# Gender equality on board and banks' earning management: Achieving SDG in Southeast Asia's Corporation

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Abstract. This study aims to analyze the influence of gender equality, which is one issue in sustainable development goals (SDGs), on earnings management of banks in the Philippines, Indonesia, Malaysia, and Thailand stock exchanges. This study uses the Generalized Methods of Moments (GMM) method on 73 listed banks in these countries from 2013-2018. Both linear and non-linear effects of a woman on the board on earnings management are examined in this study, and bank earnings management is measured using discretionary loan loss provisions. This analysis is divided into countries that have one-tier and two-tier corporate governance systems. Our findings suggest that there are insignificant results for the influence of a woman on the board and a woman on the board squared on bank earnings management, measured by discretionary loan loss provision (DLLP), for one-tier and two-tier countries. Meanwhile, there is a different result from previous studies that the presence of three women directors has a significant and positive influence on bank earnings management in two-tier countries. The results of one-tier and two-tier countries can be different because the absolute value of the error term of the two-tier countries is higher than the one of one-tier countries, which indicates higher DLLP values.

#### 1. Introduction

The increasing number of women holding positions in corporates' boards of directors over the past decade emphasizes women board representatives' crucial role in corporate governance. International Finance Corporation (IFC) in 2018 shows that several ASEAN countries, i.e., the Philippines and Singapore, have changed their corporate governance codes by adding regulations on gender diversity. Previous studies by [1], [2], [3], and [4] focused on the relationship between women's board of directors and company performance, stock prices, or the quality of earnings. Meanwhile, there is still limited empirical evidence explicitly discussing its implications on bank revenue management. This topic in the previous research was conducted more or focused on companies engaged in other industries, such as [5].

There has been considerable literature examining corporate governance in banks and how corporate governance can differ from those in non-financial companies [6]. The first attribute that makes bank control different from companies is the levels of leverage among banks. Not infrequently, banks' influence exceeds 90%, while high power can increase the likelihood of bank failure [7]. The implication of governance for high leverage is the emergence of a conflict of interest between shareholders and debtholders with equity governance at the bank. [8] stated that banks are more vulnerable to higher levels of moral hazard problems than manufacturing companies. Another attribute that makes bank

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governance important is the uncertainty faced by shareholders in accurately assessing a company's fundamental value, which causes asymmetric information and complexity of banking assets [9].

The complex corporate governance structure among banks can cause banks to be vulnerable to earnings management. Agency theory assumes that all individuals in a contract are driven by personal interests and focus on maximizing utility, which leads to conflicts of interest between company management (agent) and shareholders (principal) [10]. Conflicts of interest that occur between the manager as the agent of the company and the shareholder as the owner can provide an opportunity for the manager (agent) to manage earnings (earnings management) to mislead the company owner (principal) about the performance and economic condition of the company. Studies have documented positive relationships between principal and agent asymmetric information and earnings or earnings management [10, 11]. Complex management requires a board of directors to monitor or supervise managers efficiently. It gives managers access to important advice to carry out banking activities that can prevent them from making changes in earnings on earnings management reported in financial statements [12]. Therefore, the board of directors' role is significant in determining the extent of income/profit management.

In previous studies, the primary empirical evidence shows the relationship between the female board of directors and the board of directors' monitoring with diverse evidence, and some are sometimes contradictory. The primary empirical evidence shows a positive relationship between the female board of directors and the board of directors [1], since they are more independent and active, as well as having different background, skills, and knowledge that are helpful for critical thinking. Thus, women's involvement is expected to lead to better supervision, and eventually resulting in better quality in accounting, lower errors in reporting, and less fraud and tax avoidance [2, 13, 14].

