

THE EFFECT OF THE BOARD DIVERSITY ON FIRM PERFORMANCE: AN EMPIRICAL STUDY ON THE UK

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Abstract

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This study aims at filling existing research by examining the effect of board composition specially board diversity on firm performance using cross-sectional data from London Stock Exchange (FTSE 350) of non-financial companies with a total observations 3961 companies for the years 2000-2016. To the best of our knowledge, the contribution of this paper is to examine the effect of board diversity (age, gender, education, and nationality) of FTSE 100 and FTSE 250 on firm performance. Our results indicate that age diversity has a negative effect on firm performance, which means that young board members enhance and increase firm performance. Furthermore, education diversity has a negative effect on firm performance. On the other hand, gender diversity has positive effect on firm performance, so if companies increase the number of females in the board of directors, firm performance will increase. Ultimately, our result reveals that nationality diversity has a positive effect on firm performance.

Keywords: Board Diversity, Firm Performance, Board Age, Board Education, Female on Board, Board Nationality

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1. INTRODUCTION

Good corporate governance practices can help management better monitor and control the use of firm resources. Such efficient practices can motivate management to reveal all the material and relevant information to investors. In that case, investors will have a positive view of firm performance and, with the anticipation of more dividends, will expect higher potential cash flows. This presumption can be positively reflected in the firm's share price (Aggarwal, Schloetzer, & Williamson, 2019; Laili,

Djazuli, & Indrawati, 2019). Good corporate governance practices may therefore result in more disclosure, better firm performance and higher share price. In contrast, Ammann, Oesch, and Schmid (2011) argued that, in some cases, the cost of applying good corporate governance practices may be high and may have a negative impact on firm profitability.

The board of directors performs a very important role in corporate governance because of its vital duty to monitor top management and to ensure the reliability of financial reporting (Soliman & Abd Elsalam, 2012). Resource dependence theory

and social categorization theory predict that board diversity has a significant impact on firm performance.

Resource dependence theory claims that the efficiency of an organization is affected by its capability to maintain and manage critical resources obtained from the external environment (Ruigrok, Peck, & Tacheva, 2007). Along with the monitoring and controlling roles, a diverse board of directors may assist the firm in obtaining critical resources such as counsel and networking (Hillman & Dalziel, 2003). Therefore, it is argued that greater board diversity can create interactions and shared ideas between board members that can help to better understand the firm's surrounding environment (Hillman, Cannella, & Paetzold, 2000; Nielsen & Huse, 2010). The knowledge and experience of board members along with the resources obtained from the external environment can be used to enhance firm performance by improving the decision-making quality (Hsu, Lai, & Yen, 2019).

Social categorization theory, on the other hand, predicts that board diversity can lead to less teamwork consistency, leading to less efficient decision-making processes (Harjoto, Laksmana, & Yang, 2019). This theory assumes that people with similar characteristics form in-group, while those with dissimilarities are in out-group category (Veltrap, Hermes, Postma, & de Haan, 2015). Thus, based on this theory, it is expected that board members may classify themselves into social categories according to gender, nationality, education, or age. In this case, the theory predicts that negative attitudes towards divergent individuals and infrequent contact between members of a diverse board may have a negative effect on the board's performance (Harjoto et al., 2019).

Kagzi and Guha (2018) have classified board diversity into two categories. Structural diversity is one, and demographic diversity is the second. Structural diversity includes characteristics such as board size, role duality of the CEO, and independence of the board. Board demographic diversity, on the other hand, includes characteristics such as gender, nationality, educational, and age diversity of the board. A firm with a diverse board of directors demonstrates its commitment to a diverse workforce, which in turn attracts human capital from varied backgrounds (Spence, 1973).

Assessing the effect of corporate governance practices on firm performance has been addressed by many previous studies. Various proxies of corporate governance and firm performance have been utilized by these studies. Tobin's Q (Adams & Ferreira, 2009; Frijns, Dodd, & Cimerova, 2016), return on assets (ROA) (Adams & Ferreira, 2009; Adnan et al., 2016; Frijns et al., 2016; Kagzi & Guha, 2018; Rose, Munch-Madsen, & Funch, 2013), ROE (Adnan et al., 2016), and stock returns (Ntim, 2015) are commonly used as proxies for firm performance. Corporate governance's most widely used proxies include CEO duality, board size, and board independence. Recently, demographic characteristics such as gender, nationality, education, and age, have emerged and have become very significant proxies for board diversity (Ararat, Black, & Yurtoglu, 2017; Schmidt & Fahlenbrach, 2017). The central question of our study is how board diversity influences various types of firm performance indicator, i.e.,

accounting based (ROA), and market based (Tobin's Q)?

