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Does Gender Diversity in the Boardroom Improve Firm Performance? Evidence from Indonesia

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Abstract

This study investigates board gender diversity in Indonesia's listed firms and its effect on firm performance from 2011–2016. After addressing the endogeneity of diversity, the results in this paper show that the proportion of female in the boardroom marginally improve firm performance. Firms with two or more female in the boardroom have a stronger impact on firm performance than firms with one female in the boardroom, consistent with the critical mass effect. Finally, certain sectors will gain more benefits of appointing females in the boardroom. The results suggest that increasing gender diversity in the boardrooms can have beneficial effects on firm performance, but the benefits may be subject to the critical mass and firm industry.

Keywords: board diversity; tokenism problem; industry effect

JEL classifications: G30; G34; J16

1. Introduction

Gender bias in the work place has been a topical issue for recent years, which can be predominantly related to the inequality of being hired and promoted. Ideally, the chance of female candidates being appointed as directors will be the same as the chance of male directors as the firm employees and markets are relatively composed in balance between female and male.

The OECD reports that female labour contributes 65% of labour force in OECD countries, but the composition may be lower than 50% in some developing countries (OECD 2012). Yet, the involvement of females in managerial and board level remains low: 28% in Fortune 500 companies (Catalyst 2017), 10.2% in Asia Pacific countries (Centre for Govern-

nance, Institutions & Organisations [CGIO] & Korn Ferry 2016). As the most prudent industry, financial sectors around the world only appoint about 20% of female directors (Jenkins & Agnew 2015). Therefore, the problem of gender bias is a global problem.

To promote female participation in the boardroom, developed countries have enacted regulations and laws. The Norwegian government initially and controversially passed the law on a female director quota of 40% by 2007 (Ahern & Dittmar 2012). The French government requires large firms to have 20 per cent female directors in 2014 and 40% by 2017 (Nekhili & Gatfaoui 2013). The Italian government imposes 33% of female directors or corporations could face fines of 1 million euro (Chapple & Humphrey 2014). The German follow such law by mandating German big corporations to appoint female directors 30% of their board size from 2016 (Dauer 2014). Not only in the EU, Japan wishes to target 30% female representative for senior po-

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sitions by 2020. Malaysia and Brazil set 30% and 40% threshold respectively for the presence of female on the boards (The Economist 2014).

From the business case perspective, the Davies Report (2012) argues the increase of diversity on the boards brings a larger pool of talents in terms of expertise, experience, and network, leading to better governance and firm performance. Unfortunately, the empirical studies show that the effects of female directors on firm performance lack consistency. Some successfully reported that female directors have positive impacts on firm performance (Lückerath-Rovers 2013, Liu, Wei, & Xie 2014, Strøm, D'Espallier, & Mersland 2014), while the others failed to report the same result (Carter et al. 2010, Galbreath 2011, Ahern & Dittmar 2012, Marinova, Plantenga, & Remery 2016). As a result, it is necessary to examine whether the increase of female presence on the boards can bring positive outcomes on firm performance.

This study argues that this problem occurs because of three possible reasons. Firstly, prior studies on female directors have largely focused in developed countries such as the US and the EU countries, in which most of them gender diversity on boards are regulated. This suggests that the listed firms in those countries may encounter a certain pressure in forming effective boards. Liu, Wei, and Xie (2014) and Strøm, D'Espallier, and Mersland (2014) show that female directors can significantly improve a firm's 'bottom line' in the developing countries.

Secondly, the tokenism problem, which means individuals who come from a minority group will encounter obstacles (i.e. not trusted or often doubted) to make a significant contribution within an organization. In other words, under-represented females on the boards can be marginalized and, eventually, limit their contributions. Torchia, Calabrò, and Huse (2011) find that firms with three or more female directors can improve firm level of innovation for

Norwegian firms. Additionally, Joecks, Pull, and Vetter (2013) report that having three or more females on the boards will increase ROE for German listed firms. Consistently, the more absolute number of female directors, the more significant their contributions on ROA and profit margin (Liu, Wei, & Xie 2014).

Thirdly, several studies indicate that the type of industry has important roles in explaining the relationship between female directors and firm performance (Kirsch 2018). Dezsö and Ross (2012) suggested that female directors who work with the firms that are related to high innovation sectors will lead to better firm performance. Martín-Ugedo and Minguez-Vera (2014) shows that gender diversity in the boardroom is less effective in primary (raw materials) industry than in secondary (manufacturing) and tertiary (services) industry for Spanish SMEs. Chapple and Humphrey (2014) showed that female directors who work in the consumer goods industry will bring positive outcomes to the firm.

This study will be conducted in Indonesia, in which governance regulations are different from in developed countries. There is no such formal regulation to promote gender diversity on the boards for Indonesian listed firms (Deloitte 2014). As a result, female directors in the 100 biggest Indonesian listed firms remain stagnant around 11–12% during the period 2012 to 2014 (CGIO & Korn Ferry 2016). In addition, previous studies consistently reported a positive association between females on the board and firm performance (Triana & Asri 2017, Syamsudin, Setiany, & Sajidah 2017).

This study identifies several research questions that need to be addressed. (1) Does the presence of females in the boardroom improve firm performance in Indonesia? (2) Does the tokenism problem influence the relationship between gender diversity in the boardrooms and firm performance? (3) Does the presence of female in the boardroom bring

greater benefits in certain industry than other industry?

The objective of this study is to provide comprehensive evidence on the firm performance regarding the impact of female in the boardroom. The study conducts further investigation on the critical mass and industry analyses to shed some light on boardroom dynamics in the case of Indonesian listed firms.

This study makes four primary contributions to the existing literature. Firstly, this study will extend previous literature by providing empirical evidence the effect of gender diversity in the boardroom on firm performance in Indonesia, one of the world's largest developing countries. Secondly, this study will add the critical mass analysis and provide the benefits of female directors on certain industry. These aspects are rarely discussed in emerging countries, particularly in Indonesia.

Thirdly, this study will be the first comprehensive study that investigates the presence of female in the boardroom in Indonesia as the study will use all available non-financial listed firms in Indonesian Stock Exchange (IDX). Finally, this study will extend previous studies in Indonesia by employing more sophisticated econometric techniques, namely two-stage least square, which effectively addresses the endogeneity problem in previous studies (Adams & Ferreira 2009, Liu, Wei, & Xie 2014).

The remainder of the paper as follows. Section 2 will review the previous literature, such as the theory on board diversity, the empirical study of board diversity, the tokenism and critical mass of diversity on the board. Section 3 will discuss the hypotheses development. Section 4 describes the research methodology. Section 5 will show the empirical evidence and research discussion. Finally, section 6 will conclude the paper.

