JDM (Jurnal Dinamika Manajemen), 15 (1) 2024, 1-9

http://jdm.unnes.ac.id

Nationally Accredited based on the Decree of the Minister of Research and Technology/ National Agency of Research and Innovation Number 85/M/KPT/2020

Board Gender Diversity and its Impact on Firm Risk-Taking

Hesniati✉[1], Lovis Vernando[2], Hery Haryanto[3], Hengky Arviano[4]
Faculty of Economics and Business, University International Batam, Batam, Indonesia[1,2,3]
Department of Business Administration, National Taiwan University of Science and Technology[4]

Info Article

History Article:
Submitted 29 September 2023
Revised 13 October 2023
Accepted 4 January 2024

Keywords:
Gender Diversity, Corporate Governance, Firm Risk-Taking

Abstract

This study aims to analyze the gender diversity of boards of directors and its impact on firm risk-taking. It is interesting to study because the presence of women on the board of directors of a firm has garnered considerable attention in the last few years. The sample is drawn from the industrial sector listed on the Indonesian Stock Exchange from 2017 to 2021. Firm risk-taking is measured by the volatility of stock returns. Using panel data, the results of the research indicate that gender diversity has a significantly positive impact on firm risk-taking. This finding contributes that a female board of directors would lead to greater risk-taking than their male counterparts. This research provides a literature on gender diversity and firm risk-taking in a male-dominated sector in Indonesia, providing insights for investors and companies to consider the potential benefits of gender diversity on board of directors in managing firm risk-taking. Further research could apply other measurements of firm risk-taking and observe other male-dominated sectors for comparison to enhance the study's limitation.

Keberagaman Gender Dewan dan Dampaknya terhadap Pengambilan Risiko Perusahaan

Abstrak

Penelitian ini bertujuan untuk menganalisis keragaman gender dalam dewan direksi dan dampaknya terhadap pengambilan risiko perusahaan. Hal ini menarik untuk diteliti karena kehadiran perempuan di dewan direksi suatu perusahaan telah menarik perhatian yang cukup besar dalam beberapa tahun terakhir. Sampel diambil dari sektor industri yang terdaftar di Bursa Efek Indonesia dari tahun 2017 hingga 2021. Pengambilan risiko perusahaan diukur melalui volatilitas pengembalian saham. Dengan menggunakan data panel, hasil penelitian menunjukkan bahwa keragaman gender memiliki dampak positif yang signifikan pada pengambilan risiko perusahaan. Temuan ini menyumbang bahwa dewan direksi yang terdiri dari perempuan cenderung mengambil risiko lebih besar dibandingkan dengan rekan-rekan pria mereka. Penelitian ini menyediakan literatur mengenai keragaman gender dan pengambilan risiko perusahaan dalam sektor yang didominasi oleh laki-laki di Indonesia, memberikan wawasan bagi investor dan perusahaan untuk mempertimbangkan potensi manfaat keragaman gender dalam dewan direksi dalam mengelola pengambilan risiko perusahaan. Penelitian lebih lanjut dapat mengaplikasikan pengukuran pengambilan risiko perusahaan lainnya dan mengamati sektor-sektor lain yang didominasi oleh laki-laki untuk perbandingan guna meningkatkan keterbatasan studi ini.

JEL Classification: G32, M21, O16

How to Cite: Hesniati, Vernando, L., Haryanto, H., & Arviano, H. (2024). Board Gender Diversity and its Impact on Firm Risk-Taking. *JDM (Jurnal Dinamika Manajemen), 15*(1), 1-9.

✉Correspondence Address
Institutional address: Jl. Gajah Mada, Sei. Ladi, Kota Batam, Provinsi Kepulauan Riau
Email: hesniati@uib.edu

ISSN
2337-5434 (online)

INTRODUCTION

Gender diversity on company boards has become increasingly important due to its potential impact on company risk and performance. According to Elisa & Guido (2020) and Chatjuthamard et al. (2021) and, gender diversity has become a significant issue on the board of directors of corporations. The number of female directors increased by 4% in North America and Europe in 2022, reaching 29%, according to Yun (2022). Research has shown that gender diversity on boards can influence corporate risk and financial performance (Elisa & Guido, 2020; Mumtaz et al., 2021).

