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Nexus between corporate governance disclosure and firm performance: a study on the Bangladeshi pharmaceutical companies

Md. Nazrul Islam [(a)]* *Syed Zabid Hossain* [(b)] *Md. Sayaduzzaman* [(c)]

[(a)]*Associate professor, Department of Accounting and Information Systems, Jatiya Kabi Kazi Nazrul Islam University, Trishal, Mymensingh, Bangladesh*
[(b,c)]*Professor, Department of Accounting and Information Systems, University of Rajshahi, Rajshahi, Bangladesh*

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ABSTRACT

The paper intended to evaluate the extent of corporate disclosure compliance and its effect on the financial performance of Bangladeshi pharmaceutical companies listed on the DSE during a twelve-year period, from 2007 to 2020. The study explored the affinity between the Corporate Governance Disclosure Index (CGDI) and firm financial performance employing econometric techniques, such as fixed effect and random effect models. The study calculated the disclosure scores as a percentage of a given firm's overall score to the probable score it could achieve. The CGDI of the sample companies showed a positive and substantial effect on company performance as an accounting measure ROA and an insignificant effect as a market measure Tobin's Q. The study also revealed that sample firms followed the BSEC guidelines partially. These findings have implications for companies that fail to comply with the full disclosure principle, which holds that a company must disclose all material information in its financial statements in order to touch the reader's comprehension of those statements. In addition, these results imply that the code of CG requires a thorough examination to make essential modifications.

Introduction

Corporate governance (CG) is a set of laws, guidelines, and policies that determine how a corporation conducts its operations. It is a set of guidelines to guarantee fairness and openness in interactions between the company and its shareholders (Buallay et al., 2017). CG cuts changing market vulnerability to pecuniary catastrophes, strengthens property rights, lessens the operational cost and the cost of capital, and supports stock market expansion (Hasan et al., 2013). Two bubble-and-burst occurrences occurred on the Bangladeshi capital market: the first one happened in 1996 and the second one happened in 2011. The DSE General Price Index (DGEN) increased during the 1996 episode, rising from 959.1 points on 30 June to 3648.7 points (3.8 times) on 5 November. On that day, share prices of most firms warped, the bubble burst, and the market crashed. Ten years after the preliminary crash in 1996, the DGEN only once again crossed the 3,000-point threshold in December 2007. The DGEN rapidly increased from 3010.3 points on 30 June, 2009, to 8,723.2 points, or 2.9 times, on 1 December, 2010, from the third quarter of 2009. The greatest stock market crisis occurred in late 2010, and thousands of investors lost even their initial cash investments. The DGEN mislaid 3,032 points in 2011 and another 1,038 points in 2012, illustrating that the market collapse's consequences were still being felt. On 4 January, 2013, the DGEN declined to 3,383.23-point, its lowest level since 15 November, 2009 (The Daily New Age, 2014). The probe committee suggested the removal of the chair and members of the Bangladesh Security & Exchange Commission. The CG in Bangladesh clearly showed a red flag (Hasan et al., 2014). The debate related to CG makes it clearly evident that a lack of good corporate governance has a negative influence on the stock market, decreases investor confidence, and demoralizes outside investors. Over the last few decades, CG has become a vital research field associated with the financial crises and a series of corporate collapses in many advanced and emerging countries (Johnson et al., 2000). Recent corporate scandals and collapses have created interest in prevalent research in

* *Corresponding author. ORCID ID: 0000-0002-9857-0428*

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the context of economic problems because decision-makers, executives, and the general public are conscious of the financial consequences of inaccurate or incomplete disclosure of information in company financial statements (Herbert & Agwor, 2021). For instance, Enron and WorldCom (Beker, 2020), Lehman Brothers Holdings Inc. (Maskati & Hamdan, 2017), Hall Mark, Bismillah Group, Modern Food Ltd., and Adamjee Jute Mills Ltd. in Bangladesh (Rashid, 2017) have cast doubt on the financial stability of manufacturing firms and eroded investors' faith in them. In addition, the U.S Stock Market Crash of 1987 (Carlson, 2007), the subsequent bailout of several companies from 2008 onward, and the Bangladesh Capital Market Crash in 1996 and 2011 (Hasan et al., 2016) were mainly due to the absence of good CG.

