control for different types of endogeneities and corporate performance proxies. Our results provide empirical support for agency theory, which suggests that corporate boards that meet more frequently have increased capacity to effectively advise, monitor and discipline management, and thereby improving corporate financial performance.

1. Introduction

The paper examines the impact of board meetings on corporate performance in South Africa (SA). As will be further discussed, SA has pursued corporate governance (CG) reforms, mainly in the form of the 1994 (King I) and 2002 (King II) King Reports. Generally, the King Reports have sought to improve standards of CG in SA. More specifically, however, the reforms have focused on enhancing corporate performance by improving the independence and monitoring

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power of corporate boards of directors (Ntim 2009; Ntim et al 2011a). An important measure of corporate boards' monitoring power and effectiveness is the frequency of board meetings (Lipton and Lorsch 1992; Jensen 1993). Indeed, the continuing intense public (Lipton and Lorsch 1992) and academic (Jensen 1993; Vefeas 1999a, b) debate on corporate board meetings bears testimony to the view that the frequency of board meetings may affect corporate performance.

However, and whilst theoretically, there is a consensus that corporate board meetings play an important role in the governance, conformance and performance of companies (Lipton and Lorsch 1992; Jensen 1993), the empirical evidence (reviewed below) on the impact of board meetings on corporate performance is conflicting. A number of important issues, however, have been pointed out with respect to the findings of past studies that may explain the mixed evidence. First, previous studies have been criticised for potential methodological weaknesses. Specifically, past studies have been criticised for heavily relying on ordinary least square regressions (OLS), as well as for not adequately addressing endogeneity problems (Vefeas 1999a; Fich and Shivdasani 2006). For example, and as companies tend to vary in the problems and opportunities that they face over time, this can lead to a scenario where board meetings and corporate performance are jointly and dynamically determined by firm-level heterogeneities, such as company culture and managerial talent (Guest 2009; Ntim et al 2011b), which simple OLS regressions may fail to identify (Wooldridge 2002; Gujarati 2003), and thereby leading to spurious results. Second, it has been suggested that the effect of board meetings on corporate performance may not just vary by firm-level characteristics, but also by variations in country-specific CG, institutional and legal practices (Karamanou and Vafeas 2005). This notwithstanding, there is a heavy concentration of existing studies in a few matured economies of Europe and North America, which depict comparatively similar institutional contexts (Yermack 1996; Vefeas 1999a, b).

Arguably, in emerging and less developed countries with different institutional contexts, legal and CG practices (as discussed further below), the effectiveness of corporate board meetings may differ, and consequently the impact of board meetings on corporate performance can be expected to be different from what has been reported in developed countries. Therefore, an examination of the impact of board meetings on corporate performance in developing African countries, where there is an acute lack of empirical evidence will be important in providing a more complete understanding of the effect of board meetings on

corporate performance (El Mehdi 2007; Ntim 2009).

In this paper, we investigate the effect of board meetings on performance for SA companies. SA provides an interesting context to examine the association between board meetings and corporate performance. Similar to other Anglo-American countries, SA has pursued CG reforms in the form of King I and II. As previously explained, the main objective of the King Reports, especially King II is to improve CG standards by enhancing the independence and monitoring power of SA corporate boards (Ntim et al 2011b). As will be discussed further, and with specific reference to board meetings, King II suggests that corporate boards should voluntarily meet at least four times in a year.

However, the SA corporate context is distinctively characterised by concentrated ownership, greater institutional ownership, but weaker shareholder activism and poor enforcement of corporate laws (Bar et al 1995; Ntim et al 2011a). Concentrated ownership, for instance, can limit the effectiveness of the market for corporate control (Ntim 2009; Ntim et al 2011b). This can have a negative effect on the willingness of firms to voluntarily comply and disclose CG rules, including those relating to the frequency of corporate board meetings, and thereby impairing the capacity of a voluntary code to improve CG standards by enhancing the independence and monitoring power of corporate boards. We argue that the rich research context in terms of differences with developed countries, in addition to the conspicuous dearth of prior studies serves as a compelling basis to examine the impact of corporate board meetings on corporate performance in SA.

This paper contributes to the extant literature in a number of ways. First, using a sample of 169 SA listed firms from 2002 to 2007, we provide evidence on the impact of board meetings on corporate performance in SA. To the best of our knowledge, this paper presents a first attempt at modelling the board meetings-performance association within a Sub-Saharan African context, with particular reference to SA, and thus crucially extends the literature to that sub-continent. This also contributes to the largely developed countries-based literature (Europe and North America) on the link between board meetings and performance. Second, and for the first time, we provide evidence on the non-linear relationship between the frequency of corporate board meetings and corporate performance. Third, and distinct from most prior studies, we use econometric models that sufficiently address different types of endogeneity problems, including firm-level fixed-effects and simultaneity.

