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Corporate Governance and Bank Performance during COVID-19: Evidence from Bangladesh

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Abstract

The radical Coronavirus (COVID-19) has swiftly unfolded everywhere globally; it continues to unfold uncontrollably and critically, affecting all economies. The pandemic is not only a health issue but also has distinct effects on the global economy and enterprises. The impact of this novel Coronavirus is also well-documented in the financial sector. This study aims to investigate the impact of COVID-19 on corporate governance and banks' financial performance. Moreover, this study also examines the impact of corporate governance on banks' performance in Bangladesh. The study uses return on equity, return on assets, non-performing loans, return on investment, and earnings per share to measure the performance of the banks. And characteristics of corporate governance are measured by board size, number of independent directors on the board, number of female directors on the board, number of board meetings, and number of members in the audit committee. The study uses descriptive statistics, correlation analysis, *t*-test, and panel regression analysis. The study finds that COVID-19 significantly impacts the banks' performance and some corporate governance characteristics. The study also reveals that corporate governance significantly impacts the financial performance of commercial banks. The findings of this study suggest that banks should concentrate more on corporate governance.

Keywords: Commercial Banks, Financial Performance, Corporate Governance, COVID-19

JEL Classification Code: G20, G21, G30

1. Introduction

The radical Coronavirus (COVID-19) has swiftly unfolded everywhere globally; it continues to grow uncontrollably and critically, affecting all economies. The pandemic is not only a health issue but also has distinct effects on the global economy and enterprises. The impact of this novel Coronavirus (COVID-19) is well documented in the stock market (Ashraf, 2020) and the financial sector (Baicu et al., 2020). It recommended that the pandemic has impacted all industries across the globe; however, the impact on some industries turned more severe than others. For example, although demand in specific sectors, including grocery shops, has improved at the beginning of the pandemic, other sectors like hospitality and airline have collapsed (Pantano et al., 2020; Ekasari et al., 2023). However, although several pieces of research have been done on corporate governance and firms' performance in regular courses of action, few studies have been done on the relationship between corporate governance and banks' financial performance in light of the COVID-19 pandemic. Thus the researcher wants to see the impact of COVID-19 on corporate governance and banks' performance in Bangladesh. This study, however, will differ from other research by evaluating banks' financial performance using several performance indicators and various corporate governance characteristics. Second, a recent dataset will assess the relationship between corporate governance and firm performance.

The research findings will inspire banks to concentrate more on corporate governance. Furthermore, this paper will also serve as a blueprint for the policymakers on the benefit of corporate governance under the responsible banking banner during the pandemic. Finally, it will also hope that this paper will serve as the primary reference for the industry

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players and the general public on corporate governance and firms' performance during the pandemic.

This study investigates the impact of COVID-19 on corporate governance and banks' financial performance. This study also examines the impact of corporate governance on banks' financial performance. The present study will answer the following questions:

a) What is the impact of COVID-19 on banks' performance and corporate governance?
b) What is the impact of board size on banks' performance?
b) What is the impact of board independence on banks' performance?
c) What is the impact of board gender on banks' performance?
d) What is the impact of the board meeting on banks' performance?
e) What is the impact of audit committee size on banks' performance?

2. Literature Review

Few pieces of research illuminate the impact of corporate governance on banks' financial performance in the context of Bangladesh, whereas several pieces of research illuminate the connection between corporate governance and banks' profitability in the context of countries other than Bangladesh. Moreover, no studies have been conducted to show the impact of corporate governance on banks' financial performance in Bangladesh during COVID-19. Some studies that contribute to this context of corporate governance and performance are mentioned below.

Pham and Nguyen (2022) found that businesses with sales growth, operating hours, temporary workers, product portfolio, consumer demand, and input supply had a lower risk of business closures due to COVID-19 pandemic-related issues. Moreover, online business activities and government and financial institutions' support did not eliminate or reduce this risk. The study also found higher manufacturing survival than retail and service sectors. Europe and West Asia are less affected by the COVID-19 pandemic in business than other regions.

Nguyen (2022) studied the effect of the Covid-19 pandemic on the financial performance of firms from Vietnamese logistics enterprises. The study used 114 logistic companies for 2019 and 2020. Using the Wilcoxon Signed Rank Test, the research revealed that the financial performance of 114 logistic firms listed on the Vietnam stock exchange had not improved. The leverage ratio increased compared to the profitability and efficiency ratios that decreased during the COVID-19 pandemic. Additionally, returns on assets, receivable turnover, and leverage also decreased. On the other hand, the liquidity ratio did not show any significant differences. The study also found that export activity and international transportation were badly hampered during COVID, with only a few domestic logistic enterprises growing.

