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Insights from the Dhaka Stock Exchange on CEO Duality and Its Impact on Performance in Bangladesh's Manufacturing Firms

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Abstract

This research uses a dynamic panel data method and Two-Step System Generalised Method of Moments (SGMM) techniques to examine how CEO duality affects the performance of 109 manufacturing companies listed on the Dhaka Stock Limited in Bangladesh from 2014 to 2023. The results indicate that CEO duality impacts firm performance in different ways. Specifically, CEO duality does not significantly affect ROA, suggesting that when a CEO also serves as chairperson, they might make biased choices related to internal and external financing and overall decision-making. CEO duality positively impacts ROE, allowing the CEO to resolve conflicts of interest and corporate governance issues, thereby enhancing long-term profitability. CEO duality negatively affects Tobin's Q, indicating that much power is focused in one place. This reduces how well the board can oversee and manage the actions of the CEO. It allows the CEO to focus more on personal or immediate benefits rather than long-term company growth, which results in a decrease in market value as indicated by Tobin's Q. As a result, policymakers and corporate boards should evaluate the trade-offs associated with CEO duality, such as increasing board independence or restricting CEO power concentration. We used the Two-Step Difference GMM Model as a robustness check, which yielded the same findings as the Two-Step System GMM.

Keywords Corporate Firm Performance, CEO Duality, System GMM, Tobin's Q, Return on Equity, Return on Assets, Stock Exchange.

Introduction

Companies in the contemporary global economy face agency issues because ownership and control are different entities. According to Yu (2023), CEO duality refers to the situation where the CEO also serves as the board chair. This combination ofn3j 27!O. ,kcyzh 67u roles is significant in corporate governance. This paper explores how having the CEO occup/y both positions may improve a company's performance, especially for firms that emphasise operational management and strategic planning. It is pertinent to use this theoretical frame. CEO duality is essential in increasing rationalised decision-making as the decisions are centralised and coordinated by the same person, strengthening organisational leadership (Mubeen et al., 2021). The decision-making process has been substantial, and speed and time are competitive tools for manufacturing firms to realise customer shifts and demands. In addition, CEO duality provides a straightforward strategic view that a company wanting to grow globally and automate requires due to the unity created by the CEO. Still, it is argued that CEO duality may negatively impact the corporate structure, where the CEO may need supervision, primarily when the firm invests in capital-intensive projects. According to Duru et al. (2016) and Mohammadi, Basir and Lööf (2015), the CEO's actions need to be supervised by the Board of Directors. Therefore, if the CEO is the chair, the board cannot effectively hold the CEO accountable for their actions. Moreover, conflicts of interest are created, imposing constraints on the board and granting decision-making autonomy, mainly when the investment implies unchecked high-risk business strategies. The following research objectives have been developed to fulfil the above-stated research objectives: This study will examine how CEO duality affects performance by examining agency and stewardship theories in manufacturing companies in Bangladesh. This study adds to the current research by using CEO duality analysis while focusing on the unique characteristics of firms in developing economies, particularly those in Bangladesh. Second, the current studies on how CEO dualism affects company performance show varied results. This is a significant research area that mainly looks at developed nations. We applied this in our latest data analysis of 109 companies listed in Bangladesh.

We focused on the manufacturing companies on the Dhaka Stock Exchange because of their importance. First, the lion's share of Bangladesh’s GDP, employment, and export revenues are generated from the manufacturing sector. Second, the concept of manufacturing firms can be defined very broadly. This study examines how having the CEO also serve as the chairperson impacts the performance of various manufacturing firms. Thirdly, CEO duality here explains how these organisations address leadership tasks and their impact on productivity. The challenges include competitiveness, efficiency of the production system, and constant increase in the standards for manufacturing facilities in Bangladesh. Much academic attention has been paid to CEO duality and how it affects performance in global manufacturing companies. This has led to several empirical research studies. Earlier research was also found ambiguous since it suggested that CEO duality and performance were contingent and invariant with organisational form. The process splits the supervisory activity carried out by the board from the executive activity in the organisation. The perspective in Bangladesh contrasts with that of Europe; the board of directors resembles a management board and organisationally fulfils its functions with non-executive directors alongside executives performing their responsibilities. According to Rashid (2010), sponsor-shareholders are mostly family-based in Bangladesh, where the father is the chairperson, and the son or someone from his family is the CEO.

With these aims, we look at how having two CEOs affects the performance of manufacturing firms in Bangladesh listed on the Dhaka Stock Exchange. We will explore CEO duality alongside other

elements of the board structure that influence company performance, using ideas from agency and stewardship theories. In our study, CEO duality is the main focus. This focus has two options: either there is CEO duality, or there isn't (Ali et al., 2022; Duru et al., 2016; Yu, 2023). This research adds to current understanding by analysing factors like board size and the independence of board members. The audit committee's composition and CEO tenure are control variables and macroeconomic factors like GDP growth and inflation rate, which many authors have not investigated. This paper uses the GMM model, demonstrating enhanced computational efficiency relative to 2SLS and OLS estimators within a mixed regressive and spatial autoregressive framework. This model exhibits consistency and adheres to a standard distribution over time. The method uses dynamic panel data with the system GMM estimator to deal with endogeneity issues and hidden variations. This study contributes to academic and sensible discourse using addressing the studies gaps, inclusive of the impact of CEO duality innovations on company performance. It academically fills a tremendous void inside the contemporary literature by supplying facts from a rising economic system, where corporate governance demanding situations differ markedly from the ones in industrialised international locations. The consequences might also assist policymakers and regulators in Bangladesh in improving company governance structures, which can be essential for attracting worldwide investment and guaranteeing lengthy-time period corporation fulfilment and monetary quarter sustainability. The research examines firms' performance on the Dhaka Stock Exchange. It shows that having the CEO as chair can harm performance, which concerns policymakers and investors. Furthermore, this focus expands the framework to explore governance concepts and suggests ways to enhance organisational performance through appropriate governance strategies.

2 Literature Review

2.1 Theoretical Perspective and Empirical Evidence

2.1.1 Agency Theory

Agency theory states that CEO duality occurs when one person holds both the CEO and chairperson positions. This setup weakens the board's power to oversee the CEO properly. Yu (2023) notes that numerous policymakers support separating these roles. Merging the positions of CEO and chairperson can reduce the board’s independence, as the CEO may act in ways that do not benefit shareholders, which could negatively affect the company's performance (Alves, 2020; Hsu et al., 2021). As stated by Wijethilake and Ekanayake (2019), compensation paid to the CEO of the board can be linked to the goal of the corporate business so that the interest of the shareholders will always be achieved irrespective of what the CEO of the corporation does. When the CEO's compensation plan is aligned with the firm's objectives, it prevents the CEO from acting like Eudyptula Minor, prioritising immediate self-interest (Alves, 2020; Eklund, 2024). While the above strategy might eliminate some agency problems, it strengthens the counterchecks and threats associated with CEO duality.

