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The Impact of Board Diversity on Corporate Social Responsibility (CSR)

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ABSTRACT

This study investigates the impact of board diversity—specifically board gender diversity (BGD), board experience (EX), and board independence (IND)—on corporate social responsibility (CSR) within Egyptian stock market firms during the period from 2015 to 2019. Using a quantitative research methodology, data from EGX100 companies were analyzed to examine the relationships between board characteristics and CSR performance. The analysis employed regression models to address challenges such as autocorrelation and multicollinearity, particularly concerning firm size. The findings reveal a significant positive relationship between BGD and CSR, while board independence shows a moderate yet significant impact. Board experience, however, demonstrated a weaker correlation. These results highlight the predictive value of board diversity in explaining CSR performance. This research provides valuable insights for policymakers, investors, and management by emphasizing the importance of promoting diverse and independent boards. Recommendations for future research include investigating additional board and firm-level variables and enhancing corporate governance frameworks to support sustainable market development.

KEYWORDS

Board Diversity, CSR, BGD, EX, IND Egypt

1. INTRODUCTION

Corporate social responsibility (CSR) is increasingly seen as a vital concern for companies and relies heavily on managerial decision making. To enhance this decision-making process, boards are urged to formulate strategic directions and reforms that aim at maximizing value for all stakeholders. One significant reform is the growing emphasis, by investors, regulators, and other market players, on board diversity. Many countries are now considering either voluntary or mandatory measures to encourage diversity in the boardroom. Advocates of board diversity argue primarily on two fronts: the first being fairness and equity in responsible business practices, and the second being the enhancement of shareholder value through improved firm performance. However, the exact definition of board diversity remains ambiguous. It is sometimes associated with demographic differences among directors and sometimes with variations in board structure, processes, and other characteristics (Jouber, 2020).

Although the concept emerged in the 1950s, there has been ongoing debate and uncertainty regarding whether corporations should engage in social responsibility (CSR) activities and disclose related information. However, there is now a general consensus that firms should conduct their operations in a socially accountable and moral manner, including making relevant disclosures. Corporate social responsibility (CSR) reporting demonstrates a firm's accountability to a broader range of stakeholders beyond just its shareholders. It indicates that organizations are not solely driven by economic motives but also consider societal and environmental well- being, as well as ethical practices. The recent emphasis on CSR disclosures has attracted researchers interested in studying the factors influencing such disclosures (Rashid, 2021).

In recent times, the issue of diversity in the boardrooms of publicly traded companies worldwide has gained significant attention. Many developed countries, including the United States and European Union nations, now mandate corporations to enhance their board diversity practices and disclose them. Companies are increasingly prioritizing social and environmental issues. Recent studies indicate that firms with stronger CSR commitments are more resilient to the adverse effects of COVID-19 and are viewed favorably by investors. Consequently, in response to evolving societal expectations, companies are expected to be more transparent and provide increased environmental, social, and governance (ESG) information. One-way companies communicate their CSR efforts to stakeholders is through CSR disclosure, which includes information about the environmental and social impacts of their business operations (Toumi,etal 2021).

2. RESEARCH PROBLEM

Corporate Social Responsibility has emerged as a critical dimension of corporate governance, reflecting a firm's commitment to ethical, social, and environmental responsibilities. Despite its importance, there is limited empirical evidence in emerging economies, such as Egypt, on how board diversity characteristics specifically board gender diversity, experience, and independence influence CSR practices. Additionally, the role of firm size as a potential influencing factor remains underexplored. Understanding these relationships is vital for fostering sustainable corporate governance practices and enhancing market transparency and stakeholder trust.

3. RESEARCH QUESTIONS

Q1: Is there a significant relationship between Board gender diversity and CSR?

Q2: Is there a significant relationship between Board experience and CSR?

Q3: Is there a significant relationship between Board independence and CSR?

Q4: Is there a significant relationship between firm size and CSR?

