COVID-19 PANDEMIC AND FIRM PERFORMANCE IN EMERGING MARKET: THE ROLE OF CORPORATE GOVERNANCE

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Abstract

The agent is granted decision-making authority over the company's operations to achieve the principal's objectives (Jensen & Meckling, 1976). However, the existence of the COVID-19 pandemic makes companies get higher risks that have an impact on company performance. The board consisting of board size, board independence, women on board, and chief executive officer (CEO) try to maintain the company's performance during COVID-19. The purpose of this study is to analyze the role of corporate governance which consists of board size, board independence, women on board, and CEO duality on company performance during the COVID-19 period. The sample of this study is 538 companies listed on the Indonesia Stock Exchange (IDX). The results of this study indicate that COVID-19 has had an impact on decreasing the company's performance. Then, we also found that board size has a significant positive effect on company performance during the COVID-19 pandemic, while board independence, women on board, and CEO duality do not have a significant effect. Then, we interacted with COVID-19 on the company's performance. The results of our research showed that board size, women on board, and CEO duality have a significant positive effect on company performance. These results have implications that corporate governance has a very important role in boosting the performance of companies that are under pressure due to the COVID-19 pandemic.

Keywords: COVID-19, Board Size, Board Independence, Women on Board, CEO Duality, Firm Performance

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1. INTRODUCTION

COVID-19 has had a negative impact on the global economy, especially in developing countries which must take time to recover their economies (The World Bank, 2022). COVID-19 has had a negative impact on small enterprises (Riadi, Hadjaat, et al., 2022; Achmad et al., 2023; Lestari et al., 2021). Furthermore, COVID-19 has had a negative impact on the financial sector (Riadi, Hadjaat, et al., 2022; Yudaruddin, 2022; Maria et al., 2022). In addition, government policies that prevent the spread of the virus range from lockdown policies, and large-scale social restrictions to changes to monetary-fiscal policies (Zhang et al., 2020; Heyden & Heyden, 2020; Klose & Tillmann, 2021). Cejnek et al. (2021) stated that the company was forced to take a dividend-cut policy due to the COVID-19 pandemic. This indicates that COVID-19 is bad for the company's performance. Then, Guerrieri et al. (2020) stated that several sectors experienced a decline due to the COVID-19 pandemic so the performance of companies in the aviation, tourism, service industry, and restaurant sectors was getting worse. In Indonesia, several sectors have experienced a significant impact due to the COVID-19 pandemic, one of which is the tourism, aviation, and construction sectors which have experienced negative performance (Devi et al., 2020; Nugraha et al., 2022). However, despite the decline in performance due to the COVID-19 pandemic, several companies are starting to pay attention to their corporate governance. This is important because the role of the board and chief executive officer (CEO) is the company's strategic decision-maker in dealing with this global uncertainty (Sari et al., 2023; Sharaf-Addin & Al-Dhubaibi, 2022; Sudradjat et al., 2023). Ulfah et al. (2022) stated that board size plays an important role when companies come under pressure from the COVID-19 pandemic to reduce their earnings management to improve their performance. Furthermore, COVID-19 has forced companies in Indonesia to implement a different work mechanism than before, so it takes time to adapt. As a result of this policy, the company's performance during the pandemic decreased (The Conversation, 2022). Therefore, this research is important to see the extent of the impact of COVID-19 on company performance and what the role of corporate governance.

Recently, a lot of negative views have arisen due to scandals about how the board works in several well-known companies (Merendino & Sarens, 2020; Haque et al., 2022; Jensen, 1993; Krause & Semadeni, 2013; Elloumi & Gueyié, 2001). This result is thought to be due to weak monitoring of board activities in making managerial decisions which can reduce company performance (Sheikh & Alom, 2021). In addition, the influence of corporate governance is still being debated. On the one hand, there is corporate governance such as board size (García-Ramos & Díaz-Díaz, 2021; Sheikh & Alom, 2021; Rashid, 2018), board independence (Kapoor & Goel, 2016; Al Azeez et al., 2019; Jaggi et al., 2009; Mansor et al., 2013; Fama & Jensen, 1983), women on board (Krishnan & Park, 2005; Dalton & Dalton, 2010; Ulfah et al., 2022; Sarkar & Selarka, 2020; Ararat & Yurtoglu, 2020) and CEO duality (Yan Lam & Kam Lee, 2008; Brickley et al., 1997; Elsayed, 2007) can drive company performance. On the other hand, governance has a negative impact on company performance such as board size (Lorsch & Maclver, 1989; Jensen, 1993; Lipton & Lorsch, 1992; García-Ramos et al., 2017), board independence (Merendino & Sarens, 2020; Haque et al., 2022), and CEO duality (Jensen, 1993; Krause & Semadeni, 2013; Elloumi & Gueyié, 2001). So, this research fills the gap by looking at a different situation than before. The purpose of this research is to look into the impact of corporate governance on firm performance in Indonesia during the COVID-19 period. Our results strengthen the evidence that the company's performance has suffered as a result of COVID-19. The results of this study also show that only board size has a significant positive effect on company performance. In addition, we found the potential for the relationship between the COVID-19 pandemic to be interacted with by corporate governance on company performance. Ulfah et al. (2022) stated that the role of the board is important in helping managers seek strategic steps when facing a situation of global uncertainty due to the COVID-19 pandemic. Our important results found that the larger the size of the board, the greater the proportion of women on board of directors, and the duality of the CEO will drive the company's performance in the face of the pressure of the COVID-19 pandemic.

