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Do women in top management affect firm performance?

Evidence from Indonesia

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Abstract

This paper investigates the relationship between gender diversity on management boards and financial performance of Indonesian listed companies. We conduct cross-sectional regression analysis based on a sample comprising 92.4 percent of public firms listed on the Indonesia Stock Exchange (IDX). We find that the representation of female top executives is negatively related to both accounting and market performance, suggesting that female representation is not associated with improved level of performance. From correlation analysis, our results also reveal that smaller firms, which tend to be family-controlled, are more likely to have higher proportion of female members on management boards. This implies that large firms are “tougher” for women in terms of opportunities to hold seats on the board.

JEL classification: G30; G34; J16.

Keywords: Corporate governance; Gender diversity; Female representation; Financial performance; Indonesia

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1. Introduction

Business organizations recently have employees that are increasingly diverse in terms of their age, ethnic background, and gender (Jackson and Alvarez, 1992). The number of women pursuing managerial career also significantly increases (Omar and Davidson, 2001). Nevertheless, the representation of women holding seats on the board of directors is generally low, including in developed economies. A census conducted by Australia's Equal Opportunity for Women in the Workplace Agency—EOWA (2008) reveals that the average percentage of female directors is 10.7 percent in the country, compared to 15.4 percent in the United States.

In diverse organizations, it appears to be a common phenomenon that minority or “lower-status” groups, such as women and minority ethnic groups, are likely to be marginalized and given limited access to develop career (Ibarra, 1993). This condition leads to increasingly attempts to promote equal opportunity among different groups in the organization. Governments of developed countries such as the US and Australia have established equal-opportunity commissions. Proposals on governance reform also increasingly state the importance of gender diversity on the board of directors (Adams and Ferreira, 2009). Furthermore, the Norwegian and Swedish governments have imposed gender quota on the boards of directors (Medland, 2004; Randøy et al., 2005), which results in 28.8 and 22.8 percent of board seats to be held by women in Norway and Sweden, respectively (European Professional Women's Network—EPWN, 2006).

Gender diversity on the board of directors and top management team has attracted the interest of researchers in the past two decades. Compared to the diversity of other demographic attributes, gender diversity appears to be the most widely addressed in the literature (Erhardt et al., 2003). In numerous studies in the management, organization science,

and psychology literature, scholars examine the relationship between gender diversity and various aspects, such as managerial advancement (Tharenou et al., 1994), management style (Eagly et al., 2003; Rigg and Sparrow, 1994), occupational merit (Lobel and Clair, 1992), occupational pressures (Granleese, 2004), personal networks (Ibarra, 1993), and board effectiveness (Nielsen and Huse, 2010). In the accounting literature, previous studies have addressed the association between gender diversity and accounting earnings quality (Krishnan and Parsons, 2008; Ye et al., 2010), social responsibility (Coffey and Wang, 1998; Siciliano, 1996), and intellectual capital performance (van der Zahn, 2008).

In addition, there are also a growing number of studies that link gender diversity and firm profitability or financial performance. Those studies, however, are conducted in the context of a few developed economies, such as the US (Adams and Ferreira, 2009; Krishnan and Park, 2005), Canada (Francoeur et al., 2008), Spain (Campbell and Miguez-Vera, 2008), the Netherlands (Marinova, 2010), and Denmark (Smith et al., 2005). While these studies emphasize solely on gender diversity, other studies focus on the diversity of gender along with other demographic attributes, such as race or ethnic background (Carter et al., 2003; Erhardt et al., 2003; Richard et al., 2004), nationality (Randøy et al., 2006), and age (Kilduff et al., 2000). Such studies in the context of developing economies are very rare. Hence, this study contributes to the literature by examining the link between gender diversity and financial performance for a developing economy that has different economic and cultural environments from those of developed economies.

This study investigates the association between gender diversity on the board of management and financial performance of the Indonesian listed firms. Our empirical evidence reveals that the ratio of women on top management team is negatively related to financial performance, providing evidence that the presence of female top executives does not necessarily improve firm value. Further, through bivariate analysis, it is found that higher

proportion of women on the management board is more likely to be employed by smaller firms, which are likely to be family-controlled firms.

As regulated by the country's corporation law, Indonesian firms have two types of board in their organizational structures, namely *Dewan Komisaris* (supervisory board) and *Dewan Direksi* (management board). This two-tier board structure is also adopted in a number of countries, such as Germany, the Netherlands, and Japan (Weimar and Pape, 1999). Supervisory board conducts supervisory and monitoring roles on the management, whereas management board conducts the day-to-day management of the firm. In other words, executive function of the firm is merely conducted by the management board. For the purpose of this study, we emphasize on the influence of the representation of female top executives on financial performance, thus we only address women holding seats on management boards.

The remainder of this paper is structured in the following manner. Section 2 reviews prior studies and develops hypotheses. In Section 3, we describe the data and methodology used in this study. Section 4 presents and discusses empirical results, and concluding remarks are presented in Section 5.

2. Literature Review and Hypotheses Development

2.1. Gender Diversity

As argued by Cox, Jr. (1991), diversity within the members of top management team could bring potential costs to the organization, such as communication problems and interpersonal conflicts. On the other hand, the diversity may also bring advantages to the entity, such as broader perspectives in decision making, higher creativity and innovation, and

successful marketing to different types of customers (Cox, Jr., 1991; Cox and Blake, 1991; Robinson and Dechant, 1997).

