

Effect of Board Diversity on Corporate Governance Structure and Operating Performance: Evidence from the UK Listed Firms*

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ABSTRACT

This study expands the model of corporate governance to incorporate moderating effect of board diversity. It also investigates the relationship between internal corporate governance structures and firm performance and how this relationship is moderated by the influence of board diversity. The data of the study, which were extracted from annual reports of the UK FTSE 350 firms, were treated statistically using OLS-moderating multiple regression analysis. The coefficients provide evidence that the proportion of outside directors, board size, board diversity are significantly positively related to operating performance (ROA). The empirical evidence also indicates that the moderating effect of board diversity strengthens the relationship between outside directors and operating performance as well as between board size and operating performance. By implication, the result suggests that Agency Theory must explicitly indicate that board diversity plays important moderating role in corporate governance.

Keywords: Audit committee; board diversity; corporate governance; operating performance; outside directors; return on assets; United Kingdom

INTRODUCTION

The increasing cases of corporate scandal and failure in the recent past have encouraged greater media and public interest in corporate governance than ever before. The aim of corporate governance is to protect the shareholders from self-interest of the directors so that they can get fair return on their investment (Guli, Sajid, Razzaq & Afzal 2012; Fama 1980). However, with the prevalence of enormous cases of corporate scandal and failure, there is doubt whether the existing mechanisms of corporate governance effective. Core, Holthausen and Larcker (1999) argued that there will be greater agency problem, where corporate governance mechanisms are weak.

From the theoretical perspective, the interest of the shareholders can be protected from self-seeking management through effective monitoring of the management via corporate governance structures like board of directors, board committees etc, or by providing the directors with incentive to align their interests with that of shareholders (Abdulrouf 2011; Fama & Jensen 1983; Jensen & Meckling 1976). The empirical findings on how best the corporate governance mechanisms are to be structured to enhance corporate performance and serve the interest of shareholders using diverse theoretical views remain inconclusive (Combs, Ketchen, Perryman & Donahue 2007; Daily, McDougall, Covin & Dalton 2002). Combs et al. (2007) suggested that one possible reason for the ambiguous empirical results on the link between corporate governance structures and performance might be that some contingent factors moderate the relationship. Added to this, Arosa, Iturrade and Maseda (2010), Jackling and Johl (2009) and Nicholson and Kiel (2007)

declared that no single theory can adequately explain the complexity of corporate governance structure and that integrating multiple theories provide better understanding of dynamism of corporate governance.

In the recent past, the issue of corporate board diversity has attracted attention of policy makers and researchers (Davies 2011; Cartel Simkins & Simpson 2003; Kang, Cheng & Gray 2007). It is suggested that corporate board structured along demographic diversity, such as gender, age, ethnicity etc is efficient in its monitoring role, and protects the interest of the shareholders and other stakeholders (Kang et al. 2007; Ferreira 2010). Although the UK government has adopted board diversity as corporate governance practice from 2012, there is limited empirical evidence on the impact of board diversity on corporate performance.

In the light of this development, this study combines agency theory and stakeholder theory to advance the proposition that board diversity has interacting influence on corporate governance structures and operating performance. This study investigates the effects of board diversity on the relationship between the proportion of outside directors, board size as well as audit committee and operating performance to understand how board diversity would contribute to good corporate governance practice in UK and other countries. For this purpose, this study used sample of 126 of UK firms listed on FSTE 350 between 2009 and 2011 with 371 year-observations.

The findings from this study contribute to the literature in a number of ways. First, the study provides evidence on the moderating role of board diversity on the relationship between outside directors, board size as well

as audit committee and corporate operating performance. The result indicates that board gender diversity plays significant moderating role in the relationship between outside directors and operating performance as well as between board size and operating performance. Our finding suggests that the presence of women on the corporate board contributes greatly to the role of the board in corporate governance, especially in monitoring and advisory role; and this enhances corporate operating performance. Secondly, the result on the moderating role of board diversity offers practical implication for why corporate board should compose directors from diverse background to increase the efficiency of the board in its monitoring role of protecting the interest of the shareholders and other stakeholders through enhanced corporate performance. Furthermore, the findings contribute to the existing body of research, by providing evidence showing that outside directors as well as board size has significant impact on operating performance. The remaining part of this paper is organized as follows: the second part reviews relevant literature while the third part documents the methods used in the study. The results and discussion as well as the conclusion of the study follow in the fourth and fifth parts, respectively.

LITERATURE AND HYPOTHESES DEVELOPMENT

It is expected that the firms which complied with best corporate governance practices would perform well. It is widely understood that corporate governance structures influence corporate financial performance. In this case, performance may be either operating based performance or market based performance. As the case with this study, operating performance is commonly used in research studies (Bauwhede 2009). Operating performance reflects the impact of many factors including efficiency of the management and the success of monitoring and advisory role of the board and it remains the traditional indicator of corporate performance (Kiel & Nicholson 2003).

OUTSIDE DIRECTORS

Corporate board performs two important functions in corporate governance. The first is that it monitors the behaviour of the management to protect the interest of the shareholders (Cole, Daniel & Naveen 2008). In performing the monitoring role, the board is empowered to hire, reward, discipline and fire the executives (Bhagat & Bolton 2008; Jensen & Meckling 1976). In addition, the board also serves as adviser to the executive (Fama & Jensen 1983; Lasfer 2006). By these roles, the success or failure of a company lies with the board (Adams, Hermalin & Weibach 2008). Hence, the quality of the board composition has great impact on corporate performance.

The agency theorists suggest that board would be more effective in their monitoring function if outside directors dominate it (Jensen & Meckling 1976; Hermalin & Weisbach 2003). In line with this, Fama (1980) argued

that outside directors are independent as they have power to safeguard their reputation as experts; hence, can be trusted to effectively monitor the executive. Similarly, Morck, Shleifer and Vishny (1988) contended that without monitoring role of the outside directors, the executive might abuse their position in securing their job and approving their remuneration package.