Our findings suggest a statistically significant and positive association between the frequency of corporate board meetings and corporate performance, implying that SA boards that meet more frequently tend to generate higher financial performance. A further investigation indicates a significant non-monotonic link between the frequency of board meetings and performance, suggesting that either a relatively small or large number corporate board meetings impacts positively on corporate performance. The results are robust across a number of econometric models that control for different types of endogeneities and corporate performance proxies. Our findings provide empirical support for agency theory, which suggests that corporate boards that meet more frequently have increased capacity to effectively advise, monitor and discipline management, and thereby enhancing corporate financial performance.

The remainder of the paper is organised as follows. Section 2 provides an overview of the CG environment in SA. Section 3 reviews the prior literature on the impact of board meetings on corporate performance. Section 4 describes the research design. Section 5 reports empirical analyses, while section 6 concludes.

2. The Corporate Governance Environment in South Africa

Efforts at enhancing CG practices in SA began with the publication of the first King Report (King I) in 1994 (King Report 2002; Ntim et al 2011b). Arguably, King I explicitly institutionalised CG practices in SA (King Report 2002; Ntim et al 2011a). The King I proposals were heavily informed by those of the UK's Cadbury Report of 1992 (King Report 2002; Ntim 2009). For example, and similar to the Cadbury Report, King I proposed an Anglo-American style unitary board of directors, made up of executive and non-executive director, who are mainly accountable to shareholders within a voluntary CG regime (King Report 2002; Ntim et al 2011b). With specific reference to the frequency of corporate board meetings, King I did not specify the exact number or frequency that corporate boards should meet, but set a general principle that all boards should meet regularly in order to effectively advise, monitor and discipline management. Arguably, the apparent lack of clarity as to the frequency of corporate board meetings seriously impaired its effectiveness in improving board independence and monitoring, and consequently the ability to conduct any meaningful empirical analysis. Therefore, King I was replaced in 2002 with a second King Report (King II) in order to address some of the limitations with King I.

Generally, King II builds on and expands most of the Anglo-American features of King I that were aimed at improving the independence and monitoring

power of corporate boards, including maintaining the central characteristic of unitary boards operating within a voluntary CG regime (Ntim 2009; Ntim et al 2011a, b). With respect to the frequency of board meetings, and unlike King I, King II explicitly suggested that corporate boards should at least meet four times in a year (i.e., once in every quarter). Crucially, King II proposed further that the frequency of board meetings should be fully disclosed in the annual report, and thereby making available data that hitherto have been publicly inaccessible. However, critical concerns have been expressed as to whether, given the SA context, a voluntary compliance regime like King II can be effective in raising CG standards in SA by enhancing the independence and monitoring power of corporate boards. Thus, we seek to empirically investigate whether CG proposals relating to board meetings contained in King II do impact on corporate financial performance.

3. Prior Literature on the Impact of Board Meetings on Corporate Performance

Corporate boards of directors carry out critical roles, and thus deemed to be an important CG mechanism (Lipton and Lorsch, 1992; Jensen, 1993). Specifically, it been suggested that corporate boards advise (expert advice), supervise (monitor) and seek accountability (discipline) from management to ensure that managers pursue the interests of shareholders (Jensen and Meckling, 1976; Ntim, 2009). An important proxy for measuring the intensity and effectiveness of corporate monitoring and disciplining is the frequency of board meetings (Jensen, 1993; Vefeas ,1999a). However, there are mixed theoretical views as to the effect of corporate board meetings on corporate performance (see Lipton and Lorsch, 1992; Jensen 1993).

One theoretical proposition is that the frequency of board meetings measures the intensity of a board's activities, and the quality or effectiveness of its monitoring (Vefeas ,1999a; Conger et al ,1998). All else equal, a higher frequency of board meetings can result in a higher quality of managerial monitoring, and thereby impacts positively on corporate financial performance (Vefeas 1999b; Ntim, 2009). Also, it has been contended that regular meetings allow directors more time to confer, set strategy, and to appraise managerial performance (Vafeas 1999a). This can help directors to remain informed and knowledgeable about important developments within the firm, and thereby place them in a better position to timely address emerging critical problems (Mangena and Tauringana, 2008). In fact, Sonnenfeld (2002) suggests that regular meeting

attendance is considered a hallmark of the conscientious director. Further, frequent meetings intermingled with informal sideline interactions can create and strengthen cohesive bonds among directors (Lipton and Lorsch 1992), and thereby impact positively on corporate performance.

An opposing theoretical view is that board meetings are not necessarily beneficial to shareholders. Firstly, Vefeas (1999a) argues that normally the limited time directors spend together is not used for the meaningful exchange of ideas among themselves. Instead, routine tasks, such as presentation of management reports and various formalities absorb much of the meetings, and this reduces the amount of time that outside directors would have to effectively monitor management (Lipton and Lorsch 1992), which can impact negatively on corporate performance. Secondly, and board meetings are costly in the form of managerial time, travel expenses, refreshments and directors' meeting fees (Vafeas, 1999a) that can negatively influence corporate performance.