4. LITERATURE REVIEW AND DEVELOPMENT OF HYPOTHESES

4.1 Board Gender Diversity (BGD) and CSR

In 2019, Issa and Xing Fang sought to investigate the influence of board gender diversity on corporate social responsibility (CSR) disclosure in the Arab Gulf states. Their research explored variations in this impact across countries in the region. Using manual content analysis, they assessed CSR disclosure in various documents, including annual reports and sustainability reports. Ordinary least squares regression was employed to examine the relationship between board gender diversity and CSR disclosure. The results indicated a positive association between board gender diversity and the CSR reporting index in Bahrain and Kuwait. However, in Saudi Arabia, the UAE, and Qatar, the presence of women on boards did not show a statistically significant positive relationship with CSR practices. This suggests that the influence of women directors varies among countries in the Arabian Gulf.

Empirical research highlights that gender-diverse boards contribute positively to CSR outcomes. For example, Bear, Rahman, and Post (2010) found that boards with a higher proportion of female directors demonstrate greater CSR performance. Similarly, Fernandez-Feijoo, Romero, and Ruiz (2014) highlighted that companies with gender-diverse boards tend to disclose more comprehensive CSR reports, reflecting a commitment to transparency and accountability. Female directors often bring unique perspectives and priorities, particularly regarding social and ethical considerations, which enhance board effectiveness in addressing stakeholder concerns.

Research by Hafsi and Turgut (2013) supports this view, showing that board diversity positively correlates with CSR engagement, particularly in addressing environmental and social governance challenges. Additionally, diverse boards are more likely to challenge traditional practices, driving innovation in CSR strategies (Frias-Aceituno, Rodriguez-Ariza, & Garcia-Sanchez, 2013).

In 2020, Colakoglu, Eryilmaz, et al. aimed to determine whether board diversity directly influences the corporate social responsibility (CSR) performance of companies. The study also sought to explore how the age and education level of female board members moderate the relationship between board gender diversity and CSR performance. Analyzing data

from a content analysis of 117 company reports, hierarchical regression analysis was employed. A corporate social performance (CSP) measurement tool was designed to conduct content analysis on CSR disclosures in the annual reports of Turkish companies listed in the "500 Biggest Turkish Companies" report of the Istanbul Chamber of Industry (ISO) in 2015.

In 2021, Issa, Zaid, et al. aimed to assess the influence of board diversity, including factors like education, gender, nationality, and royal family membership, on voluntary corporate social responsibility (CSR) disclosure within a sample of banks listed in Arabian Gulf Council countries. They utilized the generalized method of moments (GMM) estimation approach to explore the relationship between board diversity and a CSR disclosure index, which was constructed based on Global Reporting Initiative guidelines.

In 2020, Jouber investigated the impact of board diversity on CSR, presenting novel insights from one-tier versus two-tier corporate board models. The study involved a sample of 2,544 non-financial listed firms across 42 countries from 2013 to 2017. The findings highlight that board diversity contributes to effective CSR. Differentiating between diversity among boards and within boards, the results elucidate the specific variables influencing CSR within unitary and two-tier board structures, with tenure, ideology, and educational level (gender and nationality) emerging as key drivers in one-tier (two-tier) board settings.

4.2 Board Experience (BE) and CSR

In 2020, Naheed et al. conducted an investigation into the influence of board financial expertise on corporate social responsibility (CSR) disclosure in China. Employing a sample of Chinese listed firms spanning from 2009 to 2016, with a total of 3,272 firm year observations, the study utilized the generalized method of moments and panel data estimation techniques. The research highlights the significant role of the board of directors (BOD) in CSR disclosure. The study aims to bridge this gap by examining the impact of internal governance mechanisms on CSR disclosure within the context of corporate governance, offering a substantial contribution to the literature. It underscores that financial experts on the board contribute not only to financial investment but also to non-financial investment decisions.

In summary, this research enhances our understanding of the impact of board diversity on CSR, emphasizing a positive association with the level of CSR disclosure. Furthermore, this positive impact is more pronounced in firms led by a female CEO and in state-owned enterprises. The findings remain robust against potential issues of endogeneity and sensitivity analyses.