The CEIDO-D parameter for a CEO duality leadership setup is mainly based on the company's size, internal operations, and the industry setting. CEO duality is compelling in companies with centralised governance since the CEO can make most decisions, especially in firms that require significant capital investment. This dual role can improve firm performance by speeding up decision-making and providing quick leadership (Mubeen et al., 2021; Yu, 2023). Duru et al.

(2016) have pointed out that organisations in the manufacturing sector with strong internal controls and governance structures may not need CEO duality because they experience events like audits frequently that can address any risks the CEO might decide to take for the organisation's benefit. This should only be recommended for companies with regular governance systems because it could hurt their performance and productivity.

2.1.2 Stewardship Theory

However, this theory proves that it allows strong leadership on the one hand because when the CEO and chairperson are one person, they can more easily make better decisions and coordinate better strategies to improve the firm's performance. In addition, it indicates that the issues in communication and costs arising from information sharing between the manager and shareholders are reduced when the CEO executes both duties (Hassan et al., 2023; Hsu et al., 2021; Yu, 2023). The stewardship theory views manufacturing firms as strong with lots of capital and long-term plans. The scope of these firms includes regulatory rules, technology changes, global growth, and demand variations. Sjostrand and Svensson (2022) argue that the theory pays attention to the many benefits of CEO duality -- focusing on one leadership structure, with one leader making long-term decisions and investments, while executives (the chairperson) lead the execution. Separating responsibility allows leaders to stay focused on being a leader and work on the company's path while balancing short and long-term goals. This arrangement combines the CEO and the chairperson roles in the same leader, leading to stability in leadership with the incorporation of innovation and managerial performance enhancement in a manufacturing firm (Alves, 2020; Wijethilake & Ekanayake, 2019). According to the theory, adding one person in both roles nullifies conflicts and increases productivity as decisions can be made more efficiently. A single person in charge leads to no misalignment of resources with the company’s vision. The theory, however, has come under fire from critics, mostly its proponents who advocate agency theory. According to critics, a CEO, who also serves as the Chair of the board, may put priorities of personal interests above the company goals (Hassan et al., 2023). In manufacturing companies that make complex strategic and operational choices and need many decisions in one afternoon, being CEO and simultaneously a simple majority independent director on the board are necessary for effective decision-making. It says that this can help manufacturing firms in particular and those with centralised leadership in particular. It pushes for long-term growth and operational efficiency (Le et al., 2023; Pham & Pham, 2020).

Therefore, the issues between the two theories result in two hypotheses. Second, agency theory posits that the board should assume autonomy in decision-making and implies that Implication is that the performance of a company may fall when the CEO is both the board chair and the employee (Duru et al., 2016). By contrast, stewardship theory holds that shareholders should be prioritised in a joint leadership structure. Duru et al. (2016) suggest that being an opportunist is not the premise of stewardship theory. Indeed, CEOs take pride in non-monetary rewards like reputation and respect to lead the company’s resources effectively. Pham and Pham (2020), as an example of the effect of CEO duality on company performance has been investigated. Within the context of the life cycle theory, we examined data from 442 publicly traded Vietnamese firms from 2012 to 2018 using Tobin's Q. Duru et al. (2016) found that CEO duality improves business performance during growth phases as measured by the generalised method of moments (GMM), but deteriorates its performance when a business matures.

The researchers also used GMM to estimate the effect of CEO duality on firms' performance using ROS, ROE, and ROA as the performance measure and board independence as a moderator. The data suggests that corporate performance is negatively affected by CEO duality. Mubeen et al. (2021) investigate the relationship between CEO dualism and business performance. Hsu et al. (2021) examine the influence of CEO duality on performance, highlighting that information costs serve as a moderating factor in this dynamic, particularly in Taiwan, where elevated information costs sustainably determined ROA and Tobin's Q. Debnath et al. (2021) employ panel data regression analysis and report mixed results: The CEO dualism is seen to negatively affect market capitalisation and positively impact return on assets (ROA).

In fact, in their study of 204 companies that are listed on the Istanbul stock exchange between the periods of 2009 and 2010, Doğan et al. (2013) found that CEO duality significantly impacts performance metrics such as ROA, ROE, and Tobin's Q and they did so for both odds ratios and regression coefficients. Shrivastav (2016) found that CEO duality negatively affects performance in the form of Tobin's Q and ROE in India. On the other hand, Mohammadi, Basir and Lööf (2015) scrutinised 11,000 Swedish companies and discovered that CEO duality positively affected performance. Balagobei and Udayakumara (2017) also found that CEO duality positively affected performance.

Wijethilake and Ekanayake (2019) detected a negative impact on performance in 212 publicly listed Sri Lankan firms. Chen et al. (2008) examine ownership concentration and performance in Hong Kong firms, starting a negative impact of CEO duality using Tobin's Q with no significant relationship using ROA or ROE analysis Chinese firms, finding no significant link relationship with CEO duality and performance from 2000-2001, but a positive link from 2002- 2003. However, several studies indicate no significance of CEO duality on firms' performance (Baliga et al., 1996; Chen et al., 2008; Elsayed, 2007; Rechner & Dalton, 1989; Yan Lam & Kam Lee, 2008). Dahya (2005) demonstrates that splitting the CEO and Chair of the Board titles among UK corporations is not associated with improved corporate performance. In Bangladesh, Rashid (2010) employs a two-stage least square regression (2SLS) methodology based on an observation of 825 firm years. Results show that CEO duality and business performance, as determined by Tobin's Q and return on assets, have a negative (non-significant) relationship.

2.1.3 Research Hypothesis

Based on the analysis in the previous subsections, we propose the following hypotheses:

H1: The CEO's duality positively impacts a firm's performance.

H2: Companies do less well when the CEO and board chair have dual responsibilities.

3 Methodology

3.1 Collection of Data and Sample Design

The "ex post facto" research design is applied in this examination. Secondary data of 109 manufacturing firms registered on the Dhaka Stock Exchange Limited from 2014 to 2023, representing ten fiscal years as the source of panel data needed to analyse the study, are obtained from the chosen firms' yearly financial reports and the DSE's pricing list. The study's sample is drawn using convenience sampling. The selection criteria for the manufacturing enterprises were

based on data availability, capitalisation, and economic significance in Bangladesh. These factors ensure that the sample is representative and provides insight into how characteristics of CEO dualism affect firm performance in the country. To enhance the robustness of the analysis, any missing data for institutions were excluded throughout the study period. There are a total of 1090 observations. Data on macroeconomic factors were collected from the World Bank's database. The chosen industries represent 28 textiles, five cement companies, three ceramic companies, 19 engineering companies, nine foods and allied companies, 15 fuel and power generating companies, and 17 pharmaceuticals and chemicals companies. Moreover, this investigation comprises the selection of two paper and printing companies, four tanneries, and seven miscellaneous companies from the industries above. All (i) financial institutions, (ii) corporate bonds, (iii) debentures, (iv) mutual funds, and (iv) treasury bonds issued by existing corporations and governments are excluded due to their non-manufacturing nature.

