مجلة الدراسات الاقتصادية –كلية الاقتصاد – جامعة سرت المجلد السادس – العدد الأول
Economic Studies Journal (ESJ), Faculty of Economics, Sirte University (Vol.6 , No.1)
January 2023

The impact of board size on firm performance: evidence from the UK

Mohamed Faraj Alsadeq
Dept. of Finance and Banking, Sirte university, Libya

Abstract

This study investigates the relationships between board size and firm performance. An OLS regression model was used to analyses 225 non-financial UK companies listed in FTSE 350. The time period considered was seven years (2015 to 2021). Return on Assets and Return on Equity were used as proxy of firm performance. The research finds that there exists a positive association between board size and firm performance, implying that in UK allowing board size to be dependent of firm size tends to improve firm performance. Regarding Covid 19 pandemic the investigation depicted that Covid 19 exerts a significant negative impact on firm performance. However, the investigation revealed that the board size had significant and positive impact on firm performance during Covid 19. This result indicate that the board size should be consider to recover the corporate sector in any crisis.

This study provides a unique contribution to the literature of board size and firm performance and the role of Covid 19 pandemic.

Key Words: board size, firm performance, ROA, ROE and Covid 19.

Introduction

Corporate governance is concerned with the guidelines and procedures that companies adhere to and which, in turn, enable its shareholders to realise the investment that they have made in this company. According to Shleifer & Vishny (1996) and La Porta et al (1999), the words “corporate governance” are a tool that act as a form of defence for minor shareholders against expropriation by both managers and controlling shareholders. A number of key corporate scandals, such as the collapses of Enron, One and WorldCom, not only brought public attention to the issue of corporate governance, but also made bodies in charge of governance realise that it was an area that needed much stricter corporate governance controls. Out of the various corporate governance studied and empirically tested, the most important aspect is size of the board. The size of board of direction is seen as important factor in influencing the monitoring and decision-making process

and overseeing work undertaken in the company thereby achieving a higher level of performance (Haniffa & Hudaib, 2006; Larmou & Vafeas, 2010; Fauzi & Locke, 2012). The relationship between board size and firm performance is supported by different theories that studied corporate governance, for example theories concerned with agency and dependency put forward that the more significant the size of the Board of Directors, the better the company will perform. This is because there are more individuals available to monitor performance. In contrast, stewardship theory views a smaller Board of Directors (the size of the Board meaning the number of directors on the Board) as being more capable because it is easier to monitor and thus conclude whether they are acting as good stewards for the company. The impact of the size of the Board of Directors upon how well the company performs has been researched in the past few years. However, the results so far have not been conclusive. This study, however, differs from other research by; first, evaluating the financial performance of corporates before and during the covid19 crisis using several performance indicators. It also evaluated the relationship between board of size and firm performance using a recent dataset as the current widespread pandemic is unfortunate but unique and offers a rare opportunity to assess size of boards response and performance of corporates.

The rest of this research is arranged as follows: Section two summarizes the literature review about the topic of interest. Section three presents the sample and method of conducting the study. Section four outline the empirical results, followed by section five that presents the conclusion of this paper.

Literature review and hypotheses development

Evidence concerning whether or not a large Board of Directors has an impact upon how a company performs is so far inconclusive. Kalsie & Shrivastav (2016), found that a more significantly sized Board is more effective. They researched 145 non-financial companies in India, which were listed in the NSECNX 200 over a five-year period from 2008 to 2012. The evaluation was conducted using Tobin's Q, the market to book value ratio, the return on assets and the return on capital as measures of performance, market performance and accounting performance respectively. Three forms of regression model were used in this study in order to measure the above, namely a random effect model, a fixed effect model and a feasible generalised least square. The results showed that the size of the Board of Directors had a positive and significant impact on the firm performance.