The Bangladesh Securities and Exchange Commission (BSEC) subsequently released the CG guidelines on February 20, 2006, and August 7, 2012, which are necessary for publicly-traded companies on a comply or explain basis. Additionally, on June 3, 2018, the BSEC released the CG guidelines, which are obligatory for publicly traded companies. CG regulations have sought to improve the governance environments of corporate entities and facilitate more disclosures for the stakeholders. For a company to be managed efficiently and to provide its shareholders and other stakeholders with value, sound CG is imperative (Maher & Andersson, 2000). Exceptional economic performance is usually connected with responsible and transparent platforms, in the same way, that effective governments are connected to responsible political and economic governance systems (Herbert & Agwor, 2021). CG disclosure is efficient when a firm publishes its financial statements, annual reports, and performance evaluation reports on time to represent its condition, operation, and financial performance in terms of quality and content (Sharif & Ming, 2015). Shrivastav and Kalsie (2017) observed that CG disclosure is a procedure through which companies disclose all pertinent information regarding their operations. It contributes significantly to accountability, transparency, and integrity. The cornerstone of corporate financial reporting is the disclosure of information (Palea, 2015; Baazaoui, 2020). The purpose of the CGDI is to evaluate the accurateness, completeness, and usefulness of the information that corporations publish in their annual reports and financial statements and to determine the level to which they have done so (Sharif & Ming, 2015). CG disclosure is a means to lower agency costs and information asymmetric (Sharif & Ming, 2015; Cheung et al., 2010; Kowalewski et al., 2008). CG regulators should lessen the information unevenness between aware and non-aware investors by enforcing the lowest level of clarity in disclosure (Sharif & Ming, 2015).

Bangladesh is a budding market with a rapidly expanding economy. It has made significant improvements in CG indices over the last two decades. Global CG indicators and best practices indicate that CG should remain a top priority to develop an understanding of the country's corporate sector, especially in the pharmaceutical sector. Its pharmaceutical industry is quite advanced and has a significant economic impact. Since the announcement of the Drug Control Ordinance in 1982, the growth of the pharmaceutical industry has been outstanding (Rahman, 2012). The growing trend of the economy of Bangladesh gets the attention of developed nations as this sector has maintained high economic growth for the last couple of years, touching the magnitude of 8.2 percent in 2019 (World Bank Report, 2019), the highest-ever in the history of its economy. CG in Bangladesh needs improvement as it is a stable economic growth and the smooth functioning of firms, capital markets, and the economy.

Literature review

Theoretical, Empirical Review and Hypotheses Development

Corporate disclosure is one form of vital corporate governance tool (Du Plessis, 2016). Corporate governance disclosure (CGD) is a pertinent declaration or information regarding a company's CG policy and the measures action done in response thereto that is made public with the intention to inform or influencing the decisions of stakeholders or investors (Herbert and Agwor 2021). Gibbins, Richardson, and Waterhouse (1990) well-defined a firm's disclosure as the careful exposure of financial and non-financial information through official or unofficial channels. This information might be qualitative or quantitative, mandated or optional. It is the best way to communicate a firm's performance to the stakeholders so that they can make investment decisions (Adefemi et al., 2018). The primary intent of corporate disclosure is to share information with investors to outside parties from publicly traded companies (Haely & Palepu, 2001). It plays a significant role in upholding accountability, transparency, and dependability, and annual financial reports also act as a reliable source of data for disclosures (Shrivastav & Kalsie, 2017). In addition, it suggests that regulations governing financial institutions, corporations, insurance, and securities must adhere to generally recognized accounting principles and auditing standards (Tomar & Bino, 2012). A company has many options for disseminating information, including the annual report, interim report, analytical report, conferencing, corporate communication, news release, prospectus, webpage, and so forth (Hope, 2003). In order to evaluate the relevance of their investments, stakeholders other than shareholders and investors, particularly those concerned with a company's social and environmental policies, require information (Baimukhamedova et al., 2017). Disclosure of information is of two categories, such as, mandatory and voluntary (Cheung et al., 2010; Sharif & Ming, 2015). Listed companies should abide by the rules and regulations that are the basis for mandatory information disclosure in a particular jurisdiction. On the other hand, additional disclosure can have advantages, and some companies prefer to provide more details than the essentials. It is known as voluntary information disclosure and is the best practice.

