

Gender diversity in the boardroom and shareholder wealth maximisation: Evidence from the United Kingdom

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Fakhrul Hasan, ORCID: <https://orcid.org/0000-0002-5406-9906>

Liverpool Hope Business School, Liverpool Hope University, Hope Park, Liverpool, UK

Email: hasanf@hope.ac.uk

Abstract

In this research our aims to provide further evidence in the research area behind the effects of gender diversity in the board room. The empirical consensus is gender diversity increases a firm's financial performance, and greater financial performance increases dividends and stock price. This research will provide evidence for the direct link between the two. We used FTSE 100 companies across the period 2011-2020. Data analysis shows that FTSE 100 found no relationship between gender and dividends, of 0.01% statistical significance, no relationship or statistical significance between gender and return, and a weak positive correlation of 0.015 statistical significance between gender and EPS. This therefore drawn to the conclusion of given its establishment, constituents of the FTSE 100 are subject to foreseeable levels of performance and profits. Given their size and lack of volatility at that sector of the stock market, that alteration of gender diversity at board level will result in a change in dividend or stock returns and is more likely to be due to more operational aspects of the companies.

Keywords: Gender diversity, Shareholder, Board room, FTSE 100, Return, EPS.

JEL Classifications: G30, G32, G34, G38.

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Introduction

The purpose of this research is to discover the relationship between board gender diversity and shareholder wealth maximisation at FTSE 100 companies. The FTSE 100, or the Financial Times Exchange 100, is the collection of the 100 largest companies on the London Stock Exchange by market capitalisation. It's launch occurred January 3rd, 1984, where it overtook the FT30 Index as the benchmark for market analysts, traders, and investors for UK stock market performance. Over the period of 2011-2020 in which this research will investigate, the FTSE 100 Index has seen an increase of 560 index points (Statista, 2022). This means that as a collection of the 100 constituents of the Index, the value of the collection has risen consistently and proved to be a steady, bank interest-beating investment option. its annual total return since its conception averages 7.75%, in comparison to the current interest at 1% as of May 2022 (Bank of England, 2022). The rate in which the interest rate increases is what called the Rate of inflation, measured predominantly by the Consumer Price Index, which analyses the percentage change in prices of basket goods and services consumed by households. The current hike in inflation is due to the repercussions of the COVID 19 pandemic (Carosa, 2021). It's largely due to the lack of consumer spending during the pandemic lockdowns, the reopening of the economy has created bottleneck demand, with companies ill-prepared to cope with the demand. This demand, alongside other factors such as Brexit, caused supply chain issues which has been the major cause of inflation, supplemented by deflation during the lockdowns. Therefore, the consistent beating of interest rates leading to its renowned reputation and being the main performance benchmark of UK stock market made it the perfect sample for this study of shareholder wealth maximisation.

Gender diversity has quickly become a mainstream board characteristic due to changing societal views

demanding more equality. Its particularly common in the quest to achieve greater firm performance, as numerous studies (Endraswati, 2018; Reguera-Alvarado et al. 2015; Rodriguez-Dominguez et al. 2012) all find having greater female presence on the board leads to increased firm performance, where even having females instead of males in traditionally male dominated sectors gave greater performance, and therefore recommend; all companies should increase their female presence, even to the level of greater proportions of female-to-male, and even suggest legislation should be imposed to curate this movement.

Despite this, it's still clear to see women are underrepresented in corporate boardrooms. Burgess and Tharenou (2002) stated that the number for female directors compared to the female population is not proportionate, and 18 years later, EY (2021) found only 31 female executives, including just eight CEO's, present in the FTSE100 in 2020. This shows slight but insignificant increases in the presence of female directors over a prolonged period in which countless studies have prevailed showing the benefits and increased company performance associated with increased gender diversity.

Study of the Friedmann Doctrine, also called Shareholder Theory, revealed the necessity for this study regarding the impact of gender diversity on shareholder wealth maximisation as it appears to be a scarcely explored topic, particularly in contemporary efforts within the FTSE100. The purpose of this research is to answer the following question, Research Question: is shareholder wealth maximisation enhanced with board gender diversity?

To answer this question, three aspects were identified to sufficiently represent shareholder wealth maximisation, namely: dividends, return, and EPS. Therefore, the following three research aims were outlined (1) To explore these three measures through secondary data collection in the context of FTSE 100 companies over period 2011-2020. (2) To explore the impact gender diversity in FTSE 100 company boards has on the three chosen measures of shareholder wealth maximisation.