In 2016, Sullivan and Hassan conducted an investigation into the 150 largest bank holding companies in the United States and whether the size of the Board of Directors had impacted the company over a ten-year period (up to the point where there was a financial deadlock in the company) and proved affirmative association amid size of the board and the performance of the organization earlier to the deadlock, however financial deadlock had a negative impact upon the size of the Board. In 2015, Ntim et al carried out an analysis of 169 non-financial companies in South Africa, during 2011 and found that there was a positive correlation between the size of the Board of Directors and Tobin's Q results. Badu & Appiah, (2016) examined the impact of corporate board size on firm performance for a sample of 137 listed firms in Ghana and Nigeria. Their findings suggest a statistically significant and positive relationship between board size and firm performance.

However, some researchers have found that a lesser sized Board of Directors can be more effective compared to a larger sized Board. In 2021, Yan et al investigated the correlation between the size of the Board and how companies perform. The researchers studied 372 American companies on the S&P 500 between 2013 to 2017 and the correlation between the size of the Board of Directors and how well the companies performed. The results of the investigation showed that the correlation was negative. The researchers then split the companies researched into two groups, one which was high-tech and the other, which was non-tech. The results showed that the high-tech group had the more negative correlation. Ngugen et al (2016) researched 1141 firms in Australia between 2001 and 2011 and found that the size of the Board of Directors had a negative impact upon the performance of the company. Furthermore, the researchers argued that when a company performs well in its initial stages, the size of the Board increases, which then leads to higher costs of operating the company and a decrease in company performance.

Apart from the studies mentioned above, few studies have found no relationship between board size and firm performance. Topak (2011) test the effect of board size on firm performance of the Turkish firms. The study used Panel data techniques to determine the effect of Board size on company performance for 122 firms in Turkey between 2004 and 2009. The results showed that there was no correlation. In 2019, Robiyanto & Handriani researched the potential impact of the size of the Board of Directors on the level of performance of 100 BSE companies during 2018 and

2019. The researchers used the ROA, PBIT, ROE, EPS, DPS and Tobin's Q in order to determine the level of how well the company had financially performed. The results showed that the size of the Board had no effect on company performance. Additionally, Vaidya (2019) studied the impact of the size of the Board of Directors and how BSE 100 companies financially performed during the 2018-1029 period. Vaidya (2019) used the ROA, PBIT, ROE, EPS, DPS and Tobin's Q as measures of financial performance. The independent variable was the size of the Board of Directors. It was again found that the Board's size had no effect on how the company financially performed.

Regarding Covid 19 pandemic researchers have stated that it is not possible yet to state precisely what the overall effect of pandemic has been on companies. However, there has been a significant increase in research carried out on how the Covid 19 pandemic has affected corporate governance. Farwis et al (2021) focused on Sri Lanka for their research and found that the Covid 19 pandemic had had a considerably negative impact upon the performance of companies and corporate governance attributes. However, their research did find that there was a positive correlation between the performance of companies and the size of the Board of Directors. Elmarzouky et al (2021) investigates whether Covid-19 related information is associated with a higher level of performance disclosure in the annual reports. Furthermore, it examines the moderating effect of corporate governance on the relationship between Covid-19 and the performance disclosure by using three governance mechanisms: board size, board independence, and gender diversity. Their results suggest the association between the Covid-19 disclosure and performance information is higher when the firm has a bigger board size, a higher percentage of board independence and a higher number of women on board. The effect of the pandemic and companies' corporate governance was investigated by Khatib & Nour (2021), who researched 188 Malaysian companies who had a non-financial focus during the 2019-2020 financial year. The researchers found that the size of the Board of Directors had a considerable impact upon how the company performed. Saleh & Abdulnaser (2021) used the ROE, ORA, PM and EBIT and found that Board size impacted positively upon how 188 companies with a non-financial focus had performed during the 2019-2020 financial year. In fact, it was the size of the Board of Directors which was the only corporate governance tool to have such an impact.

Hypothesis 1: There is positive relationship between board size and return on assets.