Table 1 Summary of the Selected Firms and Percentage of Samples

Name of Sector	No. of Firms listed	No. of Firms Used	Percentage of Sample Selected
Cement	7	5	71.4
Ceramic	5	3	60
Pharmaceuticals& Chemicals	33	17	51.5
Fuel & Power	23	15	65.3
Food & Allied	21	9	43
Textiles	58	28	48.24
Paper & Printing	6	2	33.33
Tannery	6	4	66.67
Miscellaneous	15	7	46.67
Total	216	109	50.47

Notes: Source of the table: DSE at 2024

3.2 Variables Measurement

3.2.1 Dependent Variables

The performance of companies was analysed by Duru et al. (2016), Hsu et al. (2021), Javeed et al. (2020), and Mubeen et al. (2021) using modern metrics such as return on equity (ROE), return on assets (ROA), and Tobin's Q. Return on assets (ROA) measures a company's profitability about its total assets, indicating how effectively a business operates. Return on equity (ROE) is another important measure of a company's performance, which is used to rate the company's performance relative to shareholders' equity. Thus, it goes without saying that in this research, the primary measures used to determine the company's performance are return on equity and assets. Also, Tobin's Q is a market-connected metric that is used to test the price of future cash flows based on actual and projected data (Singh et al., 2018).

3.2.2 Explanatory Factor

The independent variable of this study was CEO dualism, and its impact on the operational performance of manufacturing firms was analysed. When the CEO also serves as the board chair, this variable is set to 1, and otherwise, it is 0 (Mubeen et al., 2021; Wang et al., 2019). Among its influencing factors are audit committee size, CEO tenure, board size and board independence (Duru et al. 2016). A company's board is typically five to sixteen people. Access to more affordable resources through larger boards and independent board members is believed to improve performance (Duru et al., 2016). CEO tenure is an executive's tenure (Chen et al., 2017; Hu et al., 2015). The number of subgroups in a company's board that monitor financial reporting and transparency determines the number of members in the audit committee. Additional control variables include the debt-to-assets ratio (Leverage), the sales growth rate (the percentage change in current year sales compared to the prior year's sales), and the company size determined by the natural logarithm of total assets. This study examines GDP growth and inflation rates to analyse their effects on the firm's macroeconomic environment. This analysis shows a favourable correlation between GDP growth and corporate performance. Inflation drives production costs, impacting laws, supply chains, and consumer demand. It also suggests that corporate performance and inflation rate are negatively correlated.

Table 2 Catalogue of the variables

Variable	Mnemonics	Role	Measurement
Return on Asset	ROA	Dependent	Net Income / Total Assets.
Return on Equity	ROE	Dependent	Net Income / Total Equity.
Tobin's Q	TQ	Dependent	Market Value of Firm/ Replacement Cost of Firm
CEO Duality	CEOD	Independent	If the company's CEO is also the chairperson of the governance board, the variable is set to 1. If not, it is set to 0.
Board Size	BS	Control	Total Membership of the Board of Directors.
Board Independence	BI	Control	Percentage of Independent directors
CEO Tenure	CEOTEN	Control	The total number of years an executive has held the CEO office.
Audit Committee Size	AUCS	Control	Number of Members of the Audit Committee
Firm Size	SZ	Control	Natural Logarithm of the Whole Asset
Leverage	LV	Control	Total Debt / Total Assets
Sales Growth	SGR	Control	Current year sales- Base year sales/ Base year sales
GDP Growth Rate	GDPR	Control	GDP Rate Current Year- GDP Rate Base Year/ GDP Rate Base Year
Inflation Rate	INF	Control	The Rate of Annual Inflation

3.2.3 Model Specification

Our study used GMM based on recent research and some logical factors (Duru et al., 2016; Mubeen et al., 2021). We used a panel dataset to examine the relationship between CEO dualism and company performance. First, other research indicates that endogeneity issues are common in panel datasets, leading to unreliable and erroneous findings (Javeed et al., 2020; Mubeen et al., 2021). Second, CEO selections may be linked to error terms arising from possible causes in OLS regressions with missing data, autocorrelation issues, and measurement errors (Adams et al., 2010). Third, endogeneity problems could arise from the dual responsibilities of chairman and CEO, linked to certain of the company's hidden traits (Kang & Zardkoohi, 2005; Mubeen et al., 2021). Last but not least, the OLS model has limitations when used with panel datasets because unobserved variability may create biassed results and render them useless (Bae et al., 2018; Duru et al., 2016; Fralich & Fan, 2018; Javeed et al., 2020; Mubeen et al., 2021). As a result, internal issues need to be considered when conducting a CEO duality study. This study examined the connection between CEO dualism and business performance using the GMM approach to solve this internal issue. This issue might be resolved by a secondary technique that uses the robust command in fixed effects models to regulate heterogeneity under strict exo-geneity. However, when a company's sustainability efforts from the prior year impact its present performance, strict exogeneity is broken (Molla et al., 2023). Furthermore, GMM is appropriate for panel data characterised by a shorter time dimension and a larger cross-sectional dimension, as observed in this study (Yilmaz et al., 2023). In addition, the fixed effect model does not sufficiently account for endogeneity bias and autocorrelation. Furthermore, we may use the robust command to implement the random effect model. Nevertheless, the dilemma of heteroscedasticity can be resolved, whereas autocorrelation and endogeneity remain unresolved. Thus, instrumental variable estimation is necessary to address panel data endogeneity, autocorrelation, and heteroskedasticity. The Generalised Method of Moments (GMM), created by Arellano and Bond (1991), helps with dynamics endogeneity by using past values of dependent variables as tools. This approach addresses biases arising from autocorrelation, unobserved heterogeneity, and simultaneity, ensuring consistent and reliable estimates. This study uses dynamic panel data with System GMM estimation (Roodman, 2009). While requiring more resources, this approach is more efficient than the various GMM methods. We used the two-step robust command for the panel to test for autocorrelation and heteroskedasticity. Two-step GMM yields better results than one-step methods by using the covariance matrix. The Hansen J test was used to verify over-identifying restrictions, and the Arellano-Bond AR (2) test was used to evaluate the instrument's validity in the GMM analysis of autocorrelation. We also will consider using our explanatory variables, which include dynamic relationships. The GMM technique used in this study improves findings accuracy and dependability by revealing correlation and relationship between audit committee attributes and firm performance that standard econometric technique might not explain (Al-Jaifi, 2020; Wooldridge, 2019).

In this setting, the following equation can be derived:

$$CF_{it} = \alpha_0 + \delta CF_{it-1} + \beta_{it} CEOD + Xn_{it} + \mu_{it} + \in_{it} \quad [i]$$

For intercept, symbol α, slope, symbol, β and error term, ε.
As a measure of the company's corporate performance, the ROA, ROE, and TQ application in this study indicates CF_{it}. CF_{it-1} is mainly determined by the company's corporate performance from the previous year. The CEO variable is indicated by the regressor's duality, which is represented by βitCEOD, while the control variable is represented by X units. Firm-specific fixed effects of ± μit, an error term of ∈it, and individual firm input by I and time period by t are all included.