In terms of the association between gender diversity on the management team and the organization's competitive advantages, different arguments persist in the literature. Gender diversity is believed to bring advantages to the organization for the reason that women are considered to have a "feeling" cognitive style (Krishnan and Park, 2005). This type of cognitive style emphasizes on organizational values and harmony (Hurst et al., 1989), encourages sharing of information and resources (Earley and Mosakowski, 2000), facilitates conflict resolution, and shows more democratic leadership (Eagly and Johnson, 1990). Women on top management teams are also considered "tough" since they have to face challenges prior to holding seats in a male-dominated hierarchy, and this achievement thereby provides them with psychological advantages, improved interactions with peers, and highly-regarded positions in the business environment (Hambrick and Pettigrew, 2001; Krishnan and Park, 2005; Tharenou, 2001). Increased creativity and innovation is likely to be achieved when gender diversity exists in the management team (Campbell and Minguez-Vera, 2008; Cox, Jr., 1991).

On the other hand, gender diversity on the management team is also likely to bring disadvantages to the organization. Greater gender diversity may increase the likelihood of intra-group conflicts (Richard et al., 2004; Treichler, 1995), which in turn may result in slower decision-making process (Goodstein et al., 1994; Hambrick et al., 1996). Further, women are considered more risk averse than men in financial decision making (Jianakoplos and Bernasek, 1998), and thereby may affect the organization's resource allocation.

As mentioned in Section 1, some studies in the accounting literature have addressed the link between gender diversity of top management team and accounting aspects of the firms. Krishnan and Parsons (2008) find that gender diversity in senior management is positively

associated with reporting quality of accounting earnings. Using a sample of not-for-profit organizations, Siciliano (1995) indicates that gender diversity of board members is positively related to social performance. In the context of South African market, van der Zahn (2008) suggests that greater gender diversity leads to higher intellectual capital performance.

When the gender diversity is associated with financial performance, prior studies show contradicting results. Based on a sample of US firms, researchers find that the proportion of women on the board is positively related to market performance based on Tobin's q (Carter et al., 2003). Using accounting-based performance, the positive association is found between ROA and the fraction of women on the board (Erhardt et al., 2003). Addressing the fraction of female proportion in management teams, Krishnan and Park (2005) and Shrader et al. (1997) also indicate the similar results. In contrast, Adams and Ferreira (2009) indicate that the percentage of women on the board of directors has a negative relationship with both Tobin's q and ROA. From outside the US, the evidence of positive associations between the proportion of women in the boardrooms or management teams and firm performance is provided by studies using a sample of firms in Canada (Francoeur et al., 2008), Denmark (Smith et al., 2005), and Spain (Campbell and Minguez-Vera, 2008). The different result is suggested by Bøhren and Strøm (2007), which find that female representation on the board is negatively related to Tobin's q , based on the Norwegian data.

Indeed, some studies fail to find a significant association between female proportion and financial performance. Using a sample of Scandinavian firms, Randøy et al. (2006) find that the proportion of women on the board has no significant association with both accounting and market performance. Eklund et al. (2009), Marinova et al. (2010), and Rose (2007) indicate similar results.

For the Indonesian case, the proportion of female top executives of the firms included in our sample is 11.2 percent on average, which is greater than that of several European

countries such as Germany, France, Switzerland, and Spain (EPWN, 2006). As in other Southeast Asian emerging market, the nature of the Indonesian capital market is relatively unique since the listed firms are mainly family controlled (Claessens et al., 2000). Thus, women holding seats on the board are partly due to family ties with the controlling shareholder (Mak and Kusnadi, 2005; Westhead and Cowling, 1998), instead of their professional expertise and experiences. Since the lack of competence may in turn affect firm performance, we predict that the proportion of female executives on management boards is negatively related to firm performance. Hence, we state the first hypothesis as follows:

H1: *Ceteris paribus*, there is a negative relationship between the proportion of women on the management board and financial performance.

Some researchers indicate the presence of women on the board or management team using dichotomous variables, so that they can examine whether firms that have at least one woman in their boardrooms are better or worse performers compared to their counterparts that have no female board members. Employing the dichotomous variables, the evidence of prior studies is also mixed. Using a sample of US *Fortune 500* firms, Carter et al. (2003) indicate that firms with at least one female board member have significantly higher Tobin's *q*. The same result is also shown by Lückerath-Rovers (2010) based on the Dutch data. On the other hand, other studies fail to identify significant relationships between the presence of female members on the board or management team and financial performance, such as Campbell and Minguez-Vera (2008), Marinova et al. (2010), and Rose (2007). Hence, these studies conclude that firms employing female members in their boardrooms perform neither significantly better nor worse than firms with no female board members. In an Indonesian study, Kusumastuti et al. (2007) provide no evidence of significant relationship between the

presence of women on the board of management and Tobin's q , using a small sample of Indonesian manufacturing companies.

Our prediction is similar to that of the first hypothesis. We expect that the presence of women executives has a negative relationship with financial performance. Thus, our second hypothesis is stated as:

H2: *Ceteris paribus*, there is a negative relationship between the presence of women on the management board and financial performance.

Since it is argued that the proportion of board members with particular attributes is not an appropriate measure of diversity (Campbell and Minguez-Vera, 2008), some researchers use heterogeneity indices to measure the diversity level of board or management team members. A number of studies in our literature review use Blau heterogeneity index to indicate the level of gender diversity. This index is introduced by Blau (1977) and is computed as follows:

$$\text{Blau index} = 1 - \sum_{i=1}^m P_i^2 \quad (1)$$

where P_i^2 is the percentage of board members in each category and n is the total number of categories used. Richard et al. (2004) find that gender diversity is positively related to firm productivity. Using Tobin's q as the measure of performance, Ararat et al. (2010) and Campbell and Minguez-Vera (2008) also indicate the positive association in the Turkish and Spanish markets, respectively. In contrast, Dwyer et al. (2003) find no significant relationship between gender diversity and financial performance.