In fact, Jensen (1993) contends that boards in well-functioning companies should be relatively inactive and exhibit little conflicts. He suggests that rather than necessarily organising frequent board meetings, it will be more profitable for corporate boards to establish a system that is responsive to their specific challenges. For example, directors can increase the frequency of meetings during crisis or when shareholders' interests are visibly in danger, such as when replacing the CEO or fighting hostile takeovers. One implication of this is that the association between board meetings and performance can be non-linear whereby either a small or large number of meetings can equally impact positively on corporate performance. In this case, it is the flexibility with which corporate boards are able to either decrease or increase the number of board meetings to deal with emerging issues rather than the mere frequency that can influence corporate performance. Consistent with Jensen's (1993) suggestions, Vafeas (1999a) argues that companies that are efficient in setting the right frequency of board meetings, depending on its operating context, will enjoy economies of scale in agency costs, and thereby enhance corporate financial performance.

The empirical literature is not only equally conflicting, but also overly concentrated in a few developed countries in Europe and North America, which depict similar institutional context (Yermack 1996; Vefeas 1999a, b; Conger et al 1998; Carcello et al, 2002). For example, and using a sample of 307 US listed firms over the 1990-1994 period, Vafeas (1999a) reports a statistically significant and negative association between the frequency of board meetings

and corporate performance, as proxied by Tobin's Q. By contrast, he finds that operating performance significantly improves following a year of abnormal board activity. This suggests that while directors who confer more regularly can make better decisions and engage in active monitoring, the potential benefits of such intense monitoring are expected to reflect in future years' performance. That is, board decisions may have gestation period within which their full benefits may be realised. This may also suggests the presence of endogeneity problems in the association between the frequency of board meetings and corporate performance. For instance, it is possible for corporate financial performance to improve, following increased frequency of board meetings, but such increased board activity might have been triggered by poor corporate performance. As will be discussed further, and distinct from most previous studies, we explicitly address potential endogenous association between board meetings and corporate performance.

Similarly, and using a sample of 258 of the *Fortune* 1000 companies, Carcello et al (2002) establish a positive relationship between the amount of audit fees paid and the frequency of audit committee meetings. This means that audit committees that meet more frequently pay higher audit fees, and thereby impacting negatively on corporate performance. Recently, Fich and Shivdasani (2006) offer evidence, which is in line with the results of prior research that boards that meet more frequently are valued less by the market in a sample of 508 US listed firms from 1989 to 1995.

On the contrary, using a sample of 275 US listed firms from 1995 to 2000, Karamanou and Vafeas (2005) find a positive association between board meeting frequency and the accuracy of management earnings forecasts. Also, and of close relevance, Mangena and Tauringana (2008) report a positive relationship between the frequency of board meetings and corporate performance for a sample of 157 Zimbabwean listed firms over the period 2001-2003. Their results support the proposition that monitoring becomes more intense in periods of crisis, and companies whose board meet more frequently perform better. In contrast, El Mehdi (2007) finds that the frequency of board meetings has no association with economic performance in a small sample of 24 Tunisian listed firms from 2000 to 2005. He suggests that financial performance, which is tied most closely to the quality of the day-to-day management of the company, is likely to be less affected by the frequency of board meetings.

With respect to SA, King II and the listing rules of the Johannesburg

Stock Exchange (JSE) Ltd task listed firms to establish a policy for the frequency, purpose, conduct and duration of their boards of directors and board subcommittees' meetings. Specifically, and as has previously been discussed, King II recommends that all corporate boards should meet regularly, at least once a quarter, which must be disclosed in their annual reports. This implies that King II expects a higher frequency of board meetings to impact positively on corporate financial performance. However, given the conflicting international empirical evidence, we predict a statistically significant relationship between board meetings and corporate performance without specifying the direction of the coefficient as follows:

H_1: There is either a statistically significant negative or positive relationship between the frequency of board meetings and corporate performance.

4. Research Design

4.1 Data

Due to regulatory and capital structure reasons, 291 companies listed on the JSE as at 31/12/2007 from eight non-financial industries, including basic materials, consumer goods, consumer services, health care, industrials, oil and gas, technology, and telecoms were considered for inclusion in our sample. We use CG and financial variables to investigate the impact of board meetings on corporate performance. The CG variables were collected from the sampled companies' annual reports. We downloaded the annual reports from the Perfect Information Database. The financial data were collected from DataStream. The companies in our final sample had to meet two criteria. First, a company's complete 5-year annual reports from 2002 to 2006 inclusive are available. Second, the company's corresponding financial data from 2003 to 2007 is also available[1].