This paper contributes to the existing literature in several ways. First, this study complements the previous study's discussion about the effect of good governance and COVID-19 on company performance. Recently, many previous studies have focused on "normal" situations (Sheikh & Alom, 2021; García-Ramos & Díaz-Díaz, 2021; Rashid, 2018; Kapoor & Goel, 2016; Al Azeez et al., 2019; Mansor et al., 2013; Dalton & Dalton, 2010; Sarkar & Selarka, 2020; Ararat & Yurtoglu, 2020; García-Ramos et al., 2017; Merendino & Sarens, 2020; Haque et al., 2022; Krause & Semadeni, 2013), there is only Ulfah et al. (2022) which discusses good governance in the mass of COVID-19. In fact, several studies have shown that COVID-19 has a negative impact on company performance (Ren et al., 2021; Hu & Zhang, 2021; Makni, 2023). Second, taking Indonesia as a sample, Indonesia is vulnerable to shocks such as COVID-19 (Devi et al., 2020), the Asian Financial Crisis, and the Global Financial Crisis (Raghavan & Devadason, 2020). In addition, previous research in Indonesia discussed the effect of COVID-19 on performance (Nugraha et al., 2022; Devi et al., 2020; Nurdany et al., 2020), and corporate governance on performance (Sudrajat et al., 2023). However, there is still little discussion of the impact of corporate governance on company performance during COVID-19 in Indonesia (Hindasah & Akmalia, 2023; Azizah & Wulaningrum, 2022), but this research only focuses on the banking sector (Hindasah & Akmalia, 2023), and the consumer goods sector (Azizah & Wulaningrum, 2022). This research complements previous research which only discussed certain sectors. In addition, there are differences in corporate governance used by Azizah and Wulaningrum (2022) using the board of directors, committees, and the number of audits, while our research uses corporate governance measurements following Ulfah et al. (2022). Third, the findings of this study are important for companies when facing

the pressure of COVID-19, the application of good governance can be a solution to overcome problems that arise from the upcoming health crisis.

The rest of the paper is structured as follows. Section 2 reviews the relevant literature. Section 3 analyzes the methodology that has been used to conduct empirical research in this study. Section 4 contains the results of the analysis and findings from research results compared to previous research. Section 5 summarizes all the research results in general and the implications for science and practitioners.

2. LITERATURE REVIEW

2.1. COVID-19 pandemic and firm performance

COVID-19 has had a negative impact on the economy, especially in reducing demand and supply. The increase in COVID-19 cases has forced the government to take steps such as lockdowns, and large-scale social restrictions, thus disrupting economic circulation (The World Bank, 2022). In addition, demand for several sectors has decreased, such as the tourism, aviation, service, and restaurant industries due to people's fear of being exposed to the COVID-19 virus (Nugraha et al., 2023). According to Guerrieri et al. (2021), companies that experience this impact experience a decrease in performance. In addition, company performance during the pandemic is dependent on government policy (Ashraf, 2020, 2021; Pandey & Kumari, 2022; Heyden & Heyden, 2020; Yong & Laing, 2021; Deng et al., 2022; Scherf et al., 2022).

Some literature discusses the impact of the COVID-19 pandemic on company performance (Ren et al., 2021; Hu & Zhang, 2021; Makni, 2023; Nugraha et al., 2023). Ren et al. (2021) analyze the impact of COVID-19 on company performance in China. This study found that the first quarter's performance of the corporation was adversely affected by COVID-19 so that the company's performance experienced a very sharp decline. Hu and Zhang (2021) also analyze the impact of COVID-19 on company performance across countries. This study found that COVID-19 had a negative impact on company performance when COVID-19 cases increased sharply. Then, companies located in countries with good health systems and financial systems will be less affected than companies located in countries with poor health and financial systems. Next, Makni (2023) examines how COVID-19 has affected Saudi Arabian companies' performance. A similar finding was made by this study: a correlation between a rise in COVID-19 instances and a decline in corporate performance. In addition, Nugraha et al. (2023) found COVID-19 has a negative impact on companies, especially in the agricultural and property sectors in Indonesia.

H1: COVID-19 has a negative impact on firm performance.