Heterogeneity indices other than Blau's are also used in measuring gender diversity. Campbell and Minguez-Vera (2008) employ Shannon index of diversity and find that gender diversity is positively related to market performance based on Tobin's q . In addition, using

Teachman entropy-based index, Bär et al. (2009) indicate a negative association between gender diversity and fund returns, based on a sample from US mutual fund industry.

For the purpose of this study, we use Blau index of diversity for the reason that it is used in a number of studies in our literature review. In the case of Indonesia, we predict that the level of gender diversity on the management board has a negative relationship with firm performance. This prediction leads to the formulation of our third hypotheses:

H3: *Ceteris paribus*, there is a negative relationship between gender diversity on the management board (as measured by Blau index) and financial performance.

2.2. *Firm-specific Characteristics, Governance, and Ownership*

We consider some aspects of firm characteristics, corporate governance, and ownership structure to be included in our regression model as control variables. Those variables are firm size, board size, the proportion of independent commissioners, largest shareholder ownership, blockholder ownership, and family ownership.

In terms of the relationship between firm size and financial performance, prior studies show contradicting empirical evidence. Using a sample of US firms, Adams and Ferreira (2009) and Krishnan and Park (2005) indicate that firm size is positively related to Tobin's q and ROA, implying that larger firms are better performers than their smaller counterparts. On the other hand, Carter et al. (2003) fail to do so. Interestingly, using Malaysian data, Haniffa and Hudaib (2006) find that firm size is positively related to ROA but is negatively related to Tobin's q . For the Indonesian case, the largest fifty firms account for more than 80 percent of the IDX's total market capitalization. Those largest firms enjoy wider coverage of the media and market analysts. Furthermore, they seem to be able to better manage their risks since they

have higher levels of diversification and greater numbers of subsidiaries. It is expected that these advantageous factors lead to improved financial performance.

The association between the number of people holding seats on the board and the firm's competitive advantage appears to be a debatable issue in the literature. Yermack (1996) suggests that smaller board size leads to higher financial performance. The similar evidence is also indicated by later studies, such as Carter et al. (2003) and Eisenberg et al. (1998), based on a sample of US and Finnish firms, respectively. Evidence from Singapore and Malaysia also reveals such a negative association (Mak and Kusnadi, 2004). In contrast, studies by Coles et al. (2008) and Setia-Atmaja (2008) find that board size is positively related to firm performance. In Indonesia, larger firms may tend to have larger board size due to their business complexity. Better performance may be expected from larger firms with greater number of management board members.

In terms of independent members on the board, empirical evidence of previous studies is ambiguous. Millstein and MacAvoy (1998) indicate that independent directors are positively related to firm performance, while Agrawal and Knoeber (1996) suggest a negative association. In contrast, a number of studies report no significant relationship between the proportion of independent or non-executive directors and firm performance (Bhagat and Black, 2000; Haniffa and Hudaib, 2006; Weir et al., 2002). We expect that larger proportion of independent commissioners will enhance monitoring function on the management and, hence, improve firm value.

Empirical evidence on the relationship between concentrated ownership and firm performance is also mixed. A number of studies provide evidence that there is a significant positive association between shareholdings of large investors and corporate performance, such as Haniffa and Hudaib (2006) and Joh (2003), using a sample of Malaysian and Korean firms, respectively. Other studies, however, fail to find any significant association between

these two variables, such as Krivogorsky (2006) and Weir et al. (2002). High concentration of ownership of publicly-listed firms is common in Indonesia, as in other East Asian markets (Claessens et al., 2000). Following evidence from Malaysia and Korea, we expect that concentrated ownership (as measured by the proportion of shares held by the largest shareholder and blockholders) would increase corporate performance. Blockholders are shareholders who own substantial portion of the firm's shares, which is generally defined as 5 percent of the firm's ordinary shares.

As previously mentioned, Claessens et al. (2000) indicate that listed firms in East Asian markets, including Indonesia, are mainly family controlled. This condition leads to "effectively no separation between ownership and control" (Mak and Kusnadi, 2005). Employing a sample of Thai listed firms, Wiwattanakantang (2001) provides evidence that family-controlled firm performs significantly better. In contrast, Krivogorsky (2006) reveals that family ownership has a negative association with market performance, using a sample of firms in nine European countries. For the Indonesian context, since family ownership is more prevalent in smaller firms, we predict that family-controlled firms have significantly lower level of performance.

3. Data and Methodology

3.1. Sample Data

The initial sample of the present study consists of 383 firms, the total number of firms listed on the Indonesia Stock Exchange (IDX) as at 31 December 2007. In the financial years 2008 and 2009, Indonesian capital market was affected by the global financial crisis, which made the market capitalization of the listed firms distorted from normal periods. Thus, the financial year 2007 is the most recent normal period captured in this study[1]. After

excluding firms with negative equity and incomplete data, our final sample consists of 354 firms, or 92.4 percent of the total number of the IDX's listed firms.

We obtain financial data, consisting of total assets and ROA, from the *Indonesian Capital Market Directory 2008*. Additionally, from the same source, the data of total assets, shareholders' equity, and market capitalization are collected to compute Tobin's q . To collect the data of the gender of board members, as well as corporate governance characteristics and ownership structure of the firms, we use published annual reports and financial statements that are available on the Internet[2].