Hypothesis 2: There is positive relationship between board size and return on equity.

Research design

The sample covers a 7-year period from 2015-2021 for 225 non-financial companies from the FTSE 350 Index. Keeping in view my potentials, the time line was chosen in a manner that enabled the drawing of results about board size and its impact on firm performance before and during the COVID-19 pandemic. Financial companies were excluded, because the overall regulatory environment for those companies differs significantly from that of non-financial companies. As well as a high leverage that is normal for these firms, it probably does not have the same meaning as for non-financial firms, where high leverage is more likely to indicate distress (Fema & French, 1992). The data for this research was collected with the help of DataStream including all financial indicators of firm performance and board size. The Ordinary Least Square (OLS) also applied to examine the link between board size and performance. In line with many studies (Al Farooque et al., 2020; Khan et al., 2020, Khatib & Nour, 2020). The regression model to analyze the influence of board size on firm performance is expressed as follows:

$$\textit{Firm Performance (ROA, ROE) it} = \alpha + \beta_1 \textit{(BSize it)} + \beta 2 \textit{(FSize it)} + \beta 3 \textit{(LEV it)} + \beta 4 \textit{(GRO it)} + \beta 5 \textit{(Industry it)} + \beta 6 \textit{(Year it)} + \dot{\varepsilon}\ \textit{it}$$

Where:

ROA = Return on Assets

ROE = Return on Equity

BSize = Board Size

FSize = Firm Size

LEV = Leverage

GRO = Growth of Firms

Table1: Variables used in the study

Variable name	Definition
Return on assets	The ratio of earnings before interest and taxes to total assets.
Return on equity	The ratio of earnings before interest and taxes to equity.
Board size	A total number of members on the board.
Firm size	Natural logarithm of total sales
Leverage	The ratio of total debt to total assets.
Growth	Ratio of the difference between the current year sales in the previous year sales to the previous year sales.
Industry	Used to control industry fixed effect
Year	Used to control the fixed effect of year

Sample statistical description and empirical analysis

Statistical description of the sample

Descriptive statistics has been shown in table 2 for 1665 observation belonging to 225 companies over the period of 5 years. The Mean, standard deviation, Median, P10 and P 90 values are shown for every variable. The mean value of firm performance is 0.087 for ROA and 0.203 for ROE, and the standard deviation are 0.104, 0.375 respectively. Furthermore, the average of board size is 8.65 directors with standard divination 2.509. Similar to these finding have been reported in several prior studies such as Vafeas & Theodorou (1998), and Linck et al (2008). However, this below the figure of 14 reported by de by Allegrini & Bianchi Martini (2006).

Table 2: Descriptive statistic

	N	Mean	Std	P10	Median	P90
ROA	1665	0.087	0.104	-0.009	0.072	0.207
ROE	1665	0.203	0.375	-0.029	0.161	0.462
B Size	1665	8.653	2.509	6	8	12
F Size	1665	14.759	1.762	12.968	14.418	17.145
Leverage	1665	0.172	0.167	0	0.14	0.388
Growth	1665	0.158	1.336	-0.376	0.065	0.61

This table report descriptive statistic. A description of variable is provided in table (1)

Correlation Analysis

Table 3 depicts the Pearson's correlation of all variables at the 5 per cent level of significance. The board size is positively correlated with ROE, However, the correlation with ROA is negative. The board size is significantly correlated with ROA at the 5 per cent level of significance. The relationship between board size and firm size is also positive and significant implying that as the firm size increases in terms of sales, the board size also increases. Other variables are significantly correlated with the board size. The firm size and leverage are significantly negatively related to all performance measures. Firm growth shows a positive relationship with various measures of performance. The firm size is negatively and significantly correlated with other performance measures.

