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Corporate Governance and Firm Performance: The Case of Gender Diversity in Indonesia

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ABSTRACT

Regulators and researchers encourage the creation of increased opportunities for women to sit in the boardrooms because gender diversity increases the effectiveness of corporate governance. However, recent research reports that the effectiveness of gender diversity in improving company performance has mixed results. This research aims to prove the influence of gender diversity of the directors and Board of Commissioners (BOC) in the context of firm performance in Indonesia. We used 96 banks during the 2009–2021 period. We found that the gender diversity of the BOCs positively influences financial performance. In contrast, director gender diversity does not affect performance. The findings exhibit consistency with three measures of accounting-based financial performance of banks: return on assets (ROA), return on equity (ROE), and one market-based performance (price-earnings ratio-PER). However, we found that BOC gender diversity has the impact of reducing PER. Our study recommends that regulators encourage banks to appoint women's BOC through bank regulations to increase women's participation as BOC members.

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1. Introduction

Gender diversity is a major concern for regulators and researchers when evaluating the effectiveness of corporate governance (CG) (Mvita & Du Toit, 2024). Boards worldwide are under increasing pressure to expand opportunities for women to sit in the boardrooms. Moreover, numerous projects for governance amendment explicitly accentuate the importance of choosing females on boards (Adams & Ferreira, 2009). Several European countries have issued regulations to increase the number of women on boards. Several European countries, such as Belgium, France, Norway, and Italy, have enacted legislation mandating increased representation of women on the boards of certain firms (Sila et al., 2016). Other countries followed the augmentation of female representation on boards through mandatory laws or recommendations (Simionescu et al., 2021). However, recent studies report that men still dominate most corporate boards (see Tran et al., 2024; Mukhibad et al., 2024b; Cicchiello et al., 2021).

In the case of companies in Indonesia, the regulator has also set rules to increase the opportunities for women to become councilors through ministerial regulation of the Ministry of Women's Empowerment and Child Protection (MWECP) Number 1 of 2020, concerning the provision of safe houses for women workers in the workplace and MWECP regulation Number 5 of 2015, concerning the provision of work facilities that are gender responsive and supportive of children in the workplace. Besides these two Indonesian ministerial regulations, the government has implemented various programs to promote gender equality (including Indonesia's Most Powerful Women and "Anugerah Parahita Ekapraya"-APE, etc.) (USAID, 2022). However, data from the Central Bureau of Statistics for 2020 states the percentage of women occupying managerial jobs is 33.08%. Moreover, according to the International Labor Organization (ILO) Survey 2020, only 15% of women are in managerial positions.

The main concern of regulators and scholars is women because women are more effective in monitoring directors' performance (Jabari & Muhamad, 2020) and, subsequently, improving firm performance (Cardillo et al., 2021; Nadeem et al., 2019). However, the current research, regarding the causality between gender diversity and bank performance, has yielded equivocal results (Baker et al., 2020). Many scholarly investigations have been conducted to explore the correlation between gender diversity and corporate performance. Fatma and Chouaibi (2023), Duppati et al. (2020), Sarhan et al. (2019), Terjesen et al. (2016), and Liu et al. (2014) have reported and provided evidence supporting the empirical fact that gender diversity increases corporate performance. However, Kabir et al. (2023), Simionescu et al. (2021), Yang et al. (2019), and Adams and Ferreira (2009) have found a negative association. On the other hand, Yarram andAdapa (2024), Mukhibad et al. (2022), Jabari and Muhamad (2020), Simionescu et al. (2021), and Manita et al. (2020) have reported no substantial association between gender diversity and financial performance. Therefore, the existing literature on the impact of gender diversity on bank performance lacks consensus (Hazaea et al., 2023; Baker et al., 2020). Moreover, literature is in considerable debate and mixed evidence concerning the implications of female board representation in enhancing firm performance (Yang et al., 2019).