There are several theories that can explain the importance of gender equality in bank's board. Resource dependence theory argues that firms can exploit its links with external parties that possess resources [15, 16, 17]. Information can be considered as important resources in the current era, and therefore the level of information and resources that directors have can impact the performance and competitiveness of a firm [18]. In this case, it is expected that with their unique perspectives brought by female directors, women can reduce potential biases and prejudices and therefore lead to improved decision-making [18]

Tokenism theory explains that the existence of minority in a group such as board of directors, but only in a small number, can have minimal impact since they are simply perceived as a 'symbol' or 'token' [19, 20]. Stereotypical views can lead to obstacles in the perception of a board of directors to influence a group's decisions. In addition, when a board of directors is given the label 'token' or as a 'symbol,' it can make a board of directors feel uncomfortable and raise doubts about themselves [19, 20], and is considered 'tokens' can interfere with their performance in the company [21]. In fact, because of its high visibility, the board of directors considered a 'token' often faces high pressures. They feel chosen because they are only different, not because of their remarkable achievements [22].

Critical mass theory shows that interaction in a group depends on size [20, 21]. When the size of a subgroup achieves a certain minimal level, which is three in number or around 30% of the group, the subgroup's level of influence will increase [23]. In other words, this theory shows that critical mass is important if we expect that qualitative changes will occur like a group's interactions with the presence of minority. Prior studies emphasized that three female directors' critical mass adds value to maledominated board by enabling them to exert their roles and responsibilities [24, 25]. [26] posit those female directors are more likely to be more vocal there are at least three of them in the room. [27] provides evidence that boards with at least three female directors are more likely to be more critical regarding information and will take more initiatives following meetings with board members.

Based on the abovementioned arguments, this study investigates the influence of gender equality, especially the proportion and number of female boards of directors, on income management in banks (focusing on the banking sector). This research is expected to increase the understanding of female directors' existence, taking into account the proportion attributes of female directors, can influence the



decision-making process and the effectiveness of directors, and consequently also influence income management at banks.

#### 2. Method

#### 2.1. Data

In this study, they are using secondary panel data obtained from the Annual Report and issuers' financial statements in the banking sector. This study's sample is all banks listed on the Philippines, Indonesia, Thailand, and Malaysia Stock Exchanges in 2013 - 2018. These four countries have different corporate governance systems, where Indonesia has a two-tier organizational governance system, while the Philippines, Thailand, and Malaysia have a one-tier corporate governance system. In Indonesia, a country with a two-tier system, there were 72 observations, while in Malaysia, Thailand, and the Philippines, the sample covers 438 words.

## 2.2. Empirical methods and variables

There are two models used in this study. The model used was adapted from the research model by [12]. This study aims to analyze the influence of female directors' presence, the existence of female quadratic directors (non-linear), and the number of female directors on the bank earnings management so that a model that will be estimated is as follows.

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Bank\ Earning\ Management\ (DLLP)_{i,t} =
\alpha_i + \beta_1 (Measures\ of\ Female\ Directors)_{i,t} + \beta_2 (Board\ Characteristics)_{i,t} +
+ \beta_3 (CEO\ Characteristic)_{i,t} + \beta_4 (Bank\ Characteristics)_{i,t} + \varepsilon_{i,t} \qquad (1)
Bank\ Earning\ Management\ (DLLP)_{i,t} =
\alpha_i + \beta_1 (Measures\ of\ Female\ Directors)_{i,t} +
\beta_2 (Measures\ of\ Female\ Directors)_{i,t}^2 + \beta_3 (Board\ Characteristics)_{i,t} +
\beta_4 (CEO\ Characteristic)_{i,t} + \beta_5 (Bank\ Characteristics)_{i,t} + \varepsilon_{i,t} \qquad (2)
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Where discretionary loan loss provisions measure the dependent variable of bank earnings management, the independent measures of women director's variable is from the percentage of female directors, the rate of female quadratic directors, and the number of female directors. There are three control variables in this study. First, the board of directors' characteristics consists of the age, the tenure, the size, the independence, the education of the directors, the number of directors, and the number of directors held by the female board of directors. The second control variables of the CEO's characteristics are the CEO's age, the CEO's gender, CEO's education, and the CEO's tenure, and the third control variables are bank's characteristics consisting of capital ratio, diversification, return on assets, and asset growth.