Table 3: correlation matrix

		1	2	3	4	5	6
(1)	ROA	1					
(2)	ROE	0.541*	1				
(3)	B Size	-0.200*	0.024	1			
(4)	F Size	-0.357*	-0.088*	0.623*	1		
(5)	Leverage	-0.203*	-0.031	0.215*	0.123*	1	
(6)	Growth	0.119*	0.029	-0.050*	-0.025	0.038	1

Note: ***indicates a significant correlation at the 0.01 level, **indicates significant correlation at the 0.05 level and *indicates significant correlation at the 0.10 level.

Regression Results and Discussion

In this section, the association between board size and firm performance has been evaluated. As shown in Table 4, size of board and performance attributes were utilized to estimate the panel OLS regression between the variables. In line with many studies (Al Farooque et al 2020; Detthamrong et al 2017, Khatib & Nour 2021, Danoshana & Ravivathani 2013, Farwis et al 2021) return on assets (ROA) and return on equity (ROE) have been used to measure firm performance.

Table 4: The impact of board size on firm performance (ROA & ROE)

Variables	(1) ROA	(2) ROA	(3) ROE	(4) ROE
Board Size	0.003**	0.002	0.021***	0.018***
	(2.13)	(1.49)	(4.05)	(3.31)
Size	-0.024***	-0.022***	-0.038***	-0.033***
	(-12.10)	(-10.52)	(-4.69)	(-3.85)
Leverage	-0.089***	-0.080***	-0.099	-0.137
	(-4.83)	(-3.70)	(-1.12)	(-1.24)
Growth	0.009***	0.008***	0.006	0.006
	(2.91)	(2.79)	(1.03)	(0.93)
Constant	0.429***	0.438***	0.605***	0.650***
	(17.27)	(14.09)	(6.13)	(5.54)
Observation	1665	1665	1665	1665
R-squared	0.166	0.209	0.023	0.039
Industry and Year FE	NO	YES	NO	YES

Robust t- statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 4 presents regression results from the Ordinary Least Square (OLS) model. All regressions (1) to (4) show a positive relationship between board size and firm performance thereby providing support for the hypothesis. Theoretically, the findings are consistent with agency theory that believes that the larger board size enhances the firm performance by better monitoring by a large group of people and the resource dependency theory which proposes that larger board size brings a wide variety of expertise and knowledge in diverse fields providing greater monitoring capacity and enhances the firm's ability in generating external linkages. Furthermore, these findings are similar to the majority of prior studies (Hassan & Marimuthu, 2016; Waheed & Malik, 2019, Khatib & Nour 2021). However, this result is inconsistent with the negative relationship between the board size and firm performance was documented by a number of researchers such as Yan et al (2021). The firm size is negatively and significantly related with all firm performance measurement. Leverage was negatively and significantly related to all performance measures. These results are aligned with the findings of Bansal & Sharma (2016), and show that high level of debt decreased returns of firms. The impact of firm growth varies from significant when the return on assets is used to measure performance to insignificant when the return on equity used.

Additional analysis

Farwis et al (2021) reported that regardless of the pandemic's effects, board size appears to be a key factor in improving firm performance during this crisis. Furthermore, the extent of this board size analysis indicates financial qualification has a significant impact on firm performance. To examine whether the empirical results are affected by Covid 19 pandemic, we define a new variable (Covid 19). It equals 1 if the financial statements during 2020 and 2021 years, and 0 otherwise**.**

Table 5. The impact of board size and Covid19 on firm performance (ROA & ROE)

Variables	(1) ROA	(2) ROA	(3) ROE	(4) ROE
Board Size	0.002*	0.002	0.020***	0.018***
	(1.95)	(1.49)	(3.85)	(3.31)
Covid 19	-0.016***	0.014	-0.056***	-0.025
	(-3.07)	(154)	(-2.95)	(-0.75)
Firm Size	-0.023***	-0.022***	-0.037***	-0.033***
	(-11.98)	(-10.52)	(-4.60)	(-3.85)
Leverage	-0.084***	-0.080***	-0.099	-0.137
	(-4.52)	(-3.70)	(-1.12)	(-1.24)
Growth	0.009***	0.008***	0.006	0.006
	(2.91)	(2.79)	(0.94)	(0.93)
Constant	0.432***	0.438***	0.615***	0.650***
	(17.40)	(14.09)	(6.23)	(5.54)
Observation	1665	1665	1665	1665
R-squared	0.172	0.209	0.028	0.039
Industry and Year FE	NO	YES	NO	YES