2. Literature Review

2.1. The Theories on Gender Diversity on the Boards

Gender diversity on the boards can be explained in four theories. They include the agency theory, the resource dependence theory, the stakeholder theory, and the human capital theory. According to the agency theory, the presence of females in the boardroom is deemed as outsiders, who can do better monitoring roles than their counterparts on the board (Kirsch 2018). Moreover, the involvement of female directors will bring positive influence in terms of CEO power (Ahern & Dittmar 2012). Carter et al. (2010) argue that the relation between gender diversity and firm performance may depend on firm's current governance mechanism within the firms as suggested by Adams and Ferreira (2009).

Next, the resource dependence theory shows that firms should appoint people who can acquire certain resources in order to survive (sustain). Diversity on the board will provide advice (counsel), legitimacy and communication channels to achieve such firm sustainability (Terjesen, Sealy, & Singh 2009). Consequently, the boards must be filled by people from different race, gender, expertise, etc. The presence of females on boards will provide resources that cannot be provided by male directors in the boardroom. For example, appointing female directors may benefits in retail industry because a considerable proportion of firm's employees and consumer are female (Kirsch 2018).

The stakeholder theory views that the key role of boards is to build good relationships towards firms' stakeholders. The boards are not necessarily the agents of shareholders (owners). As a result, the boards should be composed different of people in terms of race, gender, and ethnicity in order to reflect the society. Firms may encounter certain pressure to do so, but the pressure is less significant

when the ownership of firms is highly concentrated (Terjesen, Sealy, & Singh 2009).

The human capital theory suggests that certain characteristics of females, namely education, skills, network, experience and other personal characteristics, may influence firm performance. In general, female qualifications are relatively the same as male qualifications in terms of education and work experience, but female directors statistically tend to be younger than male directors in Finland (Virtanen 2012). Similarly, Dang, Bender, and Scotto (2014) show that the management experience and educational background of female directors are no different from male directors in France. Nevertheless, Hodigere and Bilimoria (2015) indicate there is a tendency that females lack professional network which decrease the likelihood of being appointed as directors in the US.

The above theories indicate that gender diversity in the boardrooms may result positive or negative consequences for decision-making in the boardroom. This study will focus the impact of gender diversity in the boardrooms on overall firm performance.

2.2. The Conceptual Framework of Female in the Boardrooms

The decision on who sits in the boardroom (i.e. directors, commissioners) matters in major organizational outcomes (Hambrick & Mason 1984, Cannella 2001). Certain upper echelon characteristics (i.e. age, education, socioeconomic roots) influence the firm strategic choices and, finally, organization performance (i.e. profitability, growth, survival). In other words, the heterogeneity (i.e. tenure, experience, social background) in the boardrooms has important roles on organizations outcomes.

Empirically, Krishnan and Park (2005) show strong relationship between females on boards and firm financial performance. Robinson and Dechant (1997)

argue that the presence of females in the boardrooms improves board task performance which includes better understanding on current and potential market, promoting creativity and innovation, enhancing effective leadership, boosting effective decision making and strategic advantage in global competition. Board diversity improves board task performance, which finally improving firm performance (Hambrick & Mason 1984, Carpenter, Geletkanycz, & Sanders 2004, Dezsö & Ross 2012).

Nevertheless, the effectiveness of gender diversity on firm performance may be influenced by other factors such as critical mass (Torchia, Calabrò, & Huse 2011, Elstad & Ladegar 2012, Liu, Wei, & Xie 2014) and industry effect (Martín-Ugedo & Minguez-Vera 2014, Dezsö & Ross, 2012, Chapple & Humphrey 2014). These factors may (may not) influence the relationship between gender diversity and firm performance. Therefore, it is necessary to examine these aspects.

Figure 1 illustrates the conceptual framework of this study. Not only to examine the relationship between gender diversity and firm performance (H1), this study also examines whether critical mass (H2) and industry (H3) influence that relationship.

2.3. The Effects of Female Directors on Firm Performance

The effect of gender diversity in the boardroom on firm performance is not straightforward which may be due to many reasons (Terjesen, Sealy, & Singh 2009, Kirsch 2018). Certain conditions, namely, individual level processes, firm characteristics environment characteristics, influence the effectiveness of females in the boardroom. For example, as a minority group in the boardroom, females tend to experience tokenism, which means their contribution is less significant because of underrepresented numbers in the boardroom. Firm characteristics also have important roles, in which firms with a sizable

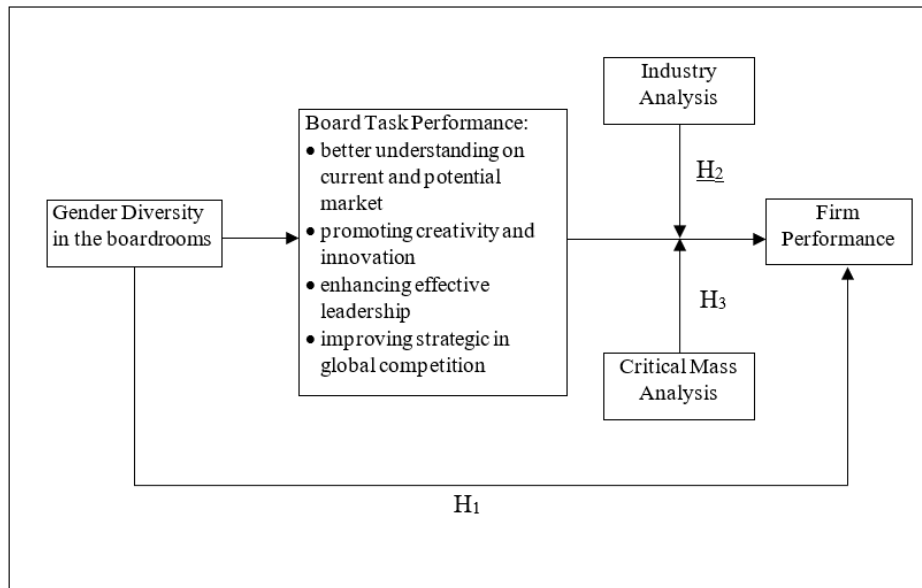


Figure 1: Conceptual Framework

proportion of female consumers may gain most benefits by the presence of female in the boardroom. In addition, the existence of laws that require females certainly influences board selection. These conditions will influence board processes, board behaviours, board selection, and board culture, which in the end, influence board effectiveness and firm outcomes (e.g. financial, reputational, and social performance).