The rationale for such discrepancies in prior findings is likely due to the type of board under consideration (for example, BOD, BOC, independent board, etc.), different indicators of gender diversity (proportion, the existence of women, Blau, and Shannon heterogeneity index), as well as various econometric methodologies employed for analysis. In particular, Liu et al. (2014), Simionescu et al. (2021), Duppati et al. (2020), Sarhan et al. (2019), and Campbell and Mınguez-Vera (2008) focus on women in the directors' roles, while Sarhan et al. (2019) focus on women in the BOD. Furthermore, Terjesen et al. (2016) focus on women as independent directors. In terms of gender diversity measurement, prior studies have used the percentage of women (Simionescu et al., 2021; Duppati et al., 2020; Sarhan et al., 2019; Gulamhussen & Santa, 2015), dummy (Bhat et al., 2020; Adams & Ferreira, 2009), Blau index (Manita et al., 2020), and Shannon index (Pathak et al., 2021). Significantly, none of these prior studies examines the role of gender diversity on a two-tier board system, focusing on the role of women in these two positions, namely, the BOC and BODs, with the combination of four measurement gender diversity techniques (including percentage, dummy, Blau index, and Shannon index).

We focus, in this study, on Indonesia because the Indonesian government is encouraging increasing women's representation in firm boards through gender equality programs in the workplace. Moreover,

the research on the impact of gender diversity on bank performance relies on cross-countries data. We only focus on examining a sample of banks in Indonesia to lower heterogeneity of data and minimize differences in institutional, socioeconomic, regulatory, and sociocultural elements that have the potential to exert an influence on the implementation of CG in banks (Berger et al., 2016). Countries may have different key characteristics (Wu et al., 2019; Lassoued, 2018), and national regulators may limit bank operations. In the context of Indonesia's CG structure, banks have two boards with different functions. The Board of Commissioners (BOC) is the supervisor of directors, and directors are implementers of bank operations (called a two-tier system). This system is different from the one-tier system, which places the supervisory and operational functions of the bank in the Board of Directors (BOD).

This study contributes to the expansion of recent literature in two ways. First, we expand on previous studies focusing on board gender in a two-tier board governance system. Although many studies have been focused on the existence of women on banking boards, previous studies examined the existence of women on a one-tier board governance system. Other studies have focused on banks that used one and two-tier systems (see Saleh & Salisu, 2024; Cicchiello et al., 2021; Galletta et al., 2022). The variation in the one-tier and two-tier board system might impact the board's efficacy in fulfilling its responsibilities (Jouber, 2021; Gillmore Doppia, 2016). Therefore, based on the information, a limited number of documents have examined the correlation between gender representation on two distinct boards, namely BOC and BOD. This research gap is evident in developing nations, such as Indonesia.

Second, previous research has measured gender diversity, using simple measurements: dummies and the existence of women sitting in the boardrooms (Jabari & Muhamad, 2021; Oradi & Izadi, 2020; Aggarwal et al., 2019). This method is simple in measuring gender diversity and leads to the argument that having a high number of female board members is beneficial for the banks. This concept differs from the resource dependence theory (RDT) approach. In the RDT approach, men and women have different attitudes, so women's boards are needed to make up for the deficiencies of men's boards and vice versa. Thus, the emphasis of studies on gender diversity is the comparison of women and men in boardrooms, that can improve bank performance. Following Oradi and Izadi (2020), and Aggarwal et al. (2019) research method, we use the Blau and Shannon indexes to complete the dummy and percentage measurements.

The remainder of the paper is structured as follows. Section 2 discusses the relevant literature review and the development of hypotheses. Section 3 describes the methods. Section 4 discusses the main empirical results that are presented and analyzed. Finally, section 5 presents a conclusion, recommendation, and the limitations of the research.

2. Literature Review and Hypotheses Development

Recent literature uses Resource Dependence Theory (RDT) to describe corporations with diverse boards, increasing board effectiveness and enhancing CG effectiveness. Based on the RDT approach, the board is a resource of compatible firms that are highly significant in increasing firm performance (Mukhibad et al., 2024; Kabir et al., 2023). Having valuable, inimitable, rare, and non-substitutable resources helps firms sustain their long-term performance. These resources can help firms attain sustainable competitive advantage and, thus, result in superior performance over time and, eventually, long-term success (Naheed et al., 2021).

As a strategic resource, board effectiveness can be observed in various board attributes: gender, age, ethnicity, education and socioeconomic background, knowledge, skills, values, attitudes, beliefs, and personality (Mukhibad et al., 2024a). Board diversity includes people with different attributes, with the attributes of certain member mitigating the weaknesses of the rest. Moreover, different attributes bring different and beneficial resources to the firm (Đặng et al., 2020). Organizations with board members with various attributes give managers better advice and enhance the board's monitoring and advisory roles, reducing risk and increasing profitability (Bhat et al., 2020).