Equation (i) can also be rewritten as Equations (1, 2 and 3) to measure the firm's corporate performance, ROA, ROE and TQ.
The first equation (1) of the model is given below:

$$ROA_{it} = \alpha_{0+} \delta_1 ROA_{it-1} + \beta_2 CEOD_{it} + \beta_3 BS_{it+} \beta_4 BI_{it} + \beta_5 CEOTEN_{it} + \beta_6 AUCS_{it} + \beta_7 SZ_{it} + \beta_8 LV_{it} + \beta_9 SGR_{it} + \beta_{10} GDPR_{it} + \beta_{11} INF_{it} + \in_{it} \quad [1]$$

The second equation (2) of the model is given below:

$$ROE_{it} = \alpha_{0+} \delta_1 ROE_{it-1} + \beta_2 CEOD_{it} + \beta_3 BS_{it+} \beta_4 BI_{it} + \beta_5 CEOTEN_{it} + \beta_6 AUCS_{it} + \beta_7 SZ_{it} + \beta_8 LV_{it} + \beta_9 SGR_{it} + \beta_{10} GDPR_{it} + \beta_{11} INF_{it} + \in_{it} \quad [2]$$

The third equation (3) of the model is given below:

$$TQ_{it} = \alpha_{0+} \delta_1 TQ_{it-1} + \beta_2 CEOD_{it} + \beta_3 BS_{it+} \beta_4 BI_{it} + \beta_5 CEOTEN_{it} + \beta_6 AUCS_{it} + \beta_7 SZ_{it} + \beta_8 LV_{it} + \beta_9 SGR_{it} + \beta_{10} GDPR_{it} + \beta_{11} INF_{it} + \in_{it} \quad [3]$$

When looking at the chosen representatives and using the data model, the influence of CEO duality on how manufacturing companies perform can be analysed.

3.3 Diagnostic Tests

To guarantee the accuracy of the actual investigations, several diagnostic tests were conducted. To ensure that data has a unit root at the specified level of significance of 1%, tests like Levin, Lin & Chu, and ADF-Fisher are used to find unit roots. Correlation analysis was also performed when multicollinearity was tested, and all of the VIF values were less than 5.00. For that reason, multicollinearity was not a significant issue (Gujarati & Porter, 2010). The Wooldridge test was used to measure autocorrelation, while White's test and the Breusch–Pagan/Cook–Weisberg tests were used to check for heteroscedasticity. Since autocorrelation and heteroscedasticity were found, the GMM model was employed since it effectively addresses those problems. This approach improves the estimates' dependability and guarantees that the findings present a trustworthy validity of how the CEO's dual personality traits affect the company's success.

4 Results & Discussion

4.1 Descriptive Statistics

Table 3 Descriptive Statistics

Variable	Observation	Mean	Std. Dev.	Min	Max
ROA	1090	5.829	3.012	-8.9	18.28
ROE	1090	6.329	2.503	-8.4	18.23
TQ	1090	2.774	.995	.78	155.6
CEOD	1090	.495	.500	0	1
BS	1090	11.71	4.457	4	27
BI	1090	.167	.06	0	.57
CEOTEN	1090	12.061	9.132	1	48
AUCS	1090	3.788	.888	3	9
SZ	1090	9.714	.655	7.2	11.654
LV	1090	1.826	1.398	.013	9.186
SGR	1090	11.771	47.866	-8.99	1234
RGDP	1090	6.5	1.151	3.45	7.88
INF	1090	6.051	.663	5.51	7.53

Notes: The table summarises data from 109 Bangladeshi manufacturing enterprises. The final study sample includes 1,090 firm-year data from 2014 to 2023, resulting in a balanced panel. This comprises CEO Duality, Corporate Governance Variables, business performance, and control variables.

The study variable's summary statistics are shown in **Table 3**. The standard deviation of CEO Duality is 50, while the mean is 495. Descriptive statistics for the variables are also provided in the table. With an average of 47%, it suggests that CEO dualism is frequent. With a minimum of four and a maximum of twenty-seven directors, the average board has around twelve members. Between 0 to 57%, the average board independence is 16.7%. The audit committee size is 3.788, with three to nine members, while the average CEO tenure is 12.061. The firm's size and sales growth rate are 9.71 and 11.77, respectively, while the average value leverage is 1.83. With a range of -8.9 per cent to 18.28 per cent, the average performance variable for Return on Asset (ROA) is 5.82 per cent. 6.32% is the Return on Equity (ROE), ranging from -8.4% to 19.34%. Tobin's Q has an average profitability variable of 2.774 per cent, ranging from 0.78 to 155.6 per cent. Tobin's Q, ROA, and ROE all show varying performance results, which reflects the sample's varied governance and financial health.

4.2 Correlation Matrix and Multi-collinearity

Table 4 Pairwise Correlation Metrix

Variables	ROA	ROE	TQ	CEOD	BS	BI	CEOTEN	AUCS	SZ	LV	SGR	RGDP	INF
ROA	1												
ROE	0.18	1											
TQ	-0.04	-0.1	1										
CEOD	0.04	0.02	0.001	1									
BS	0.11	0.09	-0.02	-0.01	1								
BI	-0.09	-0.07	0.05	0.01	-0.02	1							
CEOTEN	0.05	0.01	-0.003	0.03	0.18	0.01	1						
AUCS	0.02	0.01	0.05	0.03	0.07	-0.04	-0.16	1					
SZ	-0.06	-0.001	0.05	-0.01	0.07	-0.01	-0.1	0.12	1				
LV	0.01	0.001	0.02	-0.01	0.09	-0.04	0.01	0.01	-0.09	1			
SGR	0.05	0.033	-0.03	0.01	0.04	-0.01	0.09	0.02	-0.02	-0.3	1		
RGDP	-0.02	-0.024	-0.02	-0.05	0.03	0.02	0.02	0.01	-0.00	-0.2	0.05	1	
INF	0.04	-0.025	-0.07	0.01	-0.03	0.03	-0.09	-0.11	-0.12	-0.1	-0.03	-0.09	1

Notes: The table shows the Pearson correlations for the variables identified in the study. The proxies for company performance are ROA, ROE, and TQ, with CEOD as the primary independent variable. The firm's control variables include BI, BS, CEOTEN, AUCS, SZ, LV, SGR, RGDP, and INF. The correlation matrix shows how strong the links are between the variables.

Table 4 indicates that the Pearson correlation matrix demonstrates a significant relationship among performance metrics, CEO duality, board characteristics, and the control variables employed in this study. The matrix indicates a correlation of 0.18 among the firm's performance measures, such as ROA and ROE. CEO dualism is positively linked with ROA, ROE, and TQ, which affect company performance. The variance inflation factor (VIF) for all explanatory variables is less than 10 (see **Table 5**), indicating no multi-collinearity among the variables presented. This ensures the reliability of the regression results in future studies. The mean VIF of 1.13 indicates that multicollinearity is not a concern in this study (Salmerón-Gómez, Rodríguez-Sánchez, and García-García 2020; Tamura et al., 2019).