The remainder of the paper is organized as follows. Section 2 presents the literature review and hypotheses development, Section 3 presents the empirical methodology employed, including sample, data collection, and measurement of variables. The results of the empirical analysis are reported in Section 4, while Section 5 concludes the paper.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

2.1. Theoretical background

According to upper echelons theory, having a diverse board increases the resources of the information available for the board, strengthens the board's capacity to identify strategic opportunities, develop successful plans, tackle disputes, and improves the overall firm performance (Hsu et al., 2019). As a consequence of a women's growing participation in business and society, several stakeholders support the role of female directors (Daily, Dalton, & Cannella, 2003; Hafsi & Turgut, 2013; Hillman, Shropshire, & Cannella, 2007).

It is believed that there is no substantial difference between men and women with respect to needs such as leadership, accomplishments, self-confidence, hostility, target orientation, determination, independence, non-conformity, independence, and a locus of control (Chaganti, 1986). Nonetheless, compared to male board members, female board directors exhibit distinct behavior. During board meetings, women usually listen more openly to the speakers enabling them to help the board in solving critical problems (Konrad, Kramer, & Erkut, 2008). They usually raise more governance issues during the board meeting, leading to enhanced control over senior management and more protection of shareholders rights (Hsu et al., 2019). Female board members are more likely to adopt conservative policies (Hsu et al., 2019; Jianakoplos & Bernasek, 1998; Schmidt & Fahlenbrach, 2017). In addition, women on the boards usually enhance all types of disclosure (Ahmed, Monem, Delaney, & Ng, 2017). Females on board can change the attitude of all members of the board. Female directors can provide improved monitoring and consultancy services that can boost the organization's image (Lückerath-Rovers & Bos, 2011). Female directors thus improve the board's supervisory role and reduce agency cost, which contributes to the achievement of performance objectives (Adams & Flynn, 2005).

Critical mass theory hypothesizes that in order to constitute the necessary critical mass that can affect firm output, at least three women on boards are needed (Liu, Wei, & Xie, 2014). Moreover, Tsou and Yang (2019) found that increasing the proportion of highly educated female workers improves the efficiency of the firm. Solakoglu and Demir (2016) argue that the appointment of female directors contributes to greater innovation and creativity and is a successful corporate image enhancement strategy (Solakoglu & Demir, 2016). More gender diversity, on the other hand, could

increase the likelihood of disputes among board members (Hassan, Marimuthu, & Johl, 2015). Such conflicts can lead to more different opinions and time consuming, which can have a negative impact on the performance of the firm, especially if the firm competes in a market environment that needs prompt decisions (Smith, Smith, & Verner, 2006).

Increasing business internationalization leads to a greater demand for directors who have the information, expertise, and connections they can get from their home countries, which could benefit the firm if it operates in those countries (Carpenter, Sanders, & Gregersen, 2001). National diversity provides unique information, a variety of expertise and viewpoints that are essential to management in order to make better decisions (Pieterse, van Knippenberg, & van Dierendonck, 2013). According to resource dependence theory, the unique information and expertise of international directors are crucial resources for firms operating in the domestic market of those directors (Gull, Nekhili, Nagati, & Chtioui, 2018). Foreign managers may carry their cultural values and experiences to discussions in the board room. This transmission may help to shape the priorities and attitudes of firms towards their stakeholders (Harjoto et al., 2019) leading to a stronger response to environmental changes (Ruigrok et al., 2007).

Hafsi and Turgut (2013) argue that nationality-diverse boards may result in superior corporate performance leading to a better response to stakeholders' needs and, in return, enhances the reputation and relationships of the firm with its stakeholders and, eventually, improves its performance. Foreign directors are also less likely to be part of closed national networks and are more likely to be independent and may have more time to spend in board operations (Van der Walt & Ingley, 2003). On the other hand, collaboration of nationality-diverse boards could be more difficult, communication may be slower, more confusing, and can result in lower levels of intra-group trust (Anderson, Reeb, Upadhyay, & Zhao, 2011; Bjørnskov, 2008; Doney, Cannon, & Mullen, 1998; Frijns et al., 2016).