## 2.3. Empirical methods and variables

There are six hypotheses related to the influence of the presence of female directors, the impact of the existence of quadratic (non-linear) female directors, and the number of female directors (one, two, three, and more than three female directors):

- H1: The existence of female directors on the board of directors has a significant impact on bank earnings management, ceteris paribus.
- H2: The existence of a female director on the board of directors has a significant quadratic impact on bank earnings management, ceteris paribus.
- H3: The existence of one female director has a significant impact on bank earnings management, ceteris paribus.



H4: The existence of two female directors has a significant impact on bank earnings management, ceteris paribus.

H5: The existence of three female directors has a significant impact on bank earnings management, ceteris paribus.

H6: The existence of more than three female directors has a significant impact on bank earnings management.

#### 2.4. Empirical methods and variables

In this study, the dependent variable used is bank earnings management, as measured by discretionary loan loss provisions (DLLP). Following [11], this study uses the first difference, Generalized Method of Moment (GMM), as conceptualized by Arellano and Bond [28] to tackle the potential endogeneity problem and its dynamic nature. Endogeneity might occur because, as [12] suggest, female directors' existence might be the bank's result in earning management practices. There is a possibility that shareholders asked for board restructuring due to this problem, which resulted in female directors' appointments.

Before doing the complete regression model using GMM, the researchers first performed a linear regression to obtain the DLLP value. The dependent variable DLLP is brought by deterioration in the loan loss provisions model.

The loan loss provisions model consist of  $Size_{i,t}$ , which is the natural logarithm of total assets,  $\Delta Loans_{i,t}$  which are the difference between the total loans for the period t-1 and t,  $Loan\ Charge\ Offs_{i,t}$  which is the net charge off,  $Allowance_{i,t-1}$  which is loan loss allowance, and  $\Delta Non-Performing\ Assets_{i,t-2}$ ,  $\Delta Non-Performing\ Assets_{i,t-1}$ ,

 $\Delta Non\ Performing\ Assets_{i,t},\ \Delta Non-Performing\ Assets_{i,t+1}$  are a variable that reflects the change or the difference between non-performing loans in the period t-3 and t-2, period t-2 and t-1, period t-1 and t, and period t and t+1 respectively. All variables except  $size_{i,t}$ , divided by the book value of the total loans of each bank.

Furthermore, a linear regression was performed on the model, and the residual error value was taken. The error value will be used to calculate the DLLP value, using the formula:  $Discretionary\ Loan\ Loss\ Provisions_{i,t} = \varepsilon_{i,t} * Loans_{i,t})/Assets_{i,t}$ . After the DLLP value is obtained, the researcher will continue to use the regression method using GMM for the entire model.

## 3. Results and discussion

Tables 1 and 2 present the sample banks' statistics descriptive in countries with one-tier and two-tier systems, respectively. Table 1 provides the number of observations, mean, standard deviation, minimum value, and maximum value of each variable used in this study from listed banks in countries with one-tier corporate governance system, i.e. Philippines, Thailand, and Malaysia, from 2013-2018. Table 2 provides the number of observations, mean, standard deviation, minimum value, and maximum value of each variable used in this study from listed banks in Indonesia, which is the only country with two-tier corporate governance system from 2013-2018. This study uses the GMM method, for which two test conditions must be met. The first test is the Arellano-Bond test, which is used to check for autocorrelation in residuals. Based on the results of the Arrelano-Bond test for the three models, both two-tier and one-tier countries, there is no autocorrelation. Furthermore, the second test is the Sargan-Hansen test, which is used to see the validity of the instruments used in the regression model in this study.

One-Tier Obs. Mean Median Std. Dev. Min Max 0.00002 0.00001 0.00000 0.000037 0.00022 **DLLP** 186 005 9 16.597 18.182 % WOMEN (%) 186 10.511 44.44