The criteria were set for several reasons. First, and in line with prior studies (Yermack, 1996; Vefeas, 1999a), the criteria ensured that the requirements for a balanced panel data analysis were met. Advantages for using panel data include having time series and cross-sectional observations, more degrees of freedom and less collinearity among variables (Wooldridge, 2002; Gujarati, 2003). Second, analysis of 5-year data with both cross-sectional and time series properties may help in ascertaining whether the observed cross-sectional link between board meetings and corporate performance also holds over time, and thereby facilitates direct comparisons to be drawn with the findings of previous studies (Yermack, 1996; Carcello et al, 2002). Using the above criteria, the complete data required

is obtained for a total of 169 companies over 5-company years and 8 industries for our regression analysis.

4.2 Measures and Variables

The frequency of corporate board meetings (*FBMs*) is our main independent variable in all our regressions, which is measured as the natural log of the total number of board meetings in a year. The widely used Tobin's Q (*Q*) is our main measure of corporate performance (dependent variable). However, we apply return on assets (*ROA*) and total shareholder return (*TSR*) to check the robustness of our results to alternative accounting and market-based corporate performance proxies, respectively. In line with Vefeas (1999a) and Carcello et al (2002), we include below a number of control variables. First, companies with higher investment avenues grow faster (Henry 2008), and are likely to be associated with higher corporate performance. Therefore, we expect sales growth (*GROWTH*) to be positively related to corporate performance. Second, corporations that invest more in research and development can gain competitive advantages (Vefeas, 1999a; Ntim, 2009), and thus may receive higher corporate performance. By contrast, research and development need higher capital investment (Vefeas, 1999b), and as such, may impact negatively on current corporate performance.

In a similar vein, greater use of debt can improve performance by minimising the ability of managers to expropriate excess cash flows (Jensen 1986). On the contrary, greater levels of debt usage can result in financial distress, and minimise the ability of companies to take advantage of growth opportunities. Also, as a result of bigger agency problems, larger corporations are more likely to have good governance mechanisms (Beiner et al, 2006), and thus may generate higher corporate performance. In contrast, smaller companies are more likely to have greater avenues to grow, and therefore, may be positively related to corporate performance. Given the conflicting evidence, our prediction is that gearing (*GEAR*), capital expenditure (*CAPEX*) and firm size (*LNTA*) will either impact positively or negatively on corporate performance. Third, companies that maintain listings on foreign stock markets tend to have higher funding and investment avenues, and as such may be positively related to corporate performance. Therefore, we expect cross-listing (*CROSLIST*) to be positively associated with corporate performance. Fourth, DeAngelo (1981) suggests that audit firm size impacts positively on auditor independence and audit quality, and hence companies audited by large audit companies may be associated with higher corporate performance. Therefore, we expect audit firm size (*BIG4*) to

have a positive impact on corporate performance.

Fifth, government ownership may be associated with access to critical resources, such as finance and profitable government contracts (Murray, 2000; Ntim, 2009). Therefore, we expect a positive link between government ownership (*GOVOWN*) and corporate performance. Sixth, corporations that voluntarily set up CG committee to specifically monitor CG standards may be able to reduce managerial expropriation of corporate resources, and as such may generate higher corporate performance. Thus, we expect the presence of a CG committee (*CGCOM*) to be positively related to corporate performance. Finally, in line with Vefeas (1999a, b) and Guest (2009), we expect that corporate performance will differ across different industries and financial years. Therefore, we include industry (*INDUST*) dummies for the 5 remaining industries[2]: basic materials and oil & gas; consumer goods; consumer services and health care; industrials; and technology & telecommunications; and year (*YD*) dummies for the financial years 2003 to 2007.

5. Empirical Analyses

5.1 Descriptive Statistics and Bivariate Regression Analyses

Table 1 reports descriptive statistics of all variables that we use in conducting our fixed-effects regressions. Table 1 show, for example, that *Q* is between a minimum of 0.72 and a maximum of 3.60 with an average of 1.56. In line with the findings of Vefeas (1999a) and Carcello et al, 2002, the *FBMs* ranges from a minimum of 1 to a maximum of 15 with a median of 4 board meetings in a year. The alternative corporate performance proxies, as well as the control variables indicate wide variations, suggesting that our sample has been sufficiently chosen to achieve adequate variation, and thus eliminate any possibilities of sample selection bias.

We conduct correlation analysis in order to ascertain the level of collinearity among the variables. Table 2(see appendix) reports the correlation matrix for all variables that we use in running our fixed-effects regressions. For robustness purposes, the bottom left half of the table presents Spearman's non-parametric coefficients, whereas the upper right half of the table reports Pearson's parametric coefficients. Both the magnitude and direction of the parametric and non-parametric correlation coefficients are very similar, indicating that no major non-normality problems exist. Also, both matrices suggest that correlations among the variables are fairly low, implying that no serious multicollinearity problems