As many aspects influence the relation between females in the boardroom and firm outcome (firm performance), the empirical studies tend to lack consistency. Some report that female directors have positive association with firm performance, while the others may not have relation or even have negative association.

There are several factors that cause inconsistency results. Firstly, some studies are conducted in developing countries while the others are in developed countries. The presence of females on the boards are more likely to be intervened by a certain pressure in the developed countries (i.e. the Scandinavian Countries), namely the quotas. Such

law (regulation) more likely leads to the insignificance of female directors (Ahern & Dittmar 2012, Marinova, Plantenga, & Remery 2016). This condition does not occur in the developing countries (i.e. Indonesia), which means the listed firms in developing countries, have more freedom to structure the board of directors according to the strategic goals of firms.

Secondly, there is a certain factor that influences the relation between female directors and firm performance, for instance: current firms' level governance (Adams & Ferreira 2009, Jurkus, Park, & Woodard 2011), firm size (Pasaribu 2017), industry (Martín-Ugedo & Minguez-Vera 2014, Dezsö & Ross 2012, Chapple & Humphrey 2014). This condition infers that female directors may not necessarily bring positive outcomes to firm performance.

Thirdly, in terms of the methodology, some studies use simple regression analysis, namely OLS model, while others use advanced techniques. Studies that used simple regression analysis tended to report positive association (Mahadeo, Soobaroyen, & Hanuman 2012, Lückerath-Rovers 2013, Triana

& Asri 2017, Syamsudin, Setiany, & Sajidah 2017) while others failed to find similar results (Adams & Ferreira 2009, Jurkus, Park, & Woodard 2011, Ahern & Dittmar 2012). The use of OLS model is prone to biased estimation, caused by the endogeneity problem. Therefore, this study will try to overcome this problem by employing more than one regression analysis.

This study contributes to the existing literature in three ways. Firstly, the study extends the literature beyond developed countries by providing empirical evidence in Indonesia, one of the world's largest developing countries. Secondly, this study addresses the endogeneity of diversity which result robust estimations. Thirdly, in the case of Indonesian firms, this study is more comprehensive and robust in terms of the analysis and sample size.

2.4. Tokenism and Critical Mass

Female is deemed as a minority party in the boardroom. The appointment of only one female director is less likely to contribute to firm performance because she is not trusted or often doubted. This problem is called the tokenism problem (Terjesen, Sealy, & Singh 2009, Kirsch 2018).

Elstad and Ladegar (2012) summarize the consequences of the tokenism problems. *Visibility* is a condition when female directors are always being excessively monitored by male directors. *Polarization* is a condition when male directors feel threatened and uncomfortable by the presence of female directors, which can cause the reluctance of male directors to share information. Moreover, female directors are being cut from social communication inside (or outside) the boardroom. *Assimilation* is a condition when male directors will have a stereotypical thinking on gender, which are things that are suitable for female directors. Consequently, a female directors' ability will be underestimated, and their arguments will become trivia in board decision-

making.

In the boardroom, the presence of females is deemed as minority. Hiring 1 or 2 female directors is less likely to increase board effectiveness. female directors, which are the minority party, can be marginalised when their presence on the board is in modest proportion (number). Konrad, Kramer, and Erkut (2008) argue that there should be at least 3 female directors on the board in order to optimize the contribution of female directors, which is known as a critical mass.

Torchia, Calabrò, and Huse (2011) empirically support the critical mass of female directors on the board in terms of strategic tasks and firm innovation. Similarly, Joecks, Pull, and Vetter (2013) show that nearly balanced composition between male and female directors can contribute positively to firm performance for German listed firms. Therefore, this study will try to analyse whether tokenism and critical mass problems occur in gender diversity – firm performance relationship for Indonesian listed firms.

2.5. The Presence of Female Directors in Indonesian Listed Firms

It is undeniable that the gender bias problem still occurs in the workplace. According to the United Nations, the participation of females in labour markets are still significantly behind their male counterparts in 2003. The ratio of male-to-population is 72.2%, while the ratio of female-to-population is only 47.1%. Yet, the participation of females in senior management is much lower, which is around 24% in 2004. Moreover, globally, female workers are paid less and work for longer hours than male workers (UN Women 2017). In other words, the gender bias still occurs in developed and developing countries.

In Indonesia, the workforce between male and female is relatively the same. Yet, the presence of

females in the boardroom is only 6%. These figures are much lower than countries such as Europe and the US in which female directors are around 17% and 15% respectively (IFC/The World Bank Group 2013).

The empirical results of female directors are similar to developed countries, which lack consistency. Darmadi (2013) failed to show that females in the boardroom could bring positive contributions to the firms ROA and Tobin's Q. He argues that the presence of female on the board is mainly because of family connection. Consequently, this study only used one-year period of observation, which may cause difficulty to generalize the results.

Triana and Asri (2017) conducted a similar study with a larger dataset in Indonesia. They successfully show that female directors can improve firm performance (Tobin's Q). Similarly, Syamsudin, Setiany, and Sajidah (2017) shows the presence of females on the board of directors and commissioner influences firm performance in manufacturing sector in Indonesia. However, the previous analysis is susceptible to the endogeneity problem which makes difficult to justify the robustness of the results.

This study will try to address the problem of previous related studies in Indonesia. Using larger samples and longer period of observation. In addition, this study will try to address the endogeneity problem that usually occurs in this study. Additionally, several regression techniques will be employed to address the problem.

3. Research Hypothesis

The main objective of this study is to examine the relationship between the presence of female directors and firm performance. The first hypothesis is developed through the theory of gender diversity and previous empirical evidence. The agency theory, the resource dependence theory, and the stake-

holder theory support that the presence of female increases firm performance.

Nevertheless, previous empirical studies tend to lack consistency. Previous studies indicated that females may bring positive consequence to firm performance (Lückerath-Rovers 2013, Liu, Wei, & Xie 2014, Strøm, D'Espallier, & Mersland 2014), but some studies failed to show similar results (Carter et al. 2010, Galbreath 2011, Ahern & Dittmar 2012, Marinova, Plantenga, & Remery 2016).

Moreover, several studies tend to show inconsistent results in Indonesia. Darmadi (2013) rejected the idea that female directors positively influence firm performance. Recent studies (Triana & Asri 2017, Syamsudin, Setiany, & Sajidah 2017) successfully report positive association between female directors and firm performance even though the results might be affected by the endogeneity problem.

Indonesian listed firms have greater flexibility than their counterparts in developed countries, in which the presence of females on board are mandated by law. Indonesian listed firms can structure the boards with respect to industry characteristics and firm strategic goals. According to the above arguments, **the first null hypothesis:**

Hypothesis 1. Females in the boardroom have no influence on firm performance in Indonesia.