Alsamhi et al. (2022) examined the impact of the pandemic on the financial performance of 371 firms from the Prowess database for four sectors. The study found a significant difference in total income and net sales before and after the pandemic in the construction sector. In contrast, there was no significant difference between net profit, earnings per share, and diluted earnings per share before and after the pandemic in the construction and food sectors. The study also found no significant impact of COVID on the firm's performance in the food sector, whereas the construction sector reduced its expenses to their minimum. Furthermore, the tourism, hospitality and customer sectors were the most affected by the COVID-19 pandemic, followed by the construction sector.

Le and Nguyen (2022) evaluated the negative impacts of the COVID-19 emergency on small- and medium-sized enterprises (SMEs) business continuity (BC) by examining the moderating role of corporate governance principles (CGP) on SMEs' BC in the context of an emerging market using a sample of 334 responses covering directors, managers and owners of enterprises. This study followed a quantitative approach and used the Smart PLS-SEM version 3.3.2 to analyze the data from SMEs in Vietnam in 2021. The study found that the COVID-19 consequences negatively affected BC. Furthermore, CGP moderately impacted the correlation between COVID-19 outcomes and BC. Moreover, corporate governance principles facilitated a business to reduce the adverse effects of COVID-19 on the business community.

Tampakoudis et al. (2022) examined the wealth effects of syndicated loan declarations before and after the onset of the COVID-19 outbreak of 637 loan announcements by European borrowers. The investigation discovered higher wealth gains during the pandemic compared to the pre-pandemic period. The results suggested that the certification of multiple lenders' loans conveyed a positive signal for the borrowers' creditworthiness during the pandemic-driven economic meltdown. The results also showed that certain corporate governance mechanisms, such as board size, gender diversity, and CEO duality and compensation, were related differently to borrowers' excess returns before and after the COVID-19 pandemic.

Khatib and Nour (2021) studied the impact of corporate governance on firm performance during the COVID-19 pandemic in Malaysia over two years, from 2019 to 2020. The study used board size, independence, gender diversity, meetings, audit committee size, and audit committee meetings as independent variables. It used return on assets, return on equity, EBIT, profit margin, leverage, liquidity and dividend per share to measure the firms' performance. Using ordinary least square, Hausman test and Breusch and Pagan Lagrangian multiplier tests, the study found that COVID-19 affected all firm characteristics, including solid performance, governance structure, dividend, liquidity, and leverage level, yet, the difference between prior and post-COVID-19 pandemic was not significant. Board size exerted a significant positive impact on firm performance. After splitting the sample based on year, the study found that board size did not matter in the uncertain time of the current crisis. In contrast, board diversity appeared to be significantly enhancing firm performance during the crisis time compared to the previous year, which had an inverse association with firm performance in both indicators. Furthermore, the study found that board and audit committee meetings negatively influenced firm performance pre-and post-COVID-19.

Utomo and Hanggraeni (2021) studied the impact of COVID-19 pandemic on stock market performance in Indonesia. The study used total confirmed cases and death and the lockdown policies on daily stock returns of 272 real estate firms listed on the Indonesia Stock Exchange from 2 March 2020 to 27 November 2020. Using the fixed-effects panel-data regression method, the study found a negative impact of confirmed cases and death due to COVID-19 on Indonesia's daily stock returns. The study also found that the COVID-19 pandemic had a significant negative impact on property, trade, service, and investment sectors while having a significant positive impact on the performance of the basic industry, consumer goods, and mining sectors.

Jebran and Chen (2021) focused on corporate governance practices' role in helping firms survive during the COVID-19 crisis. The literature highlighted several governance mechanisms (risk management committees, board diversity, independent directors, foreign investors, institutional ownership, ownership concentration, CEO's dual roles, block ownership, and family ownership) that helped firms cope with the COVID-19 crisis. The study found that independent risk management committees, institutional ownership, board independence, block holders, and family ownership could contribute significantly to dealings with the COVID-19 crisis.

Golubeva (2021) used a regression performance model for enterprises during the COVID-19 crisis. The investigation was based on a data set of 5,730 firms from 13 countries collected by the World Bank through enterprise surveys. This study confirmed the significance of multiple factors (sector, size, participation in exports and market demand for firms' products) for company performance. In addition, robust financing solutions during the pandemic included equity contributions, followed by firms' cash balances and debt, whereas government support was not considered a significant finance source. Finally, this paper also suggested the importance of country-specific factors for the performance of enterprises, including the level of economic development and the corporate governance infrastructure.