Using agency theory in CG disclosure study is feasible because it enables managers with useful access to a firm's information to communicate with the market in a manner which could increase the corporation's value (Rouf, 2012). Such disclosure technique help address issues like information asymmetries between executives and stockholders and conflicts of interest resulting from the agency problem (Temiz, 2021). From the agency theory perspective, greater exposure to CG practices can boost a company's profitability by make parallel the benefits of owners and managers. In addition, CG disclosures boost the management's accountability and help

eliminate executive expropriation through expensive perks and compensation (Shrivastav & Kalsie, 2017). Barako et al. (2006) observed that CG clarity offers the option to apply agency theory since managers with greater information access might help market contact trustworthy and help increase firm value. The agency theory argues that firms disclose adequately to lessen the conflict between shareholders and executives. Firms can also boost their value by being more transparent (Lobo & Zhou, 2001). On the other hand, firms may incur costs linked to increased public scrutiny if they make disclosures.

A relationship between CGDI and financial performance of a business has been shown in numerous research. However, there have been conflicting results in past studies on CG tools regarding the affiliation between CGDI and a firm's performance. A firm's CG disclosure policies can impact its value, according to Shrivastav and Kalsie's (2017) exposition of it in diverse aspects. The Governance Index, created by Klapper and Love in 2004, is focused on firms in emerging markets. They exposed that firms holding sound CG scores are higher on market appraisals since a substantial affirmative association exists between operating performance and governance indicators. Javaid and Saboor (2015) conducted a thorough investigation into the connection between CG and a firm's profitability as determined by ROE and ROA, and TQ on accounting and market performance successively. They observed significant positive associations in both the accounting and market measures. Finally, Herbert and Agwor (2021) looked at 78 annual reports from 13 Nigerian Stock Exchange-listed commercial banks between 2011 and 2016 to decide how CG disclosure (CGD) affects the profitability of those banks. The findings of the proposed connections indicate a favorable and substantial affiliation between CGD and bank profitability, which is in relation to CGD's influences on the board of directors and whistleblower policy.

Ishii and Metrick (2001) discovered a strong correlation between CG compliance and TQ and stock returns. Sarkar et al. (2012) compiled CG indices for 500 listed companies between 2003 and 2006 and discovered a significant affiliation between CG indices and companies' market worth. Rose (2016) examined the extent of compliance with the Danish Code of CG among Danish firms to ascertain whether a higher level of 'comply or explain' disclosures is associated with corporate success. The study shows a relationship between Danish firms' compliance with good corporate governance, how well they explain disclosure ratings and ROE/ROA. Shrivastav and Kalsie (2017) analyzed 38 Indian non-financial NSE-listed firms' TQ, Market Value Added, Market-Book Value Ratio, ROE, ROA, and ROCE, to examine the relationship between the CGDI and firm performance over a five-year period, from 2008 to 2012. The study concluded that CGDI appreciatively affects a firm's performance based on market and accounting indicators. According to Rouf's (2012) research, there is a link between listed non-financial companies in Bangladesh and their profitability, and this link is positive. Black et al. (2006) discovered clear proof that the entire CG index is a significant and potentially essential factor affecting market price, independent of the choice of market segments. El-Gazzar and Fornaro (2003) stated the interpretation of their findings that high earnings inspire management to disclose critical information because they boost investors' confidence.

According to Haniffa and Cooke's review of the research findings of a study in 2002, there is a substantial and affirmative correlation between corporate profitability and the setting for voluntary disclosure. In 2013, Gupta, Nair, and Gogulato used OLS regression to explore the CG reporting techniques used by 30 BSE-listed Indian companies. They confirmed that directorship, company size, and international listing status impacted CG disclosure. Al-Ahdal et al. (2020) explored the causal connection between CG practices and the profitability of a company from the perspective of the Gulf Corporation Council. They revealed that CG elements like audit committees and board accountability had an impact on a firm's performance but not the level of disclosure. Following the rules recognized by the Securities and Exchange Board (SEB) of India, Ben (2014) studied the effects of CG compliance with voluntary disclosures on the performance of 100 companies of India. According to the research, there is a slight connection between corporate disclosure and return on capital employed. Finally, Cunha & Mendes (2017) looked at the economic factors that could influence CG disclosure level in a significant sample of Portuguese companies. However, they witnessed no link between CG disclosure and a firm's financial performance gauged by ROE.