**Table 1.** Descriptive statistics of one-tier countries.



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| %_WOMEN2 (%)        | 186 | 3.854   | 3.306  | 3.817   | 0       | 19.753  |
|---------------------|-----|---------|--------|---------|---------|---------|
| ONE_WOMEN           | 186 | 0.2634  | 0      | 0.4417  | 0       | 1       |
| TWO_WOMEN           | 186 | 0.3065  | 0      | 0.4623  | 0       | 1       |
| THREE_WOMEN         | 186 | 0.1882  | 0      | 0.3919  | 0       | 1       |
| MORETHAN3_WOME<br>N | 186 | 0.1129  | 0      | 0.3173  | 0       | 1       |
| B_AGE               | 186 | 63.4825 | 62.775 | 4.742   | 52.375  | 73.3077 |
| B_TENURE            | 186 | 8.95105 | 7.583  | 4.495   | 2       | 22.667  |
| B_SIZE              | 186 | 11.8817 | 12     | 2.735   | 6       | 18      |
| B_EDUCATION         | 186 | 1.7014  | 1.667  | 0.2887  | 1.1111  | 2.4117  |
| NDIRECTORSHIPS      | 186 | 11.8774 | 12.636 | 15.178  | 8.8889  | 13.5455 |
| NWDIRECTORSHIPS     | 186 | 1.9516  | 2.091  | 0.3204  | 1       | 2.2727  |
| C_AGE               | 186 | 57.2312 | 57     | 74.902  | 42      | 79      |
| C_GENDER            | 186 | 0.91935 | 1      | 0.2730  | 0       | 1       |
| C_EDUCATION         | 186 | 1.8333  | 2      | 0.5687  | 1       | 3       |
| C_TENURE            | 186 | 9.9839  | 6      | 10.4630 | 1       | 52      |
| CAPITALRATIO        | 186 | 0.11034 | 0.111  | 0.02197 | 0.0556  | 0.1724  |
| DIVERSIFICATION     | 186 | 3.7019  | 1.408  | 29.5711 | -4.8690 | 404.552 |
| SIZE                | 186 | 17.3778 | 17.294 | 1.8177  | 13.7405 | 23.2655 |
| ROA (%)             | 186 | 1.277   | 1.195  | 0.494   | 0.16    | 3.010   |
| ASSETGROWTH         | 186 | 0.1004  | 0.084  | 0.1113  | -0.1178 | 0.8766  |

**Table 2.** Descriptive statistics of two-tier country.

| Indonesia       | Obs<br>· | Mean    | Median  | Std.<br>Dev. | Min        | Max         |
|-----------------|----------|---------|---------|--------------|------------|-------------|
| DLLP            | 252      | 0.00012 | 0.00003 | 0.0004       | 0.00000000 | 0.0048      |
| DLLF            | 232      | 1       | 7       | 4            | 3          | 2           |
| %_WOMEN (%)     | 252      | 18.444  | 14.29   | 19.144       | 0          | 75          |
| %_WOMEN2 (%)    | 252      | 7.0519  | 2.041   | 11.364       | 0          | 56.25       |
| ONE_WOMEN       | 252      | 0.3016  | 0       | 0.4599       | 0          | 1           |
| TWO_WOMEN       | 252      | 0.1389  | 0       | 0.3465       | 0          | 1           |
| THREE_WOMEN     | 252      | 0.1389  | 0       | 0.3465       | 0          | 1           |
| MORETHAN3_WOME  | 252      | 0.0476  | 0       | 0.2134       | 0          | 1           |
| N               |          | 52.0102 | 52 505  | 2.4120       | 44.0       |             |
| B_AGE           | 252      | 53.0192 | 52.707  | 3.4128       | 44.8       | 62          |
| B_TENURE        | 252      | 10.4517 | 7.9375  | 7.38         | 1.167      | 30          |
| B_SIZE          | 252      | 6.3452  | 6       | 2.6622       | 3          | 12          |
| B_EDUCATION     | 252      | 1.5516  | 1.5714  | 0.2914       | 1          | 2.5         |
| NDIRECTORSHIPS  | 252      | 6.3897  | 6.3902  | 0.3769       | 0.667      | 6.6190<br>5 |
| NWDIRECTORSHIPS | 252      | 1.2319  | 1.2619  | 0.1007       | 1.0238     | 1.357       |
| C_AGE           | 252      | 55.464  | 56      | 5.7934       | 42         | 73          |
| C_GENDER        | 252      | 0.9286  | 1       | 0.2581       | 0          | 1           |
| C_EDUCATION     | 252      | 1.6785  | 2       | 0.5609       | 1          | 3           |
| C_TENURE        | 252      | 10.4405 | 6       | 9.9609       | 1          | 36          |
| CAPITALRATIO    | 252      | 0.15    | 0.1422  | 0.0594       | 0.05206    | 0,5653      |
| DIVERSIFICATION | 252      | 1.1258  | 0.5298  | 3.5775       | -12.049    | 48.680<br>6 |
| SIZE            | 252      | 21.2638 | 21.057  | 1.9085       | 16.322     | 25.217<br>2 |
| ROA (%)         | 252      | 1.6619  | 1.535   | 2.196        | -7.58      | 12.4        |