Educational qualification is an important criteria in hiring board members (Darmadi, 2013). In order to perform particular highly-skilled tasks, firms need to employ board members with certain levels of cognitive capacity (Darmadi, 2013). A board member should have a formal educational background that influence his/her values and cognitive capacity (Harjoto et al., 2019). The upper echelons theory claims that directors vary in their cognitive capacities, and these cognitive capacities affect firm performance in turn (Kagzi & Guha, 2018). Thus, board education diversity also may have an effect on firm performance (Cheng, Chan, & Leung, 2010). Gottesman and Morey (2010) support the argument of Jalbert, Chan, Jalbert, & Landry (2007) that CEOs with a graduate degree perform better, and CEOs with MBAs perform considerably better than those without such a degree. The logic behind that argument is that highly educated boards provide more efficient monitoring and advisory functions (Haniffa & Cooke, 2002). This efficiency is expected to enhance the reputation of the board, corporate integrity, research and development funding (Gottesman & Morey, 2010), firm's decisions

(Hsu et al., 2019), and thus firm performance (Wang, Su, Wang, & Chen, 2017). In addition, board members who are affiliated with higher education and are well equipped with modern technologies can perform their roles efficiently in an increasingly dynamic, global and rapidly moving market arena. Furthermore, board members who are associated with higher education and are well equipped with new technology, can operate effectively in an increasingly complicated, global, and fast moving business arena (Gottesman & Morey, 2010).

Another significant aspect of the board is diversity in the age of directors. Observable demographic characteristics such as age form the values and beliefs of individual directors, as suggested by upper echelons theory, which can be considered as good proxies for intrinsic cognitive abilities, values, and skills, which in turn have a major effect on decision-making and performance (Herrmann & Datta, 2005). If the board members are of the similar age group, the decision-making and the leadership styles might be biased to a precise age division in the market since the directors may have similar information and experiences (Abdullah & Ismail, 2013). Nevertheless, the board will benefit from hiring directors from different age groups to obtain information from directors who understand the importance and the need of the various shareholders in their age group to enhance the firm's performance (Akpan & Amran, 2014; Mahadeo, Soobaroyen, & Hanuman, 2012). Age diversity is advantageous when young directors use more new methods and have a higher capacity to process new ideas than old directors who may be more concerned with staying in power (Akpan & Amran, 2014; Cheng et al., 2010). On the other hand, old directors may have more common business knowledge and experience, and they are more sensitive to society at large and more willing to add to their welfare than young directors who are more sensitive to ethical and environmental issues (Hafsi & Turgut, 2013; Herrmann & Datta, 2005; Post, Rahman, & Rubow, 2011). Moreover, upper echelons literature argues that the young directors have a higher risk-taking tendency (Darmadi, 2011; Herrmann & Datta, 2005) compared to the old directors, who are more risk-averse and exhibiting a preference for greater career and financial security (Child, 1974). Therefore, it is recommended that the board should be a mirror for the society which is, in fact, diverse in its composition (Abdullah & Ismail, 2013).

2.2. Hypotheses development

2.2.1. Gender diversity

In research on board diversity, gender is a common variable examined (Hsu et al., 2019). The influence of gender diversity on firm performance has been analyzed in many studies (Adams & Ferreira, 2009; Conyon & He, 2017; Gull et al., 2018; Gyapong, Monem, & Hu, 2016; Lafuente & Vaillant, 2019; Mackey, Roth, Iddekinge, & McFarland, 2019; Marinova, Plantenga, & Remery, 2016; Salloum, Jabbour, & Mercier-Suissa, 2019; Shehata, Salhin, & El-Helaly, 2017). Past research, however, give contradictory findings with regard to the association

between firm performance and gender diversity on the board (Hsu et al., 2019).