The relationship between board experience (BE) and corporate social responsibility (CSR) is founded on the premise that experienced board members bring valuable insights, expertise, and decision-making capabilities to organizational governance. This relationship is supported by various theoretical perspectives and empirical findings.

Empirical studies demonstrate a positive link between board experience and CSR outcomes. For instance, Harjoto and Jo (2011) found that boards with experienced directors are more proactive in implementing CSR practices. Similarly, Velte

(2017) emphasized that seasoned board members contribute to comprehensive CSR disclosures, reflecting greater transparency and accountability. These directors often possess the strategic vision necessary to align CSR initiatives with organizational goals.

4.3 Board independence (BI) and CSR

Agarwala et al. (2022) examined the relationship between board independence and corporate social responsibility (CSR) practices in Indian firms, focusing on 76 non-financial companies listed on the National Stock Exchange from 2013 to 2019. Using static panel data models and the Arellano–Bond dynamic panel data model with a generalized method of moments approach, the study found that greater board independence enhances CSR activities. Independent directors contribute to transparency and help mitigate corruption through effective monitoring and expertise.

The research highlights the importance of empowering independent directors with sufficient autonomy to leverage their skills effectively. It also notes the need for optimal board size to avoid the drawbacks of over-appointment. While focused on Indian non-financial firms, the study suggests extending the analysis to a cross-country context for broader applicability and exploring sector-specific differences.

Rashid (2021) explored the relationship between board independence and corporate social responsibility (CSR) reporting, focusing on the moderating role of stakeholder power. Using a sample of 707 Bangladeshi firm-year observations, the study developed a 24-item CSR reporting index through content analysis and employed ordinary least squares regression for analysis and the findings reveal that board independence does not significantly influence CSR reporting among Bangladeshi listed firms. Instead, factors such as insider ownership, firm size, profitability, and market capitalization are positively associated with CSR reporting. Non-linearity tests suggest that a smaller proportion of outside independent directors is more effective in promoting CSR reporting.

Also Islam et al. (2023) investigate the relationship between board independence and corporate social responsibility (CSR) performance, an area with limited research. The study utilized qualitative data collected through semi-structured interviews with 19 directors from 14 Australian organizations, analyzed using a six-phase thematic analysis. The findings suggest that independent directors are perceived to better represent stakeholder interests, thus enhancing CSR performance. Despite the established policies on independent directors, the study highlights how factors such as tenure, nomination processes, and CSR culture influence the effectiveness of director independence in driving CSR outcomes.

5. RESEARCH VARIABLES AND MODELS

The objective of the study is to determine the relationship between board diversity on CSR. The study uses checklist for the CSR to measure Corporate social responsibility. However, for the board of diversity the study uses 3 characteristics to measure it as follows: board gender diversity, board experience, and Board independency. For the gender measurement, if at least one female is present on the board, assign 1, and otherwise, assign 0. For the experience measurement, assign 1 if at least one director has experience, and 0 otherwise. Lastly, for the independence measurement, assign 1 if at least one director is independent on the board, and 0 otherwise.

CSR= a+ß1GB+ß2EX+ß3Ind+ß4FS+e

Where:

CSR: Corporate social responsibility. a: Constant value.

ß: Slope value of independent variable! GB: board Gender diversity.

EX: board experience. Ind: board independence.

FS: Frim size

e: random error

Table (1): Definitions and Measurement of Research Variables

Dependent Variable	Abbreviation	Definition and Measurement
Corporate social responsibility	**CSR**	**Dummy variable, 1 if the company engages the CSR, 0 if otherwise**

Independent Variable	Abbreviation	Definition and Measurement
Gender	GB	Dummy variable, 1 if at least one female is present on the board, 0 ifotherwise
Experience	EX	Dummy variable, 1 if at least one director has experience, 0 if otherwise
Independence	IND	Dummy variable, 1 if at least one director is independent in the board,0 if otherwise