However, the rampant cases of corporate scandal and failure in recent times have cast doubt on the effectiveness of monitoring role of the board dominated by outside directors. For instance, the 11 of 14 board members of Enron were outside directors and more than 50% of WorldCom's board were also outside directors (Rashid 2010). Combs et al. (2007) declared that in practice outside directors largely depended on the executive and their independence is weakened because they are subjected to manipulation of the executive. Despite these shortcomings, scholars have suggested that board composition with outsiders is comparatively better than board without outsiders in protecting the interest of the shareholders and boost firms performance (Combs et al. 2007; Jensen & Meckling 1976). However, findings proving the relationship between outside directors and financial performance are varied.

In the UK, Weir, Laing and McKnight (2002) using data on 311 firms for 1996, reported that proportion of independent outside directors is positively and significantly related to performance. However, the authors did control other endogenous factors that may have effect on performance in the analysis and besides, they used single period time lag (1996). Similarly, Muller (2014) with data on UK FTSE100 firms provided evidence suggesting that outside directors positively affected operating performance. On the contrary, Guest (2009) who used data on panel of 2,746 UK listed companies between 1981 and 2002 reported that outside directors have negative impact on firm performance.

In other studies, Anderson and Reeb (2004), Jackling and Johl (2009), and Heenetigal and Armstrong (2011) reported significant positive relationship between outside directors and firm performance. In a more recent study, Liu, Miletkov, Wei and Yang (2015) also established positive association between outside directors and operating performance. However, Bhagat and Black (2002) which based their study on the data of 848 US firms for 1991, found no relationship between board composition and performance. Similar findings were reported in Hermalin and Weibach (2003), Rashid (2010), and Amran (2011). The preceding literature leads us to the hypothesis below:

H1: Other things being equal, proportion of outside directors on board is significantly related to corporate operating performance.

BOARD SIZE

The number of people that make up corporate board will determine how effective it discharges its responsibilities in

corporate governance. Although there is no optimum board size in practice, Jensen (1994) suggested that board should have maximum of 7 to 8 members. However, Bonne, Field, Karpoff and Raheja (2007) drawing from the views of other scholars, suggested that the size of corporate board is influenced by three factors. First, Bonne and his colleague were of the view that the size of board depends on the nature and complexity of operation of a firm. Secondly, the size of board may also be the outcome of negotiation between the corporate stakeholders particularly between the CEO and outside members. Furthermore, the board size may also reflect specific requirement of a firm's business and information environment and in this case, the board size will be a trade-off between the benefits and costs of monitoring of the management (Bonne et al. 2007). The impact of these factors may result in a firm having large or small board size.

Dependent resource theorists support large board size and they argue that large board will expose firms to great business connections and critical resources (Dalton, Daily, Ellstrand & John 1999). In addition, large board is likely to have members with diverse background, experiences and who possess great collection of information which may add value to the performance of the firm (Arosa et al. 2010; Dalton et al. 1999; Combs et al. 2007). From agency theory perspective, Jensen (1994) declared that large board is less effective than small board. The author argued that as corporate board increases in size so will be associated with agency problems.

Evidence from empirical studies indicated that board size has influence on corporate performance. With sample of US firms, Yermack (1996) established negative association between board size and performance. Guest (2009) also reported similar result using UK firms. The study of Haniffa and Hudaiub (2006) also found negative pattern between board size and Tobin q using Malaysian firms. However, a study by Johl, Kaur and Cooper (2015) which used data on 700 Malaysian listed firms for the year 2007, indicated that board size is positively related to firm performance. By the same token, Dalton et al. (1999) showed positive relationship between board size and firm performance. Abidin, Kamal and Jusoff (2009) also established similar pattern using 75 listed Malaysian firms. On the basis of the preceding literature, the hypothesis below is formulated:

H2: Other things being equal, board size is significantly correlated to corporate operating performance.

AUDIT COMMITTEE

The board of directors may establish committees to carry out some specific assignments in order to facilitate good corporate governance and enhance performance. Audit committee is one of such committees and it is highly regarded in corporate governance (Cadbury 1992). The audit committee is critical to corporate accountability and by its responsibility, it enhances confidence in financial

statements (Laing & Weir 1999). The committee monitors the preparation of financial statement by the directors and reviews significant judgments made in the financial statements. It also serves as a link between the corporate board and the external auditor on all matters relating to audits. In UK, the committee is expected to have at least 3 members (2 in case of small company), of which 2 must be independent non-executive directors (FRC 2010).

However, with increasing cases of corporate scandal in recent times, the effectiveness of the oversight responsibility of the committee is being questioned. In the case of Enron, it was reported that the failure of the audit committee contributed substantially to the collapse of the company (Solomon 2010). Nevertheless, Abdur Rouf (2011) declared that the role of the committee ensures the integrity of corporate financial report, which is critical to the implementation of corporate governance principle and improving firm performance.

Some studies have provided evidence on the connection between audit committee and firm performance. Using UK firms, Laing and Weir (1999) found out that the presence of audit committee has positive impact on corporate performance. In the same vein, Bouaziz (2012) who used Tunisian firms reported that audit committee has positive impact on financial performance. Similar result was found in the study of Kallamu and Saat (2015) on data from listed finance firms in Malaysia. However, with UK data, Vafeas and Theodorou (1998) and Weir et al. (2002) found no evidence to support the relationship between audit committee and performance. Similarly, using data on Jordanian firms, Hamdan, Sarea and Reyad (2013) reported that audit committee has no effect on operating performance. Thus, this leads to the formation of the hypothesis below:

H3: Other things being equal, audit committee is significantly related to corporate operating performance.

BOARD DIVERSITY

In recent years, one issue that has attracted great attention in corporate governance is board diversity (Davies 2011; Cartel et al. 2003; Rhode & Packel 2010). Board diversity is broadly classified as demographic diversity (gender, race etc) and cognitive diversity (education, experience) but gender diversity is the focus of most research studies (Erahardt, Werbel & Shrader 2003; Kang et al. 2007).