2.2. Board size

There are two different viewpoints when it comes to board size and company performance. First, according to agency theory, it is argued that the size of the board which is considered as a human resource that has a role in assisting oversight and assisting managers in making decisions becomes more appropriate. It is hoped that the increasing size of the board will increase strategic decisions that can drive company performance (Pfeffer, 1972; Jackling & Johl, 2009; Ciftci et al., 2019; Hillman & Dalziel, 2003; Dalton et al., 1999; Beiner et al., 2006). Second, some literature has opposing points of view (Lorsch & Maclver, 1989; Jensen, 1993; Lipton & Lorsch, 1992; García-Ramos et al., 2017) which states that companies with large board sizes incur additional costs for any problems that occur both in terms of control, coordination and flexibility in decision making. The board can also hinder the effectiveness of supervision so that the company's performance gets worse.

Recently, García-Ramos and Díaz-Díaz (2021) found that board size is not the main attribute needed to drive company performance. However, a larger company size can achieve higher company performance. Similarly, Sheikh and Alom (2021) found board size did not have a significant effect on company performance. Additionally, Yameen et al. (2019) found that board director size has a negative impact on hotel performance in India. Based on this, we see a positive relationship between board size and firm performance (Alijoyo & Sirait, 2022; Ulfah et al., 2022; Kostyuk, 2003). However, Rashid (2018) also found that board size has a positive effect on company performance.

H2: Board size has a positive impact on firm performance.

2.3. Board independence

The basic theory from Jensen and Meckling (1976) suggests that an independent board has a role to monitor and control the opportunistic behavior of managers. Then, an independent board can increase the transparency and quality of corporate reporting (Kapoor & Goel, 2016). Similarly, Al Azeez et al. (2019), Jaggi et al. (2009), and Mansor et al. (2013) found that independent boards are used by companies as a resource to monitor management actions and provide professional advice to management to encourage company performance. Furthermore, Fama and Jensen (1983) stated that an independent board is the best board position for monitoring and controlling company management decisions. They also help to lessen conflicts of interest that may arise between management and shareholders. It is anticipated that an independent board will enhance business success. Similarly, Pucheta-Martínez and Gallego-Álvarez (2020) stated that board independence has a positive impact on companies when it comes to increasing company value.

On the other hand, most of their studies argue that independent boards do not have a significant impact on improving company performance (Baysinger & Butler, 1985; Dalton et al., 1999; Hermalin & Weisbach, 1991; Rechner & Dalton, 1991). They have several reasons, including outside directors still have limited in-depth business information in the company compared to inside directors. So, decisions made by outside directors still rely on internal directors. Subsequently, the elected outside director is rendered incompetent due to the appointed outside director's relationship with the board members. Furthermore, outside directors typically have more responsibilities than board members, which lessens their supervision role.

In addition, Rashid (2018) analyzes the influence of independent boards on company performance in Bangladesh. This study finds that an independent board has a negative relationship with firm performance. Similarly, Ulfah et al. (2022) found that independent boards do not have a significant influence on earnings management in Indonesia. These findings indicate that an independent board's involvement in performing its duties is still invisible, so it has not been able to drive company performance.

H3: Board independence has a negative impact on firm performance.

2.4. Women on boards

Gender, as defined by Stoller (1994) as a socio-cultural categorization of the physical and biological human being, is not often described in the literature. Women are more adept at avoiding risks, behave more morally, and are extremely skilled at getting voluntary knowledge (Gul et al., 2008). This indicates that the role of women can reduce information asymmetry between female directors and managers. Various challenges are faced by women when they are on the board of directors. Thus, it becomes a source of pride for women when they enter the ranks (Krishnan & Park, 2005).

Then, Dalton and Dalton (2010) stated that the presence of women on the board of directors encourages more effective communication between the board and shareholders. According to organizational theory, gender-diverse boards give more thought to and address more important issues than boards made up exclusively of men (Huse & Grethe Solberg, 2006). Ulfah et al. (2022) stated that female directors are more diligent in monitoring and tend to be in positions responsible for corporate governance.

Several studies link the role of women on the board of directors with company performance. Sarkar and Selarka (2020) analyzed the influence of women on board on the performance of family firms in India. This study found that independent women when they have key roles in management have unique skills in controlling them to drive company performance. Similarly, Ararat and Yurtoglu (2020) analyzed the influence of female directors on company performance in Turkey. Then, Pucheta-Martínez and Gallego-Álvarez (2020) find that when women enter the board of directors, they will improve their performance in the company. This study found that women have a positive relationship with performance when women have a large role on the board of committees and have more numbers.

H3: Women on board have a positive impact on firm performance.

