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The Investment Behavior of Female Boards in Indonesia

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Abstract

This study examines the impact of the presence of female board members on corporate investment behavior in developing countries, such as Indonesia. We selected companies listed on the Indonesia Stock Exchange from 2015-2019. In order to estimate the primary model, the regression model is developed by Ordinary Least Square (OLS) using 1,523 observation data. The results show that increasing the number of female board members can improve investment efficiency. The presence of female commissioners in the dual board mechanism enhances its monitoring function, affecting operational efficiency reflected in investment efficiency. The results from additional tests using the proxy of the percentage of female board commissioners are also consistent. The findings of this study have important implications for academics and practitioners developing a dual board governance system in Indonesia and for understanding the impact of gender diversity on corporate financial outcomes. This study is unique in that it focuses on the Indonesian context, where the role of women at the top management level is still limited and characterized by a dual board system that separates operational and supervisory functions.

Perilaku Investasi Dewan Direksi Perempuan di Indonesia

Abstrak

Penelitian ini meneliti dampak dari kehadiran anggota dewan perempuan terhadap perilaku investasi perusahaan di negara-negara berkembang, seperti Indonesia. Kami memilih perusahaan yang terdaftar di Bursa Efek Indonesia pada periode 2015-2019. Untuk mengestimasi model utama, kami menggunakan model regresi Ordinary Least Square (OLS) dengan menggunakan 1.523 observasi berdasarkan jumlah tahun dan perusahaan. Hasil penelitian menunjukkan bahwa peningkatan jumlah anggota dewan direksi perempuan dapat meningkatkan efisiensi investasi. Kehadiran komisaris perempuan dalam dual board mechanism meningkatkan fungsi pengawasan, yang pada gilirannya mempengaruhi efisiensi operasional yang tercermin dalam efisiensi investasi. Hasil dari pengujian tambahan dengan menggunakan proksi persentase dewan komisaris perempuan juga konsisten. Temuan dari penelitian ini memiliki implikasi penting bagi para akademisi dan praktisi dalam pengembangan sistem tata kelola dewan ganda di Indonesia dan memahami dampak keragaman gender pada hasil keuangan perusahaan. Studi ini unik karena berfokus pada konteks Indonesia, di mana peran perempuan di tingkat manajemen puncak masih terbatas dan ditandai dengan sistem dewan ganda yang memisahkan fungsi operasional dan pengawasan.

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INTRODUCTION

This study aims to investigate how the investment behavior of firms with more female board members may differ from that of firms that pay less attention to the composition of female board members in developing countries such as Indonesia. Trends in the governance literature show that the role of women in companies' top management is increasing, indicating that their role is increasingly important and strategic (Garcia-Blandon et al., 2024). Some studies have also shown that female representatives in corporations play an important role in discussing public policy issues, as exemplified by Ding et al. (2022) and Gaio & Gonçalves (2022). Practically speaking, some European countries have recognized this and realized it in their public policies. For example, Norway requires listed companies to have at least 40% female representation on the board of directors (Garcia-Blandon et al., 2024).

Along with the importance of women's roles in corporate governance, women's leadership is a concern and differs from male leadership in corporate decision-making, especially in investment decisions (Ullah et al., 2020; Hesniati et al., 2024;). Women's leadership is considered to have a low level of overconfidence and is less opportunistic than men's (La Rocca et al., 2019; Ullah et al., 2020). The resulting decisions are more reliable and wiser. Furthermore, the presence of women in top management can reduce agency conflicts (Jurkus et al., 2011), increase firm value (Adams & Ferreira, 2009), highlight and even produce more efficient investment decisions.

Several empirical studies have shown that the presence of women in top management can improve the efficiency of investment decisions, which is reflected in the high value of investment efficiency. Ullah et al. (2020) tested the relationship between female CEOs and investment efficiency in Pakistan, a developing country. The results indicate that the presence of female CEOs can reduce investment inefficiency. In particular, they are more likely to limit underinvestment than overinvestment in their investment decision-making. Song & Chung (2023) highlight that gender stereotype threats play a significant role in shaping female leaders' behaviors, indicating that biological differences in risk-taking may not have as much influence as environmental factors. In their study, they discovered that female CEOs are more likely to overinvest, highlighting the influence of environmental factors on their risk-taking behavior. In addition, Mo & Lee (2022) found that female CEOs make better employment-based investments by inhibiting a firm's overinvestment in labor.