Although UK Corporate Governance Code encourages board diversity, the concern for the issue is heightened by the spate of corporate failure around the globe. As a result, the UK government constituted a committee chaired by Lord Davies on the issue in 2010 and the committee set a target for gender parity of least 25% in favour of women on FTSE 100 boards by 2015. However, Martin, Warren-Smith, Scott and Roper (2008) cautioned that if the rate of progress achieved between 2003 and 2005 is not improved upon, it would take UK the year 2225 to achieve gender balance on

her corporate boards. Nevertheless, evidence from Sealy and Vinnicombe (2012) showed that female directors on FTSE firms' boards increased to 15% in 2012 from 12.2% in 2009. What benefits has board diversity on firm performance?

Arguing from the microeconomic perspective, Campbell and Minguez-Vera (2008), Kang et al. (2007) and Ferreira (2010) stated that diversity of board is desirable because it will lead to greater knowledge base, creativity, innovation, increase discussion, cross-fertilization of ideas and enhances problem solving and decision making capacity of the board. They argued further that since women control the global consumer spending, diversity in favour of more women on the board may allow for greater market penetration because of greater access to information on market's needs and preference.

From ethical point of view, Brammer, Millington and Pavelin (2007) argued that it is wrong for an individual to be excluded from position, which she is qualified to hold on the ground of gender. Other views in favour of board diversity are also expressed in the works of Cartel et al. (2003) and Marimuthu (2008). However, board diversity is not without cost. In summary, Dobbin and Jung (2011) declared that diversity in race and gender to some extent may cause conflict, hinder communication and interfere with cooperation among board members; thereby lowering performance.

Despite the increasing calls for board diversity, research findings on the impact of board diversity on firm performance are varied. In the UK, based on sample of 17 companies with women on their boards and 19 companies without women on their boards, Ryan and Haslam (2005) reported that during the period stock market decline, the companies with females on their boards were more likely to experience bad performance consistently than the companies that appoint males. However, the samples of the study were small for its finding to be generalised.

In US, the study of Cartel et al. (2003) used the data of 683 firms and found significant positive relationship between fraction of women on the board and performance. Catalyst (2004) which is most cited study on board diversity used data of 353 US firms for 1997-2000, reported connection between gender diversity and financial performance. However, this study did not use method which produced cause effect. Francoeur, Labelle and Sinaclair-Degage (2008) and Erahardt et al. (2003) reported positive relationship between the two variables. In other studies, Dobbin and Jung (2011) and Marimuthu (2008) found negative relationship between board diversity and performance.

However, following the inconclusive findings on the relationship between governance structure and corporate performance (example Dalton et al. 1998; Daily et al. 2002 etc), we advance the proposition that board diversity influenced the relationship. We argue that the impact of outside directors, board size as well as audit committee on operating performance depend on diversity of the members. A more diverse board would have people from different backgrounds endowed with different knowledge,

experience, and skill; and they are likely to make quality contribution to decision process and monitoring role of the board, which subsequently would have great impact on performance. Our argument for the moderating role of board diversity lends support to the Agency Theory and it is based on economic cause. From theoretical perspective, well diversified corporate governance structures will ensure better protection to the shareholders' interest through effective monitoring of the behaviour of the CEO and other executive directors by people of diverse background and experiences. In this regard, the effect of board diversity through enhanced monitoring role of the board will cause firms to be economically prosperous; leading to greater profitability and thereby creating value to shareholders. This suggests that the effect of board diversity will positively strengthen the relationship between governance structure and corporate performance. Therefore, from the preceding literature, the following hypotheses are set out to test the direct and moderating effect of board diversity:

- H4: Other things being equal, board diversity is significantly related to corporate operating performance.
- H5: Other things being equal, the effect of board diversity strengthens the relationship between outside directors and corporate operating performance.
- H6: Other things being equal, the effect board diversity strengthens the relationship between board size and corporate operating performance.
- H7: Other things being equal, the effect board diversity strengthens the relationship between audit committee and corporate operating performance.

MATERIALS AND METHODS

SAMPLES AND DATA

The data used in this study were extracted from annual reports of firms listed on UK FTSE 350. The firms on FTSE 350 are from different segments of the market of FTSE 100 and FTSE 250 cutting across different sectors and industries. Given that the study covers period from 2009-2011, the samples were chosen based on the population of 241 companies listed on the FTSE in 2009 (London Stock Exchange 2009). These excluded financial institutions because these institutions are subjected to other regulations from the UK Financial Service Authority¹ and these regulations would make comparison between them and other companies difficult. In selecting the samples, proportionate stratified sampling and simple random sampling techniques were used (see Table 1).

The proportionate stratified sampling technique was applied to categorise the sample size into 9-industry classifications. From each industry, simple random sampling technique was applied to select firms that represent the samples of the study. However, after deleting firms with incomplete data as well as accounting for outliers, the actual samples of this study were 126 firms with 371 firm-years observations.