Table 1. Descriptive statistics of all variables for all (845) firm years

Variable	Mean	Median	Std. dev	Maximum	Minimum
Corporate performance (Dependent Variables)					
Q	1.56	1.34	0.67	3.60	0.72
ROA	0.11	0.12	0.14	0.38	-0.19
TSR	0.28	0.25	0.89	2.36	-0.48
Corporate board meetings (Main independent variable)					
FBMs	4.70	4.00	2.18	15.00	1.00
Control variables					
BIG4	0.73	1.00	0.44	1.00	0.00
CAPEX	0.13	0.08	0.15	0.66	0.07
CGCOM	0.32	0.00	0.47	1.00	0.00
CROSLIST	0.22	0.00	0.41	1.00	0.00
GEAR	0.32	0.19	0.31	0.78	0.01
GOVOWN	0.38	0.00	0.49	1.00	0.00
GROWTH	0.12	0.14	0.26	0.89	-0.44
LNTA	5.86	6.02	0.48	7.83	4.24

Notes: **Variables are defined as follows: Tobin's Q (Q), measured as the ratio of total assets minus book value of equity plus market value of equity to total assets. Return on assets (*ROA*), defined as the ratio of operating profit to total assets. Total shareholder returns (*TSR*), calculated as annualised total shareholder returns made up of share price and dividends. Frequency of corporate board meetings (*FBMs*), measured as the natural log of the total number of corporate board meetings in a year. Audit firm size (*BIG4*), measured as a dummy variable that takes the value of 1, if a firm is audited by a big four audit firm (PricewaterhouseCoopers, Deloitte & Touché, Ernst & Young, and KPMG), 0 otherwise. Capital expenditure (*CAPEX*), calculated as the ratio of total capital expenditure to total assets. Cross-listing (*CROSLIST*), measured as a dummy variable that takes the value of 1, if a firm is cross-listed to a foreign stock market, 0 otherwise. The presence of a corporate governance committee (*CGCOM*), defined as a dummy variable that takes the value of 1, if a firm has set up a corporate governance committee, 0 otherwise. Gearing (*GEAR*), calculated as the ratio of total debts to market value of equity. Government ownership (*GOVOWN*), measured as a dummy variable that takes the value of 1, if government ownership is at least 5%, 0 otherwise. Sales growth (*GROWTH*), calculated as the current year's sales minus last year's sales to last year's sales. Firm size (*LNTA*), measured as the natural log of total assets.**

exist among the variables.

In addition, Table 2 suggests statistically significant links between the corporate performance proxies and *FBMs*. For example, *FBMs* is statistically significant and positively related to *Q*, *ROA* and *TSR*, suggesting that SA boards that meet more regularly tend to generate higher corporate performance. Finally,

there are statistically significant relations between the corporate performance measures and the control variables. For example, *CAPEX* and *GEAR* are statistically significant and negatively associated with *Q*, *ROA* and *TSR*, whereas *BIG4*, *CGCOM*, *CROSLIST*, *GOVOWN* and *GROWTH*, are statistically significant and positively correlated to *Q*, *ROA* and *TSR*, as hypothesised.

5.2 Multivariate Regression Analyses

As previously noted, companies tend to differ in the challenges and opportunities that they encounter over time. This can lead to a situation whereby *FBMs* and *Q* are jointly and dynamically determined by firm-level differences, such as firm complexity and managerial quality (Guest, 2009; Ntim, 2009), which simple OLS regressions may fail to uncover (Wooldridge, 2002; Gujarati, 2003), and thereby resulting in misleading findings. Therefore, given the panel nature of our data and in line with prior research (Henry 2008; Guest 2009; Ntim et al 2011b), we run fixed-effects regressions to control for possible unobserved firm-level heterogeneities. We begin our analysis with basic fixed-effects regression specified as follows:

$$Q_{it} = \alpha_0 + \beta_1 FBMs_{i\,-1} + \sum_{i=1}^{n} \beta_i CONTROLS_{i\,-1} + \delta_{i\,-1} + \varepsilon_{i\,-1} \quad (1)$$

where: *Q* is the main dependent variable, *FBMs* is the main explanatory variable, *CONTROLS* refers to the control variables, including *BIG4*, *CAPEX*, *CGCOM*, *CROSLIST*, *GOVOWN*, *GROWTH*, *INDUST* and *YD*, and δ refers to the firm-specific fixed-effects, consisting of a vector of 168 year dummies to represent the 169 sampled firms.

Table 3 (in appendix) reports fixed-effects regressions results of *FBMs* on *Q*. First, to examine whether the *FBMs* is related to *Q*, we regress *Q* on *FBMs* alone without the control variables using equation (1). Statistically significant and positive effect of *FBMs* on *Q* is observable in Model 1 of Table 3. However, the coefficient on the constant term in Model 1 of Table 3 is statistically significant and seems to suggest that there may be omitted variables bias. We, therefore, add the control variables in models 2 to 8 in order to control for potential omitted variables bias. Importantly, the coefficient on *FBMs* remains statistically significant and positive in Model 2 of Table 3, and thereby providing support for H_1 that SA boards that meet more frequently tend to generate higher corporate performance. Theoretically, our findings are consistent with agency theory that indicates that corporate boards that meet more frequently have

increased ability to effectively advise, monitor and discipline management, and thereby improving corporate financial performance (Conger et al 1998; Vefeas 1999a). Our evidence also provides support for the findings of previous studies (Karamanou and Vafeas, 2005; Mangena and Tauringana, 2008) that report a positive association between *FBMs* and corporate performance, but inconsistent with those that either report a negative (Vefeas, 1999a; Carcello et al, 2002; Fich and Shivdasani, 2006) or no (El Mehdi, 2007) relationship.