Several studies have also demonstrated a negative relationship between gender diversity and risk-taking in the organization (Hurley & Choudhary, 2020; Ji et al., 2021; Mastella et al., 2021; Shi et al., 2021; Ozdemir & Erkmen, 2022). These results argue that women are more caring, less power-driven, and more diligent in the oversight of the company's finances and performance.

Female directors tend to avoid risk and are less aggressive than male directors, according to the research by Shi et al. (2021), and contribute to improving a company's financial performance (Duppati et al., 2020; Chairani & Siregar, 2021). Female directors are perceived to be better at making appropriate choices for the company, as they tend to be more sensitive to risky options in strategic decisions (Shropshire et al., 2021).

Based on the agency' theory, effective corporate governance practices have a regulating effect on director behavior. Gender-diverse boards may help to reduce agency issues between managers and shareholders (Jensen et al., 1976; Fama et al., 1998). This theory emphasizes the board of directors' role in supervising and controlling managers. A diverse board can assure stronger management oversight because diversity on the board boosts board independence. In expanding the agency theory defense, Adams & Ferreira (2009) also claim that having female directors can increase board effectiveness by allowing them to do the monitoring tasks.

The values of good corporate governance (CGC) are constituted by indicators of the board of directors and managerial ownership. In other words, the higher the board of directors and the greater the ownership of management, the more effective the management of the company will be, thus increasing the company's value. This means that investors or the market provide higher valuations for companies that implement good corporate governance. Supervisory mechanisms can be implemented by the board of directors and managerial ownership, thereby promoting a sense of ownership and responsibility in the management of the company. Good corporate management can increase enterprise value for a company (Worokinasih & Zaini, 2020).

The role of gender diversity on boards of directors in linking corporate governance arrangements to firm risk-taking is not uncommon. Firm risk-taking is a highly relevant action for a company's long-term success and survival (Yang et al., 2019). Companies are more successful with more women on the board because diversity helps to highlight the benefits and impacts of corporate governance (Muhammad et al., 2022). The study reveals a significant relationship between corporate governance mechanisms and firm risk-taking and demonstrates that gender diversity on boards significantly reduces the relationship between corporate governance mechanisms and corporate risk-taking. Consistent with the reduced risk effect of gender diversity on boards of directors and provides valuable insights on strengthening corporate governance structures as

it relates to departmental risk-taking strategies.

However, studies of gender diversity and firm risk-taking outside of the United States, Europe, and China are rare, with 75% of studies focusing on the banking sector, according to Teodósio et al. (2021). Therefore, investors need research in other countries, such as Indonesia, to learn from a variety of perspectives. The proportion of women in leadership on the board in Indonesia remains low and insufficient. because Indonesian culture is patriarchal and implies that men must take a leadership role (Sativa et al., 2022). International Finance Corporation (IFC, 2019) Survey reveals that the industrial sector in Indonesia has the highest percentage of women on boards of directors at 26%, followed by the construction and consumer staple sectors at 20% and 15% respectively. However, this proportion is even smaller than in other developed countries such as European countries which have between 30 to 40% proportion of women on boards.

Our study makes two contributions to literature. First, it uses a direct approach to study whether the presence of women in board directors has an impact on firm risk-taking by focusing on the industrial sector in Indonesia which is characterized by a male-dominated boardroom. Second, while prior research explored board gender diversity by using proportion as a proxy, this study explores several measurements as proxies for board gender diversity and its impact on firm risk-taking.

Relationship between Board Gender Diversity and Firm Risk-Taking

Hurley & Choudhary (2020) demonstrate that the proportion of women on the board have an impact on risk-taking behavior of companies. It reveals that having more female board members lowers risk for reasons such as females being more benevolent, less power-oriented, and more diligent in monitoring firm's condition. Adding one more female board member is likely to reduce stock volatility by 6%. Achour (2021) states that increased representation of women on the board would reduce firm risk-taking and that women would exert greater control and actively participate in the resolution of conflicts.