TABLE 1. Study's population and sample size

Industry	Target					Actual			
	Population of Firms	Sample Size		No of firm - Years		Sample Size		No of firm - years	
		No	%	No	%	No	%	No	%
Basic Materials	19	12	7.88	36	8.00	4	3.17	12	3.23
Consumers Goods	26	16	10.79	48	10.67	15	11.90	44	11.86
Consumers Services	65	41	26.97	123	27.33	39	30.95	117	31.54
Health Care	12	7	4.98	21	4.67	7	5.56	21	5.66
Industrials	64	40	26.57	120	26.67	38	30.16	112	30.19
Oil and Gas	22	14	9.13	42	9.33	7	5.56	18	4.85
Telecommunication	5	3	2.07	9	2.00	1	0.79	3	0.81
Technology	18	11	7.47	33	7.33	10	7.94	30	8.09
Utilities	10	6	4.14	18	4.00	5	3.97	14	3.77
Total	241	150	100.00	450	100.00	126	100.00	371	100.00

Source: Author compilation, 2012

MODEL AND MEASUREMENT OF VARIABLES

In addition to ascertaining the relationship between dependent variable and independent variables, this study also determined the moderating effect of board diversity. For this purpose, there is consensus in the statistics literature that the appropriate statistical technique to assess the presence of moderating effects in the relationship between two variables is Ordinary Least Square-Moderated Multiple Regression (OLS-MMR) (Aguinis & Gotterdson 2010; Aiken & West 1991). The direct relationship between the internal corporate governance structures and operating performance was estimated using the model 1, while the interacting effects of board diversity on the relationship was estimated in model 2.

$$\text{Operating Performance}_{it} = \beta_0 + \beta_1 \text{OUD}_{it} + \beta_2 \text{BSIZE}_{it} + \beta_3 \text{AUCOM}_{it} + \beta_4 \text{BDV}_{it} + \beta_5 \text{LogFMZ}_{it} + \beta_6 \text{DEBT}_{it} + \beta_7 \text{BMET}_{it} + \beta_8 \text{BHS}_{it} + \beta_9 \text{LogMVE}_{it} + \beta_{10} \text{LagROA}_{it} + \beta_{11} \text{INDSECT}_{it} + e_{it} \quad 1$$

$$\text{Operating Performance}_{it} = \beta_0 + \beta_1 \text{OUD}_{it} + \beta_2 \text{BSIZE}_{it} + \beta_3 \text{AUCOM}_{it} + \beta_4 \text{BDV}_{it} + \beta_5 \text{LogFMZ}_{it} + \beta_6 \text{DEBT}_{it} + \beta_7 \text{BMET}_{it} + \beta_8 \text{BHS}_{it} + \beta_9 \text{LogMVE}_{it} + \beta_{10} \text{LagROA}_{it} + \beta_{11} \text{INDSECT}_{it} + \beta_{12} \text{OUD}_{it} * \text{BDV}_{it} + \beta_{13} \text{BSIZE}_{it} * \text{BDV}_{it} + \beta_{14} \text{AUCOM}_{it} * \text{BDV}_{it} + e_{it} \quad 2$$

Where: i = firm, t = time (that is 2009-2011), β_0 is the intercept $\beta_1 - \beta_{14}$ are coefficient and e is the error. Operating performance is proxy for return on assets (ROA), OUD for the proportion of outside directors on board, BSIZE for board size, AUCOM for audit committee, BDV is board diversity. While LogFMZ is firm size, DEBT for debt capital, BMET is board meeting, BSH is block shareholders, LogMVE for market value of equity, LagROA is prior year return on assets and INDSECT is for dummy variables representing each of eight industry classifications. Table 2 summarises the measurement of various variables.

RESULTS AND DISCUSSION

DESCRIPTIVE STATISTICS AND CORRELATION

The descriptive statistics for each of the three years (2009-2011) as well as the pooled data for the entire firm with 371 observations are presented in Table 3. The descriptive analysis on the operating performance shows the mean percentage of ROA increased progressively from 9.28% in 2009 to 11.52% in 2011 with overall average of 10.59% for the 3 years. The improvement of ROA is an indication that UK listed companies had recovered from the effect of global financial meltdown and this represents a good sign of corporate governance.

With respect to the descriptive analysis of the continuous independent variables, Table 3 reveals that corporate board composed of an average of about 65%

of outside directors (OUD) in each of the 3 years under review. Even though the result suggests that majority board members of UK companies are outsiders, the mean proportion of the outside directors is slightly below 2/3 as recommended by UK Governance Code. Furthermore, Table 3 indicates that average board size (BSIZE) of listed companies in UK between 2009 and 2011 was 10. On the average, this suggests that listed companies in UK maintained board size above between 7 and 8 as recommended in the literature (Jensen 1994).

On board diversity (BDV), the mean proportion of women on the boards improved gradually from about 8% in 2009 to about 10% in 2011. The increase in the proportion of women on the corporate board in UK could be attributed to the awareness created among the stakeholders by the establishment of Dave's committee on board diversity in

TABLE 2. Measurement of operating performance and corporate governance structures

Variable	Code	Measurement
Dependent		
Operating performance	ROA	Profit before tax & interest scaled down by total assets and multiplied by 100
Independent		
Outside directors	ODU	The proportion of nonexecutive directors to the number of directors on the board each year
Board Size	BSIZE	Absolute number of directors on the board of a company each year.
Audit committee	AUCOM	Existence of the audit committee as defined by regulation, if yes it is scored one (1) and if no, the score is zero (0)
Moderator		
Board diversity	BDV	The proportion of women directors to the number of directors on the board of company each year.
Control		
Log Firm size	FMZ	Natural logarithm of the total assets of a company each year
Debt	DBT	Total debt scaled down by total assets and multiple by 100
Board meeting	BMET	Absolute number of meeting held by board of directors each year
Block shareholders	BHS	The proportion of board members who have at least 5% interest in company's shares to the number of directors on the board each year
Log Market value of equity	MVE	Natural logarithm of the outstanding shares multiplied by closing share price of a company each year
Lag Return of assets	ROA	Profit before tax & interest scaled down by total assets and multiplied by 100 of the previous year
Industry classifications	INDSECT	Each of the 8 sectors of the industry classifications was measured using dummy variable adopting consumers service as reference base.*

* The 8 sectors are Basic materials (BMAT), Consumers goods (CONGOODS), Health care service (HCARES), Industrial sector (INDUS), Oil and gas (OIGA), Telecommunication (TELECOM), Technology (TECH), Utility (UTIL).

2010 before the principle of board diversity was enshrined in UK Corporate Governance Code in 2012. However, with less than 1% women on each board, this suggests that male totally dominated corporate decision making in the UK.