Second, to test whether there is a non-linear relationship between *FBMs* and corporate performance, such that either a small or large number of board meetings impacts positively on corporate performance, as suggested by Jensen (1993), we re-run equation (1) using squared ($FBMs^2$) and cubed ($FBMs^3$) versions of *FBMs*. Statistically significant and positive effect of $FBMs^2$ and $FBMs^3$ on *Q* is noticeable in Models 3 and 4 of Table 3, respectively, and thereby providing new empirical support for theoretical suggestions that either a low or high frequency of board meetings can equally improve corporate performance. To check whether our non-monotonic evidence is sensitive to the simultaneous presence of the three board meetings proxies, we re-regress equation (1) by contemporaneously including *FBMs*, $FBMs^2$ and $FBMs^3$. The coefficients on all three are observably positive and statistically significant in Model 5 of Table 3, and thereby suggesting that our evidence of a curvilinear association between *Q* and *FBMs* is robust to this specification.

The implication of our evidence is that corporations can design board meeting arrangements that are both flexible and responsive to their specific challenges. For example, directors can increase the frequency of meetings during crisis or when shareholders' interests are visibly in danger, such as when replacing the CEO or fighting hostile takeovers. In contrast, the frequency of board meetings can substantially be reduced when there is a significant decrease in the corporate problems, in which board meetings and decisions can influence shareholder value. Whilst the finding that *FBMs* is positively associated with *Q* provides support for the recommendations of King II that corporate boards should at least meet four times in a year, our additional evidence of a non-linear relationship between *FBMs* and *Q* suggests further that the concept that '*one-size fits all*' may also be inappropriate.

Finally, and generally, the coefficients on the control variables in Models 1 to 5 of Table 3 are of the same sign, as predicted. For instance, *BIG4*, *CGCOM*, *CROSLIST*, *GOVOWN* and *GROWTH* are statistically significant

and positively associated with *Q*, whereas the coefficients on *CAPEX*, *GEAR* and *LNTA* are statistically significant and negatively related to *Q* in Models 1 to 5, as hypothesised. Finally, the *F*-values in Table 3 consistently reject the null hypothesis that the coefficients on *FBMs* and the control variables are equal to zero. Consistent with previous evidence (Vefeas, 1999a; Carcello et al, 2002), the adjusted R^2 is between 2% and 37%, implying that our fixed-effects regressions can explain significant differences in our sampled companies' *Q*.

5.3 Additional Analyses

Our fixed-effects regression analyses so far do not take into account alternative corporate performance measures and other potential endogeneity problems, implying that the positive effect of board meetings on corporate performance, for instance, may be misleading. In this subsection, we investigate how robust our findings are to the use of alternative corporate performance proxies, as well as the existence of endogeneities.

First, we examine the sensitivity of our findings to two alternative performance measures that we have data on: return on assets (*ROA* – an accounting based proxy) and total share returns (*TSR* – a market based measure). Models 6 and 7 of Table 3 report results based on using *ROA* and *TSR*, respectively, instead of *Q*. Statistically significant and positive impact of *FBMs* on *ROA* and *TSR* in models 6 and 7 of Table 3, respectively, is observable, and thereby implying that our results are robust when an accounting (*ROA*) or a market (*TSR*) based measure of corporate performance is applied instead of *Q*.

Second, to address potential additional endogeneity problems that may be caused by omitted variable bias, we rely on the widely applied two-stage least squares (*2SLS*) methodology (Beiner et al, 2006; Henry 2008). However, to be certain that the *2SLS* methodology is ideal, and in line with Beiner et al (2006), we first carry out Durbin-Wu-Hausman exogeneity test (see Beiner et al, 2006: 267) to test for the existence of an endogenous link between *Q* and *FBMs*. Applied to equation (1), the test fails to accept the null hypothesis of no endogeneity, and therefore, we conclude that the *2SLS* methodology may be appropriate and that our fixed-effects results may be misleading. In the first stage, we assume that the *FBMs* will be determined by the ten control variables (as exogenous variables) contained in equation (1). In the second stage, we use the predicted part of the *FBMs* (*PRE_FBMs*) as an instrument for *FBMs* and re-estimate equation on as follows:

$$Q_{it} = \alpha_0 + \hat{\beta}_1 FBMs_{it} + \sum_{i=1}^{n} \beta_i CONTROLS_{it} + \delta_i + \varepsilon_i \quad (2)$$

where everything remains the same as defined in equation (1) except that we use the predicted *FBMs* (*PRE_FBMs*) from the first-stage estimation as an instrument for the *FBMs*. The coefficient on the *PRE_FBMs* in Model 8 of Table 3 is positive and statistically significant, and thereby implying that our evidence of a positive impact of *FBMs* on *Q* is robust to endogeneity problems that may arise from omitted variables. Overall, the additional analyses indicate that our results are robust to different forms of endogeneity problems, including simultaneity and omitted variables bias, as well as different corporate performance proxies.