According to psychology and economics, women are more reluctant to take risks than men. In experimental environments, men are more inclined than women to make high-risk choices. Chatjuthamard et al. (2021) find that board gender diversity is less likely to choose risky strategies in an environment where professional requirements are high due to underlying gender differences in other directions. In addition, many studies support the concept that greater gender diversity on boards minimizes risk-taking.

Shi et al. (2021) showed that the impact of gender diversity on firm risk-taking varies according to the specific aspect of the risk examined. Firstly, there is a significant negative impact between gender diversity at the board level and the level of risk associated with firm outcomes. On a different side, there is weak evidence of a positive combination of gender diversity and some risk-taking measures.

Board gender diversity is negatively related to firm risk-taking. This relationship is affected by a firm's capacity to hire women directors. The impact that gender diversity has on board risk-taking is more significant in older companies or those operating in countries with a higher number of women in management positions. The relationship is also influenced by cultural factors, with companies in countries that value individualism and have a shorter distance to power benefitting more from gender diversity on boards of directors (Yun, 2022).

Nadeem et al. (2019) demonstrate a significant negative connection between

gender diversity on boards and firm risk-taking. Also argues that gender diversity can improve group dynamics so that companies with women can be perceived as less risky, attractive for institutional investors, has higher returns, and less prone to risk propensity problems.

H1 : Board Gender Diversity has a negative significant effect on Firm Risk-Taking.

METHOD

The sample used in this research is from the industrial sector and was listed on the Indonesia Stock Exchange (IDX) in the period between 2017 to 2021. The sample was selected using purposive sampling, with requirement that firms must be listed in the industrial sector and have completed its financial report, which was closed on December 31st each year between 2017 and 2021.

The data has a mixture of time series and cross-section data; therefore balance panel data is conducted in this study. After several sorting steps, only 31 companies were fit to be the sample with a total of 155 secondary data obtained from Indonesia Stock Exchange.

Firm risk-taking is measured by the stock return volatility as a proxy for firm risk, which captures total risk, including firm-specific risk and market risk. Previous finance studies have frequently adopted stock return volatility as a proxy of firm total risk (Hurley & Choudhary, 2020; Achour, 2021; Mastella et al., 2021; Li et al., 2022). Board gender diversity is measured by: (1) Gender variety in a board is formulated by the Feblau Index, (2). Proportion with the formula number of female directors divided by the total number of female directors, and (3) Dummy if women equal 1 when the board has one female director and 0 otherwise. Firm size is measured by natural logarithm of total assets, leverage with formula of total debts/total assets, market-to-book ratio with formula of market capitalization/ total book value, and ROA with formula

Table 1. Variable Measurement

Variables	Formula	Source
Firm risk-taking (RISK)	$\sigma R_{it} = \sqrt{\frac{\Sigma_{i=1}^{n}(R_{it}-\bar{R})^2}{n-1}}$	(Achour, 2021)
Board gender diversity (GEND)	Feblau Index $= 1 - \Sigma_{i=1}^{n} P_i^2$	(Tania & Hesniati, 2022)
	Percentage of women in a board of director	(Seebeck & Vetter, 2022)
	Dummy variable. Which is 1 if at least 1 woman is in the board and 0 if otherwise	(Mumtaz et al., 2021)
Firm size (SIZE)	Log of total assets	(Li et al., 2022)
Leverage (LEV)	Total liabilities divided by Total assets	(Peltomäki et al., 2021)
MB Ratio (MBR)	Market capitalization divided by Total book value	(Saeed et al., 2021)
Return on assets (ROA)	Net income divided by Total assets	(Ozdemir & Erkmen, 2022)

of net income/total assets. The formulas for the variables used in this study are explained in Table 1. To test the hypothesis, this study uses panel data regression running the following model:

$$RISK_{it} = \beta_0 + \beta_1 GEND_{it} + \beta_2 SIZE_{it} + \beta_3 LEV_{it} + \beta_4 MBR_{it} + \beta_5 ROA_{it} + \mu_i + e_{it}$$

The index *t* refers to the year of the observation, and the index *i* refers to the firm. Based on the regression model equation, the dependent variable is firm risk-taking, the independent variable is board gender diversity, and the control variables are firm size, leverage, market-to-book ratio, and return on assets (ROA).