With reference to the control variables, Table 3 indicates that the mean of natural logarithm of total assets representing firm size (FMZ) remains stable throughout the period under review at 8%. Surprisingly, the mean percentage of the debt ratio (DBT) dropped from about 58% in 2009 to 56% in 2011. Generally, the debt ratio is more than 50% and this indicates that these firms are characterised by some degree of risk. However, this varies from industry to industry.

The descriptive analysis also indicates the mean number of board meetings (BMT) held by the samples to be approximately 9 in each of the 3 years under review while the average proportion of shareholders (BHS) having blockshareholding (that is 5% or more) dropped from about 31% in 2009 to 10% in 2010, but increased to 28% in 2011. Furthermore, the mean of natural logarithm of market value of equity (MVE) remained stable at about 7% through the period under study and this suggests the sampled firms maintained stable growth.

Table 4 presents inter-correlation between various variables of the study and the results indicate that the strength of correlation between most variables are weak; hence produced small effect (± 0.1) while association between other variables produced moderate effect (± 0.3) and high effect (± 0.5) respectively. For the independent and

moderating variables, ROA is only negatively correlated to BSIZE ($r = -0.111$) at 1% significance level. Similarly, for the control variables, ROA is also negatively associated with FMZ ($r = -0.257$), BMT ($r = -0.156$) and MVE ($r = -0.137$) at 5% significance level respectively.

MULTIVARIATE ANALYSIS

Various tests were conducted to confirm whether the assumptions underlying OLS-MMR are complied with. The analysis of residual and plots of the studentised residuals against predicted value reveal considerable homoscedasticity and linearity in the data. Similarity, the results of P-P plot as well as kurtosis and skewness indicate that normality assumption was fairly upheld. However, one of the main limitations of OLS-MMR is that the presence of high correlation between variables (multicollinearity) may weaken the regression result and it may fail to detect moderating effect. To ensure robustness of the regression result, all the variables were centred² as recommended by Aiken and West (1991). Accordingly, VIF and correlation indicate that multicollinearity did not pose problem to the analysis.

In using OLS-MMR, the dependent variable was regressed on the set of predictor variables (independent variables) in the first stage to obtain the main effect while in the second stage; dependent variable was regressed on the set of predictor variables, moderator and a cross product of the preceding term (the product of each independent

TABLE 3. Descriptive statistics for continuous variables

Code	Variables	2009	2010	2011	2009-2011
		Mean	Mean	Mean	Mean
		Std Dev	Std Dev	Std Dev	Std Dev
		Skewness	Skewness	Skewness	Skewness
		Kurtosis	Kurtosis	Kurtosis	Kurtosis
		N = 123	N = 124	N = 124	N = 371
Operating performance					
ROA	Return on assets (%)	9.281	10.710	11.522	10.507
		9.530	7.7146	7.916	8.451
		.812	1.175	1.646	1.060
		3.565	3.572	6.937	4.469
Independent					
ODD	Outside Directors (%)	64.829	64.205	65.559	64.865
		12.020	11.704	11.0456	11.578
		-.278	-.228	-.402	-.301
		-.179	.054	-.407	-.195
BSize	Board Size	9.829	9.532	10.000	9.787
		2.673	2.558	2.613	2.615
		.880	.911	1.072	.943
		.999	-.838	1.222	.983
Moderator					
BDV	Board Diversity (%)	8.302	9.226	10.109	9.215
		8.258	8.353	8.527	8.390
		.948	.413	.482	.602
		1.410	-.772	-.226	.013
Control					
FMZ	Log Firm Size	7.537	7.628	7.686	7.617
		1.412	1.400	1.363	1.390
		.131	.150	.226	.162
		-.391	-.464	-.450	-.445
DBT	Debt ratio (%)	58.986	56.330	56.070	57.123
		25.330	22.738	23.012	23.690
		.976	.577	.988	.871
		3.540	1.192	4.389	3.105
BMT	Board Meeting	9.114	8.589	8.750	8.817
		3.137	2.735	2.784	2.891
		1.911	1.845	1.605	1.810
		6.946	6.515	5.275	6.354
BSh	Block S/holder	30.781	10.223	28.514	30.184
		23.476	4.308	19.116	22.101
		1.151	-.835	.665	.967
		1.708	1.113	.049	.949
MVE	Log Mkt Value of Equity	7.158	7.458	7.463	7.360
		1.342	1.333	1.295	1.327
		.593	.316	.429	.428
		.572	.245	.259	.268
ROA _{t-1}	Lag Return on assets (%)	11.557	10.734	11.556	10.519

TABLE 4. Correlation analysis

Code	ROA	OUD	BSIZE	BDV	FMIZ	DBT	BMT	BHS	MVE	ROA _{t-1}
ROA	1.000									
OUD	-.020	1.000								
BSIZE	-.111*	.105*	1.000							
BDV	.016	.128*	.190**	1.000						
FMIZ	-.257**	.312*	.575**	.296**	1.000					
DBT	-.065	.194*	.169**	.116*	.133*	1.000				
BMT	-.156**	.009	-.137**	-.124*	-.079	.019	1.000			
BHS	-.008	-.086	-.552**	-.143**	-.490**	-.143**	.127*	1.000		
MVE	-.137**	.299**	.313**	.254**	.757**	.022	-.191**	-.440**	1.000	
ROA _{t-1}	.064	.150**	-.014	-.108*	.080	-.113*	.049	-.069	.085	1.000

Significant levels are: * P<.01, ** P<.05

variable and moderator). Table 5 which documents the regression results indicates that the value of the F ratios which ranged 3.985 to 13.687 for the two models in each of the 3 years under review as well as the pooled data, is significant at the 1% level. This suggests that the models are statistically fit to predict the operating performance. With R² ranging from .426 to .452 respectively for model 1 and 2 of the pooled data, all the variables in each of these two models could only offer about 43% and 45% explanation of the variance in the dependent variable (ROA) respectively. However, the conservative explanation offered by adjusted R² was at 40% and 42%, respectively.