Following on from this introductory section, pertinent academic literature will be discussed and summarised in Section 2. Section 3 is then to follow, where the methodology of this paper was discussed. Section 4 presented, analyse, and discuss the findings. In Section 5 we conclude this paper.

1. Literature Review and Hypotheses Development

A literature review is conducted to provide the foundation on which research is built (Saunders et al. 2016). The aim of this literature review is to display the two theory's underpinning this research, namely Shareholder Theory and Agency Theory, to then discuss most relevant and widespread existing literature relating further to this topic. It will include literature on the impact on dividends, EPS, and stock return in relation to gender diversity in the board room. Based off the literature discussed, trends and expectations will be analysed and therefore hypotheses will be developed ahead of the results discussion later in this research.

1.1 Theoretical Framework

1.1.1 Shareholder Theory

The Friedman Doctrine, also known as shareholder theory, was a theory of business ethics developed by economist Milton Friedman. It discusses the social responsibility of an organisation is to increase its profits, however, the firm's sole responsibility relies with its shareholders and therefore, the goal of the organisation is to maximise returns to its shareholders (Friedman, 1970). Relating to corporate social responsibility as its commonly known, he argues that it should be the shareholders who decide what social initiative to take part in, not an executive that was appointed solely for business purposes. The theory was an influential part of the corporate world, particularly from the 1980's to 2000's. Despite its wide acceptance amongst financial economists as the correct guidelines for organisational decision making, Danielson et al. (2008) suggests that it can promote short-termism within management, as a firm's stock price can be manipulated, giving managers the incentive to please company objectives for financial rewards which can leads to distorted operational and investment decisions. Furthermore, the theory suggests if a CEO is to act in a way that doesn't benefit shareholder, for instance, donating profits to charity, the money should be recouped from the customers. This opened the theory to vast criticism as it arguably suggests customers and employees should be exploited to satisfy the shareholders (Posner, 2019).

1.1.2 Agency Theory

Furthermore, Agency Theory is a predominant theory regarding the relationship between the shareholders and managers of the company. Agency relationship is formed when the principals (shareholders) employ the

agents (executive managers) to act on their behalf (Jensen and Meckling, 1976). The board of directors are the principal agents for the risk taking and decision making for a company. The key role is ensuring the organisations prosperity through the shaping of their affairs (IoD, 2018). They play a vital role in promoting shareholder interests, the strategic direction of the organisation, and the promotion of positive organisational performance (Finkelstein et al. 2008; Hambrick, 2007; Hambrick and Mason, 1984).

A primary role of corporate governance is to monitor and resolve agency problems with its shareholders – the agents (Fama and Jensen, 1983). In some cases, it's possible the principals – the elected managers, can abuse authority through using company assets and resources to pursue their own interests rather than the maximisation of shareholder wealth (Jensen and Meckling, 1976).

Bloom et al. (2011) suggest that women executives better meet stakeholder expectations, which proved to have a positive effect on firm performance. Alongside this, Hillman et al. (2007) found that in situations which organisations found environmental constraints, the election of women on boards found to have a reductive impact upon firm risk taking. These are two studies which may suggest an argument for the positive relationship found in existing literatures surrounding the period 2008-2021, as its arguable the impacts of the financial crisis and COVID-19 play into the hands of female psychology, and their lesser appetite for risk taking may contribute towards better usage of resources to enhance shareholder wealth maximisation.

Burgess and Tharenou (2002) stated that the number for female directors compared to the female population is not proportionate. Adams and Funk (2012) suggest that women and men systematically have different value and risk attitudes, where diversity results in improved perspectives and cognitive ability of the board (Hambrick et al. 1996), as Hambrick and Mason (1984) suggest the strategic choices of senior managers is a result of behavioural and cognitive characteristics. Overall, this indicates that improvement in these characteristics through increased gender diversity should result in improved strategic decision making, even still there is disproportion within company boards. For 2020, EY (2021) found that in the FTSE 100, there were only 31 female executives; comprised of 8 CEO's, 15 CFO's, suggesting this figure has flatlines for the second year at 13.7%, conversely, they found female non-executive directors to be at an all-time high of 44%, 14% female chairmen, 25% senior independent directors, and 35% chairing board committees.