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| ASSETGROWTH | 252 | 0.2324 | 0.113 | 1.2887 | -0.3402 | 20.264 |  |
|-------------|-----|--------|-------|--------|---------|--------|--|
|-------------|-----|--------|-------|--------|---------|--------|--|

After the Arrelano-Bond test and the Sargan-Hansen test, regression was performed with the GMM method. Tables 3, 4, and 5 present the regression results from the three models in this study. Table 3 shows the main independent variables are lag of discretionary loan loss provision and the proportion of women in bank's board. On the Table 4, The independent variables are similar to the results presented in Table 3, with the squared value of the proportion of women in bank's board as an additional independent variable. The main independent variables on the Table 5 are the dummy representing the number of women on bank's board. The regressions of Table 3, Table 4, and Table 5 were conducted using GMM estimations.

**Table 3.** Regression test results of the effect of the existence of woman directors on the board of directors on bank earnings management.

|              | GMM Two-Tier Country          |         | <b>GMM One-Tier Country</b> |         |  |
|--------------|-------------------------------|---------|-----------------------------|---------|--|
|              | Coefficient (Standard P-value |         | Coefficient (Standard       | P-value |  |
|              | Error)                        | r-value | Error)                      | r-value |  |
| I DII D      | 0.051427                      | 0.020   | 0.0000877                   | 0 221   |  |
| L.DLLP       | (0.25228)                     | 0.838   | (0.0000901)                 | 0.331   |  |
| O/ NA/ONAENI | -0.0001114                    | 0.072   | 0.0000401                   | 0.220   |  |
| %_WOMEN      | (0.000698)                    | 0.873   | (0.000034)                  | 0.238   |  |

**Table 4.** Regression test results of the effect of the existence of woman quadratic directors on the board of directors on bank earnings management.

|          | GMM Two-Tier Country  |          | GMM One-Tier Country |           |  |
|----------|-----------------------|----------|----------------------|-----------|--|
|          | Coefficient (Standard | P-value  | Coefficient          | P-value   |  |
|          | Error)                | 1 -value | (Standard Error)     | 1 - value |  |
| L.DLLP   | -0.037245             | 0.262    | 0.0000954            | 0.280     |  |
| L.DLLP   | (0.331924)            | 0.202    | (0.0000882)          | 0.280     |  |
| % WOMEN  | 0.0014384             | 0.352    | 0.000003             | 0.968     |  |
| %_WOMEN  | (0.0015442)           | 0.332    | (0.0000738)          | 0.300     |  |
| % WOMEN2 | -0.001943             | 0.415    | 0.0000118            | 0.474     |  |
| %_WOMEN2 | (0.0023812)           | 0.413    | (0.0001643)          | 0.474     |  |

**Table 5.** Regression test results of the effect of the existence of number of woman directors on the board of directors on bank earnings management.

|            | GMM Two-Tier Cou         | GMM Two-Tier Country |                       | ntry  |
|------------|--------------------------|----------------------|-----------------------|-------|
|            | Coefficient (Standard P- |                      | Coefficient (Standard | P-    |
|            | Error)                   | value                | Error)                | value |
| L.DLLP     | -0.052719                | 0.224                | 0.0000702             | 0.526 |
|            | (0.43366)                | 0.224                | (0.0001106)           |       |
| ONE MONTEN | 0.000009                 | 0.027                | -0.000003             | 0.670 |
| ONE_WOMEN  | (0.0000415)              | 0.837                | (0.000007)            |       |
| TWO_WOMEN  | 0.0000729                | 0.224                | 0.000007              | 0.460 |
|            | (0.000612)               | 0.234                | (0.000009)            | 0.469 |