Control Variables	Abbreviation	Definition and Measurement
Firm size	FS	Total Assets

Accordingly, this paper formulates the relationship between the variables as follows below:

***H1*: There is a significant relationship between Board gender diversity and CSR.**

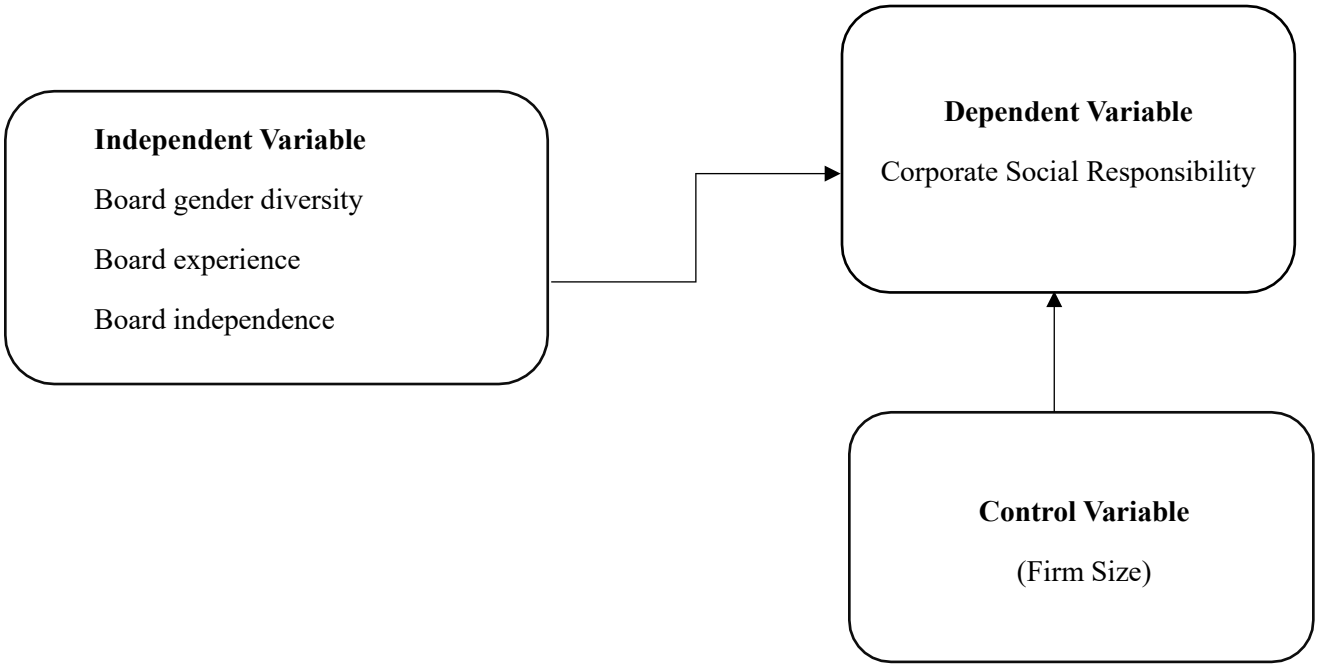
***H2*: There is a significant relationship between Board experience and CSR.**

***H3*: There is a significant relationship between Board independence and CSR.**

***H4*: There is a significant relationship between firm size and CSR.**

The visual representation in Figure (1) of our work gives a model that effectively captures the central research emphasis in an easily understandable manner. This visual depiction is intended to effectively communicate the complex interaction among these important factors, offering a clear and thorough summary of the theoretical underpinning of our study.

Figure 1: Research Model



6. METHODOLOGY

6.1 Sampling and Data Collection

The population of this study consists of all industrial corporations listed at Egyptian exchange, which published their financial reports from 2015 to 2019. The study sample included (25) industrial corporations listed in Egyptian exchange 100 (EGX 100) ‹ which meet the following conditions; never been merged or delisted through the period of the study; availability of all necessary data.

