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Impact of global financial crisis on firm performance in UK: Moderating role of ESG, corporate governance and firm size

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Abstract: This paper investigates the impact of global financial crisis (GFC; 2007–10) on financial and non-financial performance of FTSE350 UK firms. This study tests the relationships among GFC, firm financial performance and environmental, social and governance (ESG; for non-financial performance) and estimates the moderating role of ESG, corporate governance (CG) and firm size in these relationships. Panel data from 2002 to 2018 across 351 UK firms are used. For estimation, random effect model is found suitable to investigate the relationship between financial crisis and firm performance (financial performance as well as ESG performance). The results explain that financial as well as ESG performance of the firm declined during the financial crisis period. Firm size is a moderator in the relationship of financial crisis and ESG performance of the firm. Further findings of the study explain that ESG, firm size and CG are the moderators in the relationship of GFC and firm financial performance. The results of the study are data based and can be used for policy implications. Firms can employ ESG, CG and firm size as strategy tools to enhance their performance especially during the financial crisis periods.

Subjects: Economics; Finance; Business, Management and Accounting

Keywords: global financial crisis; firm financial performance; ESG performance of firm; firm size and FTSE350 firms

JEL CLASSIFICATION: E63; E65.

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PUBLIC INTEREST STATEMENT

Global financial crisis (GFC) and its manageability in the corporate sector are important and beneficial for investors. The GFC has badly affected the performance of the firms. The role of environmental, social and governance (ESG) performance is widely acknowledged from investors, firm managers and other stakeholders to manage firm performance especially during financial crisis as it is significant to increase the firm value. Firm value can be produced through incorporating ESG into the managerial strategies of the firm to reduce its financial risk. Due to the importance of ESG during financial crisis, study investigates the impact of GFC on the performance of firms in the UK.

1. Introduction

Profit maximization theory of firm explains that the prime objective of the corporate sector is to earn profit. Firms concentrate on wealth creation for their shareholders, their smooth functioning and value creation of business. Market value and earnings per share of the firm are the key indicators to maximize the shareholders' value. Moreover, firm has the responsibility towards other stakeholders, including customers, employees of the firm, society and environment. Corporate social responsibility (CSR) and environmental, social and governance (ESG; economic, environment, social and governance performance of firm) are now emerging topics in the corporate sector and important for stakeholders. Freeman and Dmytriyev (2017) explain the foundations and importance of stakeholder theory, whereas the cutting edge of corporate sector performance and conclude that ESG performance of firm can be enhanced through improving the stakeholder relationship. To generate the long-term sustainable corporate governance (CG), it is necessary for firms to include all stakeholders (for example, shareholders, consumers, financiers, communities and others) as stakeholders affect the performance of firm and are also the beneficiaries of firm value. The stakeholder theory provides that it is balancing the interests of all stakeholders for the expansion and maximization of corporate ESG performance (Freeman, 1984). The risk mitigation to control the financial crisis is derived from a risk management theory and based on the stakeholder theory (Godfrey et al., 2009 & Luo & Bhattacharya, 2006). The financial crisis and economic downturn are negatively managed in the risk mitigation view and it decreases the chances of adverse events and firms have greater resilience over shocks.

It is an indication and signals the firm to enhance its financial as well as non-financial performance. Usually, the non-financial performance of firm is its ESG (environmental, social and CG). Combining the value maximization theory with stakeholder theory of firm is an emerging requirement of the firm. The firm combines shareholders and stakeholder value in its objective function, and this proposition has now accelerated its importance in the corporate management literature. Smith and Lenssen (2009) explain that ESG issues are important to integrate with firm strategy for economic benefits other than its moral obligation. ESG and/or CG control the financial crisis. Kirkpatrick (2009) explain that financial crisis occurs due to weaknesses and failures of CG.

Recession shakes the decisions of households and businesses at a large scale. Lee and Shields (2011) explain that during the recession, the economic activities are decreased and majority of the people are in trouble during recession. The consumption falls, investment is reduced, unemployment is increased and profits of the business fall during the recession periods. GFC started in August 2007 largely after the collapse of US subprime mortgage markets. This financial crisis ruined commercial bank performances as these banks were engaged in mortgage-backed securities. The US Government stimulated subprime mortgage after 2001 to own homes for people (Poole, (2010). Although the immediate cause of GFC is the sub-prime mortgage in the USA; however, the perseverance of large global imbalances at major levels and outcomes of long periods of extreme loose monetary policy in the advanced countries are also responsible for the GFC (Mohan, 2007 & Taylor, 2009). Several factors are responsible for recessions for example, lack of suitable guidelines in financial systems, especially the risky investments by financial institutions and in general the other macroeconomic factors (Roubini, 2011).