Some studies indicate that there is a positive association between gender diversity and firm performance (Abdelzaher & Abdelzaher, 2019; Agyemang-Mintah & Schadewitz, 2019; Al-Shaer & Zaman, 2016; Arun, Almahrog, & Aribi, 2015; Byron & Post, 2016; Carter, Simkins, & Simpson, 2003; Conyon & He, 2017; García-Meca, García-Sánchez, & Martínez-Ferrero, 2015; Gyapong et al., 2016; Kim & Starks, 2016; Lafuente & Vaillant, 2019; Liu et al., 2014; Low, Roberts, & Whiting, 2015; Reguera-Alvarado, de Fuentes, & Laffarga, 2017; Sabatier, 2015; Salloum et al., 2019).

A negative association between gender diversity and firm performance has been found in other studies. Adams and Ferreira (2009) found, for instance, that board gender diversity is associated with low Tobin's Q and ROA. Similarly, a negative association between firm performance and the ratio of women on corporate boards was identified by Ahern and Dittmar (2012) using a sample of 248 Norwegian publicly traded firms. A third group of studies found no association between gender diversity and firm performance (Carter, D'Souza, Simkins, & Simpson, 2010; Dobbin & Jung, 2011; Mackey et al., 2019; Marinova et al., 2016; Peni & Vähämaa, 2010; Sila, Gonzalez, & Hagedorff, 2016; Sun, Liu, & Lan, 2011; Wang & Clift, 2009).

H1: There is a significant relationship between gender diversity and firm performance.

2.2.2. Board nationality

Mixed results on the relationship between the nationality of the board and firm performance have been provided. Some studies have indicated that the two variables are positively and significantly associated. Jalbert et al. (2007), for instance, investigated the degree to which CEOs' national origin influenced firm performance. They found some evidence to indicate that CEOs born in Central and South America and CEOs born in Australia and New Zealand reported higher ROA than other CEOs. Similarly, Carter, D'Souza, Simkins, and Simpson (2007) found that ethnic diversity had a positive effect on firm performance in all Fortune 500 companies over the period 1998–2002. Also, Choi, Park, and Yoo (2007) reported a positive effect on the financial performance of firms having international directors on their board. These results are supported by many studies in many countries like Malaysia (Marimuthu, 2008; Shukeri, Shin, & Shaari, 2012) and South Africa (Ntim, 2015). Miller and Triana (2009) reported a significant and positive effect of board racial diversity on both firm reputation and innovation. They also found that the association between board racial diversity and firm performance is mediated by reputation and innovation.

Some studies, on the other hand, have found that there is a negative association between board nationality diversity and firm performance. For example, Pitts and Jarry (2007) found that an increased percentage of international board members could have a negative effect on firm performance. That result was supported by Rose et al. (2013) who used a sample of companies in Nordic countries (Denmark, Sweden, Finland,

Norway and Germany). Several studies in various countries such as the UK (Frijns et al., 2016) and Malaysia (Adnan et al., 2016) have reported a significant negative association between cultural diversity and firm performance. García-Meca et al. (2015) found that, in countries with higher levels of investor protection and bank control, the negative impact of board nationality is predominantly strong. This negative impact contributes to moral hazard among international directors and reduces their incentives for monitoring.

However, some studies found that there is no significant relationship (Kipkirong Tarus & Aime, 2014).

H2: There is a significant relationship between nationality diversity and firm performance.

2.2.3. Board education

Some studies reported that education diversity is positively associated with firm performance (Haniffa & Cooke, 2002; Harjoto et al., 2019; Khanna, Jones, & Boivie, 2014; Wang et al., 2017). According to these studies, education diversity on the board of directors can stimulate discussions on the relevance of corporate strategies, enable the team to generate a better range of strategic alternatives, better assess the potential outcomes of each alternative, leading to more innovative solutions (Harjoto et al., 2019). Other studies, however, have found that education diversity has a negative impact on firm performance (Kagzi & Guha, 2018; Mahadeo et al., 2012; Ujunwa, 2012). The results of this stream of studies suggest that investors may consider education diversity on the board of directors as a source of conflict among board members. Therefore, it may negatively affect firm performance. This implies that shareholders negatively value company boards with more education diversity (Kagzi & Guha, 2018). On the other hand, several studies have shown that diversity in education has no impact on firm performance (Engelen, van den Berg, & van der Laan, 2012; Rose, 2007) or on firm valuation (Kim & Lim, 2010).

H3: There is a significant relationship between education diversity and firm performance.