Moreover, it is reported that the performance of female directors might be influenced by certain factors such as the absolute number of females in the boardroom and industry. As a minority group, female directors tend to suffer the tokenism problem when the number of females is not nearly as balance in accordance to their male counterparts in the boardroom (Konrad, Kramer, & Erkut 2008, Torchia, Calabrò, & Huse 2011, Joecks, Pull, & Vetter 2013). This study extends the examination of female directors and firm performance by developing **the second null hypothesis:**

Hypothesis 2. There is no association between females in the boardroom and firm performance when there is one female in the boardroom.

The analysis will continue by examining the role of firm industry classification. Previous studies (Martín-Ugedo & Miguez-Vera 2014, Dezsö & Ross 2012, Chapple & Humphrey 2014) indicated that firms with products that are bought by end consumers (users) are more likely to benefit off gender diversity in the boardroom, such as: retail, consumer goods, etc. Based on this, **the third null hypothesis:**

Hypothesis 3. There is no association between females in the boardroom and firm performance when the products of firms are bought by non-end consumers (users).

4. Research Methodology

4.1. Sample and Data

This study will be using all non-financial listed firms in the Indonesian Stock Exchange (IDX) during the period 2011 to 2016. This study excludes financial firms (i.e. banking, insurance) because these firms tend to be highly leveraged which is deemed normal to this type of firms while it indicates a distress signal for non-financial firms. In addition, financial firms are highly regulated in terms of making strategic decision or structuring board (Fama & French 1992, Reeb & Upadhyay 2010, Farrell & Hersch 2005). Thus, firms with Industry Classification Benchmark (ICB) equals to 8 will be excluded from the observation.

This study will use multiple sources to obtain investigated variables, such as Thomson-One Banker, financial reports, and IDX website. Most board characteristics are hand collected financial reports, for instance: position, function, gender, etc. Proxies for firm performance are predominantly collected from the IDX website.

4.2. Regression Models and Variables

The regression analysis will a panel data set. The general form regression models are as follows:

$$\begin{aligned} \text{FirmPerformance}_{it} = & \beta_0 \\ & + \beta_1 \text{GenderDiversityMeasures}_{it} \\ & + \beta_2 \text{BoardCharacteristics}_{it} \\ & + \beta_3 \text{FirmCharacteristics}_{it} \\ & + \varepsilon_{it} + \gamma_{it} + \delta_{it} \end{aligned} \quad (1)$$

The study will use return on asset (ROA) and operating profit margin (OPM) in proxying firm performance¹. Gender diversity measures are the focused variable. It can be in several forms depending on the analysis. It can be a continuous variable, which is proxied proportion of females (*prop_tot_fem*) in the boardroom in testing hypothesis 1. It can be a dummy variable (*D1_tot* and *D2_tot*), which proxies the absolute number of females in the boardroom in testing hypothesis 2.

Board Characteristics will be divided into board size and the proportion of commissioner. Firms characteristics are proxied by firm size and firm age. γ_{it} and δ_{it} indicate firm industry and firm year respectively. The definitions of dependent and independent variables can be seen in Table 1.

In order to address the endogeneity problem that usually occurs between firm performance and gender diversity variables, the study adds another approach called the two-stage least square (2SLS). The first step is to regress alleged endogenous variables with instrumental variables. The second step is to use the predicted values of endogenous variable from the first regression as explanatory variable in the model of interest. This model effectively addressed the endogeneity problem in previous studies such as in Adams and Ferreira (2009), Liu,

¹The study also used other financial measures, namely ROE and net profit margin but the results are unsatisfactory in terms of the significance.

Table 1: Variables and Definitions

| Variables | Definitions |
|-------------------------------|--|
| <i>Dependent Variables</i> | |
| ROA | Ratio between net-income and book value of total assets |
| OPM | Ratio between operating income and total sales |
| <i>Gender Diversity</i> | |
| prop_tot_fem | Proportion of females in the boardroom |
| D1_tot | D1_tot = 1 if firms have 1 female directors, else D1_tot = 0 |
| D2_tot | D2_tot = 1 if firms have 2 female directors or more, else D2_tot = 0 |
| <i>Board Characteristics</i> | |
| Direksi_size | Total number of board of directors |
| Fract_kom | Total number of commissioners divided by total commissioner plus total directors |
| <i>Firm Characteristics</i> | |
| ln_asset | Logarithm of total assets |
| DAR | Total debt divided by total assets |
| ln_firm_year | Logarithm of difference between year t and firm listed year |
| <i>Instrumental Variables</i> | |
| ICB_one | Proportion of female in the same one-digit ICB |
| ICB_two | Proportion of female in the same two-digit ICB |
| ICB_three | Proportion of female in the same three-digit ICB |
| ICB_four | Proportion of female in the same four-digit ICB |

Source: Author's calculation

Wei, and Xie (2014), and Pasaribu (2017). Therefore, this study will employ 2SLS model in the regression analysis.

Two-stage least square (2SLS) requires a variable that can explain the presence of females in the boardrooms, but it does not have a relationship with firm performance. As a result, the study will employ the proportion of female directors within the same industry as an instrumental variable. Kirsch (2018) shows that there is a tendency that firms follow the structure of board from other firms in the same industry.

5. Results and Discussion

5.1. Descriptive Analysis

The study begins by presenting the descriptive statistics of the engagement of females in the boardroom in Indonesia. The participation of females in the boardroom tends to be stagnant between 2011 and 2016. The participation of females at only 11–12% in that period. This figure is relatively similar for director and commissioner roles, which are around 12–13% and 9–11%, respectively. Moreover, only

5–7% of firms are led by female CEO and only 8–10% of board commissioner (BOC) that are led by female commissioners. Even though more firms appoint females as either directors or commissioners, but the growth is slow. The development of female participation in Indonesian listed firm can be seen in Table 2.

Table 3 shows the details of female participation in the boardroom. Overall, more than 30% of Indonesian listed firms showcased appoint at least one female as either directors or commissioners between 2011 and 2016. However, the number of firms that have two females in the boardroom decrease significantly. Consistently, there are not too many firms that have three or more female in the boardroom. Table 3 shows that the tokenism may arise as firms tend to have one female in the boardroom.