Yarram and Adapa (2024), Marquez-Cardenas et al. (2022), Arvanitis and Varouchas (2022), Duppati et al. (2020), Sarhan et al. (2019), and Campbell and Mınguez-Vera (2008) report that a higher representation of female directors is associated with favorable firm performance. Anderson et al. (2011) suggest that an operationally complex organization may benefit from a higher diversity of

board backgrounds than an operationally simple organization, as diversity increases the board members' diverse board perspectives and viewpoints, leads to increased effective monitoring advantages, enhances shareholder engagement, and promote a more consultative role for managers in the organization. Chen et al. (2019) argue that the presence of women in the BOD motivates managers to undertake financial risks that have the potential to enhance the firm's worth. Additionally, it deters managers from engaging in actions that could lead to reputational hazards, thereby safeguarding the firm's value. Furthermore, Campbell and Mınguez-Vera (2008) report that a higher proportion of women in boardrooms has been found to have a beneficial impact on bank performance.

In contrast, Kabir et al. (2023), and Adams and Ferreira (2009) have documented an adverse correlation between board gender diversity and business financial performance. Ali et al. (2022) argue that gender diversity plays a decisive role in corporate investment decisions and causes a reduction in firm performance. However, it is essential to note that this link does not reach statistical significance when considering financial performance indicators, such as net income after taxes. According to the findings of Dale-Olsen et al. (2013), the influence of board gender diversity on financial performance is limited in the short term. Additionally, the study suggests that newly appointed female board members need to possess significantly distinct resources, views, and abilities, compared to the male board members they replace. Furthermore, Mukhibad et al. (2022), Simionescu et al. (2021), Jabari and Muhamad (2020), and Farag and Mallin (2017) see no evidence of differentiation between women and men as BOD in increasing bank performance.

Overall, the existing research studies on the causality between gender diversity and firm performance exhibits divergent findings and a lack of consensus (Aguir et al., 2023; Cardillo et al., 2021). The positive impact of increasing female representation on the board of directors on company performance has been discussed in recent literature (Farag & Mallin, 2017). The mixed findings of prior literature potentially stem from the diverse methodological approaches employed in these studies. Notwithstanding this, according to the viewpoint of RDT, the presence of a board comprising individuals with multiple experiences can enhance the information generated by the board, the effectiveness of activities, and the quality of advice supplied to managers, owing to the distinct knowledge and perspectives possessed by directors from various backgrounds (Kabir et al., 2023; Simionescu et al., 2021). Diverse board attributes are expected to generate distinct resources and information sets relevant to managerial decision-making, enhancing firm performance (Mukhibad et al., 2024a). The diversity of the board is a vital resource for corporations because acquiring and maintaining resources, human capital and relational capital increase the organization's going concern (Jabari & Muhamad, 2021). Terjesen et al. (2016) report that the presence of a gender-diversified board is expected to favor board independence and effectiveness. This is expected to boost the positive perception of a board that maintains a balanced gender composition. Based on these arguments, we develop the following hypothesis:

H1: Gender diversity on the board positively influences bank performance.

3. Methods

The sample comprises commercial banks listed by the Indonesian bank regulator from 2009 to 2021. Our research uses a sample based on a purposive sampling method, with the sample criteria being banks that have published annual reports for 2009-2021. Based on data searches from each bank's website, we only found 96 banks. This study uses unbalanced panel data, resulting in a total of 887 firm-year observation. We use bank annual reports as the main source of our data.

This study measures the performance of banks using accounting-based performance, ROA and ROE, and PER as market-based measures. ROA measures the percentage of net profit to total assets. ROA measures the percentage of net profit to total equity, and PER measures market value per share to earnings per share. The present study used the natural logarithm of the PER to address skewness and reduce variability in the data.

This study's independent variable is the gender diversity of BOC and director board members. Indonesia uses a two-tier governance system, with two boards having different functions: BOC and director (IFC, 2014). As the supervisory board, the BOC collectively oversees and advises the director, enhancing the quality of CG and increasing the director's effectiveness in making any operational

decision. Moreover, the director is required to manage the corporation in the shareholders' best interests and to attain the corporation's purposes and objectives.