3.2. Methodology

Cross-sectional regression models are used in this study to explain the extent to which financial performance is affected by gender diversity of the top executive team, along with the control variables. Since we use three different proxies to indicate the gender diversity, the following regression equations are employed in this study:

$$\begin{aligned} \text{PERF} = & \beta_0 + \beta_1 \text{PWOMEN} + \beta_2 \text{LNASSET} + \beta_3 \text{LNBSIZE} + \beta_4 \text{INDEPCOM} \\ & + \beta_5 \text{LARGEST} + \beta_6 \text{BLOCK} + \beta_7 \text{FAMILY} + \varepsilon \end{aligned} \quad (2)$$

$$\begin{aligned} \text{PERF} = & \beta_0 + \beta_1 \text{DWOMEN} + \beta_2 \text{LNASSET} + \beta_3 \text{LNBSIZE} + \beta_4 \text{INDEPCOM} \\ & + \beta_5 \text{LARGEST} + \beta_6 \text{BLOCK} + \beta_7 \text{FAMILY} + \varepsilon \end{aligned} \quad (3)$$

$$\begin{aligned} \text{PERF} = & \beta_0 + \beta_1 \text{BLAUGENDER} + \beta_2 \text{LNASSET} + \beta_3 \text{LNBSIZE} \\ & + \beta_4 \text{INDEPCOM} + \beta_5 \text{LARGEST} + \beta_6 \text{BLOCK} + \beta_7 \text{FAMILY} + \varepsilon \end{aligned} \quad (4)$$

where PERF is financial performance, measured by ROA and Tobin's q ; PWOMEN is the proportion of women on the management board; DWOMEN is a dichotomous variable that

equals 1 if the firm has at least one women on the management board and 0 otherwise; BLAUGENDER is Blau heterogeneity index for gender diversity of management board members; LNASSET is natural logarithm of total assets as the proxy for firm size; LNBSIZE is natural logarithm of the number of management board members; INDEPCOM is the proportion of independent members on the supervisory board; LARGEST is the proportion of common shares owned by the largest shareholder; BLOCK is the proportion of common shares owned by blockholders (having 5 percent of common shares or more); and FAMILY is a dichotomous variable equaling 1 if the firm is family controlled and 0 otherwise.

3.3. *Dependent Variables*

We employ two dependent variables in the present study, namely ROA (as the proxy for accounting-based performance) and Tobin's q (as the proxy for market-based performance). A number of previous studies, such as Adams et al. (2009), Adams and Ferreira (2009), and Haniffa and Hudaib (2006), also use these two measures of financial performance measures.

The data of ROA are collected from the *Indonesian Capital Market Directory 2008*, which defines it to be the ratio of the firm's net income to its book value of assets, a definition consistent with Erhardt et al. (2003) and Shrader et al. (1997). Tobin's q is computed using formula suggested by Adams et al. (2009). They define Tobin's q to be the ratio of the firm's market value to its book value of assets; market value is calculated as the book value of assets minus the book value of equity plus the market value of equity. As suggested by Hirsch (1993), Tobin's q is included in regression models using its natural logarithm form.

3.4. Explanatory Variables

We employ gender diversity as the explanatory variable in our models. We use three different proxies for the gender diversity. Firstly, we employ the proportion of women on the management board, calculated as the ratio of the number of women to the total number of management board members. This proportion is used to test whether higher percentage of female directors on the management board would lead to better performance. Secondly, we use a dichotomous variable to capture the presence of women on the management board. It equals 1 if the firm has at least one female executive and 0 otherwise. This dichotomous variable enables us to suggest whether the presence of female directors on the management board has a significant impact on corporate performance. Thirdly, we include the level of gender heterogeneity on the management board using Blau index, as shown in Equation (1).

3.5. Control Variables

As mentioned in previous section, we employ several corporate governance and ownership characteristics in our regression models, namely board size, the proportion of independent commissioners, largest shareholder ownership, blockholder ownership, and family ownership. Additionally, we include firm size, proxied by total assets.

The data are mainly obtained from annual reports and financial statements of the sample firms. As suggested by Wang (2006), family ownership is a dichotomous variable, which equals 1 if the firm is family-controlled and 0 otherwise. For this purpose, modifying the approach of Achmad (2007), we categorize the sample firms into four groups based on the type of their largest shareholders. The four types of largest shareholders are foreign institutions, the Indonesian government, domestic non-business entities (such as cooperatives and foundations), and domestic business entities. Firms with domestic business entities as the largest shareholders are categorized as family-controlled firms[3]. In pyramiding and cross-

shareholding cases, we trace the controlling owner of the controlling shareholder[4]. For example, the largest shareholder of Astra Graphia is Astra International, where these two firms are listed on the IDX. Since the largest shareholder of Astra International is a foreign institution, Astra Graphia is then categorized as a foreign-owned firm.

4. Results and Discussions

4.1. Descriptive Statistics

Table 1 presents descriptive statistics of selected variables of our sample firms. The average ROA and Tobin's q are 3.61 and 1.85, respectively. The average proportion of female directors on management boards is 12 percent, with the median of zero. Hence, the participation of women on management boards of Indonesian listed firms is considered low. From 354 firms covered in our final sample, only 38 percent of them have female members of their management boards. In terms of Blau heterogeneity index, the average index of our final sample is 0.14. Whereas the proportion of women on the management board has the range from zero to 100 percent, the range of Blau index of gender diversity in our sample is from zero to 0.50. It can be understood due to different calculation. Using formula presented in Equation (1), Blau index considers all groups instead of only one of the groups. Thus, in our calculation of gender diversity, the proportions of both male and female members are considered. The index shows the highest score at 0.50, where the proportions of male and female members are equal. In conditions where all members are men or women, the index would be zero.