Financial organizations and especially banks obligate and provide finance to non-financial sector frequently and specifically throughout the periods of financial solidity. Supplementary firms are reliant on finance and establish lending relationships with banks for external finance. This financial relationship consequently increases economic growth in the country. The institutional financing was collapsed during the financial crises 1990s that occurred in emerging markets [Rajan & Zingales, 1998a) and Love et al. (2007)]. Notta and Vlachvei (2014) examine the impact of financial

crisis on food manufacturing firms in Greek and find that the performance of firm declines during a crisis to a certain level. Anghel et al. (2013) suggest that firms are required to understand the performance and profitability during the crisis, and firms can adapt their strategies to manage during the crisis periods.

Studies find that firms reliant on financial credit lose financial performance during financial crisis periods. Moreover, firms have no motivation to establish relationships with banks to lend from them as now banks are no more stable for finance. The non-financial firms go to bankruptcy due to banking financial crises. Ultimately, the economic growth of countries slows down during financial crisis. For example, Luc and Valencia (2011) use cross-country data to conclude that sustainable growth of firms is dependent on external financing from banks and fiscal policies of the government. Claessens et al. (2011) analyse financial performance of firms in the case of manufacturing in forty-two countries and find the negative impact of financial crisis on firms' overall performance. Bricongne et al. (2012) analyse that export performance of French firms is negatively related to financial crisis. However, this impact is at margin in large firms. The export products of these firms are less affected by financial crisis.

In the case of UK economy, the impact of GFC was insignificant at the initial stage of crisis in 2007. However, this impact was more serious during 2008 and 2009 and the fall in GDP was observed even greater than the Great Depression, 1930. Mason (2009) explains that the impacts of GFC on UK economy were numerous in the form of a credit crisis as banks and financial institutions were concerned about balance sheets and the value of assets. It became a major financial crash in the UK during 2008 on a large scale and it reminded of the great crash of 1930. GFC has deep impacts on the firm financial performance in the UK. However, it needs an empirical clarification in the case of UK firms to find the relationship of GFC (2007–10) with firm performance.

To examine the GFC in the UK and its impact on firm performance is defensible, as we see inadequate academic and empirical literature on UK corporate sector during financial crisis. Therefore, the present study is devoted to analyse the relationship of GFC with firm performance in the UK. Three hypotheses are formulated to verify this crisis effect on firm performance in the UK. We find that this crisis has a negative impact on firm financial and ESG performance. Furthermore, it is found that ESG, CG and firm size are the moderators when we establish the relationship between GFC impact and firm financial performance.

Inspiration for our study is founded at Hazaa et al. (2021) that explains the factors influencing the crisis management based on the reviewed articles. However, our study expands at Hazaa et al. (2021) with empirical estimation based on large sample data set; and further our study explains that ESG, CG and firm size have key moderating role in this relationship. The overall contributions of this study can be summarized as follows: it is empirical and comprehensive study rather than review-based articles. Secondly, it estimates the relationship between GFC and firm financial performance. Performance-based measures used in this study are market value and earnings per share of the firm as compared to other studies those use return on equity, return on assets and Tobin Q. Thirdly, the majority of the studies explore GFC impact in US economy; and less literature explains GFC impact on UK economy especially the corporate performance in crisis. Hence, our study is unique to analyse the corporate sector performance in the UK and suggest the positive role of CG to mitigate crisis impact and accelerate the firm performance in GFC.