2.5. CEO duality

Shareholders want the board to be empowered to improve company performance. However, some companies that have poor performance tend to have governance changes such as avoidance of shareholder approval resulting in conflict between the CEO and the board (Nelson, 2005). Fama and Jensen (1983) stated that the board has a role in protecting the interests of shareholders by monitoring the CEO. Then, CEO duality promotes strong and cohesive leadership when the CEO of a firm also holds the position of chairman of the board of directors. Without guidance from an impartial head, the board cannot perform its essential duties (Yan Lam & Kam Lee, 2008; Brickley et al., 1997). As a result, for the board to operate effectively, the CEO and director seats must be kept apart (Jensen, 1993).

There are two different theoretical viewpoints regarding CEO duality on company performance. First, according to agency theory, CEO duality diminishes the general responsibilities of the board of directors and strengthens CEO conduct (Krause & Semadeni, 2013). Second, based on the stewardship theory states that CEO duality can implement plans immediately because of one direction from the leader. This can improve company performance and reduce the level of earnings management (Elsayed, 2007). Similarly, Pucheta-Martínez and Gallego-Álvarez (2020) found that CEO duality has a positive impact on firm value. However, several studies have not found strong evidence about the effect of CEO duality on firm performance (Chaganti et al., 1985; Berg & Smith, 1978; Daily & Dalton, 1992). Elloumi and Gueyié (2001) state that the roles of the CEO and the board must be separate to carry out their roles more optimally to drive company performance. Then, Al-Farooque et al. (2019) found that chairmen who also served as board members had a negative impact on company performance in Thailand.

H4: CEO duality has a positive impact on firm performance.

2.6. The role of corporate governance and COVID-19 on firm performance

After that, we discover how corporate governance may affect COVID-19 performance. According to Le and Behl (2022), corporate governance characteristics play a very important role in dealing with the COVID-19 pandemic. Companies are faced with global uncertainty due to a pandemic, several changes in government policies have made the economic cycle worse so companies have to make strategic steps to survive, so the role of the board is increasingly needed in helping managers make decisions in each company. Then, Arora and Sharma (2016) found that corporate governance mechanisms have a positive relationship with company performance. Then, Abacotela et al. (2014) analyzed the board's effectiveness in dealing with crises. This study found that board independence can increase the chances of a company's survival during a crisis. Similarly, organizations that have a larger board will be more likely to weather a crisis. Finally, companies with CEO duality boost the company's chances of surviving during a crisis.

Apart from that, this is different from Merendino and Sarens (2020) who state that board independence tends to fight passively when a company is in a crisis. The existence of directors' limited experience and being selective about environmental changes makes directors act passively to overcome crises. Then, Haque et al. (2022) stated that CEOs (inside) performed better in dealing with the COVID-19 pandemic crisis than CEOs (outside). In addition, Saini and Singhania (2018) and Al-ahdal et al. (2019) stated that the implementation of corporate governance can encourage company performance.

Table 1. Summary of hypothesis

Study	*Sample*	*Method*	*Finding*	*Hypothesis/sign*
Ren et al. (2021)	China	Difference-in-difference (DID)	The company's performance experienced a decline at the start of COVID-19 for companies in China.	-
Makni (2022)	Saudi Arabia	Difference-in-difference (DID)	COVID-19 has had a negative impact on the performance of companies in Saudi Arabia.	-
Nugraha et al. (2023)	Indonesia	Event study	COVID-19 had an adverse impact on company performance in the agricultural and property sectors.	-
Rashid (2018)	Bangladesh	Three-stage least squares	Board size has a positive impact on financial performance in Bangladesh.	+
Rashid (2018)	Bangladesh	Three-stage least squares	Independent board has a negative impact on financial performance in Bangladesh.	-
Sarkar and Selarka (2020)	India	Difference-in-difference (DID)	Women on board have a positive relationship with the performance of family firms in India.	+
Elloumi and Gueyié (2001)	Canada	Pooled cross-sectional	CEO and the board must be separate to carry out their roles more optimally to drive company performance.	+

3. RESEARCH METHODOLOGY

In this study using company data listed on the Indonesia Stock Exchange (IDX) as of December 31, there were 722 companies. Then, our research focuses on non-financial companies in the period 2019Q1–2020Q4. Next, we use COVID-19 as a dummy variable with the value 1 if the period of COVID-19 (2020Q1–2020Q4) or 0 otherwise (2019Q1–2019Q2). This research focuses on the COVID-19 period because previous literature discussions (Hindasah & Akmalia, 2023; Azizah & Wulaningrum, 2022) still focus on certain sectors, while our research covers all sectors except banking. Subsequently, COVID-19 has had a negative impact on the Indonesian economy (all sectors) at a level of YoY (-2.1%) even in Q2 (-5.32%) in 2020 (Indonesian Ministry of Finance, https://pen.kemenkeu.go.id /in/page/pengaruhcovid). In Table 1, we conducted a research sample, namely 538 companies that provided financial reports during the study period. The companies consisting of several sectors include 40 (7.43%) mining, 153 (28.44%) trade services and investment industry companies, 76 (14.13%) basic industry and chemicals, 23 (4.28%) agriculture, 47 (8.74%), miscellaneous, 70 (13.01%) infrastructure utilities and transportation, 51 (9.48%) consumer goods, and 78 (14.50%) property real estate and building construction.