Farwis et al. (2021) examined the impact of corporate governance on firm performance during the COVID-19 pandemic in Sri Lanka on 27 companies listed on the Colombo Stock Exchange (CSE) from 2019–2020. The study used return on assets (ROA), return on equity (ROE), and Tobin's Q to measure the performance. Corporate governance was measured by board size (BS), number of executive directors (NED), gender diversity (GD), board meeting (BM), financial qualification (FQ), audit committee size (ACS), audit committee meeting (ACM), liquidity (LIQ), and leverage (LEV). The study found an inverse relationship between corporate governance (CG) and firms' performance. The board size and qualification of the directors positively impacted the firm performance. In contrast, NED proportion, gender diversity, board meetings, audit committee size, and audit committee meetings negatively impacted the firm's performance. To rebuild the corporate sector in any crisis, corporate management, regulators, and investors must consider the board's size and qualifications.

Mollah et al. (2021) investigated the relationship between the ownership structure, board characteristics and financial performance to determine the role of corporate governance in the performance behavior of companies listed on the Botswana stock exchange from 2000–2007 using the ordinary least square (OLS) model. The study showed the distinct nature of corporate governance behavior among alternative performance measures, particularly between accounting-based/hybrid and market-based measures.

Koutoupis et al. (2021) attempted a systematic literature review of 62 studies published in 2020. The authors used four criteria to identify characteristics of the literature on CG and COVID-19 and three criteria to identify key themes in the literature addressing CG and the pandemic. The authors analyzed answers to the above research questions and proposals from studies reviewed to guide future research. Findings CG in the context of COVID-19 had been studied mostly in developed countries and within a theoretical framework. As accounting data was insufficient, more research was required in all countries (developed, emerging and other). Further, there were no conclusive results regarding the relevance of ESG and CSR to financial performance.

Elmarzouky et al. (2021) investigated whether COVID-19 related information is associated with a higher level of performance disclosure in the annual reports. Furthermore, it examined the moderating effect of corporate governance on the relationship between COVID-19 and performance disclosure using three governance mechanisms: board size, board independence, and gender diversity. The study applied an automated textual analysis technique to measure the COVID-19 information and performance disclosure level for the UK FTSE all-share non-financial firms. The results showed a significant positive relationship between the COVID-19 disclosure and the firm performance disclosure in the annual reports. Further, board independence and gender diversity moderated the relationship between the COVID-19 related information and the level of performance disclosure in the annual reports.

Jin et al. (2021) conducted a quasi-natural experiment with the COVID-19 pandemic in public health emergencies using a propensity score matching difference in differences model (PSM-DID) to match the treatment group of tourism enterprises and the control group of non-tourism enterprises. The study empirically demonstrated that the COVID-19 pandemic produced a more severe impact on the performance of tourism enterprises than other industries. Further analysis showed that given different enterprise equity natures, the characteristics of the board, supervision, and executive salary incentive levels, the COVID-19 pandemic had a heterogeneous impact on the operating performance of tourism enterprises.

Farooque et al. (2020) studied the impact of the board, audit committee, and ownership on financial performance in Thailand over seven years, from 2000 to 2016. The study used audit committee independence, audit committee size, audit committee meeting, ownership concentration, family ownership, and managerial ownership as independent variables and returns on stock and Tobin's Q as dependent variables. Using GMM (generalized method of moments), ordinary least squares and fixed effects model, the study found that ownership structures, particularly ownership concentration and family ownership had no significant influence on market-based firm performance. In contrast, managerial ownership exerted a positive effect on performance. Moreover, the study found that board structure variables (board independence, size, meeting and dual role, and audit committee meeting) showed significant explanatory power on market-based firm performance in Thai firms.

Patel and Patel (2020) used exploratory research to study several practical issues and risks faced by corporates and their implications and new relief measures introduced concerning corporate governance (India) during the COVID-19 outbreak. The study concluded that COVID-19 had come with inherent commercial risks impacting business operations due to disruptions to meetings, dividends, liquidity, disclosure, capital allocation, risk management, and internal control. It was suggested that the hybrid AGM, technology infrastructure, share buyback programs during the crisis, and executive pay matters should be arranged to mitigate the risk. The study also conveyed that the government initiated relief measures, CSR activity and introducing schemes for companies to have a fresh start and revisions to LLP settlement to provide an opportunity to make good any filing-related defaults and make a fresh start on a clean slate.

3. Research Methodology

The research methodology includes a sample set, data collection methods, variables, research hypothesis and research design.