In light of the foregoing debates, we put forth the following hypothesis:

H_0: There is no link between the CGDI and a firm's financial performance evaluated by ROA and Tobin's Q.

Ha: There is a link between the CGDI and a firm's financial performance evaluated by ROA and Tobin's Q.

This general hypothesis is segregated into the following two hypotheses.

$H_0$1: CG disclosure index does not impact the return on assets (ROA).

Ha1: CG disclosure index impacts return on assets (ROA).

$H_0$2: CG disclosure index does not impact Tobin's Q.

Ha2: CG disclosure index impacts Tobin's Q.

Purpose for the study

The following are the research's purposes:

i. To assess the extent of disclosure compliance of DSE-listed pharmaceutical companies based on CG guidelines; and

ii. To explore the effect of CGDI on the performance of pharmaceutical companies in Bangladesh that are listed on the DSE.

Research and methodology

This segment reflects on data, samples, measurement variables, and models while exploring the affinity between CG disclosure and firm performance of the DSE-listed Bangladeshi pharmaceutical companies.

Sample and research data

Nine pharmaceutical companies listed on the Dhaka Stock Exchange (DSE) constitute the sample for this paper considering the age of listing and data availability. These nine companies became listed with the DSE before the promulgation of CG guidelines in 2006. The research used more data from the websites of the sample companies, DSE and BSEC, and the publicly available annual reports of sample companies from 2007 to 2020. Consequently, a total of 126 firm-year data were employed in the study. Earlier studies have observed that a firm's annual report is the more trustworthy source of the firm's disclosures than other communication channels, such as company websites (Zheng et al., 2022). As well, this paper examined the financial statements of the sample companies to compute Return on Asset (ROA) and Tobin's Q (TQ). Finally, the paper used ratio analysis techniques to assess the sample companies' performance.

Statistical tools

In order to examine the data, this study incorporated both descriptive and inferential statistics. To determine the usefulness of a data set and make inferences about population parameters of distribution, descriptive statistics such as frequency distribution, mean, maximum, minimum, standard deviation, skewness, kurtosis, and correlation are used. Inferential statistics such as normality, multi-collinearity, correlation matrix, cross-sectional dependence test (CD test), slope heterogeneity, and CIPS unit root test are also used. The study used MS Excel 2013, IBM SPSS version- 20 software and Stata MP 13 (64-bit) to analyze the data. The association between the CGDI and the company performance of publicly traded pharmaceutical businesses in Bangladesh is examined using multiple linear regressions, including fixed effect (FE) and random effect (RE) models. The study also used the Hausman test to assess the optimum model, either a fixed-effect or random-effect model. The Dynamic Ordinary Least Squares (DOLS) technique is employed to detect the long-term effects between the explanatory and responding variables.

Variables formulation and clarification

Corporate Governance Disclosure Index (CGDI):

A dichotomous approach is used to score the disclosed parameters. If a company released data from the index, it recognized a score of 1, and if it did not, it recognized a score of 0. All of the factors were given similar weight because all are thought to be crucial for effective corporate governance. The following formula determines the CGDI:

$$\text{CGDI} = \frac{\text{Tota score for a particular company}}{\text{Maximum score a company might receive}} \times 100$$ (Ronoowah & Seetanah, 2023; Nobanee & Ellili, 2022; Saha & Kabra, 2022).

The CGDI value ranged from 0 to 100, with 100 representing the top disclosure given by a particular company and 0 the worst. The CGDI does not assess the quality and level of disclosure of a specific variable; it just acknowledges the existence of information in annual or CG reports.

Firm performance variables

The study employed both accounting and market-based measures to investigate how CGDI impacts a firm's performance. As a result, a firm's performance is considered in this paper as a dependent variable based on market measures like TQ and accounting measures like ROA (Lam & Lee, 2008; Daily & Dalton, 1993).