2. Literature review and hypothesis of study

Studies explore the causes of GFC 2007 and its impact on economic growth of countries in general and its massive impacts especially on global equity markets and financial performance of firms. Bartram and Bodnar (2009) find a reduction in the equity value of $29 trillion and drop in market capitalization more than 56% by the end of February 2009 due to financial crisis. Rose and Spiegel (2012) describe the harshness of GFC occurred in 2008 and find that the impact of GFC is not identical across different countries. Grammatikos and Vermeulen (2012) test the transmission influence of the GFC which

happened in 2007–2010 on the stock market returns of fifteen Economic Monetary Union countries. For the safety and reliability of the global financial system and individual financial institutions, regulatory reforms and policy measures are required to counter the GFC. They find the crisis transmit from US non-financial to European non-financials; however, no transmission was found in case of financial firms. Bowman et al. (2010) explain the macroeconomic fundamentals of Asian financial crisis that occurred during 1997. Defenders of the financial system argue that financial crisis essentially justifies the efficient markets hypothesis and show that markets were crashed due to government interference (Pennington, 2011). In general, the growth in credit pushed the cost of capital downward (World Bank, 2010).

Akbar et al. (2013) notice that financial crisis of 2007–08 has a negative impact on private firms in the UK. It is observed that short-term debt of the firm is changed due to crisis. It has an impact on the capital structure of the firm. It is concluded that this financial crisis has a significant impact on the firm financing in the short term; however, this impact is not found to be significant in the long term. Firms are advised to issue additional equity during the period of financial crisis to overcome the negative impacts of the credit contractions. Furthermore, Iqbal and Kume (2014) find the impact of GFC on UK firms using univariate and panel data techniques. It is found that the firm's leverage ratio has significantly risen during the time of financial crisis and it reverts to its original position after crisis levels. This increase in leverage ratios may be indebted in the short- and long-term debt plan of the firms. However, reversion in leverage ratio is due to equity issued by firms to control the crisis effect.

Hypothesis 1: *The GFC has a negative effect on firm financial performance in the UK.*

The findings of studies are mixed explaining the GFC impact on CSR/ESG (Miras et al., 2014). The selected studies conclude that it is the lack of CSR that causes financial crisis, and other studies explain that CSR is a cherished tool in the cost management during financial crisis (Yelkikalan & Köse, 2012). Firms experience liquidity difficulties and fall in their turnover during the financial crisis. For their survival, firms devise policies to reduce expenditure on CSR activities (Yelkikalan & Köse, 2012). Firms are found to reduce CSR activities and reporting the CSR activities during financial crisis (Karaibrahimoglu, 2010; Njoroge, 2009). Firms continue CSR and also report CSR in financial crisis. It is also concluded that firms increase their CSR activities during financial crisis to improve their business positions (Giannarakis & Theotokas, 2011; Miras et al., 2014). Firms use CSR activities and CSR expenditure for long-term marketing tool to mitigate the impacts of financial crisis (Yelkikalan & Köse, 2012).

ESG is negatively affected due to financial crisis, and CSR expenses of firms are lower downed during the financial crisis. Ullmann (1985) explains that firms concentrate on their economic performance other than their ESG performance during the periods of low profitability. Branca et al. (2012) test empirically that firms investment in CSR is decreased during the financial crisis. In the case of unfavorable macroeconomic situations, firms have to decide either to limit CSR expenditures to save their resources or to use CSR to discriminate themselves more efficiently (Branca et al., 2012). Fernández and Souto (2009) investigate the impact of financial crisis on CSR and conclude that managers and stockholders are affected from financial crisis. Factum Invenio conducted a survey in 2009 for Czech Donors Forum; the survey's results explain that two-third respondents reveal that the economic crisis shakes the corporate socially responsibility (Petrova & Rejzkova, 2009).

Hypothesis 2: *The GFC has a negative effect on ESG of the firm, and firm size moderates this relationship.*

Furthermore, we could focus on non-financial indicators on firm's performance. Therefore, our research query would be "How qualitative factors impact on UK FTSE firm's performance during economic crisis". As we understand that ESG issues are important to integrate with firm strategy for economic benefits other than its moral obligation, it is ESG and/or CG that control the financial crisis. Now we are thinking that the financial crisis occurs due to weak CG. These factors may be weak CG, leadership and ownership structure of the firm, financial institution regulation during the crisis time, emergency preparedness, crisis communication and emotional intelligence.

In our study, ESG, CG and firm size moderate the relationship between GFC and firm performance. Literature explains that CG/ESG in general is important to overcome the problems generated from financial crisis of the countries and especially CG plays an important role in managing the financial crisis and performance of firms. Firm size also plays a crucial role in controlling the financial crisis and promote the financial performance of the firm.