This study differs from previous research in several ways. First, this study was conducted in the context of Indonesia, where the role of women is still nominal, and the highest level of leadership in companies is generally dominated by men. In addition, within the realm of regulations in Indonesia, there are no regulations that accommodate gender diversity, especially in the context of top management. Second, Indonesia applies a dual-board system in corporate governance, consisting of a Board of Directors (BOD) tasked with managing the company's operations and a Board of Commissioners (BOC) that supervises and monitors the BOD's performance separately. This governance system differs from many developed or developing countries that adopt a one-tier board system, where management and supervisory functions are combined into one.

Female Board and Corporate Investment

The relationship between female board members and corporate investments can be explained using several related theories, including agency theory. Research suggests that gender diversity on boards of directors can significantly influence a company's risk tolerance on the Indonesian Stock Exchange (IDX). The presence of women on boards may lead to increased risk-taking behavior, potentially influencing decisions like pursuing new ventures, investing in high-growth markets, or taking on more debt (Hesniati et al., 2024). Despite extensive empirical research, the relationship between female board members and corporate investment remains inconsistent and inconclusive.

On one hand, the presence of women at the highest management level may result in less efficient investment decisions, which aligns with agency theory. Agency theory explains that information asymmetry between management and owners can interfere with efficient decision-making. Therefore, it is possible for female top management to make inefficient decisions, such as selecting unprofitable projects due to lack of management ability, lack of supervision, or personal preferences that may harm owners' interests. Some studies show that women do not always perform better than men in various aspects, such as education, work experience, and networking (e.g., Strohmeyer et al., 2017).

On the other hand, the presence of a female board shows different performance compared to men, and it is even considered that their presence at the highest management level can increase the effectiveness of strategic decision-making, including investment decisions. Shin et al. (2020) conducted a study to determine whether female representation at the highest management level was related to investment efficiency in companies listed on the Korean stock exchange market from 2006 to 2014. The results indicate that the presence of a female board is positively related to investment efficiency. Female directors show a more conservative and cautious attitude towards making investment decisions. Similar results were also found in the study by Mirza et al. (2020) which indicates that female directors can manage investments more efficiently than male directors, especially in the context of more competitive markets such as China. This finding is in line with the agency theory, which explains that the presence of women in corporate governance can improve the process of monitoring management investment performance. Ullah et al. (2020) tested the impact of female CEOs on investment effectiveness, and the results supported similar findings. The presence of women in top management can improve the overall management investment performance process.

Research investigating the investment behavior of female boards is generally conducted in the context of a one-tier board system, where monitoring and operational functions are united in one-board management (Shin et al., 2020). Research on the investment behavior of women's boards is still very limited, especially in the context of a dual board system, such as the one in Indonesia. In this system, the board is divided into two distinct parts: the board of directors, who are responsible for managing the company's operations, and the board of commissioners, who are tasked with supervising and monitoring management performance. Through this separation of functions, it is expected that the board of commissioners can become more effective in implementing healthier corporate governance. A female board of directors who is conservative and cautious in evaluating and monitoring a company's investment performance is expected to increase its effectiveness. Based on the theoretical basis and previous empirical research, the proposed hypotheses are as follows:

H1: The female board of commissioners has a positive influence on investment effectiveness in companies listed on the Indonesian Stock Exchange.

METHOD

Data and Sample

This study involved all companies listed on the Indonesian stock exchange from 2015 to 2019. The data used is obtained from various sources. For example, financial data comes from the DataStream database, while non-financial data, such as governance data, were obtained through a manual search of financial statements or using Google search engines.

We used a purposive sampling technique by considering several important criteria, such as (1) availability of financial data in the database and (2) involving all sectors except the financial sector, as it is subject to different regulations.

Research Models and Variables.

The model and variables in this study were reflected in the construction of the model proposed in the hypothesis, as described below.

$$\text{INV-TA}_{it} = \alpha_1 \text{FEM-SB}_{it} + \alpha_2 \text{ SB-SIZE}_{it} + \alpha_3 \text{FM-SIZE}_{it} + \alpha_4 \text{GROW-TH}_{it} + \alpha_5 \text{ LEVR}_{it} + \alpha_6 \text{IND}_{it} + \alpha_7 \text{YEAR}_{it} + \varepsilon_{it}$$