The following formula is utilized as the accounting-based performance measures of a firm:

$$\text{ROA} = \frac{\text{Operating Income}}{\text{Average Total Assets}}$$ (Temiz, 2021; Flammer, Toffel, and Viswanathan, 2021; Shrivastav & Kelsie 2017, Rana & Hossain, 2023)

The TQ formula employed in the present research is an improved form of the original formula. The study gives the following simplified representation of the TQ ratio:

$$\text{TQ} = \frac{\text{Equity Market Value}}{\text{Equity Book Value}}$$ (Hayes, 2021, Ali, Mahmud, and Lima, 2016, Rana & Hossain, 2023).

Control Variables

This study included a few control variables (firm size, firm age, and financial leverage) to assess the influence of CGDI on a firm's financial performance. The natural logarithm of the total assets is applied for determining the firm size (Abad et al., 2017; Ducassy & Guyot, 2017; Islam, 2023). The firm age is calculated as the natural logarithm of the number of years after a company first

registered on a stock market (Nguyen et al., 2015; Ammari et al., 2016, Rana & Hossain, 2023; Agyemang et al., 2023). The last measure of corporate financial leverage is the proportion of total debt to total assets (Dey et al., 2018; Deswanto & Siregar, 2018).

Model development

The models are created to examine how disclosure scores of firms affect their performance based on prior research.

Model 1: $ROA_{it} = \alpha + \beta_1 CGDI_{it} + \beta_2 FSIZE_{it} + \beta_3 FAGE_{it} + \beta_4 FLEV_{it} + \varepsilon_{it}$

Model 2: Tobin's Q $(TQ)_{it} = \alpha + \beta_1 CGDI_{it} + + \beta_2 FSIZE_{it} + \beta_3 FAGE_{it} + \beta_4 FLEV_{it} + \varepsilon_{it}$

Where ROA stand for Return on Asset, CGDI stand for Corporate Governance Disclosure Index, FSIZE stand for Firm size, FAGE stand for Firm age, FLEV stand for Financial Leverage, β1, β2, β3, β4, are the coefficients, *i* characterizes the number of companies, *t* indicates time, α signifies a constant, and ε is the error term.

Findings and Discussion

Descriptive Statistics

Table 1 presents the descriptive statistics of the CGDI, the lowest value is 17%, and the highest value is 99%, but the mean, median, and standard deviation (SD) are 66.30%, 77%, and 0.23183, successively. The time-series pattern (Figure 1) of the CGDI of the sample company's indications that the complied percentage increased from 2012 onwards, which signals that the revised CG guidelines of 2012 favorably impact the upward trend of the CGDI of pharmaceutical companies in Bangladesh. The data are normal distribution as the CG disclosure indices represent a minimum acceptable skewness of -.300, falling in the range of ±2.0. Nevertheless, standard kurtosis statistics of CG disclosure indices show a maximum standard kurtosis of -1.479, where the standard kurtosis of the CG disclosure indices does not surpass the normality ranges of ±2.0 (George & Mallery, 2010).

Table 1: Summary of descriptive statistics

	CGDI (%)	FSIZE (Million)	FAGE (No. of year)	FLEV (Ratio)	ROA (%)	Tobin's Q (Ratio)
Mean	66.30	11054.67	25.94	1.553	.0951	4.942
Median	77.00	2894.70	25	.932	.0982	4.085
S. D	.2318	15245.59	7.693	1.644	.0577	4.748
Skewness	-.300	-.055	-.430	1.657	.142	2.193
Kurtosis	-1.479	-1.377	-.331	1.829	-.640	6.008
Minimum	17.00	74350.8	44	.0600	.0009	.130
Maximum	99.00	69.72	11	6.454	.2413	27.03