Al-Kholy (2009) shows the need of good governance, CSR and transparency to promote the integrity of financial markets. Abdul-Qadir (2008) finds the causes of the Asian financial crises and explains that it occurred due to lack of disclosure, supervision and transparency. Makhlouf (2009) explains that CG may be applied to avoid financial crises in the corporate sector. Berger et al. (2016) explore the causes of financial failure in the banking sector and conclude that it is significantly due to the ownership structure of the bank. Furthermore, Omry (2017) also concludes the same result for the financial failure in the banking sector. He recommends that governance in the banking sector is required to avoid the collapse of banks and their financial crises.

Mitton (2002) explains the importance of CG to control the Asian crisis. He employs panel data of five East Asian countries at the firm level to demonstrate CG's impact on firm performance in the Asian financial crisis. He explains that CG is of a critical importance in financial crisis because expropriation of minority shareholders might increase as and when anticipated investment return falls. Furthermore, the financial system in East Asian countries was functioning sound during the boom. The external investors have no information about the proper utilization of their funds. The financial crisis has caused awareness of investors about the CG weaknesses in the region to shift their funds (Rajan & Zingales, 1998a). Mitton (2002) concludes that firms with higher disclosure, superior transparency, developed outside ownership concentration and corporate experience perform well during financial crisis. Lemmon and Lins (2001) find that firms that monitor their managers to own additional control over rights with fewer cash flow rights during financial crisis are likely to suffer more loss of their share values.

Demiroz (2017) provides that governance has important effects on crisis management. Omodan et al. (2018) observe the relationship between CG and crisis management. Aebi et al. (2012) explain the role of good governance in banking sectors and find that banks have higher stock returns and return on equity in the financial crisis if chief risk officer manages the risk and reports it to the board of governors. Pirson and Turnbull (2011) explain that financial crisis is due to board's failure to manage it. Bonet and Donato (2011) explain that financial crisis can provide excessive chance for organizational change of the cultural sector in Europe. Lo (2009) views that better transparency, enhanced measures of systemic risk and adaptive regulations are required to manage the financial crisis 2007–2008. Labaal (2017) finds that the low level of supervision quality in the financial as well as in the banking sector was the reason for financial crisis 2007–2008. Mahdawi (2016) concludes that islamic banks were less affected during financial crisis 2007–2008 as compared to conventional banks.

The size of the firm plays an important role in the relationship between GFC and firm performance. Firm size has an impact on firm financial performance as firm size leads to net economies of scale in industrial operations (Thompson, 1967), has greater control over the external investors and resources of firm (Aldrich & Pfeffer, 1976 & Pfeffer & Salancik, 1978), and rises the promotional chances to employees retention (Williamson, 1975).

Hypothesis 3: *ESG, firm size and CG are moderators in the relationship GFC and firm financial performance.*

3. Data and methodology

3.1. Data and sources

The impact of GFC on firm performance is analyzed in this study in the case of FTSE350 UK firms. FTSE is an acronym for the Financial Times Stock Exchange. They are subsidiaries of the London Stock Exchange. The FTSE350 is a weighted stock market index of 350 largest listed companies. The role of ESG, CG and firm size as moderators in this relationship of GFC (2007–10), and the firm performance is also explored. The panel data of 351 UK firms during the time periods from 2002 to 2018 are used for the analysis. Cardiff Business School provides the facility of Data Stream to students and researchers for data collection. The sources of data are ASSET4 databases from DataStream. The market value (MV) of the firm and earnings per share (EPS) of the firm are the dependent variables in this study. GFC, ESG, CG and firm size are the independent variables in this study. ESG is calculated from combined scores on equal weightage of economic, environmental, social and CG scores. Financial leverage, total revenues, capital expenditure as a percentage of sales and effective tax rate are kept as the control variables.

3.2. Variables measurement

It is important to develop an appropriate procedure for generating a variable to show GFC. Based on the methodology of Grammatikos and Vermeulen (2012), we constructed a dummy or a qualitative variable to show GFC for crisis period 2007–2010. GFC takes value = 1 for crisis periods and its value = 0 otherwise. In addition, use crisis period from 2007 to 2010 and construct a dummy or a qualitative variable for GFC.