Table 2. Sample selection

Sample selection	*Total*
Companies listed on IDX in 2020	722
Less: financial firms	(69)
Less: missing data	(90)
A final sample of firms for all variables	538

In the data study, the control variables were *Firm age* (*AG*), *Firm size* (*SZ*), and *Leverage* (*LV*). The constructions' independent and control variables are shown in Table 3. High-profitability businesses win the confidence of stakeholders — especially creditors — when it comes to lending. Leverage rises as a result, allowing the corporation to grow both in size and scope. To demonstrate improved performance to creditors and investors, higher profitability, business size, and leverage boost earnings (Lee et al., 2006; Dimitropoulos & Asteriou, 2010; Alzoubi, 2016; Ghofir & Yusuf, 2020). The longer the company's life, the stronger the company's ability to make new products to deal with environmental changes due to a pandemic (Angelidou et al., 2022).

Table 3. Independent and control variables

Variables	*Symbol*	*Definition and measure*	*Expected sign*	*Source*
Dependent				
Firm performance	*FP*	Ratio net profit to the total asset (%).		
Independent				
COVID-19	*CO*	Dummy variable with the value 1 if the period of COVID-19 (2020Q1–2020Q4) or 0 otherwise (2019Q1–2019Q2).	-	Ulfah et al. (2021), Kusumawardani, Wardhani, et al. (2021), Musviyanti et al. (2022), Amalia et al. (2022).
Board size	*BS*	The total number of members of the board of directors.	+	
Board independence	*BI*	The percentage of independent directors relative to the total number of directors (percent).	-	
Women on boards	*WO*	The ratio of female board members to the total number of board members (percent).	+	
CEO duality	*DU*	Dummy variable with the value 1 if the company has dual CEOs.	+	
Control				
Leverage	*LV*	The ratio of total debt to total equity (%).	+	Ulfah et al. (2021), Hadjaat et al. (2021), Kusumawardani, Yudaruddin, et al. (2021), Yudaruddin (2019, 2020).
Firms size	*SZ*	Natural logarithm of total assets.	+	
Age of firm	*AG*	Natural logarithm of a company's age as of the day it was founded.	-	

This research had two stages to achieve our objectives. First, the purpose of this study is to explore how corporate governance affected business performance during the COVID-19 pandemic in Eq. (1). Subsequently, corporate governance interacted with COVID-19 on firm performance in Eq. (2):

$$FP_{i,t} = \alpha_{i,t} + \beta_1 CO_{i,t} + \beta_2 BS_{i,t} + \beta_3 BI_{i,t} + \beta_4 WO_{i,t} + \beta_5 DU_{i,t} + \beta_6 LV_{i,t} + \beta_7 SZ_{i,t} + \beta_8 AG_{i,t} + \varepsilon_{i,t} \quad (1)$$

$$FP_{i,t} = \alpha_{i,t} + \beta_1 CO_{i,t} + \beta_2 BS_{i,t} + \beta_3 BI_{i,t} + \beta_4 WO_{i,t} + \beta_5 DU_{i,t} + \beta_6 BS * CO_{i,t} + \beta_7 BI * CO_{i,t} + \beta_8 WO * CO_{i,t} + \beta_9 DU * CO_{i,t} + \beta_{10} LV_{i,t} + \beta_{11} SZ_{i,t} + \beta_{12} AG_{i,t} + \varepsilon_{i,t} \quad (2)$$

Panel regression, which blends cross-sectional and time series data, was also employed in this investigation. Three approach models are used in the method: the random effect model (REM), the fixed effect model (FEM), and the common effect model (CEM). Using the Chow and Hausman tests, a fit model was chosen to estimate the panel data regression parameters. The best model between CEM and FEM with conditions was found using the Chow test. When the F-test and Chi-square are significant (< 0.05 or less than < 0.05), as indicated by the output findings of the Chow test or likelihood ratio test, FEM is a better choice than CEM. CEM, on the other hand, emerges as the most suitable model for interpretation when the outcomes are negligible, negating the need for further testing. To choose the optimal model between FEM and REM, the Hausman test was employed. When the Chow test yielded substantial results, indicating that FEM is superior to CEM, this test was carried out. When the results of the Hausman test indicate that the F-test and Chi-square are significant (< 0.05 or less than < 0.05), the FEM model is superior to the REM model. The REM is preferable when the outcomes are negligible.