In their study, Jabari and Muhamad (2021) employ two indicators as proxies for assessing gender diversity. Firstly, they utilized a binary variable to capture the presence or absence of women on both the directors and the BOC. Secondly, they considered the proportion of women serving on the directors and BOC as a percentage. Following Aggarwal et al. (2019), a dummy and the percentage of women sitting in the boardrooms are simple measurements to capture board gender diversity. Based on this argument, Oradi and Izadi (2020), and Aggarwal et al. (2019) recommend using two indicators, the Blau and the Shannon indexes, to measure gender diversity. Finally, we use four indicators to measure gender diversity. We present the operational variables in Table 1.

Table 1. Summary of Operational Variables

Variables	Abbreviation	Description
a. Indicators of profitability		
1. Return on asset	ROA	The net profit is divided by the total assets
2. Return on equity	ROE	The net profit is divided by the total equity
3. Price-earnings ratio	PER	The ratio of a company's stock price to its earnings per share
b. Indicators of gender diversity		
1. The existence of women as BOC.	DW_BOC	The scoring system assigns a value of 1 if there is at least one female member on the BOC, and a value of 0 if no female members are present
2. The existence of women as directors.	DW_DIR	The scoring system assigns a value of 1 if there is at least one female member on the director, and a value of 0 if no female members are present
3. The percentage of women on the BOC	PW_BOC	Women directors sitting on the BOC / total BOC members
4. The percentage of women in the directors' roles	PW_DIR	Women directors sitting on the director / total director members
5. The Blau index of the BOC	BI_BOC	$1 - \sum_{i=1}^{n} Pi^2$ In this context, let Pi represent the probability of an event occurring, specifically PW_BOC, and the number 2, indicating that there are two distinct categories, namely "male" and "female"
6. The Blau index of the directors.	BI_DIR	$1 - \sum_{i=1}^{n} Pi^2$ In this context, let Pi represent the probability of an event occurring, specifically PW_DIR, and the number 2, indicating that there are two distinct categories, namely "male" and "female"
7. The Shannon index of the BOC	SI_BOC	$1 - \sum_{i=1}^{n} P_i lnP_i$ In this context, let Pi represent the probability of an event occurring, specifically PW_BOC, and the number 2, indicating that there are two distinct categories, namely "male" and "female"
8. The Shannon index of the directors.	SI_DIR	$1 - \sum_{i=1}^{n} P_i lnP_i$ In this context, let Pi represent the probability of an event occurring, specifically PW_DIR, and the number 2, indicating that there are two distinct categories, namely "male" and "female"
Control variables		
1. BOC members	BOCSIZE	The number of BOC members
2. Director members	DIRSIZE	The number of DIR members
3. Capital adequacy ratio	CAR	The ratio of total equity to a bank's risk-weighted assets
4. Loan-to-deposit ratio	LDR	The ratio of the total loan amount to the total deposit amount
5. Nonperforming loan	NPL	Total bad loan / the total loan
6. Size	Size	Logarithmic of total assets
7. Covid	Covid	Dummy, score 1 for covid pandemic period and zero otherwise

Following prior studies, we considered several control variables to determine the partial effect of each characteristic. The first is the governance variables, namely BOC and director size (Fithria et al., 2021), capital adequacy ratio (CAR), loan-to-deposit-ratio (LDR) (Trinugroho et al., 2017), nonperforming loan (NPL) (Laryea et al., 2016), and bank size-SIZE (Terjesen et al., 2016). We use the period of 2009–2021, where in 2019-2021, the COVID-19 pandemic occurred, and the COVID-19 pandemic caused a decline in banking performance in aggregate. Differences in macroeconomic conditions have caused a decline in the bank's fundamental performance, which is the reason we

controlled the year of observation before and during the COVID-19 pandemic. We described the variable stretching method in Table 1.

This study employs the following equation models to examine the impact of gender diversity level on a bank's financial performance.

$$PROF_{it} = \alpha + \beta_1 BOC\_gender_{i,t} + \beta_2 DIR\_gender_{i,t} + \sum_{l}^{7} \beta_3 X_{it} + \varepsilon_{it}$$

In model 1, *PROF* refers to ROA, ROE, and PER, respectively, for bank i at time t. BOC_gender and DIR_gender refer to the existence of women as BOC of director, The percentage of women on the BOC or in the director role, the Blau index of the BOC or director, and the Shannon index of the BOC or director, respectively, for bank i at time t. X is a vector of a set of control variables (BOCSIZE, DIRSIZE, CAR, LDR, NPL, and SIZE), and ε refers to the error term.