Studies use different types of firm performance measures as each type has its own advantages and disadvantages. Performance measures emphasize on different features of firms with biases and their limitations. According to Orlitzky et al. (2003), the accounting-based measures are better to show organizational competences as investors' decisions are based on the stock price of the firm and market value of the firm. They consider the stock returns of the firm in past, current, and forecast for future. Ullmann (1985) explains that accounting-based measures are adjustable for risk and industry characteristics. According to him, the market-based measures are better because investors examine the ability of firms for future profits rather than observing for the past performance. Additionally, for market-based performance measures, there is less chance that these measures will be affected due to differences in accounting procedures. The market value and earnings per share of firm are the market-based measures. The investors select those assets, which are based upon disconnects between market value and their precision in future images for a discounted price. The progress in earnings per share of the firm is an important measure for firm performance vis-à-vis its management. The firm market value is calculated through multiplying the total shares of the firm with its share price. The earnings per share of a firm are derived from its profitability. We use market value of the firm and earnings per share of the firm in this study to reflect the financial performance of the firm. The variables description used in the study are given Table 1.

FTSE350 firms comprised a total of 10 industries in the UK. The name of industries with frequency of firms in the case of each industry is given in Table 2. The industry type in the UK is based on industry classification benchmark (ICB). ICB practices a system of 10 industries. It is concluded that the financials, the materials and the consumer services are the top ranked industries in the UK according to the highest numbers of firms in these industries. The frequencies of the firms in these industries are 132, 62 and 61, respectively.

Table 1. Description of variables

Variables	Description
LMV	It is the log of market value (LMV) of the firm. The market value of the firm is calculated as MV = P×S, where P is the price of the share the firm and S is the number of shares. Market value of the firm is shown in millions of units of local currency.
LEPS	It is log of earnings per share of firm (EPS). It reflects the latest annualized rate for the last financial year or it is derivable from the aggregation of interim period earnings.
GFC	GFC is dummy variable for GFC 2007–10
LESG	It is log of ESG scores of firms. It is based upon equal weightage of economic, environmental, social and CG scores. It replicates a firm performance in these four areas on equal basis.
LCG	It is log of CG scores of the firm. It explains the CG performance of firm.
LTA	It is the log of total assets (TA) of the firm.
LDA	It is log of DA ie the debt to assets ratio of the firm and is used to show the financial leverage of the firm.
LREV	It is log of revenues (REV) of the firm.
CAPS	It is the capital expenditures as percentage of sales of the firm. The formula is: CAPS = (Capital Expenditure/ Net Sales) × 100
ETR	It is the effective tax rate. It is calculated as ETR = (income taxes/income before taxes)×100.

Table 2. Name of industries and number of firms

Sr. no.	Industries	Number of firms
1	The Oil And Gas	10
2	The Basic Materials	20
3	The Industrials	62
4	The Consumer Goods	31
5	The Health Care	11
6	The Consumer Services	61
7	The Telecommunications	5
8	The Utilities	8
9	The Financials	132
10	The Technology	11
	Total Firms	351

3.3. Econometric model

Panel data regression techniques are used to estimate the effect of GFC on MV and EPS of the firm. Panel data regression models are frequently used in the studies to estimate the relationship of firm performance with other variables (for example, see Changhong Zhao et al., 2018; Ahmad et al., 2021) and ESG and Corporate Financial Performance in China. For this purpose, econometric models of fixed effects and random effects are estimated. In the fixed effects model, the parameters for cross-sectional unit (here firms) are estimated, whereas the random effects model explains the firm-specific characteristics with random distribution. These are efficient estimators. However, random effects estimator are inconsistent if the correlation between fixed effect and

independent variables is found (Baltagi, 1995). Econometric literature provides the importance of Hausman test statistic in decision-making to use a fixed effects model or a random effects model. We used random effects model to estimate the impact of GFC on firm financial performance founded on the value of the Hausman test statistic.

4. Results and discussion

The summary statistics of variables is provided in Table 3. It includes the number of observations; the mean value, the standard deviation of variable and the minimum and maximum values of the variable. The variables in the study are as follows: the LMV of the firm (LMV), the log of earnings per share of the firm (LEPS), the GFC, the log of ESG scores, the log of CG scores (LCG), the log of TA (LTA) as proxy for firm size, the log of debt to assets ratio (LDA) as a proxy for leverage, the log of revenues (LREV), the capital expenditures of the firm as percentage of its sales (CAPS) and effective tax rate (ETR) of the firm. The TA of the firm are used to show the firm size and debt to assets ratio of the firm explains the financial leverage of the firm.