6. Summary and Conclusion

Using a sample of 169 South African (SA) listed corporations, this paper investigates the impact of corporate board meetings on corporate performance. This coincides with a period during which the SA authorities pursued corporate governance reforms, which have primarily been aimed at improving board independence and monitoring power in the form of the 1994 (King I) and 2002 (KING II) reports. Our findings suggest a statistically significant and positive association between the frequency of corporate board meetings and corporate performance, implying that SA boards that meet more frequently tend to generate higher financial performance. A further investigation indicates a significant non-monotonic link between the frequency of corporate board meetings and corporate performance, suggesting that either a relatively small or large number of corporate board meetings impacts positively on corporate performance. Our findings are robust across a number of econometric models that control for different types of endogeneities and corporate performance proxies. Our results provide empirical support for agency theory, which suggests that corporate boards that meet more frequently have increased capacity to effectively advise, monitor and discipline management, and thereby improving corporate financial performance.

Our evidence also has important regulatory and policy implications. Whilst the finding that the frequency of corporate board meetings is positively associated with corporate performance provides support for the recommendations of King II that corporate boards should at least meet four times in a year, our additional

evidence of a non-linear relationship between corporate board meetings and corporate performance suggests further that the concept that '*one-size fits all*' may also be inappropriate. Since SA corporations vary in size, industry and sophistication of operations, it is reasonable to argue that adopting a '*flexible and responsive*' **instead of '***one size fits all***' approach to corporate board meetings may improve corporate performance.**

Notes:

1. It takes time for board decisions to reflect in firm value (Vefeas, 1999a, b). Hence, to avoid endogenous relationship between board meetings and corporate performance, we introduce a one year lag between board meetings and corporate performance such that this year's performance depends on last year's governance structure similar to Vefeas (1999a), as specified in equation (1) below. The sample also begins from 2002 for two reasons. Firstly, King II came into operation in 2002, and secondly, data coverage in Perfect Information/DataStream on SA listed firms is very low until 2002.
2. For lack of sufficient number of observations in 3 industries, namely health care, oil and gas, and telecommunications industries with three, one and three listed firms, respectively, were merged with the closest remaining five major industries. As a result, the three health care firms were added to the consumer services industry, the one oil and gas firm was included in the basic materials industry, whereas the three telecoms companies were also shared out to the technology firms.

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Appendix Tables

Table 2. Correlation matrix of all variables for all (845) firm years

Variable	Q	ROA	TSR	FBMs	$FBMs^2$	$FBMs^3$	GOVOWN	GROWTH	CAPEX	LNTA	GEAR	BIG4	CROSLIST	CGCOM
Q		.191***	.190***	.182***	.162***	.138***	.124***	.137***	-.198***	-.162***	-.170***	.188***	.129***	.168***
ROA	.383***		.119***	.148***	.156***	.143***	.198***	.150***	-.171***	-.251***	-.150***	.133***	.176***	.185***
TSR	.286***	.276***		.164***	.154***	.141***	.110***	.109***	-.087**	-.168***	-.162***	.178***	.132***	.134***
FBMs	.118***	.117***	.164***		.698**	.676***	.141***	.079**	.041	.174***	.015	.117***	.128***	.115***
$FBMs^2$	.114***	.116***	.156***	-.785***		.924***	.099***	.028	.053	.122***	.027	.080**	.104***	.089**
$FBMs^3$	.110***	.112***	.150***	.756***	.738***		.064*	.018	.036	.078**	.020	.045	.080**	.066*
GOVOWN	.228***	.208***	.169***	.174***	.172***	.170**		.026	-.080**	.615***	-.056*	.296***	.470***	.324***
GROWTH	.127***	.241***	.214***	.135***	.133***	.130***	.078**		-.038	.007	-.040	.008	-.034	.002
CAPEX	-.481***	-.197***	-.141***	-.167**	.165***	-.160***	-.070**	-.059*		.028	.480***	.009	-.056	-.091**
LNTA	-.191**	.130***	.138***	.247***	.245***	.240***	.638***	.116***	.067**		.085**	.434***	.475***	.455***
GEAR	-.458***	-.289***	-.196***	.041	.040	.037	-.107***	-.071**	.510***	.088**		-.020	-.036	-.053
BIG4	.145***	.180***	.170***	.148***	.146***	.140***	.296***	.014	.066*	.441***	-.039		.253***	.216***
CROSLIST	.170***	.173***	.132***	.155***	.153***	.150***	.470***	-.026	.009	.470***	-.029	.256***		.363***
CGCOM	.163***	.162***	.173***	.153***	.150***	.148***	.324***	.017	-.001	.457***	-.034	.219***	.368***	