1.2 Empirical Framework and Hypotheses Development

1.2.2. Earnings Per Share (EPS)

EPS is a leading measure of a company's profitability that shows the proportion of a company's profit that is allocated to every share issued, meaning the higher the EPS the higher its profitability. It's an important measure as it's easy to calculate, it reflects a return to the shareholders from their investment, and a positive EPS has a positive impact on company share price. However, as a measure it has its downsides, it doesn't consider the share price; just influences it, it's easy to manipulate through using different accounting policies, and if a company makes a loss, it therefore has a negative EPS, which makes the company hard to measure.

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Aladejebi (2021) study comprised of 13 publicly quoted banks on Nigerian stock exchange between 2015 and 2019 found a weak negative relationship between EPS and female board members percentage. This limited number of observations may be the reason to not produce any significant results, as a small sample size gives way to a flawed study. It's also worth mentioning COVID-19, as the first confirmed case in Nigeria was 27/02/2020 so should not have impacted upon this study. It's also found that the average %age of female board members was just 25%, which may suggest more females are needed to give any impact at all. However, this could relate to Triana et al. (2013) who found increasing female directors on the board increases the effectiveness of monitoring which had a positive effect of firm performance, however, found having too many females resulted in intense and highly strict monitoring, which had a negative effect.

Ultimately, given EPS is a renowned measurement regarding the earnings generated by a company per share,

which in turn should thereby be considered within the scope of shareholder wealth maximisation, as within shareholder theory should translate further returns to the shareholders on their investments. However, there's gaps in the existing literature regarding the direct study between EPS and boardroom gender diversity, specifically within the context of the FTSE 100. It is an important area as it's a leading market for investors searching for long-term wealth maximisation as it's not as volatile as other areas such as cryptocurrency or foreign exchange, comprised of the leading companies in terms of market capitalisation.

Hypothesis 1: Having a higher proportion of female board members will have a positive impact on an organisations EPS.

1.2.2 Dividends

There are ample studies based on the impact gender diversity has on firm performance, however, its relationship with dividends is scarce, so this study aims to contribute to pre-existing discussions and provide a more contemporary study within the context of FTSE 100.

A dividend is a cash payment a company can pay out of its profits back to their shareholders as a reward for their investments.

Carter et al. (2010) found the presence of female directors can help to reduce agency problems by strengthening the monitoring mechanisms. Supporting this, Pucheta-Martinez and Bel-Oms (2016) found boards with higher proportion of females use the 'dividend tool', as according to Jensen (1986), agency theory suggests dividends are the most effective mitigation of agency conflicts as it reduces free cash flow that may be inappropriately/inefficiently used by senior management (DeAngelo et al. 2006; Hasan, 2021a and 2021b; Hasan, 2022).

Ye et al. (2019) studied 63,464 firm observations of 8,876 companies across 22 countries over 2000-2013 period, revealing a significantly positive relationship between board gender diversity and dividend payments. However, implications regarding the financial crash would have undoubtedly affected the results in such a way, but the extent to which it affected companies is still undecided by academics. Although, theoretically the crash would have a negative impact upon dividend pay-outs as companies would prefer to have that available cash at hand in case of any unforeseen consequences of the crash and downturn in demand.

Furthermore, Mulchandani et al. (2021) found positive relationship between the number of female directors and dividend payment ratio, based on 500 observations from companies listed on Nifty 50 in India between 2010 and 2019.

Also, Trinh et al. (2020) studied 90 of the FTSE 100 between 2006 and 2016, finding that a female chairman produced a positive relationship with higher dividends, but a female CEO showed a negative relationship. It was found these two findings reversed in firms with more M&A transactions. They further found a 1% significant relationship between gender diversity and dividend, as the number of female directors increases, so does the cash dividend.

Conversely, Saeed and Sameer (2017) found a strong and robust negative relationship between board gender diversity and cash dividend payments in India, China, and Russia emerging markets between 2007-2014. Furthermore, they consider the impact of the financial crisis, suggesting the negative link was more pronounced during the crisis.

Also, Elmagrhi et al. (2017) studied 50 LSE listed SME firms between 2010 and 2013 and found board gender diversity has a significant negative relationship. However, this study has limitations. Namely, there are 1,096 AIM-listed SME firms, yet was cut down to 50 to give just 200 observations for the study. Despite this amount not being a big problem, it's not mentioned as to the criteria to how the sample was cut down to, just that it was due to the extensive nature of having that many firms.

Given mature firms tend to pay dividends more than younger/less established firms, and female executives have lesser appetite for risk and therefore promote stability in company investments and increased confidence for investors. Therefore, considering all, in the context of the FTSE 100 we developed our second hypothesis.