4. RESULTS AND DISCUSSION

Descriptive statistics on the variables used are shown in Table 4a, Table 4b, and Table 4c. The sample for this study was divided into total (2019Q1-2020Q4), pre-pandemic (2019Q1–2019Q4), and pandemic (2020Q1–2020Q4) periods, respectively. The *FP* variables' means before and during the pandemic were 2.54 and 0.97, respectively, with corresponding standard deviations of 4.92 before and 5.46 during the pandemic. This demonstrates that discretionary accruals for the sample firms are less than they were before the epidemic. The sample's average number of directors (*BS*) is three or four, with the highest and minimum being seven and two members, respectively. The average percentage of female and independent directors to the size of the board is 10% and 40%, respectively. Furthermore, with a standard deviation of 0.4833, the average CEO duality is 0.3717.

Table 4a. Descriptive statistics for all variables: Total periods (2019Q1–2020Q4)

Variables	*Obs.*	*Mean*	*Std. Dev.*	*Min.*	*Max.*
FP	3853	1.7629	5.2582	-18.032	20.538
CO	3853	0.4968	0.5001	0	1
BS	3853	3.7636	1.5273	2	7
BI	3853	40.341	9.1608	25	66.667
WO	3853	10.653	16.800	0	50
DU	3853	0.3717	0.4833	0	1
LV	3853	45.996	22.772	7.3567	96.450
SZ	3853	23.592	4.8766	14.885	29.784
AG	3853	3.2883	0.6392	0.6931	4.8903

Table 4b. Descriptive statistics for all variables: Pre-COVID-19 (2019Q1–2019Q4)

Variables	*Obs.*	*Mean*	*Std. Dev.*	*Min.*	*Max.*
FP	1939	2.541075	4.926224	-10.51436	19.21236
BS	1939	3.822589	1.532074	2	7
BI	1939	40.12889	8.924129	26.66667	66.667
WO	1939	10.3165	16.54245	0	50
DU	1939	0.3718412	0.483421	0	1
LV	1939	45.84048	21.90751	9.677147	89.05314
SZ	1939	23.53788	4.921863	14.92762	29.78377
AG	1939	3.287239	0.6460453	0.6931472	4.882802

Table 4c. Descriptive statistics for all variables: During COVID-19 (2020Q1–2020Q4)

Variables	*Obs.*	*Mean*	*Std. Dev.*	*Min.*	*Max.*
FP	1914	0.9746201	5.46378	-18.03167	20.53798
BS	1914	3.703762	1.520557	2	7
BI	1914	40.55548	9.392028	25	66.667
WO	1914	10.9948	17.05506	0	50
DU	1914	0.3714734	0. 4833249	0	1
LV	1914	46.15333	23.62056	7.356717	96.45032
SZ	1914	23.64665	4.830978	14.88537	29.67588
AG	1914	3.289458	0.632456	1.098612	4.890349

Table 5 shows the results of the multicollinearity analysis between the dependent variables using the correlation matrix test. These results indicate that the correlation value in this study is -0.3224 between board size and firm size. These results indicate that the highest correlation value is not more than 0.8 so this study does not occur multicollinearity (Lestari et al., 2022; Ulfah et al., 2022; Yudaruddin, 2020).

Table 5. Matrix correlation

Variables	*CO*	*BS*	*BI*	*WO*	*DU*	*LV*	*SZ*	*AG*
CO	1.0000							
BS	-0.0389	1.0000						
BI	0.0233	-0.1894	1.0000					
WO	0.0202	-0.1019	-0.0064	1.0000				
DU	-0.0004	0.0456	-0.1244	0.0584	1.0000			
LV	0.0069	0.0825	-0.0189	-0.0578	0.0109	1.0000		
SZ	0.0112	-0.3224	-0.0047	0.1228	-0.0425	-0.1454	1.0000	
AG	0.0017	0.2819	-0.0534	-0.0594	-0.0064	0.1119	-0.1614	1.0000

The findings of the correlation between the explanatory factors and corporate governance are displayed in Table 6. The Chow and Hausman tests were used before the panel data regression analysis to identify which of the three models — REM, FEM, and CEM — was the best. The outcomes demonstrated that FEM is the best model. Additionally, the R-square values for Model 1 and Model 2 were 0.1499 and 0.1551, respectively. These results indicate that the effect of independent variables on firm performance is 14.99% and 15.51%, respectively. These results show an increase in the effect of board size, board independence, women on boards, and CEO duality when interacting with COVID-19 on company performance. The probability of F (Prob > F) is 0.000 or less than 0.05, meaning the regression model is fit.