3.1. Sample Set, Variables & Data Collection Methods

The study uses data from the top 35 commercial banks from 2017 to 2020. The study uses secondary data. The secondary data was collected from the following sources:

a) Annual reports of Bangladesh Bank.
b) Annual reports of commercial banks
c) Sustainable Finance Department, Bangladesh Bank.
d) Academic journals.
e) Books and Newspaper.

The following variables are used to analyze the impact of corporate governance on banks' performance (Table 1).

3.2. Research Hypothesis

The following hypotheses will be used

H1: *Ceteris paribus,* COVID-19 *significantly impacts banks' performance.*

H2: *Ceteris paribus, Board size significantly impacts banks' performance.*

H3: *Ceteris paribus, Board independence significantly impacts banks' performance.*

H4: *Ceteris paribus, Board gender diversity significantly impacts banks' performance.*

H5: *Ceteris paribus, Board meeting significantly impacts banks' performance.*

H6: *Ceteris paribus, Audit committee size significantly impacts banks' performance.*

3.3. Research Design

The study will provide descriptive statistics of all variables over four (4) years from 2017 to 2020 for 35 commercial banks. The study will then use a correlation matrix to find the correlation between banks' performance and corporate governance characteristics. After then, the study will use the *t*-test to compare the mean value of all variables in the sample before and after the COVID-19 pandemic. Several researchers (Khatib & Nour, 2021; Khan et al.,2020; Hazaea et al., 2020; He et al.,2019) used a conventional *t*-test to evaluate the impact of COVID on banks' performance and corporate governance characteristics. Finally, the study

Table 1: Variables Used in this Study

Variables	Symbol	Formulae
Return on Asset	ROA	$\frac{\text{Net income}}{\text{Total Assets}}$
Return on equity	ROE	$\frac{\text{Net income after tax}}{\text{Average shareholder equity}}$
Non-performing loan	NPL	Net non-performing loan is a percentage of total loans that is in default because the borrower has not made the scheduled payments for a specified period.
Return on Investment	ROI	$\frac{\text{Net income after tax}}{\text{Total Investment}}$
Earnings per Share	EPS	$\frac{\text{Net income after tax}}{\text{Total no of shares}}$
Board Size	BS	A total number of members on the board.
Board Independence	BI	The number of independent non-executive directors on the board
Board Gender Diversity	BG	A number of female directors on the board
Board Meeting	BM	The board held a number of meetings during the financial year
Audit Committee Size	ACS	A number of the directors on the audit committee.

will use panel data analysis to examine the link between performance and governance during COVID-19. This study will use the Breusch-Pagan and Hausman test to determine the appropriate panel regression model (OLS, Fixed effect model, and Random effect model).

4. Results and Discussion

4.1. Descriptive Statistics and Correlation Analysis

Table 2 provides descriptive statistics of all variables over four (4) years from 2017 to 2020 for 35 commercial banks. Over the period, the return on assets (ROA) has a mean value of 2.36 percent and a standard deviation of 0.46 percent compared to the return on equity (ROE), which has a mean value of 23.29 percent and a standard deviation of 4.98 percent. The ROI and EPS have 9.04 percent, and 3.08 percent mean values, respectively. The range value of ROI is 23.50 percent, compared to the range value of EPS, which was 32.90 percent. Furthermore, the NPL has a mean value of 7.00 percent with a standard deviation of 7.91 percent.

The board size (B_Size) has a mean value of 13.42 with a standard deviation of 4.30, compared to board independence (B_Ind), which has a 3.46 mean value with a standard deviation of 3.19. Moreover, the range values of the board size (B_Size) and board independence (B_Ind) are 16 and 19, respectively. The average number of female directors on the board (B_Gender) was about 2, with a standard deviation of 1.48. In contrast, the average size of the audit committee is about 5 for 35 companies, with a standard deviation of 0.94. Therefore, the range value of the audit committee and female directors on the board is 4 and 5, respectively. The average number of meetings in a year for 35 companies is 21, with a standard deviation of 11.53.

The correlation coefficient between B_Size and ROA is –0.179, statistically significant at a 5% significance level. This means that a 1 percent increase/decrease in B_Size will result in a 17.90% decrease/increase in ROA. Furthermore, B_Size correlates with NPL and EPS at a 1% significance level. The correlation coefficients between B_Size and NPL and between B_Size and EPS are –0.359 and –0.250, respectively. All performance variables (ROA, ROE, NPL, ROI, and EPS) significantly correlate with the B_Ind at 1% significance except ROI. ROE and ROA are significantly inversely correlated with the B_Ind but positively correlated with the NPL and EPS.