2.2.4. Board age

Age diversity may have positive or negative effects on the firm's performance. Age diversity may have a positive impact on the board's skills, resources, knowledge, experience and relationships, which in turn may have a positive impact on firm performance. Age diversity may, however, be related to cognitive conflicts and inferior team unity, which in turn have a detrimental impact on firm performance.

Some studies show that age-diverse boards contribute to improve the financial performance of firms (Ali & French, 2019; Ararat et al., 2017; Kilduff, Angelmar, & Mehra, 2000; Kim & Lim, 2010; Mahadeo et al., 2012). Other studies found that age diversity has an unfavorable impact on firm social performance (Faleye, 2007; Hafsi & Turgut, 2013; Kunze, Boehm, & Bruch, 2011, 2013; Talavera, Yin, & Zhang, 2018), profitability (Abdullah & Ismail, 2013; Ali, Ng, & Kulik, 2014; Talavera et al., 2018), and strategic reforms (Kipkirong Tarus & Aime, 2014).

On the other hand, other found no significant association between age diversity and firm performance (Randøy, Thomsen, & Oxelheim, 2006).

H4: There is a significant relationship between age diversity and firm performance.

3. METHODOLOGY

3.1. Sample and data collection

The data of this study was collected from companies listed in the London Stock Exchange (FTSE 350). The total sample of FTSE 350 the nonfinancial companies is 39150 observations for 233 companies from the period 2000 to 2016. Furthermore, we selected the FTSE 100 and FTSE 250 with total number of observations 1292 and 2669 respectively as shown in Table 1.

Table 1. Sample of the study

	No. of companies	No. of observations
FTSE 100	76	1292
FTSE 250	157	2669
FTSE 350	233	3961

3.2. Measurement of variables

Table 2 describes the definition of variables used in this study. Panel A epitomizes the dependent variables, which include two groups, ROA as a book-based performance and Tobin's Q as a market-based performance. Panel B represents the independent variables that include the board characteristics (board size, board independence, board age, board education and females in board) and firm specific characteristics, which are firm size and leverage.

Table 2. Definition of variables

Variable name	Code	Measurement	Source	Reference
Panel A: Dependent variables (Firm performance)				
Return on assets	ROA	Net income/Total assets	DataStream	Lutz, Hegazy, Mohamed, and Basuony (2020)
Tobin's Q	Tobin's Q	$(MV(CS) + BV(PS) + BV(LTD) + BV(INV) + BV(CL) - BV(CA))/BV(TA)$ (1)	DataStream	Lutz et al. (2020)
Panel B: Independent variables				
Board characteristics				
Board size	BrdSize	Number of directors on the board	BoardEx	Basuony, Mohamed, and Samaha (2018); Carter et al. (2010); Kim and Starks (2016)
Board independence	BrdInd	% of No. of nonexecutive independent directors to total number of board directors	BoardEx	Kim and Starks (2016); Li and Chen (2018)
Age diversity	AgeBrd	Average age in years of all directors	BoardEx	Kim and Starks (2016); Li and Chen (2018)
Education diversity	EduBrd	Average number of education qualifications earned by all directors	BoardEx	Xu, Zhang, and Chen (2018)
Gender diversity	GenBrd	Number of female directors on the board	BoardEx	Carter et al. (2010); Li and Chen (2018)
National diversity	NatBrd	Proportion of all directors from different countries	BoardEx	Miller and Triana, (2009); Frijns et al. (2016)
Firm specific characteristics				
Leverage	Levg	Total debt/Total assets * 100	DataStream	Li and Chen (2018); Lutz et al. (2020)
Firm size	FSize	Natural log of total assets	DataStream	Li and Chen (2018); Lutz et al. (2020)

Notes: *Education diversity is calculated as the average number of education qualifications earned by all directors. This variable is measured based on the bachelor, master, professional qualification and PhD degrees obtained by the directors.

4. DATA ANALYSIS

4.1. Descriptive statistics

Table 3 reports the descriptive statistics. The table reveals that the average age of the board members is

55.7 years old, the average number of education qualifications earned by all directors is 2, the average numbers of the female board members is 1 board member, and the average foreign board members is 1 board member.