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| THREE_WOMEN    | 0.0001647<br>(0.000091) | 0.070* | 0.000008<br>(0.0000121)  | 0.531 |  |
|----------------|-------------------------|--------|--------------------------|-------|--|
| MORETHAN3_WOME | 0.0000158<br>(0.000117) | 0.893  | 0.0000156<br>(0.0000133) | 0.242 |  |

Regression results with the independent variable; female directors' presence indicates no model in which the existence of female directors' influences bank earnings management. These results are in line with research conducted by [12] because they also did not find a significant effect between the independent variables on the existence of female directors and bank income management. [12] The linear model is not an ideal model to characterize the relationship between female directors and bank earnings leadership.

Regression results with the existence of quadratic female directors as the independent variable show no one-tier or two-tier state model that has a significant influence on bank earnings management. This study's results are supported by the theory held by [29], which states that there is no meaningful relationship between female directors and company earnings management, even though it is not quadratically viewed. Moreover, there is new literature that shows no differences between male and female directors in conducting supervision in companies because women in leadership positions, such as the board of directors, have adapted to a male-dominated culture [2, 30, 31].

The existence of a female board of directors with one female director (ONE\_WOMAN) and two female directors (TWO\_WOMEN) as an independent variable does not significantly affect bank earnings management in this study of one-tier and two-tier countries. These findings are in line with the study conducted by [12] and supported by the theory of tokenism owned by [20] and [26], where the existence of one and two women is only considered as a 'representative' on the board of directors in the company, so their presence is often not considered. Female directors will maximally and fully play their supervisory role if there are at least three female directors [20].

In this study, the next independent variable was a board of directors with three female directors (THREE\_WOMEN); this had insignificant results for one-tier country samples. In this study, two-tier countries have significant positive effects on bank earnings management. These results are not in line with the findings of [12], which show a significant negative result for three female directors' presence. Following [20], who states that, with three female directors, they will have more confidence to take an active supervisory role and avoid bank earnings management. But the results of this study are supported by research conducted by [32] and [33], which states that the presence of three female directors does not make the presence of female directors effective. Also, they indicate that the numerical imbalance explained by [20] does not always reduce the tension faced by female directors on the board of directors' position and, instead, tends to increase competition, which makes female directors have the intention to manage bank income.

The existence of more than three directors (MORETHAN3\_WOMEN) in this study with one-tier and two-tier country samples did not have significant results on bank earnings management. This is the same with the findings by [12], which are also not substantial, where, if there is a presence of women on the board of directors (more than three) or in large numbers, the bank earnings management will also increase along with the increase in the presence of women on the board of directors.

The overall results of this study show that resource dependence theory, critical mass theory, and tokenism are not proven with regards to the impact gender equality of banks' board members on banks' earning management. Nevertheless, this does not mean that gender equality does not matter, since it can also impact other dimensions of banks' performances. This is an area that further studies can explore.

### 4. Conclusion

This study shows the insignificance of the influence of the presence of female directors and the existence of quadratic female directors on bank earnings management for one-tier and two-tier countries. Meanwhile, in contrast to previous research, it was found that the presence of three women directors



had a positive effect on bank earnings management in a two-tiered country. Therefore, only hypothesis 5 that is proven to be significant.

There are some relevant implications for this research. Regulators can use this research to make policies related to corporate governance so that gender composition in Indonesia can reasonably occupy any position in a company. The regulation needs to be made to support the sustainable development goals (SDGs) owned by the United Nations, gender equality. For companies, this research can reference the composition of female directors of more than three people in their company. Women are more confident to play an active and efficient supervisory role in the company. Academics, especially those who want to conduct further research on corporate governance, can take advantage of this research to develop in detail the topic of corporate governance, precisely the existence of a female director on the board of directors of the company and what influence the presence of the female directors presents.

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