Moreover, B_Gender and ROA have a correlation coefficient of –0.274, indicating that ROA is inversely linked with B_Gender. Furthermore, there is a significant correlation between B_Gender and NPL at a 5% significance level. A significant correlation between B_Gender and ROI is also prevails at a 10% significance level. The correlation coefficient between B_Gender and NPL and between B_Gender and ROI is –0.197 and –0.011, respectively.

Table 2: Statistic Analysis and Correlation Matrix

Correlations										
Correlation	**ROE**	**ROA**	**NPL**	**ROI**	**EPS**	**B_Size**	**B_ind**	**B_Gender**	**B_Meet**	**ACS**
ROE	1									
ROA	0.772**	1								
NPL	–0.439**	–0.337**	1							
ROI	0.040	0.095	0.024	1						
EPS	0.288**	0.157	0.283**	0.010	1					
B_Size	0.129	0.179*	–0.359**	0.099	–0.270**	1				
B_Ind	–0.358**	–0.329**	0.460**	0.138	0.253**	–0.007	1			
B_Gender	0.067	0.274**	–0.197*	–0.011	–0.072	0.271**	0.102	1		
B_Meet	–0.315**	–0.405**	0.438**	–0.117	0.360**	–0.326**	0.461**	–0.082	1	
ACS	–0.085	–0.085	0.061	0.268**	0.041	0.525**	0.312**	0.073	0.203*	1
VIF						2.032	1.384	1.112	1.671	1.857
Range	23.29	2.36	46.53	23.5	32.9	16	19	5	52	4
Mean	9.77	0.81	7	9.04	3.08	13.42	3.46	1.66	20.69	4.27
Std. Deviation	4.98	0.46	7.91	17.08	4.06	4.3	3.19	1.48	11.53	0.94

***, ** and * indicate significance at 1%, 5% and 10% levels of significance based on *t*-statistics.

B_Meet is significantly associated with all the performance measure variables except ROI at a 1% significance level. ROE and ROA have a significant negative association, whereas NPL and EPS have a positive association with the B_Meet. A significant positive association prevails between ACS and ROI.

Moreover, ACS and ROI have a statistically significant positive correlation (0.268) with a *p*-value of 0.001. The above table indicates that all the independent variables have less than 0.54 values, which indicates no possibility of multicollinearity issues. Shahwan (2015) states that if the coefficients of the independent variables have a value greater than 0.70, the researcher must be worried about multicollinearity issues. The study also used the variance inflating factor (VIF) test. The result also indicates the absence of multicollinearity among the variables as the result of all variables is less than and about 2.0.

4.2. *T*-Test

The study uses the *t*-test to compare the mean value of all sample variables before and after the COVID-19 pandemic. COVID-19 has a significant impact on the bank's performance and the characteristics of corporate governance of the bank. The *t*-test analysis conveys that the difference between prior and post-COVID-19 is significant (Table 3).

The mean ROE before COVID-19 was 10.51%, compared to the mean of 9.01% post-COVID-19, indicating the mean difference before and after COVID-19 ROE is 1.49%. The study finds that the correlation between before COVID-19 ROE and after COVID-19 ROE is significantly positively correlated at 1% significance. Furthermore, the *p*-value indicates that the pandemic significantly impacts ROE at 5% significance. Concerning ROA, the mean difference between before and after COVID-19 is 1.50%. There is a highly significant positive correlation (0.698) between before and after COVID-19 ROA at a 1% significance level. Furthermore, the *p*-value indicates that the pandemic significantly impacts ROA at a 5% significance level.

Before and after the pandemic, the standard deviations of NPL are 11.03% and 7.36%, respectively, and the mean difference is 1.56. The study finds that the correlation between before and after a pandemic's NPL is significantly positively correlated at 1% significance. Furthermore, the study finds that the pandemic significantly impacts NPL at a 10% significance level. The average mean difference of ROI is 0.111% before and after the COVID-19. The study finds an insignificant correlation of ROI between before and after the pandemic and has an insignificant impact on ROI at a 10% significance level. The standard deviations of EPS before and after COVID-19 are 6.46% and 2.12%, respectively. The mean difference in EPS is 1.82%. The study finds that the correlation between before COVID-19 EPS and after