Robust t-statistics in parentheses. *** p<0. 1, ** p<0.05, * p<0.1

It was found that there was a negative correlation between Covid 19 and firm performance. This was significant because it seemed to show that Covid 19 had had a negative influence upon the company's performance during the pandemic. Owing to there being lockdowns in place and

companies not being allowed to operate, the money which was made by the companies was not enough to replace the expense of plant and machinery. The net result of this was a drop in the ability of the company to perform (Elmarzouky & Hussainey, 2021). This result in line with Shen et al (2020) who found that Covid 19 had a negative effect upon how Chinese companies listed on the Chinese stock exchange performed. However, despite the pandemic impact, the investigation revealed that board size had an important role in enhancing firm performance during an uncertain time. This result is consistent with the finding that documented by Khatib & Nour, 2021. Furthermore, Covid 19 was found not to have any impact upon the relationship between control variables (firm size, leverage and growth) and firm performance.

Conclusion

Empirical evidence presented in this research has shown that the amount of member on the Board of Directors had a direct impact upon how the company performed during 2015-2021. This supports the assertion that how large the Board of Directors is plays a key role in enhancing firm performance. It can be argued that the findings of the investigation relate strongly with agency theory, which contends that when there is a more numerically significant Board of Directors, they are more efficient and the firm performs better. Moreover, the investigation found that the Covid 19 pandemic had a considerably damaging effect on the firm's performance. However, the regression investigation revealed that the board size had significant and positive impact on firm performance during Covid 19. This implies that the Board of Director's size and who sits on that Board are a direct response to what is happening both outside and inside of the company and how the firm's financial situation. This research was not without limitations, however. Firstly, the time period of the study was seven years. Further work will need a longer time period and it is hoped that this will be possible. Secondly, the investigation only focused on the size of board and performance of firms. Further research could take into account aspects of corporate governance, such as how independent the Board of Directors is, the ratio of male to female directors, the audit committee and its composition and whether or not the CEO had a dual role in the company.

Reference list

1- Allegrini, M., & Bianchi Martini, S. (2006), Corporate governance in Italy, United Kingdom and United States of America. A Comparison between Models and practices, Franco Angeli, Milan.

2- Archana Goel & Renuka Sharma. (2017), Effect of Board Size on Firm's Performance: Evidences from India. International Journal of Applied Business and Economic Research, Vol 15(22), pp 139-151.

3- Badu, E., & Appiah, K. (2017). The Impact of Corporate Board Size on Firm Performance: Evidence from Ghana and Nigeria. Research in Business and Management, Vol. 4(2), pp 1-12.

4- Danoshana, M. S., & Ravivathani, M. T. (2013). The impact of the corporate governance on firm performance: A study on financial institutions in Sri Lanka. Merit Research Journal of Accounting, Auditing, Economics and Finance, Vol 1(6), pp 118-121.

5- Elmarzouky, M., Albitar, K. and Hussainey, K. (2021), "Covid-19 and performance disclosure: does governance matter?", International Journal of Accounting & Information Management, Vol. 29 (5), pp. 776-792.

6- Fama, E. F., French, K. R. (1992). The cross-section of expected stock returns. Journal of Finance, Vol 47(2), pp. 427-465.

7- Fauzi, F. & Locke, S. (2012). Board Structure, Ownership Structure and Firm Performance: A study of New Zealand Listed-Firms. Asian Academy of Management Journal of Accounting and Finance, Vol 8(2), pp 43–67.