Table 6. The impact of COVID-19 and corporate governance on firm performance

Variables	*Model 1*				*Model 2*			
	Coef.	*Std. Err.*	*t*	*p > |t|*	*Coef.*	*Std. Err.*	*t*	*p > |t|*
CO	-1.594***	0.123	-13.01	0.000	-4.986***	0.679	-7.34	0.000
BS	0.218**	0.094	2.31	0.021	-0.023	0.098	-0.24	0.812
BI	-0.001	0.012	-0.09	0.930	-0.012	0.014	-0.87	0.382
WO	0.009	0.007	1.34	0.182	0.000	0.008	0.05	0.964
DU	0.266	0.247	1.08	0.281	0.080	0.276	0.29	0.771
*COV * BS*					0.596***	0.068	8.77	0.000
*COV * BI*					0.020	0.014	1.45	0.148
*COV * WO*					0.015**	0.007	2.00	0.046
*COV * DU*					0.436*	0.256	1.70	0.089
LV	-0.069***	0.006	-12.15	0.000	-0.069***	0.006	-12.37	0.000
SZ	-0.134***	0.032	-4.17	0.000	-0.136***	0.032	-4.24	0.000
AG	0.059	0.244	0.24	0.809	0.049	0.242	0.20	0.841
Constant	7.693***	1.382	5.57	0.000	9.337***	1.416	6.59	0.000
Prob > F	0.0000				0.0000			
R-square	0.1499				0.1551			
Obs.	3853				3853			

*Note: * sig. at level 10%; ** sig. at level 5%; *** sig. at level 1%.*

In this section, we regress the results of Eq. (1) as Model 1 and Eq. (2) as Model 2 (see Table 6). Then, we document that COVID-19 has a negative coefficient of 1.594 with a significance value of 0.000 in Model 1 and a coefficient negative of 4.986 and a significance of 0.000 in Model 2. These results indicate that COVID-19 has a significant negative effect on the performance of companies in Indonesia. These results are supported by studies (Ren et al., 2021; Hu & Zhang, 2021; Makni, 2023) which found that COVID-19 had a negative impact on company performance. Furthermore, the results of this study indicate that board size has a positive coefficient of 0.218 with a significance of 0.021 in Model 1. Thus, board size has a significant positive effect on company performance. These results indicate that the larger the size of the board, the better the company's reputation and also the supervisory role of the board member's function which drives the company's performance. Due to the COVID-19 pandemic situation facing the company, the board of directors assists managers in taking strategic steps to maintain the company's performance. These findings are supported by Pfeffer (1972), Jackling and Johl (2009), Ciftci et al. (2019), Hillman and Dalziel (2003), Dalton et al. (1999), and Beiner et al. (2006) which state that the larger the size of the board owned will encourage companies to carry out their business effectiveness and assist management in decision making.

Meanwhile, we also found board independence, women on board, and CEO duality to have coefficients of -0.001, 0.009, and 0.266 but did not have a significance value < 0.05. These results indicate that board independence, women on board, and CEO duality do not have a significant positive effect on company performance. These findings support Rashid (2018) and Ulfah et al. (2022) who found board independence did not have a significant impact on company performance, especially in developing countries.

Furthermore, we found interesting things when COVID-19 interacted with corporate governance on company performance. We represent that previously COVID-19 had a significant negative effect on company performance, but when it interacted with board size it had a significant positive effect on company performance. These results indicate that when a company is hit by a crisis due to the COVID-19 pandemic, the board size has an important role in strategic decisions to increase the chances of the company's survival. In addition, board sizes have decreased slightly during the COVID-19 period to keep costs down (see Table 5). This finding is relevant to Le and Behl (2022), Arora and Sharma (2016), and Abacotela et al. (2014) who found board size to have a very important role in helping managers deal with problems caused by the pandemic.

Furthermore, we discovered that the interactions between women on board and COVID-19 significantly improved business performance. These findings suggest that women's roles on the board of directors will be able to drive the company through their unique skills in carrying out their functions in dealing with the COVID-19 pandemic. This finding is also reinforced by the results of Table 5 which shows the proportion of women on board during the pandemic increased. This finding is supported by Sarkar and Selarka (2020) and Ararat and Yurtoglu (2020) who found that women on board play an important role in the oversight function which will drive company performance.

Furthermore, we found that the CEO duality that COVID-19 dealt with significantly improved business success. These findings suggest that businesses with dual CEOs will be better able to make decisions when COVID-19 puts pressure on them. These results are in accordance with Yan Lam and Kam Lee (2008), Brickley et al. (1997), and Elsayed (2007) which state that CEO duality is more effective in running the company's business due to the low conflict between the board and the CEO so that it encourages company performance. In addition, Zaremba et al. (2020) stated that the acceleration of policy implementation during the COVID-19 era determined that companies could face global capacities that had an impact on their performance.

We represented that COVID-19, which was interacted with by board independence, did not have a significant effect on company performance. These results indicate that outside directors do not have a significant enough role to drive the company's performance when facing COVID-19. This finding supports previous studies by Merendino and Sarens (2020) and Haque et al. (2022) who found that outside directors tend to be unable to contribute when companies are faced with a crisis.