Table 3. Descriptive statistics

	N	Minimum	Maximum	Mean		Std. deviation
	Statistic	Statistic	Statistic	Statistic	Std. error	Statistic
ROA	3344	-128	269	8.99	0.250	14.454
Tobin's Q	3228	0.47	284.36	2.5516	0.17002	9.65995
Levg	3437	0	270	24.66	0.357	20.954
FSize	3437	3.02	8.58	6.1774	0.01272	0.74546
BrdSize	3164	4	27	9.15	0.048	2.673
BrdInd	3164	0.00	1.00	0.6365	0.00240	0.13517
AgeBrd	3152	40.25	71.28	55.7237	0.06161	3.45891
EduBrd	3152	0.30	4.15	1.8752	0.01003	0.56296
GenBrd	3137	0.00	8.00	1.0259	0.01905	1.06681
NatBrd	3130	0.00	16.00	1.3950	0.03022	1.69044

Figure 1. Age diversity

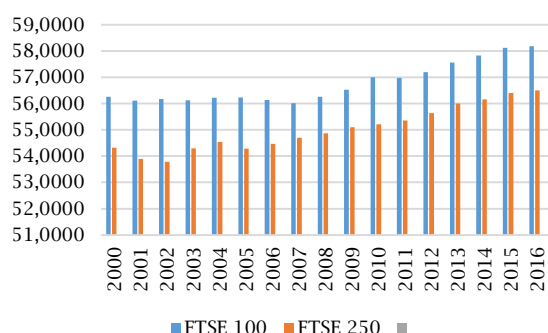


Figure 2. Education diversity

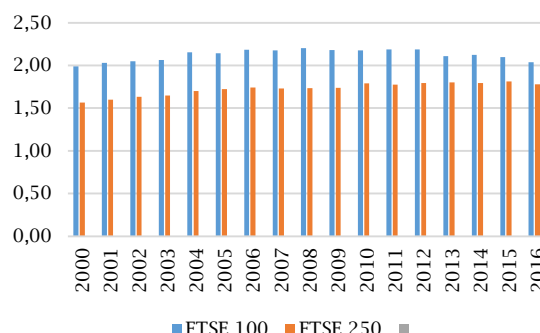


Figure 3. Gender diversity

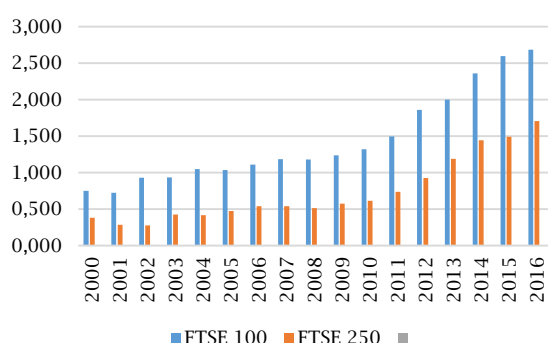
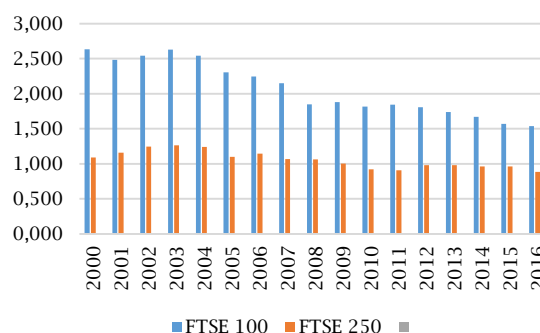


Figure 4. Nationality diversity



Age diversity is more in FTSE 100 than in FTSE 250, as shown in Figure 1 in FTSE 100. Age diversity seems to be constant until 2009 then it began to increase until 2016. On the other hand, age diversity in FTSE 250 decreased in 2002, then it fluctuated until 2006, and then it had a stable increase until 2016. As shown in Figure 2, education diversity in FTSE 100 is more than in FTSE 250, and it seems to be constant for both FTSE 100 and FTSE 250. Gender diversity is more in FTSE 100 than in FTSE 250. As shown in Figure 3, in FTSE 100, the number of the females seems to be constant from 2000 until 2010, then there is extraordinary increase until 2016. On the other hand, in FTSE 250, the number of females decreases in 2002, then it seems to be constant, then there is extraordinary increase until 2016. Nationality diversity in FTSE 100

is more than in FTSE 250. As shown in Figure 4, the foreign board of directors in FTSE 100 is high in 2000, then it decreased in 2005, and it continued to decrease until 2016. On the other hand, in FTSE 250, the foreign board of directors seems to be constant from 2000 until 2016.