Table 1. Variable Definition

Variables	Definitions and References
INV-TA_{it}	Capital expenditure in company i and year t divided by total assets in period i-year t-1 (Phan et al., 2020)
FEM-SB_{it}	Number of female board of commissioners (Rossi et al., 2018)
$\text{FEM-SB(\%)}_{it}$	Percentage of female board of commissioners (Rossi et al., 2018)
INV-TA_{it}	Capital expenditure in company i and year t divided by total assets in period i-year t-1 (Phan et al., 2020)
Control Variables-Company Characteristics	
SB-SIZE_{it}	The size of the board of commissioners in company i and year t (Joni et al., 2020)
FM-SIZE_{it}	Natural log value of total assets for company i and period t (Pan & Tian, 2017; Phan et al., 2020)
GROW-TH_{it}	Period t sales - period t-1 sales) divided by period t-1 sales (Phan et al., 2020)
LEVR_{it}	Total debt divided by total assets for company i and period t (Phan et al., 2020)
Control Variables-fixed effects	
IND_{it}	Industry type classified by two-digit GICS (Global Industry Classification Standard).
YEAR_{it}	Observation period: 2015, 2016, 2017, 2018, 2019

Source: Authors (2023)

Statistical Analysis.

We used the ordinary least squares (OLS) model to estimate the hypotheses. Some specific steps are as follows: first, we present descriptive statistics to provide a clear picture of the underlying data used; second, we also conduct correlation analysis to obtain information on the associations that occur in each of the main variables; third, in this study, we perform a multi-collinearity check on the model using the variance inflation factor (VIF); the last step is model testing through OLS regression to examine the impact of the presence of women in top management on corporate investment behavior.

Sensitivity Analysis.

This study also conducted additional tests to examine the relationship between the percentage of female supervisory board members and investment efficiency.

RESULT AND DISCUSSION

Statistical Description and Correlation

Table 2. shows the descriptive statistics of several key variables, including investment efficiency (INV-TA), the female board of commissioners (FEM-SB), board size (SB-SIZE), firm size (FM-SIZE), sales (GROWTH), and leverage (LEVR).

Table 2. Statistical Description Summary

Variable	**N**	**Mean**	**St. Dev**	**Min**	**Max**
INV-TA	1,523	4.654	6.088	0.000	42.040
FEM-SB	1,523	1.330	2.032	0.000	12.000
SB-SIZE	1,523	6.734	3.576	0.000	17.000
FM-SIZE	1,523	22.179	9.362	2.607	32.921
GROW-TH	1,523	4.470	1.780	-3.340	1.050
LEVR	1,523	0.734	1.990	0.000	0.960

Source: Authors (2023)

Note: This table reports a statistical description of the main variables in the model. The sample of this study comprises 1,523 observations during the period 2015-2019. The variables used were based on the calendar years. The definitions of these variables are listed in Table

Table 3. Correlation Matrix

Variable	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
(1) INV_TA	1.000					
(2) FEM_SB	0.048[c]	1.000				
(3) SB_SIZE	0.073[a]	0.502[a]	1.000			
(4) FM_SIZE	-0.041	-0.672[a]	-0.169[a]	1.000		
(5) GROW_TH	0.074[a]	0.118[a]	0.267[a]	-0.034	1.000	
(6) LEVR	0.089[a]	-0.163[a]	0.033	0.131[a]	0.135[a]	1.000

Source: Authors (2023)

Note: This table reports the pairwise Pearson's correlation matrix for the entire sample of 1,523 observations. The variable definitions are presented in Table 1. Superscripts a-c indicate two-sided significance at the 1%, 5%, and 10% levels, respectively.

Table 4. Female Board of Commissioners and Investment Efficiency-pooled OLS

	Model
INTERCEPT	2.079[b] (1.97)
FEM-SB	0.240[a] (4.17)
SB-SIZE	0.112[a] (3.00)
FM-SIZE	0.041 (1.49)
GROW-TH	2.660[a] (2.56)
LEVR	-6.010 (-0.22)
IND	Included
YEAR	Included
Average VIF	2.61
Adj. R^2	0.051
F	6.68
Prob > F	0.000[a]
N	1,523

Source: Authors (2023)
Note: This table reports the coefficients of the ordinary least squares (OLS) regression estimates, including the control variables for year and industry. The variable definitions are presented in Table 1. Superscripts a-c indicate two-sided significance at the 1%, 5%, and 10% levels, respectively.

The average INV-TA value was 4.654, with a standard deviation of 6.088, a maximum value of 42.040, and a minimum value of 0.000. The average INV-TA value reflects the magnitude of the investment in the company. The maximum number of female board members (FEM-SB) was 12, whereas the minimum number was 0. The average FEM-SB score was 1.330, with a standard deviation of 2.032. These values are consistent with previous studies, such as those conducted by Phan et al. (2020) and Rossi et al. (2018).