Table 5 Variance Inflation Factor

Variables	VIF	1/VIF
BS	1.531	.653
INF	1.507	.663
CEOTEN	1.115	.897
SZ	1.073	.932
AUCS	1.056	.947
LV	1.024	.977
RGDP	1.014	.986
SGR	1.013	.987
BI	1.01	.99
CEOD	1.005	.995
Mean VIF	1.135	

Notes: This table displays the multicollinearity statistics for corporate governance characteristics and firm control variables. A VIF of less than 10 indicates no multi-collinearity issues among the variables.

4.3 Unit Root Test

Unit root tests were performed to ensure that the variables included in the regression analysis were stationary. Table 6 displays the results of the Levin-Lin-Chu (LLC) and Augmented Dickey-Fuller Fisher (ADF-Fisher) tests, which indicate that all variables have a position of 1% significance. Since non-stationarity is not an issue, the data are appropriate for additional econometric research.

Table 6 LLC, ADF-Fisher, Test

	LLC		ADF-Fisher	
	Statistic	P	Statistic	P
ROA	-4.39	.0000***	12.34	.000***
ROE	-6.56	.00001***	14.56	.0002***
TQ	-5.34	.000***	-3.45	.0004***
CEOD	-1.00	.000***	-1.00	.0000***
BS	-4.56	.0002***	-3.4	.0006***
BI	-8.56	.00001***	-7.8	.0002***
CEOTEN	-3.6	.0000***	-9.3	.0000***
AUCS	-5.6	.0000***	7.8	.0005***
SZ	-12.3	.00001***	4.5	.0003***
LV	-7.8	.0000***	6.3	.0005***
SGR	-5.9	.0003***	3.9	.0000***
GDPR	-12.3	.0000***	-6.3	.0000***
Inflation Rate	-13.09	.0000***	-11.4	.0001***

*Notes: The symbol *** represents importance at the 1% level. At this level, both the Levin-Lin-Chu and Augmented Dickey-Fuller-Fisher tests are carried out.*

4.4 Heteroscedasticity

White's test, the Breusch–Pagan/Cook–Weisberg test, and the Modified Wald test were used to evaluate heteroscedasticity. With p-values for the chi-square statistics dropping below 0.05 in maximal testing, **Table 7's** results demonstrate that the statistics display heteroscedasticity. This implies that the variance of the error phrases differs between observations; therefore, using robust estimating techniques—like GMM—is necessary to address this challenge and produce reliable findings.

Table 7 White, BPCW, MW Test for Heteroscedasticity

	White test		Breusch–Pagan/ Cook–Weisberg test		Modified Wald test	
	Chi2	Prob>chi2	Chi2	Prob>chi2	Chi2	Prob>chi2
Model 1 (ROA)	192.29	0.0000	.3418	.90	3.4e+0.5	0.0000
Model 2 (ROE)	227.04	0.0000	6.30	.0123	1.3e+0.5	0.0000
Model 3(Tobin's Q)	193.52	0.0000	4.14	0.0000	1203.19	0.0000

4.5 Autocorrelation

The Durbin-Watson statistic, the Wooldridge test, and the Breusch-Godfrey LM test have been used to assess autocorrelation. According to the results shown in Desk Eight, there is first-order autocorrelation in the facts set. GMM must handle this issue and produce independent estimates, as autocorrelation implies that residuals from a single period are related to those from previous periods (**see Table 8**).

Table 8 BGLM, DW, and Wooldridge Test

	Breusch–Godfrey LM		Durbin–Watson test	Wooldridge test	
	Chi2	Prob>chi2	D-W Statistic	F(1, 108)	Prob>chi2
Model 1 (ROA)	4.567	.0000	1.756	382.612	0.0000
Model 2 (ROE)	13.89	.0034	1.83	97.404	0.0000
Model 3(Tobin's Q)	6.78	.2345	2.056	115.604	0.0000

4.6 Regression Result

We analysed the differences between the fixed and random effects models using the Hausman specification analysis. **Table 9** evaluates the fixed-effects model, which is appropriate given the robust evidence against the null of consistent random results at $p<0.05$ for Tobin's Q, ROA, and ROE models. To generate reliable and efficient estimates and effects that better suited the objectives of the investigation, however, the Two-Step System GMM estimator was employed due to heteroscedasticity, auto-correlation, and perhaps endogenous regressors.

Table 9 Hausman specification

	Chi-square test value (Coefficient)	P
Model 1 (ROA)	54.4	0.000
Model 2 (ROE)	66.8	0.000
Model 3(Tobin's Q)	14.6	0.000

The Two-Step System method's GMM results for CEO duality and overall business success are shown in **Table 10**. Each edition proposes a significant relationship between the current year's and the prior year's total performance. This outcome is consistent with Duru et al.'s (2016) research. It is recommended that the dynamic nature of the version be used to assess corporate performance functions. The Arellano-Bond test, used to look for second-order serial correlation in first differenced residuals, and the Hansen over-identity test, which evaluates the variable's validity, are essential for robust GMM estimation.

Table 10 Two-Step System GMM Model Output

Variables	Model 1 (Return on Asset)	Model 2 (Return on Equity)	Model 3 (Tobin's Q)
Return on Asset$_{(t-1)}$	.558***(0.09)		
Return on Equity$_{(t-1)}$		.742***(0.004)	
Tobin's Q$_{(t-1)}$			.89***(0.24)
CEO Duality	-.022(.439)	.524**(.307)	-.0328**(.064)
Board Size	-.076***(.022)	.016(.019)	-.020**(.011)
Board Independence	-2.01***(1.02)	-.595**(.725)	1 .86***(.811)
CEO Tenure	.001(.009)	-.028**(.033)	.002(.005)
Audit Committee Size	.005(.080)	-.076(.079)	.022(.027)
Firm Size	-.065(.134)	-.077(.11)	.034(.038)
Leverage	.026(.047)	.025(.034)	-.001(0.018)

Sales Growth Rate	.005(.004)	.001***(.0005)	.0003(0.0004)
GDP Growth Rate	.002(.057)	-.023(.039)	-.047***(.022)
Inflation Rate	.470***(.117)	-.0322(.076)	-.111**(.063)
Constant	.441(1.63)	2.94**(1.51)	.800(.864)
Sargen test (p-value)	8.59***(.014)	.83(.134)	2.97*(0.06)
Hansen Test (p value)	4.14(.126)	.75(.456)	5.49(.498)
AR (1) Test (p-value)	-4.61***(0.00)	-3.84***(0.00)	-2.20**(0.028)
AR (2) Test (p-value)	-1.09(.275)	.20(0.567)	-.86(.389)
Groups/ instruments	109/14	109/15	109/24
Number of observations	981	981	981
Year effects	Yes	Yes	Yes
Prob > F	0.00	0.00	0.00

*Notes: The above table displays the double-step system GMM valuation results. Brackets around the coefficient values denote standard robustness inaccuracies. At the 1%, 5%, and 10% significant levels, ***, **, and * indicate statistically significant results.*