The mean of the number of management board members of the sample firms is 4.46, while the average proportion of independent commissioners is 40 percent. Similar to the documentation of Classens et al. (2000), listed firms on the IDX show high concentration of

ownership. The average proportions of common shares owned by the largest shareholder and blockholders are 49 and 71 percent, respectively. Interestingly, 54 percent of the sample firms are considered family-controlled firms, underlying Claessens et al. (2000) who indicate that most listed firms in East Asian markets are mainly family controlled.

[Insert Table 1 about here]

4.2. Correlation Results

In Table 2, we present the result of our correlation analysis between variables in Equation (2). It can be seen that PWOMEN is negatively correlated to LNASSET, implying that higher proportion of women is more likely to belong to smaller firms. Furthermore, PWOMEN has a significant positive association with FAMILY, indicating that family-controlled firms have higher proportion of women on their management boards. As indicated by Mak and Kusnadi (2005) and Westhead and Cowling (1998), in East Asian markets whose listed firms are mainly family controlled, the holdings of board seats are partly due to family ties with the controlling shareholder. Thus, in our sample, higher proportion of women employed by family-controlled firms may be also due to family ties with the founder or the controlling shareholder. Larger board size, which tends to belong to larger firms, leads to lower percentage of female members. This implies that larger firms are considered “tougher” for women in terms of opportunities to hold seats on management boards. In terms of financial performance, the table shows that the proportion of female executives does not have a significant correlation with ROA. However, a significant negative relationship exists between PWOMEN and LNTOBINQ, suggesting that higher proportion of women leads to significantly lower market performance.

In other correlation analyses (not reported here), we also find a significant negative association between Tobin’s q and the presence of women on the management board, as

indicated by a dichotomous variable. This seems to suggest that low-performing firms are more likely to have women on their management boards. In contrast, Blau index of gender diversity has no significant relationships with both ROA and Tobin's q . As abovementioned, this can be understood due to different calculation of the heterogeneity index.

[Insert Table 2 about here]

4.3. Regression Results

We conduct multivariate regression analysis to examine whether female representation on management boards, along with corporate governance and ownership structure variables, has significant impacts on financial performance. Before running the regressions, the models are tested to identify whether they suffer from multicollinearity and heteroskedasticity. Using correlation coefficients (as shown in Table 2) and variance inflation factors (VIF), we conclude that our models do not suffer from multicollinearity problem. Gujarati (2003) suggests that multicollinearity may exist when the correlation coefficient exceeds 0.80 and the VIF exceeds 10. To deal with potential heteroskedasticity problems, White heteroskedasticity-consistent standard error estimates are used (Brooks, 2008).

Table 3 reports the regression of ROA, as the proxy for accounting-based performance, on the representation of women. We specify three models based on Equations (1), (2), and (3). The presence of women on the management board is found to be significantly and negatively associated with ROA, marginally at the 10 percent level. Hence, this finding supports Hypothesis 2 when ROA is used as the performance measure[5]. This suggests that higher fraction of female executives is associated with lower level of performance. Additionally, the fraction of women on management boards is found to be insignificantly related to accounting performance. This implies that board composition does not contribute to the improvement of the firm's performance (Tacheva and Huse, 2004). They suggest that

firm performance is more affected by task performance of the individuals sitting the board. Furthermore, since listed firms in Indonesia are mainly family controlled (Claessens et al., 2000), the positions held in the boardrooms may partly be based on family relationships rather than occupational expertise and experiences, hence making gender diversity of board members is unlikely to improve firm performance.

Among the control variables, firm size, largest shareholder ownership, and family ownership are found to be significantly and positively related to the accounting performance. Similar to the findings of Adams and Ferreira (2009) and Krishnan and Park (2005), our result implies that larger firms tend to have significantly higher ROA than their smaller counterparts. Additionally, the positive relationship between the ownership proportion of the largest shareholder and firm performance is consistent with the findings of Haniffa and Hudaib (2006) and Joh (2003). In contrast, blockholders ownership is found to have an insignificant association with ROA. Consistent with the finding of Krivogorovsky (2006), family-controlled firms perform at significantly lower levels compared to their peer at the 10 percent level.

Overall, our models explain from 7.4 to 7.8 percent of the variability in ROA at the 1 percent level. Hence, the variability in accounting performance may also be explained by many variables other than independent variables used in our models.

[Insert Table 3 about here]

As presented in Table 4, the proportion of women on the management board is found to have a negative impact on Tobin's q . The negative impact is marginally significant at the 5 percent level. Hence, this result is consistent with Adams and Ferreira (2009) and Bøhren and Strøm (2007). Again, this implies that higher proportion of female executives is associated with lower level of market performance. As suggested by Adams and Ferreira (2009), another possible explanation of this negative association is that higher fraction of women on the

board could lead to overmonitoring. Furthermore, when a dichotomous variable is used to indicate the presence of female executives, such a negative relationship also exists. Thus, this contradicts Carter et al. (2003) and Lückerath-Rovers (2010) who suggest that the presence of female board members has a positive relationship with market performance based on a sample of US and Dutch firms, respectively. Our findings support Hypotheses 1 and 2 when Tobin's q is used as the performance measure. This negative impact on the market performance may also be explained by propositions mentioned in Section 2, namely intra-group conflicts, slower decision-making process, and different response to the risks; however it needs further investigation.