Table 3. presents the correlation matrix for the main variables. Based on the correlation test results, the most robust relationship occurred between board size and female board members, which was 0.50. It indicates the potential correlation among independent variables. We also tested potential multicollinearity in the model using the Variance Inflation Factor (VIF), as shown in Table 4. The VIF results showed an average value of 2.61 < 10, indicating no multicollinearity problem in the regression model.

The Relationship between the Female Board of Commissioner and Investment Efficiency

Table 4. reports the regression estimation results on the relationship between the female board of commissioners and investment efficiency. The results show that the female board of commissioners has a significant positive relationship with investment efficiency (coefficient=0.240; t=4.17).

This result supports the proposed hypothesis, which states that female board members have a positive effect on investment effectiveness in companies listed on the Indonesia Stock Exchange. This finding is consistent with the results of previous studies, such as those conducted by Phan et al. (2020) and Shin et al. (2020). These results indicate that from an agency theory perspective, the presence of fema-

Table 5. Percentage of Female Commissioners and Investment Efficiency-Pooled OLS

	Model
INTERCEPT	2.211[b] (2.11)
FEM-SB (%)	0.311[a] (5.04)
SB-SIZE	0.138[a] (3.75)
FM-SIZE	0.059[b] (2.16)
GROW-TH	2.740[a] (2.64)
LEVR	-5.680 (-0.20)
IND	Included
YEAR	Included
Average VIF	2.47
Adj. R^2	0.056
F	7.28
Prob > F	0.000[a]
N	1,523

Source: Authors (2023)

Note: This table reports the coefficients of the ordinary least squares (OLS) regression estimates, including the control variables for year and industry. The variable definitions are presented in Table 1. FEM-SB (%) is the percentage of female board members. Superscripts a-c indicate two-sided significance at the 1%, 5%, and 10% levels, respectively.

le commissioners in the dual board system improves the company's monitoring function so that investment efficiency can be achieved. It is reflected in higher percentage of female board of commissioner members results higher capital expenditure. The presence of women in top management and the implementation of monitoring functions are considered to be more conservative and apply prudent principles (Ullah et al., 2021). Consequently, the higher the presence of female commissioners, the more efficient the management of corporate investment in the context of developing countries and countries that implement a dual board system.

Sensitivity Testing

This study also conducted a sensitivity test or an additional test by including the percentage of female board members in the model, and the results are presented in Table 5. It is considered a robustness test and supports the primary model. The results reported in Table 5 are consistent with those presented in Table 4, suggesting that female board of commissioners can improve investment efficiency in companies listed in Indonesia during the 2015-2019 period.

CONCLUSION AND RECOMMENDATION

This study examines the relationship between the presence of a female board of commissioners and investment efficiency in Indonesia, a developing country. This study stands out by focusing on the presence of female commissioners in Indonesia's dual board system, where the board of commissioners is responsible for a monitoring function that is separate from the board of directors, which handles the operational functions of the company. In addition, research on gender diversity is interesting because of the cultural setting in Indonesia that emphasizes male dominance in the workplace.

The results of this study indicate that the presence of a female commissioner enhances a company's investment performance. This means that within the context of Indonesia's dual-board mechanism, where the board of commissioners oversees, and the board of directors manages operations, female commissioners contribute positively to investment outcomes. The presence of female commissioners can strengthen the monitoring function through their conservative and prudent attitude, which in turn increases the efficiency of management investment. This study has practical implications for academics and practitioners, especially public policymakers.

The findings contribute to the development of literature on the relationship between gender diversity and financial outcomes in the context of a dual-board system. In addition, the results are expected to serve as a reference for policymakers to pay attention to gender diversity issues in the development of governance policies, especially in developing countries that still uphold patriarchal cultural values. For practitioners, as part of their fund portfolio selection process, specific corporate governance dimensions can be included as part of including investors.

The results of this study must be interpreted with consideration of several limitations. First, it focuses on the presence of women as members of the board of commissioners only, without considering the presence of women on the board of directors. Future research can expand this scope by considering the presence of women as members of the board of directors. Second, this study is limited to only one country that implements a dual-board system, while many countries outside Indonesia also implement a dual-board system. Future research that tests this model in several countries with dual-board systems can increase its generalizability.

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