Table 7. Robustness checks with regression with robust standard errors

Variables	*Model 1*				*Model 2*			
	Coef.	*Std. Err.*	*t*	*p > |t|*	*Coef.*	*Std. Err.*	*t*	*p > |t|*
CO	-1.507***	0.1587388	-9.49	0.000	-5.323***	0.9031733	-5.89	0.000
BS	0.297***	0.0574017	5.18	0.000	0.0192	0.0725662	0.26	0.791
BI	0.00953	0.0092151	1.03	0.301	-0.00164	0.012243	-0.13	0.893
WO	0.00861	0.0047026	1.83	0.067	0.00450	0.0064493	0.70	0.486
DU	0.0886	0.1662023	0.53	0.594	-0.248	0.2206564	-1.12	0.262
*COV * BS*					0.674***	0.1085075	6.21	0.000
*COV * BI*					0.0231	0.0180543	1.28	0.200
*COV * WO*					0.00802	0.0092701	0.87	0.387
*COV * DU*					0.677*	0.3276032	2.07	0.039
LV	-0.0674***	0.0038673	-17.42	0.000	-0.0680***	0.0037847	-17.98	0.000
SZ	-0.120***	0.0177096	-6.79	0.000	-0.122***	0.0176753	-6.88	0.000
AG	0.0431	0.1379275	0.31	0.755	0.0230	0.1379262	0.17	0.868
Constant	6.677***	0.8138314	8.20	0.000	8.486***	0.9116233	9.31	0.000
Prob > F	0.0000				0.0000			
R-square	0.1204				0.1355			
Obs.	3853				3853			

*Note: * sig. at level 10%; ** sig. at level 5%; *** sig. at level 1%.*

Finally, we present an alternative analysis method, regression with robust standard errors, to ensure the robustness of our results. Following Kusumawardani, Wardhani, et al. (2021) and Deviyanti et al. (2023), regression with robust standard errors, commonly known as robust standard errors, is a statistical method used in regression analysis to address uncertainty or imperfections in data, particularly when classical assumptions are violated, such as heteroscedasticity or the presence of outliers. In this process, the robust standard errors method accounts for such irregularities by incorporating estimations that are robust to such disturbances, thereby providing more reliable coefficient estimates and more accurate standard errors. By accounting for resilience to unexpected variability, this method helps mitigate the effects of outliers and other irregularities, thus yielding more consistent and reliable regression results. Table 7 presents the results of the analysis using regression with robust standard errors. Overall, our results have not changed, which means the results are robust.

5. CONCLUSION

The COVID-19 pandemic has provided challenging conditions for companies in all sectors. The existence of government policies to prevent the spread of the COVID-19 virus creates uncertainty globally marked by declining demand and supply. This also happens to companies, which must immediately seek strategic steps to survive in the business world. One of the highlights is corporate governance to increase the chances of a company's survival. This study aims to determine the role of corporate governance consisting of board size, board independence, women on board, and CEO duality on company performance in Indonesia. This study used a sample of 538 companies listed on the IDX for the period 2019Q1–2020Q4. The results of this study found that COVID-19 had a significant negative effect on company performance. In addition, we also found that board size has a significant influence on company performance during the COVID-19 pandemic, while the others are not significant. The results of this research strengthen our assumptions in the previous findings of Alijoyo and Sirait (2022), and Ulfah et al. (2022), while these findings are contrary to Yameen et al. (2019).

Our important findings, when we interact with COVID-19, are that the board size, women on board, and CEO duality have a significant positive effect on company performance. These results indicate that board size, women on board, and CEO duality have an important role in mitigating all risks arising from the COVID-19 pandemic, thereby increasing company performance. These findings are important compared to previous research (Pucheta-Martínez &

Gallego-Álvarez, 2020; Sarkar & Selarka, 2020). These findings confirm the "socio-cultural characterization" put forward by Stoller (1994) and "organizational theory" by Huse and Grethe Solberg (2006) which reveal the existence of gender diversity in organizations makes discussions more intense on the issues at hand. Furthermore, we see that the application of the stewardship theory by Elsayed (2007) was more effective during the COVID-19 period. Our research contrasts with previous studies supporting agency theory. The results of this research show that the role of corporate governance, which consists of board size, women on board, and CEO duality, has a vital role in maintaining company performance in Indonesia in facing the uncertain situation of COVID-19. These findings strengthen our assumptions from previous studies (Le & Behl, 2022; Arora & Sharma, 2016; Saini & Singhania, 2018; Al-ahdal et al., 2019) where corporate governance has an important role in dealing with COVID-19 in improving company performance.

This finding has implications for policymakers and managers. First, for policymakers, in setting a policy when facing a health crisis (e.g., COVID-19), it is necessary to look at the impact of the policy on economic activity. Second, for managers, these findings become the basis for determining the implementation of corporate governance to survive the health crisis in the future. This research has limitations that only focus on the COVID-19 period, future research can discuss the influence of corporate governance on financial performance during post-COVID-19.

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