The size of management board is found to have a positive association with the market performance measure. Hence, our evidence contradicts a number of studies that indicate a negative relationship between board size and firm performance, such as Eisenberg (1998), Mak and Kusnadi (2005), and Yermack (1996). Larger board size may be needed to provide broader perspectives for the decision-making process of board members (Coles, 2008; Setia-Atmaja, 2008). The proportion of independent commissioners on the supervisory board has a negative impact on Tobin's q . This seems to suggest that higher proportion of outside members on the supervisory board leads to overmonitoring and restrain strategic actions of the firm (Baysinger and Butler, 1985; Goodstein et al., 1994). In terms of ownership structure, the ownership proportion of the largest shareholder has a significant positive association with market performance. Additionally, the negative association between the ownership proportion of blockholders and Tobin's q is marginally significant. Again, at the 10 percent level, family ownership is found to have a negative influence on market performance.

Our three models in Table 4 have the explanatory power (R^2) from 5.6 to 6.2 percent. This suggests that only 5.6 to 6.2 percent of the variation in Tobin's q can be explained by the

representation of women on management boards and the control variables, while the rest may be explained by other variables not captured in our models.

[Insert Table 4 about here]

4.4. Robustness Checks

To examine the robustness, we conduct regressions separately for larger and smaller firms. A firm is considered larger if it has total assets of more than Rp1,000 billion. From 354 listed firms in the final sample, 169 of them are considered larger firms. Tables 5 and 6 present the regression results using female proportion and female presence, respectively, as the explanatory variable. It can be seen that the explanatory power of the regressions for smaller firms in both tables are not significant.

The fraction of women on management boards has significant impacts on both ROA and Tobin's q for larger firms only. From correlation analysis, it is found that higher proportion of female executives is likely to be found in smaller firms, which tend to be family controlled. When the regression only observes smaller firms, the fraction of female executives insignificantly affects firm performance. The similar result is also documented for the presence of women, as reported in Table 6.

Further, since the proportion of independent commissioners has a negative correlation with firm size (see Table 2), the variable is significant ($p < 0.05$) for larger firms only. Our robustness checks also reveal that ownership variables matter for larger firms only. From Table 2, it can be seen that firm size is significantly and negatively correlated with blockholders ownership and family-controlled type. This implies that smaller firms tend to have larger blockholders ownership and be family controlled. Thus, for smaller firms, these variables are found to be insignificant. Similarly, the ownership of the largest shareholder is significant for large firms.

[Insert Table 5 about here]

[Insert Table 6 about here]

5. Conclusion

This paper examines the influence of gender diversity among the members of management boards on financial performance of the Indonesian listed firms. To the best of our knowledge, the present study is the first of its kind for the Indonesian context. Hence, this study contributes to the literature by examining the link between gender diversity and financial performance for a developing economy that has different environment from that of developed economies, where previous studies have been conducted. Our final sample comprises 354 firms listed on the IDX as at 31 December 2007. Following Adams and Ferreira (2009) and Carter et al. (2003), we include both financial and non-financial firms in our sample.

From correlation analysis, it is found that the proportion of female executives has a negative association with total assets. Hence, we conclude that higher proportion of women on management boards is more likely to belong to smaller firms, which tend to be family controlled. Women holding seats on the boards of this type of firms may be partly due to family ties with the founder or the controlling shareholder. Therefore, larger firms are considered “tougher” for women in terms of opportunities to sit on management boards.

Cross-sectional regression analysis is conducted to examine the influence of the representation of women on financial performance. The representation of women on management boards is indicated using two variables in separate regression models, namely the proportion of women (indicated using a percentage) and the presence of women (indicated using a dichotomous variable). Using ROA as the proxy for accounting-based

performance, empirical evidence obtained reveals that the presence of women negatively and significantly influences firm performance. When Tobin's q is used as the proxy for market-based performance, the proportion of female executive also shows such a negative association. This implies that higher fraction of female executives tends to belong to low-performing firms. Furthermore, we employ Blau heterogeneity index to indicate the level of diversity among management board members. Our evidence suggests no influence of the diversity index on both ROA and Tobin's q . In robustness checks, we run regressions separately for larger and smaller firms and find that the negative impact of female representation on ROA and Tobin's q is significant for larger firms only.

Despite its contribution to the corporate governance literature, this study only focuses on one single financial year. Future studies may need to consider the use of panel data to provide more powerful insights into the association between board gender diversity and financial performance.

Notes

1. A number of studies on the association between board diversity and firm performance employ longitudinal data (e.g. Adams and Ferreira, 2009; Campbell and Minguez-Vera, 2007; Oxelheim and Randøy, 2003; Rose, 2007), while other studies use purely cross-sectional data (e.g. Carter et al., 2003; Erhardt et al., 2003; Krishnan and Park, 2005; Shrader et al., 1997; Randøy et al., 2006). In the present study, we use the data for the financial year 2007. Similar to Carter et al. (2003), we recognize the limitations of using a single year of data and, hence, the results of this study cannot claim to represent other financial years.