On the contribution of individual variables in each model, Table 5 indicates that proportion of outside directors (OUD) was positively significantly related to operating performance (ROA) in model 2 of the pooled data, but not significant in the models in each period under study. This suggests that the interacting effect of board diversity strengthens the relationship between outside directors and ROA. This result supports H1 and is consistent with findings in Anderson and Reeb (2004), Jackling and Johl (2009), Heenetigala and Armstrong (2011), Liu, Miletkov, Wei and Yang (2015) which reported positive relationship between OUD and ROA. This finding is expected considering that descriptive statistics (see Table 3) provided evidence that majority (65%) of board members on FTSE 350 were OUD. This means that the OUDs brought on the board diverse skill and experience, which assisted in pushing up advisory and monitoring role of the board, which positively influenced the company's operating performance.

This result supports the proposition of the Agency Theory, which suggests that board dominated by OUDs is likely to be efficient in its advisory and monitoring role and which in turn, will have impact on corporate performance. It is in recognition of the important role that OUDs dominated board plays in corporate governance particularly in corporate performance that as far back as 1992 Cadbury Committee asked for formal inclusion of the appointment of OUDs on the board as part of UK Corporate

Governance Code with further recommendation on this matter by other committees.

Similarly, board size (BSIZE) became significantly related to operating performance (ROA) on the inclusion of the interacting effect of board diversity in model 2 under pooled data. This implies that large board size could be more efficient if it encompasses people of diverse background. Though the positive relationship between board size and operating performance indicated by regression coefficient contradict the proposition by the agency theory, the result is consistent with findings of some past studies which also reported positive relationship between the two variables. For instance, the study of Abidin et al. (2009) reported that board size has positive impact on financial performance. The same result was also found in a more recent investigation by Johl, Kaur and Cooper (2015). Thus, this result provides evidence in support of H2. However, the relationship between audit committee (AUCOM) and operating performance (ROA) is not significant in individual years except for model 1 of the pooled data when audit committee exerts significant positive impact on operating performance. This result supports H3 and agrees to the findings in studies of Laing and Weir (1999), Bouaziz (2012) and Kallamu and Saat (2015) which indicated that audit committee is significantly positively associated with financial performance. In addition, the board diversity (BDV) is found to be significant to operating performance (ROA) in model 2 in 2010 as well as for the pooled data. This result which indicates significant positive connection between BDV and ROA allows us to accept H4. The result corresponds to the findings in the studies of Cartel et al. (2003), Catalyst (2004), Francoeur et al. (2008) and Erahardt et al. (2003). Each of these studies provided evidence which suggests that board diversity positively influences financial performance. The evidence on the relationship between BDV and ROA reported in this study lends support to the argument by Davies (2011) that corporate board would perform better if membership is drawn from different spectrum of the society and background, particularly on gender. Similar

view is held by other scholars (Ferreira 2010; Kang et al. 2007 etc.). Furthermore, the finding of this study provides justification for recent UK policy to encourage firms listed on the FTSE 350 to have more women on their boards by 2015 (Davies 2011) as well as activists who are agitating for great female representation on corporate boards worldwide. Therefore, positive relationship between the board diversity and financial performance as reported in this study is not surprising; considering the fact that diverse boards particularly in terms of gender is likely to improve decision making process and strategies of a firm through great and quality input. Diverse knowledge, experience, skill, creativity and innovation are to be brought to the board.

The results on the control variables indicate that company size (FMZ) which is represented by natural logarithm of total assets has significant negative association with operating performance (ROA) for all the three years and the pooled data. This suggests that as company becomes large in size it becomes complex to control. Hence, it becomes inefficient and this would result in lower financial performance. Similarly, board meeting (BMT) was found to have significant negative relationship with ROA in 2010. The regression result also provides evidence that control variable natural logarithm of market value of equity (MVE) is positively significant related to operating performance in every year under reviewed as well as for the pooled data. This result is not unexpected because market value of equity and operating performance interrelated; better market value of equity will positively influence operating performance and vice versa. In addition, on industry classification, basic materials (BMAT) sector was found to be positively related to operating performance at significant level in 2010 and 2011 as well as for the pooled data compared to industrial sector (INDU) which was positively significant in 2009 and for the pooled data. The health care sector (HCARES) was only significant in model 1 for the pooled data while its counterpart in the utility sector (UTIL) was found to be positively significant in 2009 and for the pooled data. Unlike other sectors, oil and gas sector (OILGAS) was found to be negatively related to operating performance at significant level in 2010 as well as in model 1 for the pooled data; but the technology sector (TECH) was negatively significant in 2010 and 2011. This suggests that increase in the activities in these sectors might have effect on operating performance.

The regression result also suggests that the inclusion of board diversity in the regression model as a moderator slightly increase the adjusted R^2 of all the years and the pooled data. This is an indication that the predictive capacity of model 2 was strengthened in the presence of moderating effect of board diversity. This result suggests that the moderating effect of board diversity has great impact on operating performance and it is an indication that operating performance reacts favourably to inclusion of women on the boards.

For the moderating effect, the result indicates that board diversity (BDV) interacted positively with outside

directors (OUDs) to influence operating performance (ROA) at significant level for every year and for the pooled data except for 2010. Thus, the result provides support for the acceptance of H5. This finding which came in the direction expected, suggests that outside directors from diverse gender background have positive impact on operating performance. There are a number of possible explanations for this finding. First, outside directors from diverse gender encourage directors to bring into a firm better and creative approach which may improve the ability and capacity of the board to monitor and control the management. The improvement in the monitoring and controlling function of the board resulting from the effect of gender diversity of outside directors will undoubtedly enhance corporate performance and add value to shareholders. Added to this, diverse directors from outside provide a firm more connections with the external environment and this means greater access to market and resources which will translate into greater financial performance. Hence, the effect of board diversity strengthens the relationship between outside directors and corporate performance.