Hypothesis 2: Board gender diversity will have a positive relationship with an organisation's dividends.

1.2.3 Share Price

The share price of a company is the amount it would cost to buy a single share, it fluctuates according to the

market conditions. Increases and decreases are likely due to if the company is perceived to be performing well or not and can also be influenced by the actions of competitors. In terms of shareholder wealth maximisation, its arguable stock trading is the more short-term approach to financial gain, yet it requires much more rigorous and persistent monitoring and research into that company, the market, and the skills and knowledge required by the individual to make consistent, worthwhile returns. However, long-term wealth maximisation by obtaining dividends can also be contributed by the increases in share price, but this would only be a tangible return if those shares are sold, which would remove your privilege of receiving dividends. Negative media coverage, regarding performance dips or other factors perceived by investors to be harmful for future business can result in mass share selling, causing price dips, as supply and demand are at play in the stock market. As a result, the impact of gender diversity upon share price is a relatively untouched area of research, as the bulk of the research studies the impact of female CEO appointment on the share price.

S&P Global (2019) found that firms with female CEO's have superior stock price performance compared to the market; the 2-year post appointment of female CEO saw 20% rise in stock price momentum; the firms were more profitable; and with female CFOs generated excess profits compared to their firm's competitors. This is further backed by Schrand et al. (2018) who found that in 112 US Equity REITs between 2005 and 2015, gender diversity had a positive effect on market performance, share price being one of their measures; also suggesting that the critical mass of female executives is reached at roughly 30%.

According to Ahmad et al. (2016), CEO turnover had no effect on share price, based on their sample of 105 announcements in Malaysia between 2008 and 2014. This is based on Warner et al. (1988) finding that CEO turnover has no effect on share price, unless in the case where the CEO is removed forcefully, based on 269 US firms between 1963-1978. Despite being a relatively old study, it was an initial study into this area and its findings are still repeated in numerous studies more recently. Another study by Hurt et al. (2020) found 12 months after CEO appointment, firms appoint female CEO did not differ than those appointing a male, relative to the 12 months before appointment, focusing on the S&P 500 companies that have hired a new CEO since 2000. Its again supports by Geerts (2017) who found no significant relationship between announcement for female CEO appointment yet did find slight increases in share price upon day of appointment of a male CEO based on 2,000 largest European companies, however this study is again limited by the small number of female CEOs.

Alternatively, Lee and James (2007) in their study between 1990 and 200 of 529 U.S firms found stock markets react more negatively towards appointment of female CEOs than male. This was further backed by Carron and Lucey (2011) who followed same methodology as Lee and James (2007), for FTSE 100 companies and found similar negative relationship with statistically significant Welch F-test, however, that gender is not an issue when non-executive directors were appointed. Caveats do include the small number of observations for female executive directors and CEO's which does implicate the robustness of this study.

Overall, this area of study is full of contradicting evidence, with positive, negative, and null relationships being found time and time again. It's an important area to be included in this study as its one of the aspects which contribute towards maximising shareholder wealth and results here can help provide investors by providing more contributing evidence to include in their investment strategies. However, gaps remain in this area due to the lack of direct study into the impact board gender diversity has on stock price changes, especially in FTSE 100 companies.

Hypothesis 3: Board gender diversity will have a positive impact on companies' stock return.

2. Methodology and data

2.1 Method and Model specifications

Ordinary Least Square regression model was used to analyse the relationship between the variables, consistent with Ye et al. (2019) and Mulchandani et al. (2021).

To address the three hypotheses developed, the following models have been constructed:

$$BasicEPSExcludingEI_{it} = \alpha_{it} + \beta(female_{it}) + \lambda_1(Div_{it}) + \lambda_2(Size_{it}) + \lambda_3(Lev_{it}) + \lambda_4(Cov_{it}) + \varphi(Year\ dummy_{it}) + \mu_{it} \quad (1)$$

$$Div_{it} = \alpha_{it} + \beta(female_{it}) + \lambda_1(BasicEPSExcludingEI_{it}) + \lambda_2(Size_{it}) + \lambda_3(Lev_{it}) + \lambda_4(Cov_{it}) + \varphi(Year\ dummy_{it}) + \mu_{it} \quad (2)$$

$$return_{it} = \alpha_{it} + \beta(female_{it}) + \lambda_1(BasicEPSExcludingEI_{it}) + \lambda_2(Div_{it}) + \lambda_3(Size_{it}) + \lambda_4(Lev_{it}) + \lambda_5(Cov_{it}) + \varphi(Year\ dummy_{it}) + \mu_{it} \quad (3)$$