The research was not conducted in the years after 2019 due to Corona and the fluctuations that happened due the pandemic.

Sources of data collection are annual reports, web sites and direct contacts as well.

6.2 Analysis and Results

6.2.1 Descriptive Analysis

Year	Variable	N	Mean	Std. Deviation
2015	**BG**	**23**	**0.43**	**0.507**
	EX	**23**	**0.52**	**0.511**
	IND	**23**	**0.83**	**0.388**
	FS	**23**	**5121359346**	**9419789983**
2016	**BG**	**23**	**0.43**	**0.507**
	EX	**23**	**0.52**	**0.511**
	IND	**23**	**0.96**	**0.209**
	FS	**23**	**4811758632**	**5861347404**
2017	**BG**	**23**	**0.39**	**0.499**
	EX	**23**	**0.65**	**0.487**
	IND	**23**	**0.91**	**0.288**
	FS	**23**	**7509388693**	**10995377323**
2018	**BG**	**23**	**0.48**	**0.511**
	EX	**23**	**0.65**	**0.487**
	IND	**23**	**0.91**	**0.288**
	FS	**23**	**10649989737**	**20461915442**
2019	**BG**	**23**	**0.52**	**0.511**
	IND	**23**	**0.91**	**0.288**
	EX	**23**	**0.61**	**0.499**
	FS	**23**	**16877319255**	**47121162078**

Year 2015:

Board Gender Diversity (BG):. Mean = 0.43, Std. Deviation = 0.507 Board Experience (EX): Mean = 0.52, Std. Deviation = 0.511

Board Independence (IND): Mean = 0.83, Std. Deviation = 0.388

Firm Size (FS): Mean = 5.121×10^9, Std. Deviation = 9.420×10^9

Year 2016:

BG: Mean = 0.43, Std. Deviation = 0.507 EX: Mean = 0.52, Std. Deviation = 0.511 IND: Mean = 0.96, Std. Deviation = 0.209

FS: Mean = 4.812×10^9, Std. Deviation = 5.861×10^9

Year 2017:

BG: Mean = 0.39, Std. Deviation = 0.499 EX: Mean = 0.65, Std. Deviation = 0.487 IND: Mean = 0.91, Std. Deviation = 0.288

FS: Mean = 7.509×10^9, Std. Deviation = 1.099×10^{10}

Year 2018:

BG:. Mean = 0.48, Std. Deviation = 0.511 EX:. Mean = 0.65, Std. Deviation = 0.487 IND:. Mean = 0.91, Std. Deviation = 0.288

FS:. Mean = 1.065×10^{10}, Std. Deviation = 2.046×10^{10}

Year 2019:

BG: Mean = 0.52, Std. Deviation = 0.511 EX: Mean = 0.61, Std. Deviation = 0.499 IND: Mean = 0.91, Std. Deviation = 0.288

FS:. Mean = 1.688×10^{10}, Std. Deviation = 4.712×10^{10}

Analysis:

Board Gender Diversity (BG) seems to fluctuate slightly over the years, with a range from 0.39 to 0.52.

Board Experience (EX) remains relatively stable around 0.52 to 0.61, with slight variations.

Board Independence (IND) appears consistent across the years, staying around 0.83 to 0.96, with the exception of a drop to 0.91 in 2017.

Firm Size (FS) shows a significant increase over the years, starting from around $5

\times 10^9$ in 2015 to approximately 1.688×10^{10} in 2019. However, it's essential to note the substantial standard deviation, indicating variability within the data.

These observations provide an overview of the trends in board diversity and firm size over the specified years. Further analysis, such as correlation or regression analysis, can be performed to explore potential relationships between these variables.

6.2.2 Descriptive Analysis CSR

year	n	mean	St. Deviation
2015	**23**	**0.487**	**0.487**
2016	**23**	**0.47**	**0.47**
2017	**23**	**0.511**	**0.511**
2018	**23**	**0.507**	**0.507**
2019	**23**	**0.511**	**0.511**

Mean Values:

The mean value of the variable ranges from 0.470 to 0.511 across the five years.