2. When the pictures of board members are available in annual reports, the gender could be easily identified. However, when such pictures are not available, familiarity with such names plays an important role. Adams and Ferreira (2004) infer the gender of board members from their first names. To minimize errors, they use many name dictionaries, including English, Hebrew, and Arabic ones. In this study, the author is relatively familiar with Indonesian, Malay, Muslim, and Western names. When Japanese and Chinese names are found, we infer the gender from specific words in annual reports or notes to the financial statements that indicate the gender, such as *Mr.*, *Mrs.*, *Ms.*, *he*, and *she*.
3. We recognize that this identification method may be ambiguous to a particular extent. Descriptive statistics (see Table 1) shows that 54 percent of our sample firms are considered family-controlled firms. From a sample of 178 Indonesian listed firms for the financial year 1996, Claessens et al. (2000) indicate that 69 percent of those firms are family-controlled. This seems to suggest there is a changing trend of the ownership structure of Indonesian listed firms from 1996 to 2007. A number of firms that were initially family-controlled may now have more diffused ownership structure. Some others have been acquired by foreign corporations, e.g. HM Sampoerna and Bank CIMB Niaga.
4. Following La Porta et al. (1999), a firm's structure is a pyramid if there is at least one listed firm between it and the ultimate owner in the chain of control; while in a cross-shareholding, a listed firm own shares in its controlling shareholders (another listed firm) or in the firms along the chain of control. La Porta et al. (1999) and Claessens et al.

(2000) indicate that pyramid structure and cross-shareholdings are common in East Asian capital markets.

5. Even though our regression model does not suffer from multicollinearity, the correlation between firm size and board size is relatively strong (positive and significant at 0.65). In a separate regression (not reported here), we exclude firm size from the model and find that the presence of women is significantly and positively related to ROA at the 5 percent level. Therefore, Hypothesis 2 is supported.

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Table 1
Descriptive statistics

This table reports the descriptive statistics of firms in our sample. The final sample comprises 354 firms or 92.4 percent of the total number of firms listed on the IDX as at 31 December 2007. The data are obtained from the *Indonesian Capital Market Directory 2008*, as well as annual reports and financial statements of the sample firms.

Variables	Mean	Median	Standard Deviation	Minimum	Maximum
ROA (percent)	3.61	2.60	9.95	-89.50	62.20
Tobin's q	1.85	1.22	3.70	0.24	65.40
Proportion of women	0.12	0.00	0.19	0.00	1.00
Presence of women (dummy)	0.38	0.00	0.49	0.00	1.00
Gender heterogeneity index	0.14	0.00	0.19	0.00	0.50
Total assets (billion Rupiahs)	6,969	892	26,893	10	319,086
Size of management board	4.46	4.00	1.97	2	13
Proportion of indep. commissioners	0.40	0.33	0.12	0.20	1.00
Largest shareholder ownership	0.49	0.50	0.21	0.06	0.99
Blockholders ownership	0.71	0.75	0.18	0.06	0.99
Family-controlled (dummy)	0.54	1.00	0.50	0.00	1.00

Table 2
Correlation coefficient matrix

This table reports correlation coefficients between variables included in regression models. ROA is return on assets. LNTOBINQ is log value of Tobin's q . PWOMEN is the proportion of women on the management board. LNASSET is log value of total assets, the proxy for firm size. LNBSIZE is log value of the number of management board members. PINDEP is the proportion of independent commissioners on the supervisory board. LARGEST is the proportion of common shares owned by the largest shareholder. BLOCK is the proportion of common shares owned by blockholders (shareholders with 5 percent of ownership or more). FAMILY is a dichotomous variable, which equals 1 if the firm is a family-controlled firm and 0 otherwise. *, **, and *** indicate significance at the 0.10, 0.05, and 0.01 levels, respectively.

	ROA	LNTOBINQ	PWOMEN	LNASSET	LNBSIZE	PINDEP	LARGEST	BLOCK	FAMILY
ROA	1.00								
LNTOBINQ	0.16***	1.00							
PWOMEN	-0.05	-0.11**	1.00						
LNASSET	0.22***	0.04	-0.16***	1.00					
LNBSIZE	0.17***	-0.13**	-0.12**	0.65***	1.00				
PINDEP	0.01	-0.10*	-0.05	0.20***	0.03	1.00			
LARGEST	0.14**	0.11**	0.01	0.06	0.09	0.02	1.00		
BLOCK	0.05	0.01	-0.05	-0.12**	0.04	-0.11**	0.54***	1.00	
FAMILY	-0.13**	-0.09*	0.11**	-0.17***	-0.17***	-0.05	-0.08	-0.11**	1.00

Table 3

Regression of ROA on the representation of women on management boards

The dependent variable is return on assets. Robust t -statistics, based on heteroskedasticity-consistent standard errors, are in parentheses. *, **, and *** indicate significance (one-tailed) at the 0.10, 0.05, and 0.01 levels, respectively.

Independent variables	Predicted sign	(1)	(2)	(3)
Intercept		-4.24 (-0.78)	-4.32 (-0.82)	-4.09 (-0.77)
Proportion of women	(-)	-0.60 (-0.25)		
Presence of women (dummy)	(-)		-1.37* (-1.52)	
Gender heterogeneity index	(-)			-2.51 (-1.08)
Log (Total assets)	(+)	1.02*** (2.36)	1.01*** (2.36)	0.99** (2.31)
Log (Size of management board)	(+)	0.45 (0.30)	0.75 (0.53)	0.60 (0.42)
Proportion of indep. commissioners	(+)	-2.94 (-0.63)	-2.73 (-0.59)	-2.80 (-0.61)
Largest shareholder ownership	(+)	5.75** (1.88)	5.59** (1.84)	5.64** (1.87)
Blockholders ownership	(+)	-0.67 (-0.17)	-0.45 (-0.11)	-0.56 (-0.14)
Family controlled (dummy)	(-)	-1.66* (-1.36)	-1.60* (-1.30)	-1.63* (-1.32)
Number of observations		354	354	354
R^2		0.074	0.078	0.076
F -statistic		2.952***	4.196***	4.079***

Table 4Regression of Tobin's q on the representation of women on management boards

The dependent variable is log value of Tobin's q . Robust t -statistics, based on heteroskedasticity-consistent standard errors, are in parentheses. *, **, and *** indicate significance (one-tailed) at the 0.10, 0.05, and 0.01 levels, respectively.