4.2. Hypotheses testing

Ordinary least squares (OLS) model is used in order to examine the effect of board diversity on firm performance on FTSE 100, FTSE 250, and FTSE 350 using leverage and firm size as control variables. This study used some different independent variables for firm performance (ROA and Tobin's Q).

Table 4. OLS models

	OLS			OLS		
	ROA (Model 1)			Tobin's Q (Model 2)		
	FTSE 100	FTSE 250	FTSE 350	FTSE 100	FTSE 250	FTSE 350
Cons.	32.4904***	71.8814***	43.5858***	49.0089	5.2588***	13.1328***
Levg	-0.0315**	-0.0321*	-0.0451***	-0.0743***	0.0047	-0.0129
FSize	-2.0758***	-4.3840***	-2.6244***	-2.5609***	-0.4375***	-0.8627***
BrdSize	0.0083	0.1722	0.3509***	0.43105**	-0.0798**	0.2624***
BrdInd	11.9581***	6.9910**	9.6152***	18.5347***	0.6178	7.7197***
AgeBrd	0.04980	-0.1288	-0.0809	-0.3081*	0.0070	-0.1169**
EduBrd	-0.9211*	-2.0397***	-1.4451***	-2.4066**	0.2188*	-0.3853
GenBrd	0.0918	1.9470***	1.1065***	-0.3119	0.3470***	-0.0807
NatBrd	0.2274	0.4680*	0.4340**	0.4481	0.1683***	0.1500
ROA				0.1270**	0.1957***	0.1916***
F-value	21.42	31.42	33.62	11.89	304.90	39.07
Prob.	0.000	0.000	0.000	0.000	0.000	0.000

Notes: *** Significant at 1% level, ** Significant at 5% level, and * Significant at 10% level.

Model 1 examines the effect of board diversity on ROA. The results reveal that leverage has a negative effect on ROA. Moreover, firm size has a negative effect on ROA, which means that small firms have higher firm performance than big firms. On the other hand, board size has a positive effect on ROA in the whole sample (FTSE 350). Thus, when the firm increases that number of board members, the firm performance will increase. Moreover, board independence has a positive effect on ROA, so when the firm increases the number of the non-executive board member, the firm performance will increase. In addition, education diversity has a negative effect on ROA. So, when the education diversity increases, firm performance will decrease. The result is consistent with Kagzi and Guha (2018), Mahadeo et al. (2012), and Ujunwa (2012). In contrast, gender diversity has a positive effect on ROA in FTSE 250. Consequently, when the firm increases the number of females in the board members, the firm performance will increase. The result is consistent with Abdelzaher and Abdelzaher (2019), Conyon and He (2017), and Lafuente and Vaillant (2019). However, gender diversity appears to be not significant in FTSE 100. In addition, nationality diversity has a positive effect on ROA in FTSE 250. Accordingly, when the firm increases the number the foreign board member, the firm performance will improve. The result is consistent with Marimuthu (2008) and Shukeri et al. (2012).

However, nationality diversity appears to be insignificant in FTSE 100. On the other hand, age diversity has no significant effect on ROA.

Model 2 examines the effect of board diversity on Tobin's Q. The results reveal that leverage has a negative effect on Tobin's Q in FTSE 100, but it is not significant in FTSE 250. Moreover, firm size has a negative effect on Tobin's Q. In contrast, board size has a positive effect on Tobin's Q in FTSE 100. However, it has a negative effect on firm performance of FTSE 250. Moreover, board independence has a positive effect on Tobin's Q only in FTSE 100 but it has no significant effect in FTSE 250. Furthermore, age diversity has negative effect on FTSE 100. This result is consistent with many previous research (Faleye, 2007; Hafsi & Turgut, 2013; Kunze et al., 2013). However, it is not significant in FTSE 250. In addition, education diversity has a negative effect on Tobin's Q in FTSE 100. This result is consistent with many previous research (Kagzi & Guha, 2018; Ujunwa, 2012). Education diversity also has a positive effect in FTSE 250. This result is consistent with Haniffa and Cooke (2002) and Khanna et al. (2014). In contrast, gender and nationality diversity has a positive effect on Tobin's Q in FTSE 250. However, they are not significant in FTSE 100. Last but not least, ROA has a positive effect on Tobin's Q.