RESULT AND DISCUSSION

Based on the results of the descriptive test in Table 2, it shows that the average 5-year stock return volatility is 15.85% and the standard deviation is 22.97% which is higher than the mean. Therefore we conclude that the data has more variability. Feblau Index shows range of the gender of variety is between 0% to 50%. Some firms have zero female presence, while the maximum proportion of female representation is only half of the total number of directors. With 18.79% as an average provides an overview that gender in the industrial sector is quite homogeneous. The average gender proportion is 14.12% of the total number of directors, which means there will be one or two female directors out of 10 directors. However, the average of dummy shows an average of 51.61% means half of the sample is having at least one female directors. Based on descriptive statistics, the size of the firms shows the scale of industrial sector has ranged from 54 billion Rupiah to 367 trillion Rupiah. On average firms uses 50.58% of leverage to make a greater profit. MBR and ROA show some firms experienced loss and the standard deviation of MBR and ROA are greater than the mean which means the value of MBR and ROA are more spread out. It can be concluded that all firms achieve different scales of profit.

However, the correlation test gives a new insight that the relationship between gender diversity and control variables shows every increase of female members can improve company performance (MBR and ROA). This result is consistent with Hurley & Choudhary (2020) that female is more diligent in monitoring firm's condition.

Table 2. Descriptive Statistics

Variables	N	Min.	Max.	Mean	Std. Deviation
RISK	155	.000	2.299	.158	.229
GEND FEBLAU	155	.000	.5	.187	.194
GEND Proportion	155	.000	.667	.141	.165
GEND Dummy	155	.000	1	.516	.501
SIZE	155	24.712	33.537	28.583	1.805
LEV	155	.006	1.740	.505	.254
MBR	155	-10.547	39010.36	1759.318	5477.998
ROA	155	-1.022	.316	.020	.122

Source: Data Processed (2023)

Table 3. Correlation Test

	RISK	*GEND FEBLAU*	*GEND Proportion*	*GEND Dummy*	*SIZE*	*LEV*	*MBR*	*ROA*
RISK	1.000							
GEND FEBLAU	.055	1.000						
GEND Proportion	-.006	.956	1.000					
GEND Dummy	.149	.939	.827	1.000				
SIZE	-.014	.003	-.027	.118	1.000			
LEV	.123	-.025	-.051	.006	.173	1.000		
MBR	-.066	-.312	-.275	-.332	.110	.127	1.000	
ROA	.023	.064	.039	.091	.239	-.146	.103	1.000

Source: Data Processed (2023)

Table 4 shows that the t-test used in this study used a dummy variable of the independent variable, i.e., gender diversity (Feblau Index), and the dependent variable of firm risk-taking. The dummy variable is obtained from the average of assumed independent variable value. A gender diversity value below 18.79% is referred to as Group 0 whereas value above 18.79% is referred to as Group 1.

The t-test results in the table above show a value of -2.042, which means that there is a significant difference of average gender variety on Group 0 and Group 1. As the t value is negative because Group 0 has a lower mean than Group B, this test reveals that the means are statistically different from each other at any level greater than 4.28%.

The hypothesis testing results in Table 5 shows that the board gender diversity variable measured by Female Dummy as an independent variable has a significant positive influence on firm risk-taking with a coefficient value of 0.063 and a significance level of 10%. Measurement by GEND Feblau and GEND Proportion have an insignificant impact on firm risk-taking. This mixed result has rejected our hypothesis in literature before, in which most of the research found that board gender diversity has a significant negative impact on firm risk-taking (Hurley & Choudhary, 2020; Achour, 2021; Shi et al., 2021).