Table 4 shows the descriptive statistics of variables that will be used in the regression analysis. The average proportion of female is 11%, in which 13% and 10% appointed as directors and commissioners, respectively. The average of ROA and OPM is 3.63% and -9.62% respectively. The average of peo-

Table 2: The Female Participation in the Boardroom for Indonesian Listed Firms between 2011 and 2016

| Year | Firms | prop_tot_fem | prop_exec_fem | prop_com_fem | ceo_female | komis_female |
|------|-------|--------------|---------------|--------------|------------|--------------|
| 2011 | 311 | 0.11 | 0.12 | 0.09 | 0.05 | 0.08 |
| 2012 | 328 | 0.11 | 0.13 | 0.10 | 0.07 | 0.09 |
| 2013 | 351 | 0.11 | 0.12 | 0.11 | 0.06 | 0.08 |
| 2014 | 365 | 0.11 | 0.12 | 0.10 | 0.06 | 0.08 |
| 2015 | 372 | 0.12 | 0.13 | 0.11 | 0.06 | 0.09 |
| 2016 | 372 | 0.12 | 0.13 | 0.11 | 0.07 | 0.10 |

Source: Author's calculation

Note: Firms are the total of observation firms.

Prop_tot_fem is total proportion females in the boardroom (BOD plus BOC).

Prop_exec_fem is total proportion female executive directors to total board of directors (BOD).

Prop_com_fem is total proportion female commissioner to total board of commissioner.

CEO_female is the proportion of firms with female CEO.

Komis_female is the proportion of firm with female head of commissioner.

Table 3: The Absolute Number of Female in the Boardroom in Indonesian Listed Firms between 2011 and 2016

| year | d1_fem | d2_fem | d3_fem | d1_com | d2_com | d3_com | d1_dir | d2_dir | d3_dir |
|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 2011 | 0.35 | 0.14 | 0.10 | 0.23 | 0.05 | 0.02 | 0.32 | 0.09 | 0.02 |
| 2012 | 0.35 | 0.16 | 0.09 | 0.23 | 0.05 | 0.02 | 0.33 | 0.09 | 0.02 |
| 2013 | 0.36 | 0.17 | 0.08 | 0.25 | 0.07 | 0.01 | 0.29 | 0.10 | 0.02 |
| 2014 | 0.36 | 0.16 | 0.08 | 0.27 | 0.05 | 0.01 | 0.31 | 0.09 | 0.03 |
| 2015 | 0.34 | 0.20 | 0.09 | 0.26 | 0.07 | 0.01 | 0.31 | 0.09 | 0.04 |
| 2016 | 0.32 | 0.19 | 0.10 | 0.27 | 0.06 | 0.01 | 0.28 | 0.09 | 0.06 |

Source: Author's calculation

Note: D1_fem is firms with one female in the boardroom.

D2_fem is firms with two females in the boardroom.

D3_fem is firms with three females or more in the boardroom.

D1_com is firms with 1 female commissioner.

D2_com is firms with 2 female commissioners.

D3_com is firms with 3 or more female commissioners.

D1_dir is firms with 1 female director.

D2_dir is firms with 2 female directors.

D3_dir is firms with 3 female directors or more.

ple in the boardroom is 9.27, while the size of board of directors and board of commissioners are 4.96 and 4.31 respectively. This indicates the number of commissioners, who conduct monitoring, are close to the number of directors. Some data are missing which later affects the number of observations in the regression analysis.

Figure 2 shows the proportion of females on the board according to the industry. The highest proportion of females on board is in the healthcare industry with more than 25%. Consumer services and technology are the second and the third respectively. On the other hand, industrials, basic materials, oil, and gas are least likely to appoint females as directors and commissioners. This finding is relatively similar in Germany (Oehmichen, Rapp, & Wolff 2012) and

China (de Jonge 2014), in which certain industry will appoint more females because of the nature of firms' business. The effects of female in the boardroom will be discussed in the next section.

5.2. Regression Analysis

5.2.1. The influence of female directors on firm performance

Table 5 presents the OLS and 2SLS estimation result for the effect of the presences of female in the boardroom. The focused variable, prop_tot_female, tends to significantly improve firm performance (ROA and OPM) in OLS models at the 5% level. The estimations of OLS models are relatively similar to previous studies in the US (Adams & Ferreira

Table 4: Descriptive Statistics

| Variable | N | Mean | St. Dev | Q1 | Median | Q2 |
|------------------------------|------|----------|-----------|--------|----------|----------|
| <i>Gender Diversity</i> | | | | | | |
| prop_tot_fem | 2099 | 0.11 | 0.12 | 0.00 | 0.10 | 0.18 |
| prop_exec_fem | 2099 | 0.13 | 0.17 | 0.00 | 0.00 | 0.25 |
| prop_com_fem | 2094 | 0.10 | 0.17 | 0.00 | 0.00 | 0.20 |
| <i>Firm Performance</i> | | | | | | |
| ROA | 1995 | 3.63 | 12.59 | 0.00 | 3.22 | 8.04 |
| OPM | 1867 | -9.62 | 112.85 | 0.89 | 6.39 | 14.88 |
| <i>Board Characteristics</i> | | | | | | |
| total_bod_boc | 2099 | 9.27 | 3.45 | 7.00 | 9.00 | 11.00 |
| direksi_size | 2099 | 4.96 | 2.12 | 3.00 | 5.00 | 6.00 |
| komisaris_size | 2099 | 4.31 | 1.86 | 3.00 | 4.00 | 5.00 |
| fract_kom | 2099 | 0.47 | 0.10 | 0.40 | 0.47 | 0.50 |
| <i>Firm Characteristics</i> | | | | | | |
| asset (billions) | 1992 | 7,191.00 | 13,800.00 | 641.50 | 2,032.00 | 6,289.00 |
| DAR | 1995 | 0.57 | 0.45 | 0.33 | 0.51 | 0.68 |
| firm_year | 2093 | 14.27 | 9.27 | 5.55 | 14.77 | 21.88 |

Source: Author's calculation

Note: prop_tot_fem is the proportion of female in the boardroom (BOD and BOC).

Prop_exec_fem is the proportion of female directors to total BOD.

Prop_com_fem is the proportion of female commissioner to total BOC.

ROA is return to asset.

OPM is operating profit margin.

Total_bod_boc the number of female and male in the boardroom.

Direksi_size is the number of female and male directors.

Komisaris_size is the number of female and commissioner directors.

Fract_kom is the proportion of commissioner to BOD and BOC.

Asset is the total assets of firm.

DAR is debt to asset ratio.

Firm_year is the difference between year and IPO date.

ROA, OPM, asset, and DAR are winsorized 1% and 99%.