Source: The authors calculation

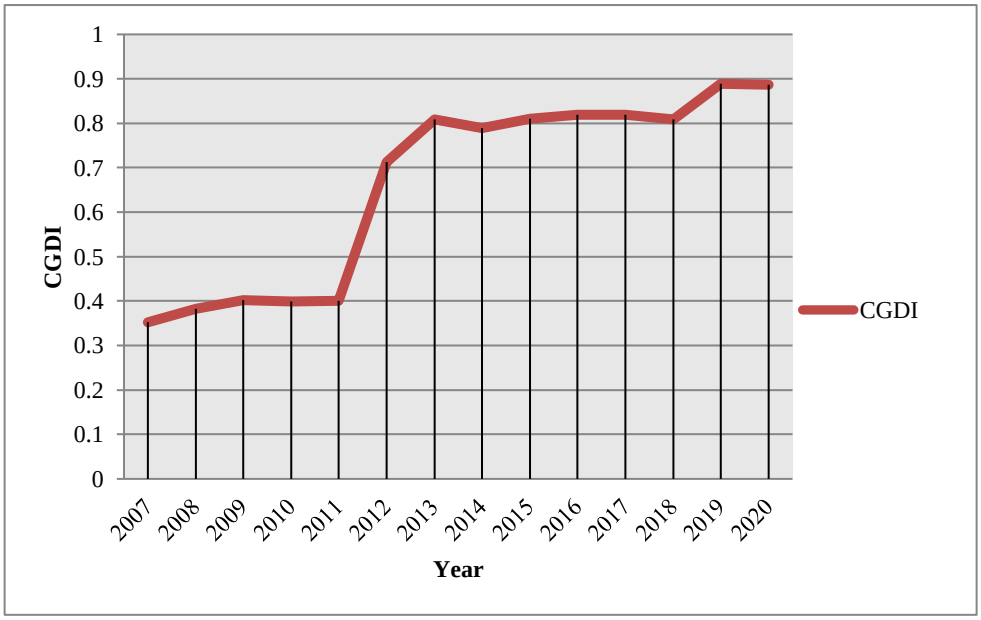

Figure 1: the time series pattern of CGDI from 2007 to 2020.

The figure shows the time series pattern of CGDI from 2007 to 2020.

Correlation Matrix

This section used the Pearson correlation test to show the tie-up between the CG mechanisms and firm performance measures exhibited in table 2. The correlation analysis reveals that firm size negatively correlates with TQ at a 1% significance level, but there is no real connection between ROA and FSIZE, FAGE, FLEV, and CGDI. Firm age has no relationship with ROA and TQ. Then again, FLEV has no significant effects on ROA but has a substantial positive tie with TQ at the 1% level. CGDI does not significantly correlate with indicators of financial performance.

The correlation matrix table also demonstrations the affinity between explanatory variables. All of the coefficients in this table are less than 0.6, demonstrating that the explanatory variables are not strongly associated. Therefore, there is no trouble with multicollinearity among the independent variables. Likewise, the outcomes of the econometric model for ROA and TQ involving independent variables are free from multicollinearity, and the data are reliable, as exhibited in Table 2, where the VIF value for each explanatory variable is less than ten and greater than one.

Table 2: Correlation Matrix (Pearson Correlation) and VIF

	ROA	**TQ**	**FSIZE**	**FAGE**	**FLEV**	**CGDI**	**VIF**
ROA	1						
TQ	.589**	1					
FSIZE	.030	-.433**	1				1.620
FAGE	.159	.018	.305**	1			1.441
FLEV	-.156	.438**	-.506**	-.030	1		1.378
CGDI	-.013	-.097	.384**	.533**	-.113	1.00	1.514

Source: The authors calculation

** Correlation is significant at the 2-tailed level of 0.01.

* Correlation is significant at the 2-tailed level of 0.05.

Tests for cross-sectional dependence (CD) and CIPS unit root

The study tested CD for each variable before resolving stationarity. Because of this, the study employed the Pesaran (2004) CD test. The test results of horizontal CD for pharmaceutical companies listed on the DSE are displayed in Table 3 using Pesaran CD (2004). The null hypothesis of sectional dependence, CD ~ N (0, 1) p values are almost near nil. The CD statistics and connected p-values sturdily reject the null hypothesis for cross-sectional dependence. The paper indicates that cross-correlations are substantially suggesting cross-sectional correlation among the variables. It demonstrates that we made the right decision while selecting our estimation method. The test result shows that cross-sectional dependence exists for most model variables.

In data analysis, it is crucial to consider whether a data series is stationary, meaning when it lacks a unit root, or not stationary, meaning it has a unit root after estimating 2004 Pesaran's CD test, 2007 Pesaran's unit root test is employed. The outcomes of the CIPS unit root test are exhibited in table 3. The outcomes of the CIPS unit root test make clear that, with the exception of firm size, the data series is stationary at all levels. Entire variables became stationary after the first differentiation.