It is possible to argue that gender diversity can be merely tokenism by recruiting a small number of female board directors to give an appearance of gender

Table 4. t-Test Result

Group	**Obs**	**Mean**	**Std. errs.**	**Std. dev.**	**[95% conf. interval]**	
0	77	.120	.012	.110	.095	.145
1	78	.195	.034	.301	.127	.263
Combined	155	.158	.018	.229	.122	.194
diff		-.074	.036		-.146	.002

Source: data processed (2023)

Table 5. Hypothesis Testing

Variables	FEBLAU (1) RISK	Proportion (2) RISK	Dummy (3) RISK
GEND	.036	-.040	.063*
	(.70)	(-.79)	(1.88)
SIZE	-.006	-.006	-.008
	(-.96)	(-.97)	(-1.20)
LEV	.137**	.137**	.132**
	(2.09)	(2.12)	(2.04)
MBR	-.000*	-.000**	-.000
	(-1.80)	(-2.07)	(-1.00)
ROA	.118	.127	.096
	(.88)	(.95)	(.76)
Constant	.258	.271	.294
	(1.43)	(1.52)	(1.55)
Adj. R-squared	-.004	-.005	.011
Obs.	155	155	155

* p<0.10 * p< .05 ** p< .01
Source: Data Processed (2023)

equality in the workforce because average gender variety and proportion are 18.79% and 14.12% over the five-year period in Indonesian industrial sector. This finding is consistent with Biswas (2021) in India's context which revealed the insignificant result is in line with the tokenism theory where appointed female board director only serves a symbolic purpose and is unrelated with firm decision-making. The presence of female directors may be related to higher profitability, but it does not change the risk-taking behavior of firms and leads to higher risk for shareholders.

However, the GEND Dummy proxy has a positive significant impact on firm risk-taking. This finding reveals that a firm with at least one female board director will increase firm risk-taking. Board risk-taking appetite is embedded in the specific context in which a firm operates. Board of directors with risk-taking tendencies may influence the risk-taking attitude of female directors (Saeed et al., 2021).

Leverage also has a significant positive to firm risk-taking. It shows higher leverage will lead to higher firm risk (Khaw et al., 2016; Ozdemir & Erkmen, 2022). This can also be explained by the fact that the sample in this study are highly-leveraged company with an average value of 50.58%. The homogeneity within the group could make the board to be too aligned in their ideas and offsetting the effect of diversity. This could be one of the causes of increase in leverage and risk (Rigolini et al., 2021).

The result of this study gives an insight that it is possible that the small presence of women on the board could transform female director's risk preferences to become similar to those of male directors in highly leveraged firms of the industrial sector.

CONCLUSION AND RECOMMENDATION

The study examined the impact of gender diversity in board of directors on firm risk-taking in 31 Indonesian industrial companies listed on the stock exchange from 2017 to 2021. The results show that gender diversity measure by female

dummy and leverage has a significant positive effect on firm risk-taking, while firm size, market-to-book ratio and ROA did not have a significant effect. Therefore, the assumption that gender diversity on the board has a negative effect on firm risk-taking is not supported. Although, we do not rule out the possibility that the small presence of women on the board could transform female director's risk preferences to become similar to those of male directors in highly leveraged firms of the industrial sector.

This study has several limitations that may have affected optimal outcomes. Firstly, it targets only one business sector which is the industrial sector. Secondly, the financial statements used in this research are limited to a period of five years. Lastly, the search uses only one independent variable, which limits the variation of the data. Future researchers should consider these limitations and strive to address them to obtain more comprehensive and robust results in their subsequent studies.

For future researchers, recommendations to enhance the accuracy and comprehensiveness of their studies include exploring different sectors or conducting sectoral comparisons, and enriching the research object with samples from other countries for comparative studies to better understand their impact on firm risk-taking behavior. The implementation of these recommendations can contribute to more accurate and robust research results, leading to optimum results.

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