Table 5. Fixed effect models

	FE			FE		
	ROA (Model 1)			Tobin's Q (Model 2)		
	FTSE 100	FTSE 250	FTSE 350	FTSE 100	FTSE 250	FTSE 350
Cons.	50.1399***	28.7252***	34.5918***	89.2182***	6.8146***	28.9820***
Levg	-0.5487***	-0.1331***	-0.01067***	-0.0513	-0.008	-0.0043
FSize	-3.0561***	-1.5196***	-2.0159***	-7.0013***	-0.5262***	-2.2754***
BrdSize	0.1712	0.1867	0.1681	-0.0474	-0.0766	-0.0707
BrdInd	3.0619	-4.4109	-1.8760	14.7734**	-0.6959	4.0497*
AgeBrd	0.0969	0.07115	0.0939	0.4743*	0.0310	0.1455*
EduBrd	-0.7924	0.4418	0.6715	-5.3839***	0.0915	-1.8042***
GenBrd	0.3762*	0.6951*	0.5289**	0.3192	0.2429***	0.1819
NatBrd	-0.1033	-0.02615	-0.1038	0.4274	0.1388**	0.2224
ROA				-0.1493**	0.1481***	0.10821***
F-value	7.25	5.48	8.86	7.46	88.21	11.92
Prob.	0.000	0.000	0.000	0.000	0.000	0.000

Notes: *** Significant at 1% level, ** Significant at 5% level, and * Significant at 10% level.

The fixed effect model is used in order to examine the effect of board diversity on firm performance on FTSE 100, FTSE 250, and FTSE 350 using leverage and firm size as control variables. This study uses different independent variables for firm performance (ROA and Tobin's Q).

Model 1 examines the effect of board diversity on ROA. The results reveal that leverage has a negative effect on ROA. This means that when the percentage of the total debt to total asset increase, the financial performance will deteriorate because of the high debt. Moreover, firm size has a negative effect on ROA. Which means that small firms have high firm performance than big firms. In contrast, gender diversity has a positive effect on ROA. So, when the number of females increase in the firm, the financial performance will increase. All the other variables have no significant effect on ROA.

Model 2 examines the effect of board diversity on Tobin's Q. The results reveal that firm size has

a negative effect on Tobin's Q. Moreover, in FTSE 100, board independence and age diversity have a positive effect on Tobin's Q. This means that the high dependence on non-executive directors leads to upsurge financial performance. In addition, the high age diversity refers to combination between the old experience and tech experience and this will leads to high firm performance. In addition, education diversity has a negative effect on Tobin's Q. So, high diversity in education may leads to jealousy and plotting on each other. However, it appears to be not significant in FTSE 250. On the other hand, in FTSE 250, gender diversity and nationality diversity have a positive effect on Tobin's Q. Which means that high number of females and foreigners in the firm leads to high firm performance. However, it appears not significant in FTSE 250. Ultimately, ROA has a positive effect on Tobin's Q.

5. CONCLUSION

The results presented above may suggest some prevalent features with respect to board diversity and the UK firm performance. In line, with previous literature, we assume that the result supports the board of directors in a way to enhance firm performance. The main objective of this study is to show the effect of board diversity on firm performance. To fulfil this objective, we used data from the companies listed in the London Stock Exchange (FTSE 350). The total sample of FTSE 350 for the nonfinancial companies is 3961 observations for 233 companies from the period 2000 to 2016. Furthermore, we selected the FTSE 100 and FTSE 250 with total number of observations 1292 and 2669 respectively. The sample of this study is limited to only the non-financial companies and it measures

the financial performance using only ROA and Tobins Q.

Our results indicate that age diversity has a negative effect on firm performance, which means that young board members enhance and increase firm performance. Furthermore, education diversity has a negative effect on firm performance. On the other hand, gender diversity has positive effect on the firm performance. So, if firms increase the number of females in the board of directors, their performance will improve. Ultimately, our results reveal that nationality diversity has a positive effect on firm performance. Future research might include the effect of the board diversity for both Executive and non-executive directors on the firm performance. Consequently, this will enhance and enrich the literature of corporate governance.

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