Here, CEO Duality has no significant effect on ROA at model 1, which indicates that when the CEO performs the same duty as the chairperson, some biased actions in favour of the Chairperson regarding internal and external financing and decision-making do not influence the firm's performance, which is comparable to that of others. (Baliga et al., 1996; Chen et al., 2008; Elsayed, 2007; Rechner and Dalton, 1989; Yan Lam and Kam Lee, 2008). For control variables related to corporate governance, ROA negatively significantly impacts board size and board independence. For (Model 1), increasing the board size cannot effectively manage the firm, and more non-executive directors in Bangladeshi enterprises do not generate profitability. For the other control variable, only the ROA positively and significantly affects the inflation rate. Therefore, the outcome exclusively supports hypothesis three: CEO Duality neutral influences firm performance. In model 2, CEO Duality shows a positive and significant impact on ROE. This means that when the CEO also serves as the board's chairperson, the CEO can make better decisions by eliminating conflicts of interest in the audit committee, reducing corporate governance issues, and fostering long-term company value, ultimately boosting the firm's profitability. This finding is supported by the previous research of Mohammadi, Basir, and Loof (2015), who discovered that CEO Duality improves company success. This finding confirms our premise that CEO Duality has a favourable impact on business performance. Only board independence and CEO tenure negatively affect ROE among the governance control factors, demonstrating that independent directors do not benefit the firm. Among the other control variables, only sales growth positively influences ROE. Therefore, the results confirm that our first hypothesis about CEO Duality's significant impact on firm performance is supported.Model 2 results support stewardship theory. Stewardship theory says that having two roles on the board combines functional and oversight duties, which boosts shareholder accountability (Finkelstein and D'Aveni et al., 1994). This approach helps align goals

between the CEO and the board since the chairperson brings together the board and management (Baliga et al., 1996). Additionally, CEO duality reduces rivalry between the CEO and chairperson, avoiding power issues in decision-making (Singh et al., 2018).

In Model 3, CEO Duality significantly negatively impacts Tobin's Q, indicating a lack of power balance. This diminishes the board's ability to oversee and manage executive actions. Earlier studies show that a company with only one CEO and chairperson is terrible for performance (Hsu et al., 2021; Shrivastav, 2016). This supports the second hypothesis: Firm performance is affected negatively due to a CEO duality. The board's ability to supervise and function independently declines when the CEO is also the chairman. With those larger boards comes lower Tobin's Q. In this scenario, the CEO may focus more on personal gain and less on an enterprise's long-term value and success, which would cause a drop in Tobin's Q. However, higher board independence is associated with improvements in Tobin's Q. In other words, a more effective board, fewer conflicts of interest and more shareholder alignment indicate an independent board. As a result, this greater independence can enhance the company's financial performance. The results of Model 3 corroborate the agency theory premise. Fama (1983) asserts that CEO duality adversely affects business performance due to increased agency costs, as posited by agency theory. The claim that dual leadership gives the CEO too much power in decision-making complicates the board's capacity to carry out one of its primary responsibilities: supervising the CEO. This leads to agency issues, notably conflicts of interest, when the CEO's interests and judgments differ from those of the shareholders. Another control variable, only the GDP growth rate and inflation rate, negatively affects Tobin's Q. Therefore, the outcome exclusively supports hypothesis two: CEO dualism adversely impacts corporate performance. Ultimately, the dynamic regression model results indicate that CEO duality substantially impacts corporate performance. The instrument is also lower than the group. This observation highlights the test's validity. The model exhibits statistical validity by utilising the AR (1) and AR (2) tests. A result of $p < .05$, which is less than the significance level for the AR (1) test, indicates that the residuals lack significant autocorrelation. Acquiring precise estimates is strictly dependent on this condition. Additionally, there is no evidence of over-identification, as the Hansen test demonstrates that the model's specifications are precise ($p > .05$). As the highly significant Chi-squared value attests, the system is suitably specified.

4.7 Robustness check

In this research, we conducted a robustness check with the Dynamic Two-Step Difference Generalized Method of Moment (GMM) regression to validate and ensure the reliability of the regression findings. Leamer (1983) argued that the "fragility" of regression coefficient estimates indicates a potential specification error and that performing sensitivity analysis, or robustness tests, is necessary to help identify any misspecification issues.

Table 11 Two-Step Difference GMM Model Output

Variables	Model 1 (Return on Asset)	Model 2 (Return on Equity)	Model 3 (Tobin's Q)
Return on Asset$_{(t-1)}$	.64***(0.17)		
Return on Equity$_{(t-1)}$		.69***(0.006)	
Tobin's Q$_{(t-1)}$			.84***(0.28)

CEO Duality	-.034(.39)	.456**(.35)	-.043**(.073)
Board Size	-.116***(.052)	.026(.024)	-.034**(.013)
Board Independence	-4.01***(2.02)	-.55**(.74)	3.56***(.67)
CEO Tenure	.004(.008)	-.034**(.027)	.004(.008)
Audit Committee Size	.004(.090)	-.066(.089)	.026(.034)
Firm Size	-.075(.114)	-.088(.22)	.045(.056)
Leverage	.046(.067)	.036**(.044)	-.002(0.027)
Sales Growth Rate	.007(.008)	.003***(.0008)	.0004(0.0008)
GDP Growth Rate	.012**(.06)	-.024(.049)	-.037***(.033)
Inflation Rate	.55***(.145)	-.037(.073)	-.245**(.038)
Constant	.561(1.38)	3.54**(2.61)	.5600**(.723)
Sargen test (p-value)	.98(.305)	.56**(.04)	1.98***(0.00)
Hansen Test (p value)	1.26(.567)	.84(.44)	2.43(.456)
AR (1) Test (p-value)	-3.54***(0.00)	-3.43***(0.00)	-1.01**(0.001)
AR (2) Test (p-value)	-1.89(.639)	.36(0.45)	1(.334)
Groups/ instruments	109/14	109/28	109/25
Number of observations	981	981	981
Year effects	Yes	Yes	Yes
Prob > F	0.00	0.00	0.00

*Notes: The above table displays the double-step difference in GMM valuation results. Brackets around the coefficient values denote standard robustness inaccuracies. Statistically significant values are indicated by the symbols ***, **, and * at the 1%, 5%, and 10% levels.*

Here's a two-step difference: GMM is used to achieve the outcomes of the robust analysis. Since the results of the two-step difference GMM regression are identical to the two-step system GMM that came before it, as shown in Table eleven, we can state that our effects are free from bias and misspecification and provide reliable and accurate results. In model 1, the inflation rate is positively and significantly impacted by ROA, whereas ROA adversely and severely impacts board size and independence. In this case, CEO duality has no significant impact on ROA. The outcome is identical to the two-step system GMM's previous outcome. CEO Duality has a markedly positive effect on ROE in model 2. Meanwhile, ROE is adversely impacted by board independence and CEO tenure. CEO Duality has a substantial negative impact on Tobin's Q for Model 3, indicating that concentrated authority may limit checks and balances and impair board effectiveness, resulting in choices prioritising short-term over long-term objectives. Tobin's Q is adversely affected by board size. However, board independence positively affects Tobin's Q, and GDP growth rate and inflation rate negatively affect Tobin's Q. The instrument is also lower than the group. This observation highlights the test's validity. The model exhibits statistical validity using the AR (1) and AR (2) tests. A result of $p < .05$, which is less than the significance level for the AR (1) test, indicates that the residuals lack significant autocorrelation. Acquiring precise estimates is strictly dependent on this condition. Additionally, there is no evidence of over-

identification, as the Hansen test demonstrates that the model's specifications are precise (p>.05). As the highly significant Chi-squared value attests, the system is suitably specified.