Table 3: Results of the CD and CIPS unit root test.

CD Test			**CIPS Unit Root Test**	
Variable	Statistics	p-value	Level	1st Difference
CGDI	20.040	0.000	-5.521***	
FSIZE	19.09	0.000	-1.270	-3.713***
FAGE	22.44	0.000	-3.396***	
FLEV	2.60	0.009	-3.220***	
ROA	-1.57	0.100	-2.279***	
Tobin's Q	3.32	0.001	-2.161***	

***, denotes significance at the 1%, level.

Source: The authors calculation

Slope heterogeneity

The research paper presented the slope heterogeneity studies over cross-sectional components that are deliberately similar to Pesaran and Yamagata's experiments (2008). The delta test is initially run in a cross-section unit to see whether there is homogeneity or heterogeneity (Pesaran & Yamagata, 2008). Table 4 slope heterogeneity test results show that the delta adj**.** The p-value for all models is less than .05. The research refuses the null hypothesis (H_0) and supports the alternative hypothesis (H_1). Hence, this model allows for heterogeneous slopes.

Table 4: Results of slope heterogeneity test

	Model-1		**Model-2**	
Test	Test Stat.	p-value	Test Stat.	p-value
Delta	3.873	0.000	1.878	0.060
Delta adj.	5.277	0.000	2.559	0.011

Source: The authors calculation

Regression model results

Table 5 illustrates how the corporate governance disclosure index (CGDI) affects financial performance evaluated by ROA and TQ. When comparing the Hausman test Chi-square values for model 1 (ROA), we see that the probability values are less than 5% (P-value 0.05), which indicates that the research denies the null hypothesis (H_0) and supports the alternative (H_1). Consequently, it is evident from the Hausman test results that the fixed effect model is preeminent for predicting data than the random effect model according to ROA**.** In contrast, when examining the Hausman test Chi-square values in model 2 (TQ), the statistic value is more significant than 5% (P-value > 0.05), indicating that the research takes the null hypothesis (H_0) and discards the alternative (H_1). Consequently, it is evident from the Hausman test results that the random effect model is chosen for forecast data than the fixed effect model according to TQ.

Table 5 (model 1) demonstrates that CGDI positively and substantially affects financial performance assessed by accounting measure (ROA). Therefore, the null hypothesis ($H_0$1) is refused, and the alternative hypothesis is approved. Model 2 shows that CGDI has no noticeable effects on financial performance evaluated by market measure (TQ). The null hypothesis ($H_0$2) is supported in this situation, and the alternative hypothesis is denied. It implies that companies with higher corporate transparency procedures do better than pharmaceutical companies with lower disclosure levels. In the past, some studies have discovered a significant correlation between the CGDI and the financial performance of the company, including Nor et al. (2016), Shrivastav and Kelsie (2017), Xie and Ward (2019), Siueia et al. (2019), and Wu et al. (2020). However, in the present analysis, the influence of company disclosures on TQ is negligible. The outcomes of this study concur with several earlier investigations, including those by Hagberg et al. (2015), Neeveditah et al. (2017), Rahman et al. (2018), Krisdayanti and Wibowo (2019), and Utomo et al. (2020). These results suggest that CG codes are to be examined to make the necessary improvements. Besides, the BSEC has to enhance its monitoring capabilities to ensure better compliance by the pharmaceutical companies in Bangladesh. These conclusions have profound implications for corporations that ignore corporate disclosure.

The control variable, firm size, has a weighty and adverse influence on firm performance as evaluated by ROA and TQ. Conversely, firm age and financial leverage significantly and positively influence on firm performance as evaluated by the TQ; however, they have an insignificant effect on firm performance as evaluated by the ROA. So firm age and financial leverage are the most vital control variables that help guess the influence of CGDI on a firm's market measure performance.