The correlation among the variables is calculated to know the relationship among the variables. The value of correlation coefficients of variables is explained in Table 4 through correlation matrix.

Two separate econometric models are specified and estimated to find the relation between GFC impact and firm financial performance. The results of these two models are given in

Table 3. Summary statistics of variables

Variables	No. of obs.	Mean V	Std. dev.	Min V	Max V
LMV	4,689	7.268	1.545	1.327	11.940
LEPS	4,576	3.018	1.190	1.098	7.0458
GFC	5,967	0.235	0.424	0.000	1.000
LESG	3,458	4.009	0.736	1.112	4.588
LCG	3,455	4.127	0.583	0.457	4.584
LTA	5,092	14.437	1.928	5.308	21.596
LDA	5,065	2.821	0.976	1.098	5.609
LREV	5,050	13.430	2.248	5.215	19.707
CAPS	4,477	16.713	97.943	0.000	3,663.830
ETR	3,156	0.229	0.389	−4.010	8.490

Table 4. Correlation matrix of variables

	LMV	LEPS	GFC	LESG	LCG	LTA	LDA	LREV	CAPS	ETR
LMV	1.000									
LEPS	0.267	1.000								
GFC	−0.051	−0.025	1.000							
LESG	0.463	0.226	0.006	1.000						
LCG	0.339	0.146	0.027	0.804	1.000					
LTA	0.820	0.177	−0.01	0.407	0.288	1.000				
LDA	0.187	0.014	0.045	0.151	0.102	0.324	1.000			
LREV	0.764	0.198	0.016	0.514	0.383	0.766	0.241	1.000		
CAPS	−0.053	−0.081	−0.05	−0.047	−0.01	0.024	0.150	−0.267	1.000	
ETR	0.028	0.017	0.018	0.054	0.039	0.001	−0.00	0.116	−0.089	1.000

Table 5. Impact of GFC on market value and earnings per share of firm

	Model 1 (LMV)			Model 2 (LEPS)		
	Coefficients	**Z value**	**P value**	**Coefficients**	**Z value**	**P value**
GFC	−0.146	−7.39	0.000	−0.029	−1.25	0.211
LESG	0.159	6.73	0.000	0.148	4.96	0.000
LTA	0.484	23.87	0.000	0.245	9.18	0.000
LDA	−0.131	−7.33	0.000	−0.113	−5.00	0.000
LREV	0.235	11.45	0.000	0.229	8.24	0.000
CAPS	0.0006	2.04	0.041	0.0008	2.10	0.036
ETR	−0.048	−2.13	0.033	−0.061	−2.25	0.024
CONS	−2.978	−13.89	0.000	−3.896	−13.16	0.000

Table 5. These results are based on the random effects GLS regression models. Model 1 explains that LMV is dependent variable and shows the firm financial performance whereas log of earning per shares (LEPS) is the dependent variable in model 2 and it is the proxy for financial performance. We find that GFC has a negative impact on the firm financial performance in both cases i. e. in models 1 and 2, respectively. However, the negative impact of crisis is highly significant in case of model 1 (where log market value of the firm is the dependent variable to explain the performance of the firm). Furthermore, the negative impact of financial crisis is not significant in case of model 2 (where log of earnings per share of firm is dependent to show the performance of the firm).

Our study finds and explains the negative impact of GFC on ESG and moderating role of firm size in this relationship. The results explain that GFC reduces the non-financial performance of the firm too via ESG performance other than financial performance. The relationship between global financial crisis and firm financial performance is already explained in Table 5. Now, it can be further explained that GFC has a negative impact on ESG (non-financial performance of firm) in our case, and the results are explained in Table 6. Furthermore, the role of firm size as a moderator in this relationship (between GFC and ESG) is also provided in Table 6. The model 1 indicates that ESG is the dependent variable and model 2 provides that firm size is the moderator in the relationship of GFC and ESG. It explains that the negative impact of GFC on ESG performance of firm is reduced due to firm size.

Furthermore, this study explores the role of ESG and firm size as moderators in the relationship between GFC and firm financial performance. The LMV of firm and log of earnings per share of the firm are experimented as the dependent variables to estimate the said relationships respectively and results of these estimated relationships are provided in Table 7 and Table 8 respectively. It is mentioned that results reported in Table 5 explaining the impact of GFC on firm financial performance reproduced in Table 7 and Table 8. These results are reproduced to compare the moderation role of ESG and firm size.