The dependent variable, Shareholder wealth maximisation, is measured using earnings per share, dividends, and stock return, as shown in the three OLS models above. Subscript i represents each firm and t represents the year. Female is a dummy for the representation of females on the board, following Apesteguia et al. (2012), who states 3+ females on the board of directors considers females to no longer be ‘outsiders’, where they can then influence a greater amount of board discussions. Firm characteristic Size and Lev are described below, and Cov is dummy to control impact of the pandemic. Calculations regarding Lev, Size and ROA are all consistent with those used by Alam et al. (2020), and dividends calculation is in line with Ye et al. (2019). Table 1 shows the definitions and calculations where applicable of each of the variables.

Table 1 Variables including definitions and calculations

Variables	Definition	Calculation
Div	Cash dividends	Gross common stock dividends over total assets
Lev (control variable)	Financial leverage	Total debt over total assets
Size (control variable)	Company size	Natural log total assets
Female	Dummy variable for female board representation	3 or more females take 1, less than 3 takes 0
Covid-19	Dummy for COVID-19	2019 takes one, other years take 0
Return	Stock price return	Change in closing price over closing price
EPS	Earnings per share excluding extraordinary items	Directly sourced from Eikon
ROA (robustness test)	Return on assets	Earnings before interest and tax over total assets
ROE (robustness test)	Return on equity	Earnings before interest and tax over total equity

Source: Compiled by the author.

2.2 Data collection

This study focuses on the firms that make up the 2022 FTSE100, and their data from the period 2011-2020. Firm panel data of the 10 years (2011 – 2020) were sourced from the financial database Eikon provided by Thomas Reuters. This aimed to achieve 1,000 observations, however, missing data specifically regarding Airtel Africa PLC were dropped, resulting in 819 observations. All variables are secondary date and were collected from the Eikon database, whether directly, or data to be used in calculations within STATA to achieve the desired variables. All data collected from Eikon was exported to Excel for sorting purposes before being imported to STATA for any calculations and ultimately the regression analysis and summary and descriptive statistics.

Table 2 below shows the results of the summary statistics produced on STATA, containing the number of observations, mean, standard deviation, minimum value, and maximum value for the variables used to test the three hypotheses.

Table 2 Summary statistics

Variable	Observations	Mean	Std. dev	Min	Max
EPS	819	0.80858	1.2426	-4.3631	13.649
Female	819	0.50916	0.5002	0	1
return	819	-0.00183	0.031654	-0.37822	0.19533
Dividend	819	0.04677	0.08268	0	0.90915
Size	819	23.263	2.0321	17.467	28.724
Leverage	819	0.25319	0.19446	0	2.0139
Covid-19	819	0.11477	0.31894	0	1

Source: Compiled by the author.

Table 3 shown below present the pairwise correlation results produced by STATA of all variables used to test the hypotheses. The summary statistics show how over the period, some companies for some years of the FTSE 100 did not pay any dividends, where the highest recorded was just short of 0.91, and the mean (average) dividends was 0.047. EPS and return both show that the min results were negative figures, -4.363 and -0.378 respectively, suggesting over the 10-year period companies experienced what could be assumed to be poor performance. Despite being the largest 100 companies, Size shown to have the greatest std. dev results at 2.03, showing greatest dispersion of results around the mean, compared to return at 0.03 being the smallest. This could be predicted as the FTSE 100 has averaged 10% returns per year of the last 100 years.

The correlation matrix shows that both dependent variables Return, and EPS, had 0.0728* and 0.1158* results respectively with Female, however, Dividends did not show such significant correlation, and at 0.0022 shows a result very close to perfect independence. Return and Covid shows to be the most correlated variables at 0.4827*. This high correlation would be expected, however, it would be presumed that the impact of the Covid-19 pandemic would be negative, as shown by the FTSE 100 index dropping from 7,500 to 5,000 in February 2020 (Jolly et al. 2021).

Table 3 Correlation matrix

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) Female	1.000						
(2) Return	0.0728*	1.000					
(3) Size	0.3424*	0.0073	1.000				
(4) Leverage	0.0004	0.0339	-0.1635*	1.000			
(5) Dividend	0.0022	-0.0264	-0.4268*	-0.0494	1.000		
(6) Covid-19	0.2539*	0.4827*	0.0474	0.0888*	-0.0766*	1.000	
(7) EPS	0.1158*	-0.0128	0.0030	-0.0047	0.1220*	-0.0184*	1.000

Note: * <0.05

Source: Compiled by the author.