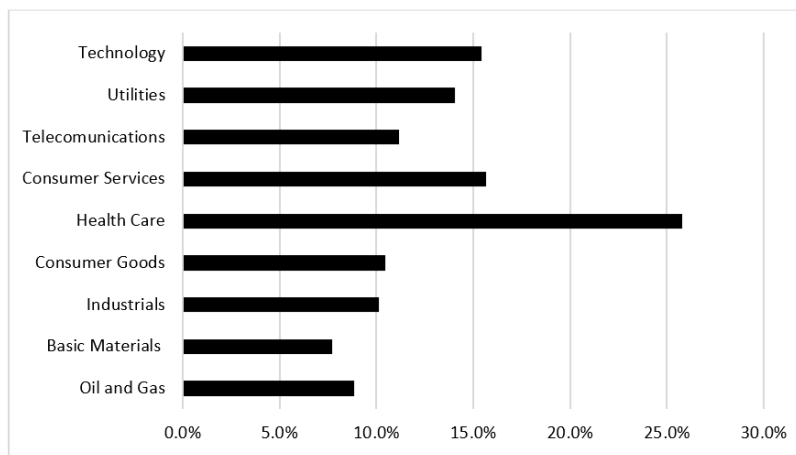


Figure 2: The Average Proportion of Females on the Board based on Industry

Source: Author's calculation

2009), the Netherlands (Lückerath-Rovers 2013), China (Liu, Wei, & Xie 2014), and Indonesia (Triana & Asri 2017, Syamsudin, Setiany, & Sajidah 2017). However, these results are prone to the endogeneity problems which mainly caused by reverse causality.

This infers that females are appointed because they want to work in well-performed firms rather than females that can improve firm performance (Adams & Ferreira 2009).

In order to address the endogeneity problem, the study employs 2SLS models for both dependent variables following Adams & Ferreira (2009) and Liu, Wei, and Xie (2014). The estimations of *prop_tot_female* tend to be less significant. *Prop_tot_female* significantly improves ROA at 10% level, but females do not influence OPM. This shows that the same problem also occurs when analysing female participation in the boardroom and firm performance either in developed countries or developing countries. Table 5 concludes that females in the board room marginally improve firm performance.

Moreover, the participation of females is measured by total females (directors and commissioners) rather than only female directors. An early investigation in this study indicated that female directors do not statistically improve firm performance even though directors are deemed more involved in running the firms, while commissioners focus on monitoring activities.

The insignificant contributions of females in the boardroom might be due to over-monitoring problems (Adams & Ferreira 2009, Jurkus, Park, & Woodard 2011). Firms with strong internal and external governance will weaken the significance of females in the boardroom. Similarly, when firms only appoint female directors, without any female commissioners, female directors may suffer from over-monitoring problem. The contributions of females may be underestimated. Most of their ideas and arguments less significant in decision-making in the boardroom. More analysis about this matter needs to be conducted in future research.

5.2.2. The analysis of critical mass

The next analysis is to examine whether having more absolute number of females bring more positive outcomes as one female in the boardroom may suffer from the tokenism problem. The study creates

new dummy variables *d1_tot* and *d2_tot* to indicate if firms have one female and more than one female in the boardroom respectively. Again, the focused variables are in total females in the boardroom (directors and commissioners) rather than directors only as early examination did not indicate proper results.

Initially, *d1_tot* and *d2_tot* significantly influence ROA and OPM in Table 6. But, these estimations are prone to endogeneity problem. Similar to previous analysis, the study employs 2SLS models, in which proportion of females in the board becomes an instrumental variable, to address the endogeneity problems.

Panel A Table 6 shows that *d2_tot* is more significant than *d1_tot* in both the OLS and 2SLS models. This means having more females is more influential than only having one female in the boardroom because one female in the boardroom will cause the tokenism problem. However, Panel B Table 6 fails to show similar results. *D1_tot* is more significant than *d2_tot* in the OLS model, but both variable in the 2SLS models. Again, Table 6 shows the presence of females marginally improve firm performance. Even though the significance of focused variables is moderately statistically significant, the results, overall, are consistent with the previous studies in Norway (Torchia, Calabrò, & Huse 2011, Elstad & Ladegar 2012), China (Liu, Wei, & Xie 2014), Germany (Joecks, Pull, & Vetter 2013), and Brazil (da Silva & Margem 2015).

5.2.3. The analysis of industry

The next analysis is to examine the effect of females in the boardroom according to firm industry classification. Previous studies indicated that the proximity of products (goods or services) to the final consumer is a pivotal aspect in whether women were represented on the board in a given industry (Kirsch 2018). In this case, the presence of females

Table 5: The Effect of Females in the Boardroom on Firm Performance

| VARIABLES | Panel A: Dependent Variable = ROA | | Dependent Variable = OPM | |
|--------------------|-----------------------------------|----------------------|--------------------------|----------------------|
| | OLS | 2SLS | OLS | 2SLS |
| prop_tot_fem | 4.242** (2.071) | 69.36* (38.39) | 54.41** (23.80) | 312.7 (342.5) |
| direksi_size | 0.763*** (0.188) | -0.754** (0.301) | 1.561 (1.525) | -2.554 (2.976) |
| fract_kom | 2.505 (3.253) | -14.26*** (4.829) | 37.78 (30.13) | -120.0** (47.94) |
| ln_asset | 0.295 (0.254) | 2.012** (0.897) | 7.190*** (2.708) | 37.42*** (7.474) |
| DAR | -6.638*** (1.337) | -1.772 (1.140) | -29.15** (12.90) | -36.65*** (11.17) |
| ln_firm_year | 0.608* (0.329) | -4.672*** (1.333) | 3.182 (2.423) | -36.05*** (13.38) |
| Constant | -4.600 (4.676) | | -201.1*** (50.05) | |
| ICB_three | | | | |
| ICB_two | | | | |
| Observations | 1,987 | 1,985 | 1,859 | 1,848 |
| R-squared | 0.135 | -0.004 | 0.069 | 0.053 |
| Number of stock_id | | 369 | | 359 |

Source: Author's calculation

Note: This table reports the estimations of ordinary least square (OLS) and two-stage least square (2SLS).

Panel A and B use ROA and OPM as dependent variables respectively.

Prop_tot_fem is the proportion of females in the boardroom.

Direksi_size is the total of board of directors.

Fract_kom is the proportion of commissioners on total BOD and total BOC.

Ln_asset is natural logarithm of firm total assets.

DAR is debt to asset ratio.

Ln_firm_year is the difference between firm year and IPO date.

The standard error of each coefficient is shown in parentheses.