4. Result

4.1. Descriptive Analysis and Regression Analysis

The sample has an average ROA of 1.688%, and an average ROE of 10.640%, as shown in Table 2. However, there are samples that have negative ROA and ROE (-14.042% and -132.525%). The ROA standard deviation score is 2.006, and the ROE is 89.030, which indicates that the sample is more heterogeneous than ROA.

Our sample shows that the percentage of women sitting in BOC and in directors' role are low, whereas Table 2 indicate that the average of women sitting in BOC is 3.5%, and in the directors' role is 17.4%. Table 2 reports that 37% of banks have female BOCs, and 57.1% of banks have female directors. Based on the complex measurement to capture board gender diversity, Table 2 shows that the average BI_BOC is 0.149, and BI_DIR is 0.217. Based on the Blau index score, director members have greater gender diversity than those on the BOC. The complex indicator of gender diversity, the Shannon index, also corroborates this finding, indicating that SI_DIR has an average score (0.064) greater than the gender diversity of BOC members (0.040).

Table 2. Descriptive Analysis

Variables	Mean	St. Dev.	Min.	Max.
ROA	1.688	2.006	-4.042	15.890
ROE	10.640	12.802	-132.525	89.030
PER	3.036	1.084	1.212	6.706
DW_BOC	0.370	0.483	0.000	1.000
DW_DIR	0.571	0.495	0.000	1.000
PW_BOC	0.035	0.069	0.000	0.444
PW_DIR	0.174	0.188	0.000	0.800
BI_BOC	0.149	0.203	0.000	1.000
BI_DIR	0.217	0.202	0.000	0.500
SI_BOC	0.040	0.056	0.000	0.151
SI_DIR	0.064	0.059	0.000	0.151
BOCSIZE	4.504	1.842	0.000	9.000
DIRSIZE	5.349	2.312	2.000	16.000
CAR	22.069	17.437	3.840	195.140
LNLDR	4.482	0.641	-2.040	13.135
NPL	4.497	62.346	0.000	198.500
Size	25.055	5.124	2.938	35.109
Covid	0.154	0.361	0.000	1.000

Table 3 represents the results of the regression test with panel data regression. Breusch and Pagan ML Test is employed to test data heterogeneity, where the significance of the Breusch and Pagan ML score is below 0.05, showing that interbank data is heterogeneous, and it is not recommended to use OLS which is recommended for homogeneous data. The Breusch and Pagan ML Test on Model 1a-1i shows a p-value of less than 0.05, indicating that the sample was heterogeneous. This test does not recommend the OLS model for processing data.

Table 3. Regression Analysis

Dependent Variables	ROA				ROE				PER			
	1a	1b	1c	1d	1e	1f	1g	1h	1i	1j	1k	1l
DW_BOC	0.213	-	-	-	3.611**	-	-	-	-0.089	-	-	-
PW_BOC	-	1.584*	-	-	-	22.275***	-	-	-	-2.326***	-	-
BI_BOC	-	-	0.519	-	-	-	8.442***	-	-	-	0.533*	-
SI_BOC	-	-	-	0.107	-	-	-	40.094***	-	-	-	-1.970**
DW_DIR	0.192	-	-	-	1.373	-	-	-	0.060	-	-	-
PW_DIR	-	0.186	-	-	-	2.585	-	-	-	0.083	-	-
BI_DIR	-	-	0.272	-	-	-	2.359	-	-	-	-0.022	-
SI_DIR	-	-	-	-0.293	-	-	-	5.751	-	-	-	-0.191
BOCSIZE	0.075	0.111	0.093	0.030	-0.149	0.198	-0.107	0.065	-0.056	-0.080	-0.059	-0.063
DIRSIZE	-0.120**	-0.115*	-0.114*	-0.050**	-0.852**	-0.848**	-0.813**	-0.778**	0.073	0.079**	0.080**	0.076**
CAR	0.003	0.004	0.004	0.004	-0.013	-0.007	-0.013	-0.013	0.041 **	0.040**	0.042**	0.040**
LDR	0.075	0.077	0.075	0.008	-0.176	-0.137	-0.169	-0.188	-0.491 **	-0.478**	-0.468**	-0.473**
NPL	-0.001	-0.001	-0.001	0.001***	-0.004	-0.004	-0.004	-0.004	0.149 **	0.153***	0.152***	0.151***
Size	0.131***	0.139 ***	0.138***	0.051*	1.053**	1.124**	1.151**	1.053**	0.024	0.016	0.022	0.025
Covid	-0.503***	-0.504***	-0.492***	-0.548***	-4.637 ***	-4.703***	-4.642***	-4.621***	0.275*	0.256*	0.261*	0.285*
CONS	-1.892*	-2.222**	-2.139*	-1.114	-11.434	-14.209	-13.944	-12.664	3.417*	3.736**	3.428*	3.457*
Breusch and Pagan ML Test	466.98***	410.19***	391.88***	468.29***	530.86***	478.21***	457.59***	519.35***	320***	341.87***	311.04***	309.26***
Mean VIF	1.35	1.34	1.32	1.32	1.35	1.34	1.32	1.32	1.61	1.57	1.56	1.56
Wooldridge Test	18.345***	10.884***	11.684 ***	18.295 ***	4.309**	2.135	2.159	4.289**	9.134***	7.95***	0.031***	8.995***
Modified Wald	8.6e+05 ***	8.7e+05 ***	1.1e+06 ***	1.1e+06 ***	1.9e+31 ***	2.3e+31***	8.2e+31 ***	9.8+31***	5934.21***	4452.93***	5894.36***	5773.23***
Hausman	9.09	8.35	16.64*	9.01	24.64 ***	19.53**	27.87***	23.99***	19.84**	20.58**	29.91***	23.61***
Wald chi2 or F	67.74***	64.82***	66.83***	84.72***	5.96***	5.97***	5.59***	5.74***	11.83***	9.64***	8.71***	10.24***
R-Square	0.1213	0.1382	0.1293	0.0682	0.0535	0.0507	0.054	0.0558	0.2177	0.2427	0.2262	0.2229