3. Findings and Discussion

3.1 Dividends

In Table 4 regression analysis across the board for dividends shows 5/6 <0.01 statistically significant results, with Covid being the odd one out. Covid shows a -0.02536-correlation coefficient, showing there was close to no correlation at all between the two variables, yet is a negative correlation, as expected given firms suffered as reports show UK companies either cut or deferred a total of £30 billion worth of dividend payments to weather the storm of Covid-19 (Sweney, 2020). The correlation coefficient refers to the degree of how a change in a dependent variable is related to the change in the independent variables. Dividends and female shows $<0.01\%$ statistically significant, meaning the relationship between the two is down to something aside from just chance. It shows that boards with ≥ 3 females pay greater dividends than boards with <3 females, at 0.03362 coefficient. It also shows a low standard error at (0.00587), showing there was small deviation around the mean. It further gave a t value of 5.73, giving evidence of greater confidence of the coefficient as a predictor. This low coefficient falls closer in line with results found in Mulchandani et al. (2021), Ye et al. (2019), yet to varying degrees of correlation which may be because of the large sample size of 819 observations in this study. It's furthermore in line with Trinh et al (2020) who found 1% statistically significant results. It goes against results found by Saeed and Sameer (2017) however, their research focuses on emerging markets (India, China, and Russia) and therefore would expect the established FTSE 100 to provide greater opportunities for females to reach senior positions, and the constituents to provide greater and more consistent dividend payments. Despite the significance level, the results would have to be said to reject Hypothesis 2, a value of less than 0.2, as according to Saunders et al. (2016), it must be said the value falls short of being called a weak positive relationship, and therefore having no relationship at all.

Regarding correlation, dividend expressed the strongest relationship with Leverage, being -0.05161, showing a very weak yet $<0.01\%$ statistically significant negative relationship. This is in line with Mulyani et al. (2016), who produced similar results ranging from -0.1 to -0.002 across multiple models. The weakest correlation seen was with EPS, at a low 0.00669, yet $<0.01\%$ statistically significant. This suggest the relationship is very much inexistent, however due to the number of observations, it was evident enough do not be 0 and have a minimal positive relationship, and the significance level suggesting it was caused by something more than just by chance.

R^2 measure the proportion of the variation in the dependent variable, Dividends, that can be statistically explained by the independent variables. The result of 0.247 means 24.7% of the variation can be explained, and 75.3% is explained by other variables outside the model. It indicated the goodness of fit of the multiple regression models and can be interpreted to determine how good a predictor of the multiple regression equation is likely to be. This is a low R^2 value that indicates low correlation and room for a better fitting model for the variables collected.

3.2 EPS

The multiple regression analysis shows 2/6 variables to be statistically significant at <0.01%. It shows female and EPS to have a slight positive relationship that was statistically significant at 0.26225. This means that having ≥ 3 females on the board of directors has a positive impact on EPS, one that is caused by something more than by chance, at a greater degree than shown between dividends and female. It also produced a t value of 2.59, greater than the +2 value commonly associated with providing greater confidence with the coefficient as a predictor. This contradicts the findings of Aladejebi (2021) and could be explained by the research of Triana et al. (2013), suggesting three females on the board could fall before the threshold for which a board comprising of a high percentage of females starts to negatively impact EPS. Therefore, we can state that this research supports Hypothesis 1 given the present, yet weak, statistically significant correlation shown between EPS and Female.

Table 4. Regression analysis results

Variable	EPS	Divi	Return
Female	0.26225*** (0.10141)	0.03362*** (0.00587)	0.00307 (0.00201)
EPS		0.00669*** (0.00206)	-0.00001 (0.0007)
Dividends	1.93374*** (0.59481)		-0.00421 (0.01184)
Size	0.01333 (0.02603)	-0.02069*** (0.00135)	-0.00021 (0.00052)
Leverage	0.0486 (0.22852)	-0.05161*** (0.01332)	0.00205 (0.00452)
Covid-19	-0.04042 (0.19499)	-0.02536 (0.01144)	0.02685*** (0.00386)
Constant	0.17464 (0.63303)	0.52287*** (0.03237)	0.0155 (0.01252)
Year dummy	Yes	Yes	Yes
R ²	0.0369	0.2470	0.4202
N	819	819	819

Note: ***<0.01, **<0.05, *<0.1. Standard error in parenthesis.