*, **, and *** mean statistically different from zero at 10%, 5%, and 1% level of significance respectively.

in the boardroom is most likely to be in banking, insurance, consumer goods, utility, retail, and healthcare (Oehmichen, Rapp, & Wolff 2012, Chapple & Humphrey 2014, Martín-Ugedo & Minguez-Vera 2014). As this study does not include firms within finance industry, the sample is divided into two parts which are firms within consumer, healthcare, and utilities industries and firms outside those industries.

Table 7 presents the estimations for consumer, healthcare, and utilities firms. There is evidence that the presence of females on the board could improve firm performance particularly ROA. Females significantly influence ROA at the 10% level. Even though, the estimation of prop_tot_fem is negative in Panel B Table 7, the coefficient of estimation is not significant.

On the other hand, the presence of females does not bring positive outcomes to mining, basic material, and technology firms. Table 8 presents that none of prop_tot_fem estimation is statistically significant. It means that the presence of females does not necessarily improve firm performance. Firms that operate close to final customers will likely to benefit of gender diversity in the boardroom. It is necessary for firms to appoint females in the boardroom in order to reflect the gender diversity among firms' customers.

These findings are consistent with previous empirical studies in Australia (Chapple & Humphrey 2014) and Spain (Martín-Ugedo & Minguez-Vera 2014). Firms within utility, consumer goods, and healthcare are more likely experience positive outcomes by the presence of females in the boardroom in Indonesia.

Table 6: The Analysis of Critical Mass

| VARIABLES | Panel A: Dependent Variable = ROA | | | Panel B: Dependent variable = OPM | | |
|--------------------|-----------------------------------|----------------------|----------------------|-----------------------------------|----------------------|----------------------|
| | OLS1 | 2SLS1 | 2SLS2 | OLS2 | 2SLS3 | 2SLS4 |
| d1_tot | 1.107* (0.643) | -15.84 (23.07) | | 17.28*** (6.361) | -7.569 (145.1) | |
| d2_tot | 1.303** (0.626) | | 17.29* (9.790) | 15.38** (6.237) | | 83.95 (92.78) |
| direksi_size | 0.711*** (0.191) | -0.948** (0.386) | -1.787*** (0.636) | 1.038 (1.461) | -2.492 (3.337) | -7.515 (6.389) |
| fract_kom | 1.936 (3.295) | -15.98*** (5.437) | -23.34*** (6.855) | 29.67 (28.91) | -120.5** (49.12) | -163.3** (68.20) |
| ln_asset | 0.281 (0.254) | 0.857 (0.615) | 1.556** (0.725) | 6.910** (2.697) | 32.73*** (5.366) | 36.07*** (6.600) |
| DAR | -6.686*** (1.333) | -0.756 (1.410) | -1.314 (1.131) | -30.11** (12.97) | -34.62*** (11.44) | -35.15*** (11.09) |
| ln_firm_year | 0.609* (0.329) | -5.816** (2.271) | -5.240*** (1.409) | 3.120 (2.412) | -37.59** (15.78) | -39.12*** (13.63) |
| Constant | -3.883 (4.630) | | | -192.8*** (49.09) | | |
| Observations | 1,987 | 1,985 | 1,985 | 1,859 | 1,848 | 1,848 |
| R-squared | 0.136 | -0.178 | -0.052 | 0.071 | 0.073 | 0.036 |
| Number of stock_id | | 369 | 369 | | 359 | 359 |

Source: Author's calculation

Note: This table reports the estimations of ordinary least square (OLS) and two-stage least square (2SLS).

Panel A and B use ROA and OPM as dependent variables respectively.

d1_tot and d2_tot are dummy variables.

d1_tot is equal to 1 if firms have one female in the board room; it is equal to zero if else.

d2_tot is equal to 1 if firms have two or more females in the board room; it is equal to zero if else.

Direksi_size is the total of board of directors.

Fract_kom is the proportion of commissioners on total BOD and total BOC.

Ln_asset is natural logarithm of firm total assets.

DAR is debt to asset ratio.

Ln_firm_year is the difference between firm year and IPO date.

The standard error of each coefficient is shown in parentheses.

*, **, and *** mean statistically different from zero at 10%, 5%, and 1% level of significance respectively.

5.3. Discussion

This study is to examine the effect of females in the boardroom on firm performance. Unlike similar previous studies in Indonesia, this study employs a rigorous econometric technique, namely 2SLS model, covers several aspects, i.e. the tokenism problems and industry effects, and uses a large data-set. Consequently, the results are more robust than previous studies in Indonesia.

The descriptive analysis indicates that the average participation of female in the boardroom remains low, which is around 15%. There are two ways to explain this occurrence. Firstly, it may be due to female lack of experience, expertise and connection. Or secondly, it is likely most of boards still suffer from gender bias. More research can be conducted

to find the answer of this phenomenon.

The regression analysis shows that OLS models experience the endogeneity problems. Most of female variables in OLS models are statistically significant, but they are no longer statistically significant in 2SLS models. It means that the positive estimation in OLS sign does not mean females bring positive outcome on firm performance, but rather well-performed firms tend to appoint females in the boardroom. This study employs 2SLS to address the endogeneity problem. As result, female directors tend to marginally influence firm performance (at 10% level significance).

Further examination is conducted. The critical mass analysis indicates that firms that appoint more than one female in the boardroom may bring positive con-

Table 7: The Effect of Females in the Boardroom for Consumer, Healthcare, Utilities Firms (ICB 3000 – ICB 7000)

| VARIABLES | Panel A: Dependent= Variable ROA | | Panel B: Dependent= Variable OPM | |
|--------------------|----------------------------------|---------------------|----------------------------------|----------------------|
| | OLS | 2SLS | OLS | 2SLS |
| prop_tot_fem | 6.932** (2.800) | 78.58* (44.79) | 48.86** (19.11) | -181.5 (270.5) |
| direksi_size | 0.835*** (0.292) | -0.948** (0.455) | -1.415 (1.290) | 2.556 (3.297) |
| fract_kom | 0.807 (4.698) | -15.61** (7.922) | 9.327 (35.76) | 20.63 (55.09) |
| ln_asset | 0.504* (0.304) | -0.203 (1.073) | 7.539*** (2.123) | 10.98 (7.046) |
| DAR | -4.912** (2.240) | 0.119 (1.810) | -54.88** (24.47) | -73.93*** (12.48) |
| ln_firm_year | 0.612 (0.518) | -3.813* (2.067) | 0.498 (2.619) | -20.24 (15.25) |
| Constant | -9.472 (6.007) | | -114.7** (46.23) | |
| Observations | 953 | 952 | 896 | 891 |
| R-squared | 0.113 | -0.095 | 0.144 | 0.063 |
| Number of stock_id | | 179 | | 175 |

Source: Author's calculation

Note: This table reports the estimations of ordinary least square (OLS) and two-stage least square (2SLS).