***, **, and * indicate significance at the 1%, 5%, and 10% confidence levels, respectively

The Hausman test is employed to determine the selection between a fixed effect model (FEM) and a random effect model (REM) for data analysis. Table 3 illustrates that the Hausman test on three models (1a, 1b, 1d) produces a p-value of greater than 0.05, and indicates the use of REM to analyze the three models. In contrast, other models produce a p-value less than 0.05, and recommend using FEM. The VIF test on all models produces an average score of less than five, indicating no multicollinearity issues in all models. The Wooldridge test for autocorrelation tests is conducted on panel data. A p-value below the threshold of 0.05 indicates the presence of autocorrelation. The symptoms of autocorrelation in all models, except for models 1f and 1g, are presented in Table 3. The Modified Wald test is utilized to assess group-wise heteroscedasticity, where a p-value below 0.05 is indicative of homoscedasticity. The Modified Wald test reveals heteroscedasticity in all the models. In the study conducted by Duppati et al. (2019), robust standard errors was employed to preserve the integrity of statistical inference where the regression model violates the assumptions of heteroskedasticity and autocorrelation.

4.2. Robustness Test

The primary aim of this study is to establish the impact of gender diversity attainment on the financial performance of banks. Table 4 reports the effect of gender diversity on performance. We use three financial performance measures to prove this hypothesis: ROA, ROE, and PER. Following Morara and Sibindi (2021), and Haddad and Alali (2021), we use these three financial performance measurements to corroborate the research results. Based on the analysis, ROA and ROE produce consistent findings, where BOC gender diversity has an impact on the increase in ROA and ROE. However, director gender diversity does not affect ROA and ROE. In contrast, regarding PER, the research reported different results, where BOC gender diversity impacts decreasing financial performance. The difference in the results of this study strengthens the research by Shahzad et al. (2022) which indicates that ROA and PER have different fundamental performance measurement indicators. ROA and ROE measure the performance of accounting-based banks while PER measures market-based bank performance and is sensitive to investor response.

We conducted a robustness check by adding control variables to the research model to maintain the research results. Following Lu and White (2014), a robustness check examines how certain "core" regression coefficient estimates behave when the regression specification is modified by adding or removing regressors or control variables. We added the income diversification variable (DIV_INCOME) to the research model as a robustness check. Income diversification is measured by the ratio of noncredit income to total income (Mukhibad et al., 2024b). Modern portfolio theory states that revenue diversification hence maximizes a firm's financial performance because different revenue streams result in different risks and costs (Guan et al., 2021). The results of the regression test, by adding the income diversification variable, are presented in Table 4. Table 4 reports findings that support Table 3, indicating that the gender diversity of BOCs positively affects financial performance. On the contrary, gender diversity in the director's room does not affect performance.