Source: Compiled by the author.

EPS and dividends showed the second <0.01 % statistically significant and greatest coefficient at 1.93374. This is a significantly greater result than when dividends were the dependent variable, this suggest that EPS has a much greater impact upon dividends, than vice versa. This will be down to EPS being a measure of profitability, per share, and therefore the more profitable a company is, aligned with Shareholder theory, the more likely they are to pay dividends, and the higher chance those dividends are of a greater value, as found by Ajanthan (2013). It also produced a t value of 3.25, like EPS and female, showing there's great confidence in the coefficient.

The R² value for EPS shows as 0.0369. This result is the lowest out of the three models by a significant margin suggesting it's a poor fitting model. Given EPS is not a measure of shareholder return, this low result is to be expected. Its inclusion is based off the Friedmann Doctrine, with the theory that higher EPS should result in greater shareholder return through increased stock prices and greater dividend payments if the company follows this theory of putting shareholder wealth maximisation as its key focus.

3.3 Return

As shown by Table 4, results regarding return provided no noteworthy relationships with other variables, or any statistical significance aside from with covid dummy. Return shown just a 0.0031 correlation with female, such a minimal positive that is effective to say there was no relationship between the two. Its lack of statistical significance could suggest this was down to chance, and there could be a more expected result perhaps with an alternate set of data. As to be mentioned in the research limitations, Cumulative abnormal returns as opposed to just return could have provided better correlation and statistically significant results, despite the widespread usage and therefore basis of the return variable used in this research, based off existing literature. This doesn't follow the results of S&P Global (2019) and Schrand et al. (2018) who found greater stock performance with gender diversity in similar companies and time periods. On the other hand, it did produce a t value of 1.52, which in approaching the standardised value of 2 used in the accounting and finance industry as a good predictor of strong confidence. Expectations of results were reserved given the

lack of direct study between board gender diversity and stock price, as much more was geared towards CEO turnover and their genders, however its arguably assumed as greater gender diversity leads to greater performance, which in turns leads to greater stock price returns, which are both deemed the majority view in their respective fields of study

A 0.01% statistically significant result happened to be found with the covid dummy, suggesting that during the pandemic the FTSE 100 companies had better returns. This is difficult to believe given the economic downturn experienced during and post pandemic, however the t value associated was 6.96 suggests there is great confidence in this relationship. This could be because of the increased market volatility found respective to nature of Covid 19 news released, as found by Baek et al. (2020). Ultimately the results show there's no relationship, and therefore we must reject hypothesis 3.

Considering the results, the regression as whole gave a R2 value of 0.41. Meaning 41% of the variation can be explained by the chosen variables, suggesting it could still be made to better fit, however, proves to be the greatest value of the three model results. This could further support the lack of a relationship found, and therefore provide to the evidence that gender diversity may not be as strongly associated with return directly, despite both variables' indirect links with firm performance, at least in the context of the 100 largest companies.

3.4 Robustness test

Table 5. Robustness test

Variable	ROA	ROE
Female	-0.00512 (0.01046)	-0.62779 (0.49345)
EPS	-0.01499*** (0.00362)	-0.05670 (0.17051)
Dividends	2.72425*** (0.06145)	19.822*** (2.8981)
Size	-0.01253*** (0.00267)	0.02629 (0.12615)
Leverage	0.0557** (0.02347)	-0.04614 (1.1068)
Covid-19	0.01377 (0.02002)	0.577178 (0.9440)
Constant	0.32342*** (0.06503)	-0.76078 (3.0669)
Year dummy	Yes	Yes
R ²	0.7794	0.0807
N	818	818

Note: ***<0.01, **<0.05, *<0.1. Standard error in parenthesis.

Source: Compiled by the author.