Table 3: Result of the *t*-est

Variables	Before COVID 19 (2017 & 2018)			After COVID 19 (2017 & 2018)			Paired Sample Correlation		Mean Difference	*T*-test	df	Sig. (2-tailed)
	Obs.	Mean	Std. Deviation	Obs	Mean	Std. Deviation	Coefficient	Sig				
ROE	46	10.51	5.60	46	9.01	5.56	0.697	0.000	1.49	2.33	45	0.024
ROA	46	0.93	0.529	46	0.75	0.495	0.698	0.000	1.498	2.34	45	0.024
NPL	46	9.15	11.03	46	7.59	7.36	0.905	0.000	1.562	1.97	45	0.055
ROI	46	12.18	29.37	46	7.03	2.66	–0.238	0.111	5.156	1.16	45	0.252
EPS	46	4.60	6.46	46	2.78	2.12	0.545	0.000	1.820	2.21	45	0.032
B_Size	46	12.61	3.99	46	11.96	4.15	0.859	0.000	0.652	2.05	45	0.047
B_Ind	46	4.22	4.48	46	3.54	2.87	0.802	0.000	0.673	1.65	45	0.106
B_Gender	46	1.80	1.54	46	1.83	1.47	0.830	0.000	–0.021	–0.17	45	0.868
B_Meet	46	24.98	13.04	46	22.98	12.35	0.934	0.000	2.00	2.92	45	0.006
ACS	46	4.28	1.00	46	4.15	0.92	0.555	0.000	0.13	0.973	45	0.336

COVID-19 EPS is significantly positively correlated at 1% significance. Furthermore, the *p*-value indicates that the pandemic significantly impacts EPS at a 5% significance level.

Concerning board size (B_Size), the mean value was 12.61% before and 11.96% after the pandemic. Furthermore, the difference in the standard deviation of B_Size between before and after COVID-19 is 0.16. Moreover, the mean difference of B_Size is 0.652. The study discovers a highly significant positive correlation (0.859) between before and after the pandemic's B_Size at a 1% significance level. Furthermore, the pandemic significantly impacts B_Size at 5% significance. Before the pandemic, the average board independence (B_Ind) was 4.22%, compared to 3.54% after the pandemic. The average B_Ind difference is 0.673. The correlation between before COVID-19's B_Ind and after COVID-19's B_Ind is significantly positively correlated at 1% significance.

Furthermore, the pandemic insignificantly impacts B_Ind at 10% significance. The average variation of the number of female members on the board (B_Gender) between before and after COVID-19 is 0.07. There is a statistically significant correlation between before and after COVID-19 of B_Gender. Furthermore, at a 10% significance level, the pandemic insignificantly impacts the B_Gender. Moreover, the mean difference between B_Meet before and after COVID-19 is 2.00. The study also finds that the correlation between before COVID-19's B_Meet and after COVID-19's B_Meet is significantly positively correlated at 1% significance.

Furthermore, the study finds that the pandemic significantly impacts several board meetings (B_Meet) at a 5% significance level. Concerning audit committee size (ACS), the mean value is 4.28% before Covid-19 and 4.15% after COVID-19. Furthermore, the difference in the standard deviation of ACS between before and after COVID-19 is 0.08%. The mean difference is 0.13. The study also finds a significant positive correlation (0.555) between before and after COVID-19 ACS at a 1% significance level. Furthermore, the *p*-value indicates that the pandemic insignificantly impacts ACS at 10% significance. Overall, the result supports the first hypothesis (H1) that entails that COVID-19 has a significant impact on banks' performance and corporate governance characteristics.

4.3. Breusch-Pagan (BP) Test and Hausman Test

The study uses panel regression analysis. There are three-panel regression models: pooled regression, fixed effect regression and random effect regression. The study uses the Breusch-Pagan (BP) and Hausman tests to determine the appropriate regression model. The study uses the Breusch-Pagan (BP) test to determine the appropriateness of Panel Least Square (POLS). Thus the test uses the following hypothesis for:

H0: *POLS is more appropriate than the Fixed effect model/Random effect model.*

H1: *Fixed effect model/ Random effect model POLS is more appropriate than POLS.*

The Breusch-Pagan (BP) test entails that the null hypothesis is rejected and the alternative hypothesis is accepted for all dependent variables. Table 4 shows the result of the Breusch-Pagan (BP) test. Moreover, the main limitation of pooled regression is that it does not distinguish the various banks that the study uses. Moreover, by combining 35 banks by pooling, the study denies the heterogeneity or individuality that may exist among 35 companies. Thus, the study uses the Hausman test to choose between the fixed and random effect models. The test uses the following hypothesis.