The highest mean value is observed in 2017, with a mean of 0.511, indicating that, on average, the variable had a higher value in that year compared to the other years.

The lowest mean value is observed in 2016, with a mean of 0.470, indicating a slightly lower average value of the variable in that year.

Standard Deviation:

The standard deviation of the variable is consistent across the years, ranging from 0.487 to 0.511.

The standard deviation measures the variability or dispersion of the data points around the mean.

A lower standard deviation indicates that the data points are closer to the mean, while a higher standard deviation indicates that the data points are more spread out.

Consistency:

Overall, the variable appears to exhibit relatively consistent variability across the years, as indicated by the similar standard deviation values.

Despite fluctuations in the mean values from year to year, the standard deviation remains relatively stable, suggesting consistent variability in the data.

In summary, while the mean values of the variable fluctuate slightly across the years, the standard deviation remains consistent, indicating stable variability in the data over the specified time period.

6.2.3 Normal Distribution Analysis

Year	Variable	Jarque-Bera (JB)	P-value	Skewness	Kurtosis
2015	**BG**	25.35766415	0.999996884	0.281842	-2.112967033
	EX	25.85182036	0.999997566	-0.093233	-2.19047619
	IND	35.49935921	0.99999998	-1.843064	-1.843064044
	FS	34.58637691	0.999999969	3.003753	3.003752584
2016	**BG**	25.35766415	0.999996884	0.281842	-2.112967033
	EX	24.34472222	0.999994829	-0.093233	-2.036707152
	IND	471.5	1	-4.795832	23
	FS	43.21309875	1	2.536176	7.400359884
2017	**BG**	24.35962714	0.999994867	0.477134	-1.950566893
	EX	22.84563025	0.999989057	-0.684484	-1.686666667
	IND	67.91652912	1	-3.1404	8.605442177
	FS	17.69418003	0.9998562	2.093213	3.968157811
2018	**BG**	25.85182036	0.999997566	0.093233	-2.19047619
	EX	22.84563025	0.999989057	-0.684484	-1.686666667

	IND	67.91652912	1	-3.1404	8.605442177
	FS	114.0451914	1	3.287645	11.70455349
2019	**BG**	25.85182036	0.999997566	-0.093233	-2.19047619
	EX	24.35962714	0.999994867	-0.477134	-1.950566893
	IND	67.91652912	1	-3.1404	8.605442177
	FS	29.38142459	0.999999583	2.337876	5.965842261

6.2.3.1 Jarque-Bera (JB) Test:

The Jarque-Bera test is a statistical test that assesses whether the data follows a normal distribution.

Higher JB test statistics indicate departures from normality, while lower values suggest that the data is closer to a normal distribution.

6.2.3.2 P-value:

The p-value associated with the JB test indicates the probability of observing the test statistic if the null hypothesis (data follows a normal distribution) is true.

Lower p-values (typically below 0.05) suggest rejection of the null hypothesis, indicating that the data does not follow a normal distribution.

Skewness and Kurtosis:

Skewness measures the asymmetry of the data distribution. Positive skewness indicates a right-skewed distribution, while negative skewness indicates a left-skewed distribution.

Kurtosis measures the 'tailedness' of the distribution. Higher kurtosis values indicate heavier tails, while lower values indicate lighter tails compared to a normal distribution (which has a kurtosis of 3).

Analysis by Variable and Year:

For the BG (Board Gender Diversity) Variable:

The JB test statistics and p-values suggest that the data does not significantly deviate from a normal distribution for all years.

Skewness and kurtosis values are within acceptable ranges, indicating relatively symmetrical distributions with moderate tails.

For the EX (Board Experience) Variable:

Similar to BG, the JB test statistics and p-values suggest no significant deviations from normality for most years.

Skewness and kurtosis values are also within acceptable ranges for most years.

For the IND (Board Independence) Variable:

The JB test statistics and p-values indicate significant departures from normality for some years, particularly in 2016 and 2017.