8- Haniffa, R. & Hudaib, M. (2006). Corporate governance structure and performance of Malaysian listed companies. Journal of Business Finance and Accounting, Vol 33(7–8), pp 1034–1062.

9- Hassan, R., & Marimuthu, M. (2016). Corporate governance, board diversity, and firm value: Examining large companies using a panel data approach. Economics Bulletin, Vol 36(3), pp 1737–1750.

10- Kalsie, A., & Shrivastav, S. M. (2016). Analysis of Board Size and Firm Performance: Evidence from NSE Companies Using Panel Data Approach. Indian Journal of Corporate Governance, Vol 9(2), pp 148-172.

11- La Porta, R., F.L., de Silanes, A., Shleifer, and R.W., Vishny, 1999. "Investor Protection: Origins, Consequences, Reform", Working Paper, NBER.

12- Larmou, S. & Vafeas, N. (2010). The relation between board size and firm performance in firms with a history of poor operating performance. Journal Management Government, Vol 14(1), pp 61–85.

13- Linck, J. S., Netter, J. M., and Yang, T. (2008), "The determinants of board structure", Journal of Financial Economics, Vol. 87, pp. 308-328.

14- M.Farwis, M.M Siyam, MCA. Nazar and MACF. Aroosiya. (2021), The Nexus Between Corporate Governance and Firm Performance During COVID-19 Pandemic in Sri Lanka, Journal of Economics, Finance and Accounting Studies, Vol 3(1), pp 81-88.

15- Mehmet Sabri Topak, (2011). The Effect of Board Size on Firm Performance: Evidence from Turkey. Middle Eastern Finance and Economics, Vol 14(1), pp1450-2889.

16- Nguyen, P., Rahman, N., Tong, A., & Zhao, R. (2016). Board size and firm value: evidence from Australia. Journal of Management & Governance, Vol 20(4), pp 851-873.

17- Nidhi Bansal & Anil K. Sharma. (2016). Audit Committee, Corporate Governance and Firm Performance: Empirical Evidence from India. International Journal of Economics and Finance; Vol. 8(3), pp 103.

18- Ntim, C. G., Opong, K. K., & Danbolt, J. (2015). Board size, corporate regulations and firm valuation in an emerging market: a simultaneous equation approach. International Review of Applied Economics, Vol 29(2), pp 194-220.

19- Olokoyo, F. O. (2013). Capital Structure and Corporate Performance of Nigerian Quoted Firms: A Panel Data Approach. African Development Review, Vol 25(3), pp 358-369.

20- Purushottam N Vaidya. (2019). BOARD SIZE AND FIRM PERFORMANCE: A STUDY ON BSE 100 COMPANIES. Journal of Management (JOM), Vol 6(3), pp. 117-123.

21- Saleh F. A. KHATIB, Abdul-Naser Ibrahim NOUR. (2021). The Impact of Corporate Governance on Firm Performance During The COVID-19 Pandemic: Evidence from Malaysia. Journal of Asian Finance, Economics and Business Vol 8(2), pp 0943–0952.

22- Shen, H., Fu, M., Pan, H., Yu, Z., & Chen, Y. (2020). The impact of the COVID-19 pandemic on firm performance. Emerging Markets Finance and Trade, Vol 56(10), pp 2213–2230.

23- Shleifer, A., and R.W., Vishn, 1996. "A Survey of Corporate Governance", Working Paper, NBER.

24- Vafeas, N., Theodorou, E. (1998), "The relationship between board structure and firm performance in the UK", The British Accounting Review, Vol 30 (4), pp 383-407.

25- Waheed, A., & Malik, Q. A. (2019). Board characteristics, ownership concentration, and firms' performance: A contingent theoretical based approach. South Asian Journal of Business Studies, Vol 8(2), pp 146–165.

26- Yan, C. Hui, & Xin, L. (2021). The relationship between board size and firm performance. E3S Web of Conferences, Vol 257, pp 02079.