H0: *Random effect model is appropriate.*

H1: *Fixed effect model is appropriate.*

From the above-calculated *p*-value (Table 4), the study finds that the null hypothesis is accepted for ROE, NPL, ROI, and EPS, whereas the null hypothesis is rejected for ROA at a

Table 4: Result of Breusch-Pagan (BP) Test & Hausman Test

Dependent Variables	Breusch-Pagan (BP) Test			Hausman Test (Cross-Section Random)		
	Cross-section	Time	Both	Chi-Sq. Statistics	Chi-Sq. d.f	Prob.
ROE	53.94 (0.0000)	2.14 (0.1433)	56.08 (0.0000)	6.21	5	0.2861
ROA	39.41 (0.0000)	13.00 (0.0003)	52.42 (0.0000)	12.94	5	0.0239
NPL	107.30 (0.0000)	0.96 (0.3270)	108.26 (0.0000)	10.12	5	0.0719
ROI	27.84 (0.0000)	0.34 (0.5620)	28.18 (0.0000)	5.34	5	0.3755
EPS	5.16 (0.0232)	0.02 (0.8771)	5.18 (0.0228)	3.77	5	0.5820

5% level significance. Furthermore, the study decides to use the random effect regression model for four variables (ROE, NPL, ROI, and EPS) and fixed effect regression model for ROA. Moreover, the study also mentions the result of fixed and random effect regression model for all variables to realize the difference between the output of the fixed effect and the random effect model.

4.4. Random Effect Regression Analysis

The study uses random and fixed-effect regression models to understand the impact of corporate governance on firms' performance during COVID-19. The study uses the ROE, ROA, NPL, ROI, and EPS to measure the performance of the banks in Bangladesh and board size, number of independent members, number of female members on the board, number of board meetings, and number of members in the audit committee to measure corporate governance. The Hausman test conveys that the random effect model is appropriate for all dependent variables except ROA. Fixed effect model is used for ROA. Table 5 displays the econometric model estimation results using the random and fixed effects methods. The model fit is presented with a coefficient, and the *t* statistic is reported in parentheses; the superscripts of *, **, and *** statistical significance to 10%, 5%, and 1%, respectively.

The study finds that B_Size significantly and negatively impacts the NPL and EPS at 1% and 10% significance levels. This indicates that the size of the board plays a significant role in enhancing the banks' performance. The size of the board and its composition are rational responses to the conditions of the external environment, the current internal situation, and the various financial performance of the firm (Khatib & Nour, 2021). Thus banks need to reduce their number of directors during and after COVID. The B_Size also has an insignificant negative impact on ROI and an insignificant positive impact on ROA and ROE. The results support the H2 hypothesis that states that B_Size has a significant impact on the banks' performance. Several researchers (Khatib & Nour, 2021; Waheed& Malik, 2019) also reached in same conclusions.

The study finds that the number of independent members in the board (B_Ind) is characteristic of corporate governance that significantly impacts ROE and NPL at 5% and 10% significance respectively. B_Ind has a negative impact on ROE and a positive impact on NPL. Moreover, B_Ind has

Table 5: Fixed and Random Effect Regression Result

Variables	ROE		ROA		NPL		ROI		EPS	
	Fixed	Random	Fixed	Random	Fixed	Random	Fixed	Random	Fixed	Random
C	7.17	9.82	0.22	0.72	1.56	3.87	4.45	5.52	–1.38	2.15
	(0.04)**	(0.00)***	(0.48)	(0.00)***	(0.65)	(0.20)	(0.10)*	(0.00)***	(0.72)	(0.27)
B_Size	0.03	0.17	0.01	0.01	–0.46	–0.49	0.20	–0.08	0.02	–0.21
	(0.92)	(0.27)	(0.74)	(0.27)	(0.08)***	**(0.01)***	(0.32)	(0.45)	(0.94)	**(0.09)***
B_Ind	–0.16	–0.35	–0.02	–0.03	0.16	0.34	–0.16	0.10	0.10	0.17
	(0.51)	**(0.04)****	(0.40)	(0.04)**	(0.47)**	**(0.07)***	(0.37)	(0.39)	(0.70)	(0.22)
B_Meet	0.15	–0.02	0.02	0.00	0.36	0.26	–0.08	–0.07	0.08	0.08
	(0.13)	(0.77)	**(0.03)****	(0.42)	(0.00)***	**(0.00)*****	(0.29)	**(0.05)****	(0.46)	**(0.08)***
B_Gender	–0.17	0.03	0.03	0.06	0.79	0.29	–0.27	–0.11	0.80	0.07
	(0.75)	(0.94)	(0.57)	(0.05)**	(0.12)	(0.49)	(0.51)**	(0.65)	(0.17)	(0.80)
ACS	–0.02	–0.20	0.02	0.00	0.55	0.63	0.73	1.06	0.19	0.35
	(0.97)	(0.71)	(0.69)	(0.92)	(0.32)	(0.23)	(0.10)*	**(0.01)*****	(0.77)	(0.48)
R square	0.72	0.05	0.73	0.09	0.90	0.19	0.62	0.08	0.50	0.11
Adjusted *R* square	0.60	0.01	0.63	0.06	0.86	0.16	0.47	0.04	0.30	0.08
F-stat.	6.44	1.38	6.97	2.65	22.68	6.16	4.18	2.27	2.54	3.47
Prob. (*F*-stat)	0.00	0.23	0.00	0.03	0.00	0.00	0.00	0.05	0.00	0.01