Skewness and kurtosis values are also indicative of non-normal distributions, with notably high kurtosis values in 2016.

For the FS (Firm Size) Variable:

The JB test statistics and p-values suggest significant departures from normality for most years.

Skewness and kurtosis values further confirm non-normal distributions, with significant skewness and kurtosis values across the years.

Overall Analysis:

The BG and EX variables generally exhibit distributions closer to normality compared to IND and FS variables.

IND and FS variables, particularly FS, show significant departures from normality, as indicated by higher JB test statistics and p-values, along with notable skewness and kurtosis values.

In summary, while BG and EX variables show relatively normal distributions, IND and FS variables exhibit significant departures from normality, which should be considered when interpreting analyses involving these variables

6.2.4 Correlations

	Correlations					
	Control Variables			BG	EX	IND
2015	FS	BG	Correlation	1.000	0.298	0.196
			Significance (2-tailed)		0.177	0.382
			df	0	20	20
		EX	Correlation	0.298	1.000	0.056
			Significance (2-tailed)	0.177		0.803
			df	20	0	20

		IND	Correlation	0.196	0.056	1.000
			Significance (2-tailed)	0.382	0.803	
			df	20	20	0
2016	FS	BG	Correlation	1.000	-0.033	-0.243
			Significance (2-tailed)		0.886	0.275
			df	0	20	20
		EX	Correlation	-0.033	1.000	-0.205
			Significance (2-tailed)	0.886		0.360
			df	20	0	20
		IND	Correlation	-0.243	-0.205	1.000
			Significance (2-tailed)	0.275	0.360	
			df	20	20	0
2017	FS	BG	Correlation	1.000	0.011	-0.368
			Significance (2-tailed)		0.961	0.092
			df	0	20	20
		EX	Correlation	0.011	1.000	-0.222
			Significance (2-tailed)	0.961		0.321
			df	20	0	20
		IND	Correlation	-0.368	-0.222	1.000
			Significance (2-tailed)	0.092	0.321	
			df	20	20	0
2018	FS	BG	Correlation	1.000	-0.238	-0.332

			Significance (2-tailed)		**0.287**	**0.131**
			df	**0**	**20**	**20**
		EX	**Correlation**	**-0.238**	**1.000**	**0.073**
			Significance (2-tailed)	**0.287**		**0.746**
			df	**20**	**0**	**20**
		IND	**Correlation**	**-0.332**	**0.073**	**1.000**
			Significance (2-tailed)	**0.131**	**0.746**	
			df	**20**	**20**	**0**
2019	FS	**BG**	**Correlation**	**1.000**	**0.106**	**0.009**
			Significance (2-tailed)		**0.657**	**0.971**
			df	**0**	**18**	**18**
		EX	**Correlation**	**0.106**	**1.000**	**0.108**
			Significance (2-tailed)	**0.657**		**0.650**
			df	**18**	**0**	**18**
		IND	**Correlation**	**0.009**	**0.108**	**1.000**
			Significance (2-tailed)	**0.971**	**0.650**	
			df	**18**	**18**	**0**

Correlation between FS and BG:

The correlation between FS and BG varies across the years, ranging from -0.033 to 0.298.

In 2015 and 2019, there is a positive correlation between FS and BG, indicating a tendency for larger firm sizes to be associated with higher levels of board gender diversity.

However, in 2016 and 2018, the correlation is close to zero or slightly negative, suggesting a weaker or negligible relationship between FS and BG.

In 2017, there is a weak negative correlation between FS and BG

Correlation between FS and EX:

The correlation between FS and EX also varies across the years, ranging from -0.238 to 0.106.

Similar to the correlation with BG, the relationship between FS and EX fluctuates over the years.

In 2016 and 2018, there are negative correlations between FS and EX, indicating a tendency for larger firm sizes to be associated with lower levels of board experience. However, in 2019, there is a positive correlation between FS and EX, suggesting a tendency for larger firm sizes to be associated with higher levels of board experience.