The results in Table 7 explain the negative impact of GFC on firm financial performance (when LMV of the firm is experimented for firm performance and used as dependent variable depicted in model 1). The results of model 2 in Table 7 explain the role of ESG and firm size as moderators in the relationship between GFC and firm financial performance. These results provided in econometric model 1 & models 2 are based on the random effects GLS regression.

Table 6. Impact of GFC on ESG and firm size as a moderator in GFC and ESG

	Model 1 (ESG)			Model 2 (Firm size as a moderator in the relation between GFC and ESG)		
	Coefficients	**Z value**	**P value**	**Coefficients**	**Z value**	**P value**
GFC	−0.042	−2.62	0.009	−0.233	−1.60	0.109
LTA	0.151	8.93	0.000	0.149	8.78	0.000
GFC×LTA				0.013	1.32	0.186
LDA	−0.072	−4.94	0.000	−0.071	−4.89	0.000
LREV	0.224	13.16	0.000	0.223	13.09	0.000
CAPS	0.0004	1.49	0.136	0.0004	1.48	0.138
ETR	−0.011	−0.59	0.557	−0.011	−0.59	0.554
CONS	−1.287	−7.06	0.000	−1.246	−6.74	0.000

Table 7. Impact of GFC on firm financial performance and ESG and firm size as moderators

	Model 1 (LMV)			Model 2 (ESG and firms size as moderator in GFC and LMV)		
	Coefficients	**Z value**	**P value**	**Coefficients**	**Z value**	**P value**
GFC	−0.146	−7.39	0.000	−0.346	−1.79	0.073
LESG	0.159	6.73	0.000	0.188	7.45	0.000
GFC*LESG				−0.124	−3.34	0.001
LTA	0.484	23.87	0.000	0.475	23.38	0.000
GFC*LTA				0.048	3.55	0.000
LDA	−0.131	−7.33	0.000	−0.129	−7.22	0.000
LREV	0.235	11.45	0.000	0.229	11.22	0.000
CAPS	.0006	2.04	0.041	0.0007	2.06	0.039
ETR	−0.048	−2.13	0.033	−0.048	−2.13	0.033
CONS	−2.978	−13.89	0.000	−2.870	−13.30	0.000

Table 8. Impact of GFC on firm financial performance & ESG and firm size as moderators

	Model 1 (LEPS)			Model 2 (ESG and firms size as moderator in GFC and LEPS)		
	Coefficients	**Z value**	**P value**	**Coefficients**	**Z value**	**P value**
GFC	−0.029	−1.25	0.211	−.679	−2.93	0.003
LESG	0.148	4.96	0.000	.1622	5.05	0.000
GFC*LESG				−.059	−1.32	0.188
LTA	0.245	9.18	0.000	.233	8.69	0.000
GFC*LTA				.061	3.74	0.000
LDA	−0.113	−5.00	0.000	−.108	−4.82	0.000
LREV	0.229	8.24	0.000	.219	7.91	0.000
CAPS	0.0008	2.10	0.036	.0009	2.06	0.039
ETR	−0.061	−2.25	0.024	−.062	−2.28	0.022
CONS	−3.896	−13.16	0.000	−3.649	−12.22	0.000

Table 9. Impact of GFC and CG on firm financial performance

	Model 1 (LMV)			Model 2 (LEPS)		
	Coefficients	**Z value**	**P value**	**Coefficients**	**Z value**	**P value**
GFC	−0.151	−7.63	0.000	−0.033	−1.43	0.154
LCG	0.143	5.15	0.000	0.164	4.67	0.000
LTA	0.488	23.95	0.000	0.244	9.11	0.000
LDA	−0.134	−7.50	0.000	−0.114	−5.06	0.000
LREV	0.253	12.58	0.000	0.246	8.97	0.000
CAPS	0.0007	2.13	0.033	0.0009	2.19	0.028
ETR	−0.048	−2.13	0.033	−0.061	−2.25	0.024
CONS	−3.245	−15.07	0.000	−4.197	−14.19	0.000