5. Conclusion

The study uses a dynamic panel statistics method, a two-step system generalized methods moments (SGMM) estimator, to research the impact of CEO duality on the overall performance of 109 manufacturing firms indexed at the Dhaka Stock Exchange Limited in Bangladesh from 2014 to 2023. Earlier studies mainly concentrated on static analysis of duality's effects on performance. Recent research emphasises the need to examine the long-term impacts of CEO duality within a dynamic framework since board structure can evolve (Duru et al., 2016; Mubeen et al., 2021). This analysis includes the firm's past performance, recognising that leadership structure and other factors are not entirely external. The outcomes of this study align with previous literature, providing new insights into Bangladeshi firm performance and revealing that CEO duality affects performance in two distinct ways. In Model 1 of the GMM system, CEO duality does not significantly influence the return on assets (ROA). This indicates that when the CEO is the chairperson, biased decisions may favour personal interests regarding financing and decisions that do not affect firm performance. The findings from Model 2 show that CEO duality positively affects Return on Equity (ROE) such that by holding both roles, it should resolve conflicts within the audit committee and provide the opportunity to increase long-term company value, thus improving profitability. This supports stewardship theory. In Model 3, however, CEO duality negatively influences Tobin's Q, indicating that attention to electricity can lessen the board's functionality to oversee management. This diminished independence may enable the CEO to prioritise personal or short-term goals over the company's long-term success, negatively affecting its market value, which aligns with agency theory. These findings show that CEO leadership can be beneficial and risky; it may improve some aspects of financial performance while jeopardising long-term stability. Thus, policymakers and corporate boards should carefully consider the pros and cons of CEO duality. To mitigate potential conflicts of interest and agency problems, companies could implement independent audits, separate major decision-making roles, and increase board independence. This research appends to the discussion about CEO duality, stating that having the CEO be the chairperson can either help or reduce company performance.

Limitation of the Study

Here are some limitations in our research. First, the studies are based on secondary information and quantitative records. Moreover, the study excluded certain firm-specific and macroeconomic variables and other factors influencing firm performance, such as ownership structure and industry-specific regulations, which were not considered. The exclusion of qualitative data or insights from corporate insiders, such as interviews with CEOs or Board members, creates a new path for further research in this area. The study sample covers only ten years and the manufacturing industry. Further research could include additional financial institutions, including insurance companies, investment banks, mutual funds, and banks. Corporate governance and the effects of CEO duality can change a lot from one country to another because of different rules, business customs, and economic situations.

Conflict of Interest

There is no conflict of interest, and everyone cleared their position.

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References

Adams, R. B., Hermalin, B. E., & Weisbach, M. S. (2010). The role of board directors in corporate governance: A conceptual framework and survey. *Journal of Economic Literature*, 48, 58–107. https://doi.org/10.1257/jel.48.1.58

Ali, S., Naseem, M.A., Jiang, J., Rehman, R.U., Malik, F., & Ahmad, M.I. (2022). How and when does CEO duality matter? *A case study from a developing economy.* Sage Open, 12, 21582440221116113. https://doi.org/10.1177/21582440221116113

Al-Jaifi, H. A. (2020). Board gender diversity and environmental, social, and corporate governance performance: Evidence from ASEAN banks. *Asia-Pacific Journal of Business Administration,* 12(3/4), 269-281. https://doi.org/10.1108/APJBA-12-2018-0222

Alves, S. (2020). CEO duality and firm performance: Portuguese evidence. In I. S. Paiva & L. C. Carvalho (Eds.), *Advances in business strategy and competitive advantage* (pp. 227–246). IGI Global. https://doi.org/10.4018/978-1-7998-2128-1.ch012

Arellano, M., & Bond, S. (1991). Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *Review of Economic Studies, 58*, 277–297. https://doi.org/10.2307/2297968

Bae, S.C., Chang, K., & Yi, H.-C. (2018). Corporate social responsibility, credit rating, and private debt contracting: New evidence from the syndicated loan market. *Review of Quantitative Finance and Accounting,* 50, 261–299. https://doi.org/10.1007/s11156-017-0630-4

Balagobei, S., & Udayakumara, K.G.A. (2017). Board leadership structure and firm performance: Evidence from listed companies in Sri Lanka. *International Journal of Accounting and Finance, Reporting,* 7(2), 391-403. https://doi.org/10.5296/ijafr.v7i2.12072

Baliga, B.R., Moyer, R.C., & Rao, R.S. (1996). CEO duality and firm performance: What is the fuss? *Strategic Management Journal, 17*(1), 41–53. https://doi.org/10.1002/(SICI)1097-0266(199601)17:1

Chen, C.-W., Lin, J.S.B., &Yi, B. (2008). CEO duality and firm performance - an endogenous issue. *Journal of Corporate Ownership Control,* 6, 58–65. https://doi.org/10.22495/cocv6i1p6

Chen, L., Liao, C.-H., Tsang, A., & Yu, L. (2017). CEO career concerns during early tenure and corporate social responsibility (CSR) reporting, *SSRN Electronic Journal.* https://doi.org/10.2139/ssrn.2992972

Dahya, J. (2005). One man, two hats: What's all the commotion? *Journal of Corporate Governance*, 13(4), 352–365 https://doi.org/10.2139/ssrn.853006

Debnath, P., Das, P., Laskar, N., Khan, S.B., Dhand, S., & Kaushal, K. (2021). CEO duality and firm performance: an empirical study on listed companies from an emerging market. *Corporate Governance and Organizational Behavior Review*, 5, 194–202. https://doi.org/10.22495/cgobrv5i2sip7

Doğan, M. (2013). The impact of CEO duality on firm performance: Evidence from Turkey. *International Journal of Business and Social Science,* 4, 149–155.