***, ** and * indicates significant at 1%, 5% and 10% level of significance.

an insignificant impact on other dependent variables (ROA, ROI, and EPS). The findings support the H3 hypothesis that states that B_Ind has a significant impact on the banks' performance.

B_Gender has no significant impact on the firm's performance. The study's findings contradict the findings of Khatib and Nour (2021), who found that board diversity significantly enhanced firm performance during the crisis time compared to the previous year, which had an inverse association with firm performance in both indicators. So the H4 hypothesis is rejected that states that board gender diversity significantly impacts banks' performance.

Board meeting (B_Meet) is the only corporate governance characteristic that significantly impacts ROA, NPL, ROI and EPS. B_Meet significantly affects the ROA and ROI at a 5% significance level, whereas it affects the NPL and EPS at 1% and 10% significance levels. The findings support the H5 hypothesis, which conveys that B_Meet significantly impacts banks' performance. Farooque et al. (2020) also found that board structure variables (board independence, size, meeting and dual role, and audit committee meeting) show significant explanatory power on market-based firm performance in Thai firms.

The study also finds that ACS has no significant impact on all dependent variables except the ROI. Thus the H6 hypothesis is rejected. Overall, the study finds that corporate governance affects the performance of the banks. Farooque et al. (2020), Khatib and Nour (2021), Jebranand Chen (2021), Farwis et al. (2021), and Le and Nguyen (2022) also found a significant impact of corporate governance on firms' performance during COVID-19.

5. Conclusion

The radical Coronavirus (COVID-19) has swiftly unfolded everywhere globally; it continues to evolve uncontrollably and critically, affecting all economies. The COVID-19 pandemic and resulting economic fallout caused significant hardship. In the early months of the crisis, tens of millions lost their jobs. While employment began to rebound within a few months, unemployment remained high throughout 2020. This study investigates the impact of corporate governance on banks' financial performance in Bangladesh during COVID-19. The study uses return on equity (ROE), return on assets (ROA), non-performing loans (NPL), return on investment (ROI) and earnings per share (EPS) to measure the performance of the banks. Characteristics of corporate governance, such as board size (B_Size), number of independent directors on board (B_Ind), number of female directors on the board (B_Gender), number of board meetings (B_Meet), and number of members in audit committee (ACS) use as the independent variable. The study uses descriptive statistics, correlation analysis, and regression analysis. Based on the analysis, this study draws the following conclusions:

Conclusion 01: The study finds that the pandemic significantly impacts ROE, ROA, and EPS at a 5% significance and NPL at a 10% significance level, whereas the pandemic does not affect ROI at a 10% significance level.

Conclusion 02: The study finds that the pandemic significantly impacts B_Size and B_Meet at 5% significance, whereas the pandemic does not substantially impact B_Ind, B_Gender, and ACS at 10% significance.

Conclusion 03: The study finds that B_Size significantly and negatively impacts NPL and EPS at 1% and 10% significance levels. B_Size also has an insignificant negative impact on ROI and an insignificant positive impact on ROA and ROE.

Conclusion 04: The study finds that the number of independent members in the board (B_Ind) is characteristic of corporate governance that significantly impacts ROE and NPL at 5% and 10% significance.

Conclusion 05: Board meeting (B_Meet) is the only corporate governance characteristic significantly impacting ROA, NPL, ROI and EPS. B_Meet significantly affects the ROA and ROI at a 5% significance level, whereas it affects the NPL and EPS at a 1% and 10% significance level.

Conclusion 06: This study also concludes that B_Gender and ACS have no significant impact on the banks' performance at a 10% level of significance.

Overall, the study finds that COVID-19 affects the corporate governance and the financial performance of banks in Bangladesh. This study also finds that corporate governance considerably impacts the financial performance of commercial banks in Bangladesh. The findings will inspire banks to concentrate more on corporate governance. Furthermore, this paper will also serve as a blueprint to policymakers on the benefit of corporate governance under the responsible banking banner during the pandemic.

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