4.3. Discussion

Table 3 shows that, based on ROA as financial performance, only the proportions or percentages as diversity measures on BOC positively impact ROA at a 10% level. However, we did not find the effect of gender diversity of directors based on the four indicators of gender diversity (the existence, percentage, Blau index, and Shannon index) on ROA. We argue that there is no difference between the performing director and BOC to enhance ROA in Indonesia. Complex bank operations cause banks to choose BOC and director members who can manage bank assets regardless of gender differences (IFC, 2014). Our results are consistent with Farag and Mallin's (2017) report that gender does not affect ROA. Moreover, Table 3 reports that the percentage of female directors is 17.4% and female BOC is 14.9%.

Table 4. Regression Analysis (Robustness Test)

Dependent Variables	ROA				ROE				PER			
	1a	1b	1c	1d	1e	1f	1g	1h	1i	1j	1k	1l
DW_BOC	0.222	-	-	-	3.647**	-	-	-	-0.079	-	-	-
PW_BOC	-	1.668*	-	-	-	23.310***	-	-	-	-2.313***	-	-
BI_BOC	-	-	0.206	-	-	-	9.523***	-	-	-	0.500*	-
SI_BOC	-	-	-	0.169	-	-	-	23.836**	-	-	-	-1.879*
DW_DIR	0.115	-	-	-	1.192	-	-	-	0.060	-	-	-
PW_DIR	-	0.103	-	-	-	1.793	-	-	-	0.078	-	-
BI_DIR	-	-	-0.269	-	-	-	1.887	-	-	-	-0.049	-
SI_DIR	-	-	-	-0.577	-	-	-	-1.584	-	-	-	-0.260
BOCSIZE	0.079	0.114	0.039	0.037	0.003	0.371	0.059	0.469	-0.055	-0.080	-0.058	-0.062
DIRSIZE	-0.106*	-0.103*	-0.044*	-0.045*	-0.786*	-0.773*	-0.730*	-0.373	0.074**	0.079**	0.080**	0.077**
CAR	0.002	0.002	0.003	0.003	-0.011	-0.005	-0.011	-0.027	0.041**	0.040**	0.042**	0.040**
LDR	0.066	0.066	0.014	0.017	-0.069	-0.028	-0.067	-0.094	-0.489**	-0.478**	-0.466	-0.471**
NPL	-0.001	-0.001	0.001***	0.001***	-0.004	-0.004	-0.004	-0.004	0.148***	0.153***	0.151	0.150***
Size	0.130***	0.137 ***	0.054*	0.051*	1.078*	1.150**	1.182**	0.726***	0.026	0.016	0.023	0.026
Covid	-0.512***	-0.513***	-0.557	-0.547***	-4.607***	-4.675***	-4.631***	-4.213***	0.261*	0.254	0.247	0.274*
DIV_INCOME	0.114**	0.115**	0.028	0.028**	0.132	0.143	0.133	0.129	0.025	0.004	0.024	0.019
CONS	-1.928*	-2.245*	-1.332	-1.228*	-13.567	-16.528	-16.507	-7.758	3.356	3.725**	3.365	3.407*
Breusch and Pagan ML Test	467.04***	415.01***	1700.05 ***	289.99***	511.04***	462.23***	441.77***	285.86***	289.99***	319.10***	285.86***	284.18***
Mean VIF	1.34	1.33	1.32	1.57	1.34	1.33	1.32	1.53	1.57	1.53	1.53	1.53
Wooldridge Test	18.673***	11.375***	3.449*	9.831***	4.045**	2.006	1.956	8.584***	9.831***	8.482***	8.584***	9.597***
Modified Wald	1.4e+06 ***	1.4e+06 ***	62230.90 ***	6087.21 ***	1.0e+07 ***	1.1e+06***	4.4e+06 ***	5963.24***	6087.21***	4482.60***	5963.24***	5832.03***
Hausman	10.93	9.63	13.91	19.33**	20.31**	16.48*	25.74***	26.98***	19.33**	14.55	26.98***	21.24**
Wald chi2 or F	71.10***	67.83***	121.86***	119.03***	5.57***	6.27***	5.16***	54.96***	11.19***	8.56***	7.85***	9.08***
R-Square	0.1020	0.0553	0.077	0.0727	0.0522	0.0501	0.055	0.0495	0.2182	0.2427***	0.2266	0.2232