Correlation between FS and IND:

The correlation between FS and IND also shows variability across the years, ranging from -0.368 to 0.009.

In most years, there is a negative correlation between FS and IND, indicating a tendency for larger firm sizes to be associated with lower levels of board independence.

However, in 2019, the correlation is close to zero, suggesting a weaker relationship between FS and IND compared to other years.

6.2.5 Autocorrelation Test

year	model	PRESS	Durbin-Watson
2015	**1**	**4.898**	**1.7**
2016	**1**	**4.644**	**2.315**
2017	**1**	**9.402**	**2.04**
2018	**1**	**6.956**	**1.157**
2019	**1**	**12.489**	**1.052**

PRESS (Predicted Residual Sum of Squares):

PRESS measures the sum of squares of the prediction errors obtained by omitting each observation in turn from the model.

Lower PRESS values indicate better predictive performance of the model.

Durbin-Watson:

The Durbin-Watson statistic measures the presence of autocorrelation in the residuals of a regression model.

Values of Durbin-Watson close to 2 indicate no significant autocorrelation, while values significantly different from 2 suggest the presence of autocorrelation.

Durbin-Watson values below 2 suggest positive autocorrelation (residuals are correlated in a positive direction), while values above 2 suggest negative autocorrelation (residuals are correlated in a negative direction).

	2015		2016		2017		2018		2019	
	Tolerance	VIF	Tolerance	Tolerance	Tolerance	VIF	Tolerance	VIF	Tolerance	VIF
BG	0.867	1.153	0.925	1.081	0.766	1.305	0.862	1.16	0.932	1.073
EX	0.877	1.14	0.947	1.056	0.943	1.06	0.953	1.049	0.918	1.09
IND	0.931	1.074	0.987	1.013	0.805	1.242	0.895	1.117	0.979	1.022

FS	**0.921**	**1.086**	**0.895**	**1.117**	**0.891**	**1.123**	**0**	**0**	**0.885**	**1.13**

6.2.6 Multicollinearity Test

Variance Inflation Factor (VIF):

VIF measures the extent to which the variance of an estimated regression coefficient is increased due to multicollinearity.

VIF values greater than 10 suggest multicollinearity, indicating that the variable may be highly correlated with other predictor variables in the model.

5. CONCLUSION

In conclusion, the analysis of the data provided offers valuable insights into the dynamics of firm characteristics, board characteristics, and corporate social responsibility (CSR) in the context of the Egyptian stock market represented by the EGX100 companies.

The descriptive statistics highlight fluctuations and trends in variables such as board gender diversity (BG), board experience (EX), board independence (IND), firm size (FS), and CSR over the years 2015-2019.

While some variables show relative stability, others exhibit significant variability, indicating the dynamic nature of the market and its participants.

The normal distribution and correlation analyses reveal the distributional characteristics and relationships between variables. While some variables demonstrate a closer approximation to normality and consistent correlations over time, others deviate from normality and exhibit fluctuating correlations, suggesting varying relationships between firm size and board characteristics.

The presence of autocorrelation and multicollinearity in the data, particularly in firm size (FS) in certain years, underscores the importance of addressing these issues to ensure the reliability of regression analyses and inferential results.

The empirical results from t-tests and model summaries provide insights into the statistical significance and predictive accuracy of the model. While some variables show statistically significant relationships with the dependent variable, others do not reach conventional levels of significance, indicating the need for further investigation and potential refinement of the model.

6. IMPLICATIONS AND FUTURE DIRECTIONS

The findings from this analysis have implications for understanding the dynamics of the Egyptian stock market and informing decision-making processes for investors, policymakers, and stakeholders.

Future research could explore additional factors influencing CSR and board characteristics, consider alternative methodologies, and investigate longitudinal trends to provide a more comprehensive understanding of market dynamics over time.

In summary, the analysis offers valuable insights into the interplay between firm characteristics, board characteristics, and CSR within the Egyptian stock market, laying the foundation for further research and strategic decision-making in the realm of corporate governance and social responsibility.

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