Duru, A., Iyengar, R. J., & Zampelli, E. M. (2016). The dynamic relationship between CEO duality and firm performance: The moderating role of board independence. *Journal of Business Research*, 69(9), 4269–4277. https://doi.org/10.1016/j.jbusres.2016.04.001

Eklund, M.A. (2024). CEO compensation and market risk: The moderating effect of board size and CEO duality in the Swiss context. *International Journal of Disclaimer Governance*, 21, 227–240. https://doi.org/10.1057/s41310-023-00188-2

Elsayed, K. (2007). Does CEO duality really affect corporate performance? *International Revision of Corporate Governance*, 15, 1203–1214. https://doi.org/10.1111/j.1467-8683.2007.00641.x

Fama, E. F., & Jensen, M. C. (1983). Separation of ownership and control. *The journal of law and Economics*, *26*(2), 301-325. https://doi.org/10.1086/467037

Finkelstein, S., & D'Aveni, R.A. (1994). CEO duality as a double-edged sword: How boards of directors balance entrenchment avoidance and unity of command. *Journal of Academic Management,* 37, 1079–1108. https://doi.org/10.2307/256667

Fralich, R., & Fan, H. (2018). Legislative political connections and CEO compensation in China. *Journal of Asian Business Management,* 17, 112–139. https://doi.org/10.1057/s41291-018-0034-x

Gujarati, D. N., & D. C. Porter. (2010). *Basic econometrics.* New York: McGrow-Hill.

Hassan, M.K., Houston, R., Karim, M.S., & Sabit, A. (2023). CEO duality and firm performance during the 2020 coronavirus outbreak. *Journal of Economics and Asymmetries*, 27, e00278. https://doi.org/10.1016/j.jeca.2022.e00278

Hsu, S., Lin, S.-W., Chen, W.-P., & Huang, J.-W. (2021). CEO duality, information costs, and firm performance. *North American Journal of Economics and Finance*, 55, Article 101011. https://doi.org/10.1016/j.najef.2019.101011

Hu, N., Hao, Q., Liu, L., & Yao, L. J. (2015). Managerial tenure and earnings management. *International Journal of Accounting & Information Management*, *23*(1), 42-59. https://doi.org/10.1108/IJAIM-04-2014-0025

Javeed, S.A., Latief, R., & Lefen, L. (2020). An analysis of the relationship between environmental regulations and firm performance with moderating effects of product market competition: Empirical evidence from Pakistan. *Journal of Cleaning Production*, 254, 120197. https://doi.org/10.1016/j.jclepro.2020.120197

Kang, E., Zardkoohi, & A. (2005). Board leadership structure and firm performance. *International Revision of Corporate Governance*, 13, 785–799. https://doi.org/10.1111/j.1467-8683.2005.00470.x

Le, H.T.M., Ting, I.W.K., Kweh, Q.L., & Ngo, H.L.T. (2023). CEO duality, board size and firm performance: Evidence in Vietnam. *International Journal of Business Excellency*, 29, 98. https://doi.org/10.1504/IJBEX.2023.128255

Leamer, E.E. (1983). Let's take the con out of econometrics. *American Economic Review,* 73, 31–43.

Mohammadi, A., Basir, N., & Lööf, H. (2015). CEO duality and firm performance revisited. *International Journal of Corporate Governance*, 6(2), 125–147.

Molla, M. I., Islam, M. S., & Rahaman, M. K. B. (2023). Corporate governance structure and bank performance: Evidence from an emerging economy. *Journal of Economic and Administrative Sciences*, *39*(3), 730-746. https://doi.org/10.1108/JEAS--05-2021-0083

Mubeen, R. (2021). CEO duality and business firms' performance: The moderating role of firm size and corporate social responsibility. *Sustainability*, 12(8), 3480. https://doi.org/10.3389/fpsyg.2021.669715

Pham, D., & Pham, Q. (2020). The impact of CEO duality on firm performance: examining the life-cycle theory in Vietnam. *Accounting*, *6*(5), 737-747. https://doi.org/10.5267/j.ac.2020.6.010

Rashid, A. (2010). CEO duality and firm performance: Evidence from a developing country. *Corporate Ownership and Control, 8*(1), 163–175. https://doi.org/10.22495/cocv8i1c1p1

Rechner, P. L., & Dalton, D. R. (1989). The impact of CEO as board chairperson on corporate performance: Evidence vs. rhetoric. *Academy of Management Perspectives*, *3*(2), 141-143. https://doi.org/10.5465/ame.1989.4274764

Roodman, D. (2009). How to do xtabond2: An introduction to difference and system GMM in Stata. *The Stata journal*, *9*(1), 86-136. https://doi.org/10.1177/15-36867X0900900106

Salmerón-Gómez, R., Rodríguez-Sánchez, A., & García-García, C. (2020). Diagnosis and quantification of the non-essential collinearity. *Computational Statistics*, *35*(2), 647-666. https://doi.org/10.1007/S00180-019-00922-x/METRICS

Shrivastav, S. (2016). The relationship between CEO duality and firm performance: An analysis using panel data approach. IUP, *Journal of Corporate Governance,* 15.

Singh, S., Tabassum, N., Darwish, T. K., & Batsakis, G. (2018). Corporate governance and Tobin's Q as a measure of organisational performance. *British journal of management*, *29*(1), 171-190. https://doi.org/10.1111/1467-8551.12237

Sjöstrand, V., & Svensson Kanstedt, A. (2022). CEO duality's effect on firm performance: A comparison between the agency and stewardship theory. *Economic and Business cartegory.diva-portal.org*, p.121.

Tamura, R., Kobayashi, K., Takano, Y., Miyashiro, R., Nakata, K., & Matsui, T. (2019). Mixed integer quadratic optimisation formulations for eliminating multicollinearity based on variance inflation factor. *Journal of Global Optimization*, 73(2), 431–446. https://doi.org/10.1007/s10898-018-0713-3

Wang, G., DeGhetto, K., Ellen, B. P., & Lamont, B. T. (2019). Board antecedents of CEO duality and the moderating role of country-level managerial discretion: a meta-analytic investigation. *Journal of Management Studies,* 56(1), 172-202. https://doi.org/10.1111/joms.12408

Wijethilake, C., & Ekanayake, A. (2019). CEO duality and firm performance: the moderating roles of CEO informal power and board involvements. *Journal of Social Responsibilities*, 16, 1453–1474. https://doi.org/10.1108/SRJ-12-2018-0321

Wintoki, M.B., Linck, J.S., & Netter, J.M. (2012). Endogeneity and the dynamics of internal corporate governance. *Journal of Finance and Economics*, 105, 581–606. https://doi.org/10.1016/j.jfineco.2012.03.005

Wooldridge, J. M. (2019). *Introductory Econometrics: A Modern Approach*. 7th ed. Boston, MA: Cengage Learning.

Yan Lam, T., & Kam Lee, S. (2008). CEO duality and firm performance: Evidence from Hong Kong. *Corporate Governance*: *International Journal of Business Sociology*, 8, 299–316. https://doi.org/10.1108/14720700810879187

Yilmaz, M. K., Hacioglu, U., Tatoglu, E., Aksoy, M., & Duran, S. (2023). Measuring the impact of board gender and cultural diversity on corporate governance and social performance: Evidence from emerging markets. *Economic research-Ekonomska istraživanja*, *36*(2).

https://doi.org/10.1080/1331677X.2022.2106503

Yu, M. (2023). CEO duality and firm performance: A systematic review and research agenda. *Journal of European Management Review, 20*, 346–358. https://doi.org/10.1111/emre.12522