Table 10. Impacts of GFC on firm financial performance and CG as a moderator

	Model 1 (LMV)			Model 2 (CG as a moderator in GFC and LMV)		
	Coefficients	**Z value**	**P value**	**Coefficients**	**Z value**	**P value**
GFC	−0.151	−7.63	0.000	0.182	0.89	0.372
LCG	0.143	5.15	0.000	0.158	5.40	0.000
GFC*LCG				−0.079	−1.64	0.101
LTA	0.488	23.95	0.000	0.487	23.94	0.000
LDA	−0.134	−7.50	0.000	−0.134	−7.49	0.000
LREV	0.253	12.58	0.000	0.253	12.58	0.000
CAPS	0.0007	2.13	0.033	0.0007	2.15	0.032
ETR	−0.048	−2.13	0.033	−0.048	−2.13	0.033
CONS	−3.245	−15.07	0.000	−3.281	−15.18	0.000

Table 11. Impacts of GFC on firm financial performance and CG as a moderator

	Model 1 (LEPS)			Model 2 (CG as a moderator in GFC and LEPS)		
	Coefficients	**Z value**	**P value**	**Coefficients**	**Z value**	**P value**
GFC	−0.033	−1.43	0.154	−0.624	−2.55	0.011
LCG	0.164	4.67	0.000	0.136	3.67	0.000
GFC*LCG				0.140	2.43	0.015
LTA	0.244	9.11	0.000	0.248	9.24	0.000
LDA	−0.114	−5.06	0.000	−0.115	−5.08	0.000
LREV	0.246	8.97	0.000	0.246	8.98	0.000
CAPS	0.0009	2.19	0.028	0.0009	2.17	0.030
ETR	−0.061	−2.25	0.024	−0.061	−2.25	0.024
CONS	−4.197	−14.19	0.000	−4.135	−13.92	0.000

The results in Table 8 explain GFC has negative impact on firm financial performance (when log of earning per shares of the firm is experimented for firm financial performance and used as the dependent variable as depicted in model 1). Further, results explain that ESG and firm size explain the role of moderators in the relationship between GFC and firm financial performance. These results are explained through econometric model 2 given Table 8. Both econometric models are based on random effects GLS regression.

The CG enhances the financial performance of the firm. The results of our study are explained in Table 9. These results show that CG has positive and significant impact on the firm financial performance during GFC. The results are based on random effects GLS regression. Econometric model 1 in Table 9 explains that LMV is dependent variable and shows the firm financial performance whereas log of earning per shares (LEPS) is the dependent variable in econometric model 2 and is the proxy for financial performance.

Table 10 shows the moderation role of the CG when the GFC impact on firm financial performance is estimated (here LMV is used for the financial performance of the firm). However, these results are significant at 10 per cent level of significance as explained in econometric model 2.

Table 11 shows the moderation role of CG when the GFC impact on firm financial performance is estimated. (Here log of earning per shares of the firm is used to show the financial performance of the firm). We find significant results estimated in econometric model 2 when CG is used as a moderator.

5. Conclusion

The study finds the impact of GFC on the firm performance in the UK. The financial and non-financial performance of firms are evaluated during the crisis period. Market value and earnings per share of firm are dependent variables used to capture firm financial performance. Furthermore, this study estimates the moderating role of ESG, CG and firm size when the impact of GFC on firm financial performance is estimated. The analysis is based on panel data of cross section of 351 firms from time periods (2002 to 2018). The panel data regression techniques of fixed and random effects models are experimented. However, based upon the results/statistics of Hausman test, using random effects model is more suitable to estimate the econometric models.

The results of the study explain that GFC has a negative impact on firm financial performance and ESG as well. The LMV of the firm and log of earnings per share of the firm are used to show the financial performance of the firm. ESG is used to represent the non-financial performance of the firm. We find the negative and significant impacts of GFC market value earnings per share of the firm. In the case of ESG analysis of the firm, ESG of the firm is reduced in global financial crisis period and firm size is a moderator in this relationship. This study also explains the role of ESG, CG and firm size in the relationship between GFC and firm financial performance. The results reveal that ESG, CG and firm size are the moderators in the relationship between GFC and firm financial performance. Based on the results of the study, the CG is recommended as a strategy tool of firm. It can control and enhance the firm financial performance and ESG of the firm as well.

However, our study is limited to UK corporate sector while estimating the impact of financial crisis on firm financial performance. The relationship between GFC and firm performance is complicated in its nature. Future studies can endeavour to explore the impact of financial and economic crisis not only on the corporate sector performance but also on the economy at aggregate and global level.

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