Robustness testing analyses the uncertainty of models and tests whether the estimated effects of interest are sensitive to changes in model specifications. ROA and ROE are the selected dependent variables. ROA and ROE are common proxies used for firm performance, shown by Alam et al. (2020). The regression was ran based off model 1. Existing literature shows gender diversity to have a positive impact upon ROA and ROE values (Alam et al. 2019; Kiliç and Kuzey, 2016). In turn, firm performance is found to have positive relationship with dividends (Uwuigbe et al. 2012), share price (Schrand et al. 2018), and EPS is another common proxy for firm financial performance. Robustness test shows no significance regarding female, ROA producing a very weak negative relationship, whereas ROE produced a strong negative relationship. This is in line with Muturi, W. (2019) who concluded a negative relationship between ROE and gender. Comparatively with the regression analysis, female and both EPS and dividends had statistically significant weak positive relationships. This doesn't provide the confidence expected in the results of the regression. ROE shown to have a substantially high and <0.01% statistically significant coefficient with dividends at 19.822. This is expected as shown in results by Trisnadewi et al. (2019), who also found significant positive relationship between ROE and dividends. This could also be because paying dividends boosts shareholder equity on the balance sheet which in turn influences a company's ROE. A high correlation was also shown between ROA and dividends at 2.72425, showing <0.01% statistical significance. R2 for ROA shown a very strong result at 0.7794, meaning only 22.06% of the variance is explained by other variables outside the

model. Comparatively to ROE that showed a very low value at 0.0807, meaning a very limited amount of the variance could be explained by the model, suggesting it was a poor fit for the robustness checks, and hence why only one variable (Dividends) had a statistically significant result - converse results of ROA, which produced all results statistically significant, apart from female.

Conclusion

Given the impact gender diversity plays on firm performance, it's possible to argue there's a concrete positive relationship, yet the degree of diversity for optimal effects is still undecided. This therefore encouraged this study on the relationship between gender diversity and shareholder wealth maximisation, as firm performance positively impacts a firm's dividend payments and stock return.

Regarding the regression analysis results, this study shows gender has no impact on a firm's dividends. Its coefficient indicates it might be moving towards a positive one rather than negative, however, this alongside the low R^2 value suggests a poor fitting model which needs to be considered when considering this disappointing correlation. It's important to notice its 0.01% statistical significance, however this indicates strong confidence in the no relationship and this study therefore must support the general contradicting evidence to be found in relevant existing literature. Ultimately, this study suggests the investors should not be too concerned with the gender diversity present at FTSE 100 companies when looking to attain dividends, which we believe to be down to just how established these companies are and how little volatility they are subject to in terms of spikes in performance, therefore there's very little that will affect the levels of dividends they give.

This study shows that gender diversity has a positive impact upon EPS, with 0.01% statistical significance, with its correlation being the strongest out of the three dependent variables. Given EPS was used as a measure for shareholder wealth maximisation solely based off Shareholder theory, it's encouraging to see this relationship. This means firms looking to improve EPS and if basing on shareholder theory, companies should look to increase their gender diversity to achieve such objectives.

Return produced no relationship or statistical significance with any variable, aside from covid. This in turn suggests the gender diversity in the board room should not be considered an area for investigation by firms looking to improve their share prices, or by traders looking to make short term gains, or investors looking to make long term gains through share price inflations. On the contrary, the impact of COVID 19 both during and post lockdowns has severely altered the economic climate and therefore could significantly be responsible for skewing results, even across the 2011-2020 period.

EPS and gender diversity stand to be the most positive relationship discovered in the study. This research finds positive correlation between gender diversity and both dividends and EPS, and no relationship with return. However, each of the positive relationships would be considered weak, and therefore while being able to say we accept Hypotheses 1+2, while rejecting 3, there is scope to argue that there could be better choice with more complex dependent and independent variables.

Research Limitations

The main limitation of this research is its focus on the FTSE 100. These are the 100 largest companies present on the LSE by market capitalisation, so there's a great degree of certainty these companies will remain in or around the top 100 due to their predictably smooth continuance of past performance, with the exception of a few, and therefore pay consistent dividends, provide consistent returns as seen over the past 20 years, regardless of the fact it has been, and still is, more male dominated in the board room.

Two more limitations regard the usage of dividend and return proxy variables. There are numerous ways to consider the dividend payments, used interchangeably across existing literature. This is also true regarding return, primarily proxied by Cumulative Abnormal Return (CAR). This requires significant and complex usage or formulae, data collection, and processes to gain accurate results. Return in this paper was calculated and based on prior literature, and it's providing a perfectly valid variable, however the addition of CAR would have provided a greater variable but was deemed to not be fundamental and more of an additional benefit to this study.

Scope for Further Research

As mentioned in the prior sub-section, an area of which this research could move towards would be in smaller firms, either more SME's or perhaps FTSE250. This would provide more representative results and

therefore advice to be made to companies of all sizes, as its probable recommendation from studies basing off the FTSE 100 would not be as compatible with companies of lesser sizes. Alongside which, the usage of more complex variables such as CAR could be better suited.

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