Table 5: Regression model outcomes

	Model-1(ROA)		**Model-2 (TQ)**	
	Random Effect Model (RE)	Fixed Effect Model (FE)	Random Effect Model (RE)	Fixed Effect Model (FE)
CGDI	0.3740	0.445*	-.077	-0.084
	(0.118)	(0.069)	(0.662)	(0.646)
FSIZE	-.458***	-.599***	-.250**	-0.277
	(0.001)	(0.000)	(0.016)	(0.019)
FAGE	-0.2714	-.076	0.810*	0.9123
	(0.658)	(0.909)	(0.081)	(0.073)
FLEV	-.0640	-.056	0.291***	.298***
	(0.505)	(0.566)	(0.000)	(0.000)
R^2	0.1880	0.1900	0.2230	0.2232
F-test	3.343	6.63	34.46	8.12
Prob > F	0.0004	0.0001	0.0000	0.0000
Chi 2	8.25		0.48	
Prob>chi2	0.0082		0.9750	

***, **, and * represents at the 1%, 5%, and 10% significance level accordingly.

Source: The authors calculation

DOLS estimator outcomes

According to DOLS estimate table 6, the corporate governance disclosure index (CGDI) significantly and positively affects financial performance as indicated by ROA and TQ in the long run. The panel data regression results showed that CG disclosure positively and

substantially influences firm performance evaluated by ROA, but TQ has no noteworthy impact. Our primary outcomes are robust in the case of ROA.

Table 6: Outcomes of DOLS

Regressors	**Model-1 (ROA)**		**Model-3 (TQ)**	
	Coeff.	p-value	Coeff.	p-value
CGDI	1.627	0.000	0.458	0.062
FSIZE	5.982	0.000	-0.038	0.916
FAGE	1306.64	0.000	1174.91	0.000
FLEV	-3.115	0.000	-2.279	0.000

Source: The authors calculation

Key findings

The outcomes of the descriptive statistics indicated that the sample companies did not fully comply with the BSEC guidelines. However, the time-series pattern of corporate disclosure indices showed that the compliance percentage has increased since 2012. It signals that the revised CG code of 2012 has impacted the growing trend of the CGDI of pharmaceutical companies in Bangladesh. This study demonstrated that corporate disclosure influences firms' financial performance (ROA) in an affirmative and significant way. However, CG disclosures have little impact on TQ. Outcomes from DOLS have indicated a long-term favorable correlation between company disclosure and financial performance as evaluated by ROA and TQ.

Conclusions

CG disclosure has evolved as a critical part of business practice over time and unfolded a robust trend globally, especially for pharmaceutical companies whose operations impact the lives and livelihoods of people (Herbert & Agwor, 2021). The study has answered the objectives meticulously and successfully. The study has studied the degree of disclosure compliance of the DSE-listed pharmaceutical companies based on CG guidelines and explored the influence of CGDI on the firm performance of DSE-listed pharmaceutical companies in Bangladesh. The target population was the 15 DSE-listed Bangladeshi pharmaceutical companies. Nine out of fifteen companies were chosen as a sample since those companies became listed on the DSE before 2007. The research gathered secondary data from annual reports from 2007 to 2020. The research used fixed and random effect regression models to explore the connection between the CG disclosure index and company financial performance. Depending on the CG disclosure checklist, the study shows that the sampled companies failed to comply fully with the BSEC's CG code throughout the study period. The study observed that CG disclosures positively and significantly impact firms' financial performance (ROA). It confirms that pharmaceutical companies with more CG disclosures perform better than those with lower ones. Then again, the study shows that CG disclosures have an insignificant impact on TQ. Outcomes from DOLS, however, indicated a long-term positive correlation between CGDI and firm performance as estimated by ROA and TQ.

The study proposed that the regulators or the pharmaceutical industry develop a CG disclosure index/ checklist to enhance firm performance. It implies that pharmaceutical companies with higher CG disclosure practices do better than companies with lower disclosure practices. These outcomes suggest a thorough review of the CG code of best practices to make necessary modifications to the CG code.

The limited sample size, short the study period, and use of hand-collected data are drawbacks of this study. However, we presumed that the information was fair and accurate because the study's parameters were established based on data given in annual reports. A similar idea may be used in future research to assess the effect of CGDI on firm performance in both advanced and emergent nations with more firms and control variables. Notwithstanding the negative aspects, the outcomes are in relation to the theoretical hypothesis that disclosures lessen agency costs prompted by the differentiation of ownership and control.

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