Similar to the result on outside directors, board diversity (BDV) also positively significantly moderated the relationship between board size (BSIZE) and ROA in 2009 and 2011 as well as for the pooled data. Hence, this statistical result support H6 and this suggests that board size composing people of different gender background is likely to improve firms' operating performance. To be specific, these results show that the presence of women on the board either as executive or nonexecutive directors exerts influence which tremendously improved operating performance (ROA). These findings came in the direction and statistical significance expected suggesting that the presence of women on the board increases the board productivity which strengthened relationship between board size and operating performance. This result is not surprising because board size that is well diversified along gender basis will certainly attract different talented individuals with greater knowledge base, creativity, innovation and ability to increase discussion, cross-fertilise ideas and enhances problem solving and decision making capacity of the board.

These unique characteristics from a diverse board size will promote corporate performance. Furthermore, board size that is diverse in favour of gender is expected to increase economic prosperity through greater market penetration resulting from greater access to information on market's needs and preference. This economic benefit is made possible by the involvement of women either as executive or nonexecutive directors on the board. By their nature, women control the global consumer spending and as a result, they are more knowledgeable about the markets particularly in the industries with feminine content and products. Market information is useful to firm's competitive strategy. The results of the effect of board diversity on outside directors and board size reaffirmed the finding on the direct relationship between outside directors and ROA as well as board size and ROA. This

TABLE 5. Cross sectional moderated OLS regression of operating performance on governance structures

Variable	2009		2010		2011		All	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Intercept	24.304 (3.129)*	28.129 (3.735)*	15.271 (2.828)*	16.151 (2.958)*	2.433 (4.563)	2.861 (5.446)*	31.776 (4.389)*	30.864 (4.331)*
ODD	.041 (.439)	.131 (1.387)	-.041 (-.523)	-.042 (-.525)	.088 (1.101)	.109 (1.419)	-.003 (-.060)	1.453 (3.586)*
BSIZE	-.094 (-.901)	-.040 (-.396)	-.003 (-.026)	.016 (.153)	-.033 (-.320)	-.026 (-.261)	-.093 (-1.575)	.716 (2.024)*
AUCOM	.110 (1.279)	.125 (1.507)	.090 (1.232)	.104 (1.396)			.089 (2.090)**	-.472 (-.939)
BDV	.052 (.614)	.111 (1.341)	.153 (2.072)	.167 (2.227)**	.053 (.672)	.125 (1.586)	.150 (3.050)*	.148 (2.998)*
Control								
FMSIZE	-.830 (-6.071)*	-.871 (-6.575)*	-1.101 (-8.713)*	-1.108 (-8.661)*	-1.095 (-8.156)*	-1.046 (-7.984)*	-.966 (-12.923)*	-.962 (-13.096)*
LEVE	-.012 (-.120)	.016 (.170)	-.068 (-.811)	-.057 (-.663)	.025 (.282)	.019 (.221)	.026 (.499)	.064 (1.237)
BMT	-.125 (-1.511)	-.143 (-1.799)**	.055 (.737)	.044 (.576)	.035 (.445)	.018 (.236)	-.031 (-.713)	-.034 (-.815)
BSH	-.136 (-1.404)	-.137 (-1.447)	.030 (.327)	.034 (.361)	-.055 (-.603)	-.069 (-.786)	-.112 (-2.152)**	-.131 (-2.543)**
MVE	.617 (4.993)*	.572 (4.734)*	.958 (8.402)*	.939 (8.064)*	.997 (8.225)*	.873 (7.157)*	.763 (11.420)*	.720 (10.813)*
ROA _{t-1}	.026 (.317)	-.008 (-.102)	.010 (.139)	.001 (.015)	-.010 (-.121)	-.048 (-.618)	.019 (.440)	.004 (.104)

Note: 1.T Statistics in parenthesis.

2. Significance levels are: * P<.01, ** P<.05 and *** P<.10

further confirms the importance of the involvement of more women on decision making to corporate performance.

However, the regression evidence indicates that the effect of board diversity did not strengthen relationship between audit committee and ROA. Hence, the result did not support the prediction in hypotheses H7. Perhaps, this result came out this way because the proportion of women on the audit committee which was insignificant compared to women on corporate board in general. Other than that, for the effect of board diversity to strengthen the relationship between audit committee and operating performance, the quality of the members that make up the committee matters. Accordingly, it must be emphasised that the quality and quantity of members that form a gender diverse audit committee is essential for having efficient and effective audit committee which will exert significant impact on corporate performance. Perhaps, the few women on the audit committee of FTSE 350 firms did not possess requisite financial knowledge, skill and experience to make reasonable contribution to the audit committee to enable the committee to positively strengthen firm performance. This view concurs the argument of Zaman, Hudaib and Haniffa (2011) that audit committee with majority financial experts may likely to have better approaches in dealing with complex financial issues that may arise in the course

of deliberation than the committee without such experts or few number of such experts.

ROBUSTNESS ANALYSIS

Although the results were not reported, further analyses were carried out to confirm the robustness of the test to the model 2 specification in respect of the pooled data. In the first place, the dependent variable operating performance (ROA) was replaced with market performance. This was measured by Tobin Q; and the regression result which was not statistically different from the result reported in Table 5 indicates that ODD, BSIZE and BDV are significantly positively associated with performance. Moreover, the effect of board diversity significantly moderates the relationship between ODD and performance as well as the link between BSIZE and performance.