Independent variables	Predicted sign	(1)	(2)	(3)
Intercept		0.55** (2.18)	0.49** (1.95)	0.51** (2.03)
Proportion of women	(-)	-0.34** (-1.79)		
Presence of women (dummy)	(-)		-0.13** (-1.99)	
Gender heterogeneity index	(-)			-0.22* (-1.28)
Log (Total assets)	(+)	-0.03 (-1.05)	-0.03 (-0.98)	-0.03 (-1.02)
Log (Size of management board)	(+)	0.23** (2.28)	0.27*** (2.59)	0.25*** (2.44)
Proportion of indep. commissioners	(+)	-0.60** (-2.07)	-0.57** (-1.96)	-0.58** (-1.98)
Largest shareholder ownership	(+)	0.46*** (2.40)	0.44** (2.28)	0.44*** (2.32)
Blockholders ownership	(+)	-0.36* (-1.64)	-0.34* (-1.55)	-0.35* (-1.61)
Family controlled (dummy)	(-)	-0.09* (-1.34)	-0.09* (-1.38)	-0.10* (-1.42)
Number of observations		354	354	354
R^2		0.061	0.062	0.056
F -statistic		3.233***	3.285***	2.947***

Table 5Regression of ROA and Tobin's q on the proportion of women on management boards

Models (1) and (2) report the regressions of ROA and log value of Tobin's q , respectively, for larger firms (firms with total assets of more than Rp1,000 billion). Models (3) and (4) report the regressions of ROA and log value of Tobin's q , respectively, for smaller firms (firms with total assets of no more than Rp1,000 billion). Robust t -statistics, based on heteroskedasticity-consistent standard errors, are in parentheses. *, **, and *** indicate significance (one-tailed) at the 0.10, 0.05, and 0.01 levels, respectively.

Independent variables	Larger firms		Smaller firms	
	ROA	Log (Tobin's q)	ROA	Log (Tobin's q)
	(1)	(2)	(3)	(4)
Intercept	8.06* (1.61)	0.80*** (2.67)	-6.77 (-0.83)	0.28 (0.83)
Proportion of women	-6.28* (-1.62)	-0.91*** (3.88)	1.53 (0.48)	-0.08 (-0.32)
Log (Size of management board)	1.18 (0.95)	0.14* (1.40)	3.92 (1.20)	0.07 (0.47)
Proportion of indep. commissioners	-10.97** (-1.96)	-0.91*** (-2.89)	6.95 (0.95)	-0.60* (-1.38)
Largest shareholder ownership	10.38*** (3.29)	0.86*** (3.83)	3.80 (0.79)	0.08 (0.28)
Blockholders ownership	-4.85* (-1.34)	-0.81*** (-3.52)	0.42 (0.06)	0.18 (0.55)
Family controlled (dummy)	-2.71** (-2.14)	-0.07 (-0.92)	-1.32 (-0.65)	-0.09 (-0.87)
Number of observations	169	169	185	185
R^2	0.108	0.190	0.031	0.024
F -statistic	3.286***	6.319***	0.949	0.743

Table 6Regression of ROA and Tobin's q on the presence of women on management boards

Models (1) and (2) report the regressions of ROA and log value of Tobin's q , respectively, for larger firms (firms with total assets of more than Rp1,000 billion). Models (3) and (4) report the regressions of ROA and log value of Tobin's q , respectively, for smaller firms (firms with total assets of no more than Rp1,000 billion). Robust t -statistics, based on heteroskedasticity-consistent standard errors, are in parentheses. *, **, and *** indicate significance (one-tailed) at the 0.10, 0.05, and 0.01 levels, respectively.

Independent variables	Larger firms		Smaller firms	
	ROA	Log (Tobin's q)	ROA	Log (Tobin's q)
	(1)	(2)	(3)	(4)
Intercept	6.98* (1.41)	0.70** (2.32)	-6.44 (-0.81)	0.25 (0.74)
Presence of women (dummy)	-2.71*** (-2.40)	-0.27*** (-4.05)	0.20 (0.14)	0.03 (0.26)
Log (Size of management board)	1.85* (1.45)	0.20** (2.00)	3.79 (1.21)	0.07 (0.50)
Proportion of indep. commissioners	-10.09** (-1.85)	-0.85*** (-2.69)	6.74 (0.93)	-0.58* (-1.31)
Largest shareholder ownership	9.69*** (3.14)	0.81*** (3.64)	3.87 (0.82)	0.08 (0.26)
Blockholders ownership	-4.18 (-1.16)	-0.77*** (-3.31)	0.40 (0.06)	0.18 (0.56)
Family controlled (dummy)	-2.71** (-2.16)	-0.07 (-1.02)	-1.27 (-0.61)	-0.10 (-0.92)
Number of observations	169	169	185	185
R^2	0.123	0.204	0.030	0.024
F -statistic	3.780***	6.922***	0.922	0.737