Panel A and B use ROA and OPM as dependent variables respectively.

Prop_tot_fem is the proportion of females in the boardroom.

Direksi_size is the total of board of directors.

Fract_kom is the proportion of commissioners on total BOD and total BOC.

Ln_asset is natural logarithm of firm total assets.

DAR is debt to asset ratio.

Ln_firm_year is the difference between firm year and IPO date.

The standard error of each coefficient is shown in parentheses.

*, **, and *** mean statistically different from zero at 10%, 5%, and 1% level of significance respectively.

sequences on firm performance at 10% level significance. Directors and commissioners are male-dominated in Indonesia. A female director (commissioner) is hardly to contribute to overall firm performance due to the tokenism problem.

Moreover, firms within certain industries may gain more benefits of the presence of females in the boardroom. These industries are consumer, healthcare, and utilities firms. This finding is supported by the stakeholder theory which suggests that boards are not only to satisfy the shareholders' interests but also the stakeholders' interests. In this case, firms with gender-balanced customers tend to benefit off a gender-balanced board.

In addition, the marginal effect of gender diversity on firm performance in Indonesia can be also explained through the human capital theory. Darmadi (2013) shows that the position of top management

in small firms tends to be filled by people who have family-ties rather than their qualification. It is likely females who sit in the boardrooms are not the best candidate, which affects the contribution of females on firm performance.

6. Conclusions and Recommendations

The objectives of this study are to examine the effect of the presence of females in the boardroom on firm performance in Indonesian listed firms. As an emerging market, there is no formal regulation in Indonesia with respect to gender diversity in the boardroom. Indonesian listed firms have more freedom in structuring their boards than their counterparts in the EU (i.e. Norway, Finland, France, the UK). Moreover, the study uses a larger data set

Table 8: The Effect of Females in the Boardroom for Consumer, Healthcare, Utilities Firms (ICB 3000 – ICB 7000)

| VARIABLES | Panel A: Dependent= Variable ROA | | Panel B: Dependent= Variable OPM | |
|--------------------|----------------------------------|---------------------|----------------------------------|---------------------|
| | OLS | 2SLS | VARIABLES | OLS |
| prop_tot_fem | 1.907 (3.007) | 62.63 (64.79) | 48.64 (49.04) | 822.3 (689.3) |
| direksi_size | 0.597*** (0.223) | -0.594 (0.440) | 5.870** (2.661) | -4.424 (5.380) |
| fract_kom | 3.714 (4.572) | -17.04** (8.189) | 69.96 (48.70) | -203.0** (95.17) |
| ln_asset | 0.261 (0.380) | 3.467** (1.483) | 4.322 (4.455) | 58.32*** (13.58) |
| DAR | -8.151*** (1.448) | -3.296* (1.876) | -6.285 (7.389) | -25.03 (22.12) |
| ln_firm_year | 0.598 (0.406) | -4.559** (1.828) | 5.294 (4.011) | -53.37** (22.52) |
| Constant | -2.901 (5.215) | | -121.3** (49.13) | |
| Observations | 1,034 | 1,033 | 963 | 957 |
| R-squared | 0.15 | 0.074 | 0.055 | -0.011 |
| Number of stock_id | | 190 | | 184 |

Source: Author's calculation

Note: This table reports the estimations of ordinary least square (OLS) and two-stage least square (2SLS).

Panel A and B use ROA and OPM as dependent variables respectively.

Prop_tot_fem is the proportion of females in the boardroom.

Direksi_size is the total of board of directors.

Fract_kom is the proportion of commissioners on total BOD and total BOC.

Ln_asset is natural logarithm of firm total assets.

DAR is debt to asset ratio.

Ln_firm_year is the difference between firm year and IPO date.

The standard error of each coefficient is shown in parentheses.

*, **, and *** mean statistically different from zero at 10%, 5%, and 1% level of significance respectively.

and more advanced econometrics techniques to address the endogeneity problems, so the study can provide robust results.

The empirical evidence shows that females marginally influence firm performance. Most of the estimations of the female coefficient are statistically significant at level 5%, but these estimations are prone to endogeneity problem. In order to overcome the problem, the study employs 2SLS models. However, the effects of females are less significant than in OLS models. Most of the coefficients are statistically significant only at 10%. These results are consistent after controlling the absolute number of female and firm industry.

The regression analysis results are slightly different from previous studies (Triana & Asri 2017, Syamsudin, Setiany, & Sajidah 2017), in which females in the boardroom could improve firm performance

in Indonesia. However, those results are caused by the reverse causality problem which leads to the endogeneity problem. This means that well-performed Indonesian listed firms tend to promote gender diversity in the boardroom rather than gender diversity in the boardroom could improving performance.

The study will implicate the firms' stakeholders. The finding suggests that firm may benefits more from having at least two females in the boardroom. Firms that only appoint one female will likely experience the tokenism problem which means the contributions of females in the boardroom will be marginalised as they are the minority party. Moreover, firms should structure their board with respect to firm industry. Firms with products that are relatively close to final consumers may need females in the boardroom, while, several industries (i.e. mining, basic materials) may not need one.

For government, it is the responsibility of the government of Indonesia to ensure that inequality does not exist in the workplace which may be caused by race, religion, or gender with respect to salary or chance being promoted. In terms of Indonesia listed firms, most laws and regulations in Indonesia stock market are adopted from developed stock markets such as two-tier board system, the requirement of independent commissioners, etc. The Indonesian stock market regulators (i.e. OJK, IDX) may push certain law or regulation to promote the presence of female in the boardroom like its counterparts in the EU countries, Malaysia, and Brazil. The study recommends the stock market regulators to introduce disclosure requirement on gender diversity on boards for listed firms as a corporate governance code (guideline) rather than imposing quotas legislation in pursuing gender-balance in the boardroom.

For academics, who want to conduct similar studies on gender diversity, it is necessary to employ at least two approaches in the analysis regressions. This study has shown the bias estimations when females variables are linked with firm performance in the OLS models. The academics have to address properly the endogeneity problem in the next research.

Like previous studies, this study also has limitations. This study did not discuss the characteristics of females, namely their experience, expertise, education, and connection. Further study should examine these characteristics on firm performance. It is also interesting to study the other impacts of females on the boards such as bankruptcy risk, financing and investing decisions, corporate social responsibility performance. These issues can be examined and discussed for future research.

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