As a further robust check, the 8 dummy variables for industry classification which had taken greater part of the degree of freedom for the sample size was excluded from the model specification to test their effects on operating performance. The result from this test was not statistically different from result reported in Table 5. As an additional test, the 8 sectors in the industry classification were grouped into 2 classes¹ and included in the model. The regression

TABLE 5. Cross sectional moderated OLS regression of operating performance on governance structures (continued)

Variable	2009		2010		2011		All	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
BMAT	-.011 (-.126)	.036 (.436)	.137 (1.860)***	.157 (2.080)**	.186 (2.391)**	.227 (2.977)*	.118 (2.563)**	.146 (3.170)*
CONGOODS	-.087 (-.991)	-.047 (-.548)	-.091 (-1.168)	-.074 (-.940)	-.050 (-.620)	-.057 (-.737)	-.069 (-1.472)	-.072 (-1.564)
HCARES	.079 (.891)	.025 (.286)	.059 (.802)	.037 (.488)	.105 (1.334)	.022 (.270)	.084 (1.838)***	.044 (.954)
INDUS	.182 (1.918)***	.191 (2.065)**	.079 (.943)	.077 (.905)	.124 (1.439)	.086 (1.029)	.137 (2.713)*	.118 (2.366)**
OILGAS	-.114 (-1.309)	-.069 (-.814)	-.251 (-3.327)*	-.248 (-3.277)*	.111 (1.417)	.117 (1.555)	-.089 (-1.949)***	-.069 (-1.534)
TELECOM	.031 (.398)	.002 (.020)	.025 (.363)	.018 (.265)	.037 (.503)	.033 (.472)	.017 (.409)	.006 (.141)
TECH	-.035 (-.389)	-.007 (-.074)	-.180 (-2.159)**	-.164 (-1.913)***	-.169 (-1.938)***	-.159 (-1.908)***	-.072 (-1.475)	-.048 (-1.003)
UTIL	.211 (2.394)**	.239 (2.806)*	.042 (.554)	.056 (.726)	-.019 (-.235)	.010 (.133)	.092 (2.023)**	.105 (2.335)**
BDV*OUD		.166 (1.893)***		.078 (1.096)		.133 (1.721)***		1.454 (3.593)*
BDV*BSIZE		.261 (3.175)*		-.092 (-1.253)		.221 (2.908)*		.809 (2.320)**
BDV*AUCOM		-.082 (-.011)		.077 (.980)				-.583 (-1.155)
R ²	.411	.477	.553	.566	.504	.556	.426	.452
Adjusted R ²	.307	.367	.476	.476	.421	.471	.397	.419
F Ratio	3.985 (p=000)	4.336 (p=000)	7.157 (p=000)	6.267 (p=000)	6.043 (p=000)	6.521 (p=000)	14.500 (p=000)	13.687 (p=000)

Notes: 1.T Statistics in parenthesis.

2. Significance levels are * P<.01, ** P<.05 and *** P<.10

3. Regression failed to produce result for BDV*AUCOM in 2011

result of this model is not statistically different from the result reported in Table 5. A further robustness analysis was conducted by introducing the dummy of year as control variables in the model excluding the 8 dummy industry variables as well as replacement of 8 dummy variables. These tests are statistically similar to the primary result in Table 5.

CONCLUSION AND IMPLICATIONS

This study investigates the relationship between corporate governance internal structures and operating performance measured as ROA and how this relationship is moderated by board diversity. This relationship is as conceptualised by the Agency Theory and supported by the Stakeholders Theory. The study was motivated by recent policy of the UK Government on board diversity, which encourages corporate firms to increase women representation on corporate boards.

In line with the proposition of the Agency theory, the results of the study establish a significant positive

relationship between the proposition of outside directors and operating performance. This finding reaffirms previous findings on the role of non-executive directors in good corporate governance as well as justifies the provision in the Governance Corporate Code of UK and some other countries which recommend that corporate boards should have at least half non-executive directors NEDs. Similarly, the study also found board size as well as board diversity to be significantly positively correlated with operating performance. The result on board diversity is interesting because it further clears the doubt about the positive impact of the involvement of women on corporate board.

Furthermore, the findings on integrated model, which incorporated the moderating effect of board diversity, suggests that the presence of women on corporate board (board diversity) plays significant positive interactive influence on the relationship between proportion of outside directors and operating performance. Added to this, the study also indicates that the relationship between board size and operating performance is positively moderated by the effect of board diversity. However, the effect of board

diversity did not significantly moderate the relationship between audit committee and operating performance. Contrary to the perception that board diversity (women) adds no value to firms, findings of this study demonstrate that board diversity contributes significantly to corporate performance through its interaction on the corporate boards.

The findings of this study have some notable implications. First, the findings clearly demonstrate the importance of the interacting influence of board diversity on the relationship between the corporate governance structures and firm performance; and such influence cannot be ignored theoretically. Hence, this suggests that Agency Theorists should explicitly support the argument that the presence of women on board enhances good corporate governance.

Furthermore, the findings suggest that policy makers in the UK and elsewhere should be more concerned with issues surrounding board diversity as well as other related issues which could increase good corporate governance. To this end, this study's findings have a number of practical implications on UK corporate governance and other countries with similar corporate governance principles. First, although recently the UK Corporate Governance Code was amended to require listed firms to disclose in their annual reports diversity of their boards, such requirement would have more meaningful impact on corporate governance practice. However, it should be specific in terms of suggesting minimum number of women that should be on the corporate boards as being done for nonexecutive and independent directors.

Finally, the finding on the marginal relationship between audit committee and ROA, makes the need for further restructuring of the audit committee particularly in the UK in the area of membership and qualification imperative. The present requirement that audit committee should have at least one member with relevant and recent financial experience is loose and inadequate. The committee with majority non-financial experts may not make any meaningful deliberation and contribution, which would have impact on corporate governance as a whole and firm performance in particular.

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NOTES

1. The first class consists of basic materials (BMAT), consumer goods (CONGOOD), health care service (HCARES), utilities (UTIL) while the second class comprised of industry (INDUS), oil and gas (OILGAS), telecommunication (TELECOM) and technology (TECH).

2. The financial institutions regulated by FSA excluded in this study include banks, building societies, investment firms, assets managers, insurance companies, insurance brokers, credit unit etc.
3. To centre a variable, the overall mean of the variable is deducted from the value of variable.

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