Notes: **The bottom left half of the table contains Spearman's non-parametric correlation coefficients, whereas the upper right half of the table shows Pearson's parametric correlation coefficients. ***, ** and * indicate that correlation is significant at the 1%, 5% and 10% level, respectively. Variables are defined as follows: Tobin's Q (*Q*), return on assets (*ROA*), total shareholder return (*TSR*), the frequency of corporate board meetings (*FBMs*), the frequency of corporate board meetings squared ($FBMs^2$), the frequency of corporate board meetings cubed ($FBMs^3$), government ownership (*GOVOWN*), sales growth (*GROWTH*), capital expenditure (*CAPEX*), firm size (*LNTA*), gearing (*GEAR*), audit firm size (*BIG4*), cross-listing (*CROSLIST*), and the presence of a corporate governance committee (*CGCOM*). Table 1 above fully defines all the variables used.**

Table 3. Fixed-effects regressions of the impact of corporate board meetings on corporate performance

Dep. variable	Q	Q	Q	Q	Q	ROA	TSR	2SLS (Q)
Adjusted R2	0.020	0.365	0.363	0.360	0.372	0.380	0.349	0.389
F-value	5.063***	11.130***	10.458***	10.280***	11.830***	12.518***	9.380***	12.960***
(N)	(845)	(845)	(845)	(845)	(845)	(845)	(845)	(845)
Constant	1.403	1.517	1.500	1.425	1.544	-0.127	6.341	3.097
	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.985)	(0.005)***	(0.000)***
Indep. Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
FBMs	0.036	0.021	-	-	0.041	0.422	0.995	-
	(0.025)**	(0.040)**	-	-	(0.013)**	(0.008)***	(0.038)**	-
FBMs2	-	-	0.018	-	0.020	-	-	-
	-	-	(0.046)**	-	(0.039)**	-	-	-
FBMs3	-	-	-	0.015	0.008	-	-	-
	-	-	-	(0.050)**	(0.054)*	-	-	-
PRE_FBMs	-	-	-	-	-	-	-	0.050
	-	-	-	-	-	-	-	(0.000)***

Table 3. Cont.

Cont. variables								
BIG4	-	0.143	0.142	0.141	0.140	0.821	4.246	0.190
	-	(0.014)**	(0.016)**	(0.019)**	(0.024)***	(0.018)**	(0.038)**	(0.000)***
CAPEX	-	-0.009	-0.007	-0.005	-0.006	-0.045	-0.117	-0.012
	-	(0.000)***	(0.001)***	(0.001)***	(0.000)***	(0.013)**	(0.085)*	(0.000)***
CGCOM	-	0.210	0.208	0.205	0.211	1.631	1.741	0.218
	-	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.023)**	(0.037)**	(0.000)***
CROSLIST	-	0.228	0.225	0.220	0.226	2.287	2.579	0.275
	-	(0.040)**	(0.043)**	(0.046)**	(0.042)***	(0.046)**	(0.007)***	(0.000)***
GEAR	-	-0.010	-0008	-0.006	-0.009	-0.163	-0.380	-0.014***
	-	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)
GOVOWN	-	0.112	0.107	0.103	0.105	7.068	6.944	0.356***
	-	(0.010)***	(0.011)**	(0.032)**	(0.029)***	(0.000)***	(0.000)***	(0.000)
GROWTH	-	0.173	0.168	0.164	0.170	0.246	0.144	0.175***
	-	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)
LNTA	-	-0.208	-0.205	-0.203	-0.206	-2.791	-6.436***	-0.280***
	-	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)	(0.000)
INDUST	-	Included	Included	Included	Included	Included	Included	Included
YD	-	Included	Included	Included	Included	Included	Included	Included

Notes: **Coefficients are in front of parenthesis. ***, ** and * indicate that p-value is significant at the 1%, 5% and 10% level, respectively. Following Petersen (2009), coefficients are estimated by using the robust clustered standard errors technique. Variables are defined as follows: Tobin's (*Q*), return on assets (*ROA*), total shareholder return (*TSR*), frequency of board meetings (*FBMs*), frequency of corporate board meetings squared ($FBMs^2$), frequency of corporate board meetings cube ($FBMs^3$), predicted *FBMs* (*PRE_FBMs*) – obtained by regressing *FBMs* on the control variables and used as an instrument for the *FBMs* in model 8, audit firm size (*BIG4*), capital expenditure (*CAPEX*), the presence of a corporate governance committee (*CGCOM*), cross-listing (*CROSLIST*), gearing (*GEAR*), government ownership (*GOVOWN*), firm size (*LNTA*), industry dummies (*INDUST*), and year dummies (*YD*). Table 1 above fully defines all the variables used.**