***, **, and * indicate significance at the 1%, 5%, and 10% confidence levels, respectively

Based on ROE as financial performance, Table 3 reports that the gender diversity of BOC, based on the existence, the percentage, Blau index, and Shannon index, positively impact ROE. On the other hand, we did not find that gender diversity of directors impacted ROE. Our findings suggest that gender diversity is more effective in improving firm performance on directors, and director gender diversity cannot improve ROE. In a two-tier system, the BOC and the director have different functions—BOCs act as supervisors and advisers for the director to maintain the bank's financial performance. Boards with female members are more effective in conducting their functions as monitors, counselors, and advisors (Attah-Boakye et al., 2020). However, boards with female members do not impact the bank's performance in director duties (Jabari & Muhamad, 2020; Farag & Mallin, 2017). In the context of studies in Indonesia, our research results support research findings conducted by Rahayu and Diah (2022), and Suhardjanto et al. (2017), arguing that gender in the boardrooms does not improve firm performance. The difference in the relationship between director gender on ROA and ROE suggests that BOC prioritizes the stockholders' interest because it shows that female BOC members are more effective in increasing ROE than ROA. Following Tjahjadi et al. (2021), in a two-tier system, the BOC is representative of stakeholders; thus, the effectiveness of board gender to enhance bank performance depends on their roles (non-executive or executive) (Farag & Mallin, 2017).

Complex bank operations require cooperation between directors because they require quick and precise decision-making and strategy adjustments. Thus, based on the RDT perspective, diverse board members benefit the bank (Mukhibad et al., 2024; Kabir et al., 2023). After all, they have board members with different skills, competencies, and experiences. This results in more than one board member being covered by the expertise of another board member. However, regarding bank operations, male and female directors have the same effectiveness in managing bank operations (Jabari & Muhamad, 2021; Farag & Mallin, 2017), so the existence, percentage, and board diversity (based on the Blau and Shannon index) have no impact on ROE or ROA. Each bank director has a different set of responsibilities; each director will conduct their duties and responsibilities so that gender diversity does not affect the bank's financial performance.

Models 1j and 1l show that gender diversity has a negative effect on PER. PER is the future investment performance of banks and reputation performance (Edi & Wati, 2022). Table 3 shows that the gender diversity of BOC has a negative effect on performance, while the gender diversity of directors does not affect performance. In the context of banks in Indonesia, the market perceives women's BOC negatively. This result reinforces the suggestion that female boards are less likely to experience attendance problems than male boards (Adams & Ferreira, 2009). The issue of gender equality is a major problem in developing countries because of inequality in learning opportunities, employment opportunities, and careers, causing women to be considered not having the same abilities as men. This causes gender diversity to have a negative effect on performance (Kabir et al., 2023; Adams & Ferreira, 2009). Moreover, the findings of Ali et al. (2022) support the negative impact of gender diversity on bank performance because gender diversity plays a decisive role in corporate investment decisions, and undermines firms' performance.

5. Conclusion

The primary objective of this study is to establish the impact of gender diversity attainment on financial performance within Indonesia's banking sector. The CG structure in Indonesia separates supervisory and management functions. The board holding the supervisory function is the BOC; conversely, the board holding the bank's operations manager is the director. We found a positive correlation between BOC gender diversity and financial performance. In contrast, gender diversity in the director's room does not affect performance. These empirical facts are consistent with bank's performance measures: ROA and ROE. However, we found that BOC gender diversity has a negative effect on PER. These research findings support the RDT perspective that women in BOC rooms are a valuable resource for highly distinguished firms in improving their performance.

The Bank benefits from appointing female BOC members because female BOCs are more effective in supervising and providing consultation to the director, thus positively impacting ROA and ROE. We recommend that banks appoint female BOC members. However, their proportion must be limited because the market responds negatively to the appointment of female BOC. Bank regulators should

encourage banks to appoint women's BOC through bank regulations to increase women's participation as BOC members. Furthermore, we recommend that banks increase wider opportunities for women to sit on the BOC.

This study focuses on gender diversity. Other indicators of diversity can be explored by future researchers, including a diversity of education, skills, religion, and experience, which can affect the quality of board policies. In addition, future researchers should pay attention to net interest margin as a variable that influences bank performance and divide the sample based on bank size to add to the literature, as we did not observe the impact of gender and education diversity on large and small banks.

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