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Can Female Directors and Commissioners Reduce Stock Price Crash Risk: Evidence from LQ45 Indexed Company

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ABSTRACT: This study empirically examines female directors and female commissioner's affects stock price crash risk. This research was conducted on companies listed on the IDX's LQ-45 index in 2019-2021 by applying the fixed effect model (FEM) on GLS regression model. We prove that female board of directors and board of commissioners can reduce the stock price crash risk of the company by using several six control variables, those are return on asset (ROA), Leverage, Market to Book Value Ratio, RET, Sigma, and Size. The female directors and commissioners in this study are represented numerically with the results according to the assumption that the significance in the economic field, especially the risk of falling stock prices in companies, is a company that has a female board of directors and a female board of commissioners in its positions.

KEYWORDS: stock price crash risk, Female, Directors, Commissioners

I. INTRODUCTION

Investors do investing to get profit. Investors need to learn several analyses to determine possible future risks. Kahneman and Riepe (1998) explain that investors have to analyze to produce a judgment or evaluation as investing decision. However, Zhou (2018) says that investors do an analysis of technical and fundamental and some small investors use speculative analysis as an analysis advanced from the second analysis. Bodies et al. (2014) explain that analysis technical is a historical analysis where price share can be predictable because a pattern exists repeatedly. Whereas Tjiptono (2006) states that fundamental analysis is A analysis based on sourced secondary data from media reports finance with indicators of finance as well as a management company in evaluating the stock.

Investors do technical analysis on stocks price issued by the company. However, investors are uncommon to analyze stock price crash risk. Luo et al. (2016) explain that stock price crash risk is a phenomenon where exists buildup information issued by the company so that price share experience a very drastic decline in a very short time. Information This is negative information or bad news that already happened several periods so that experience buildup until being on the point where the behavior manager corrected, so all negative information will lead to the capital market and then influence to price share company. On condition, This becomes a weakness alone that price share no reflection of the company performance. Naturally, the stock price crash risk phenomenon becomes unnecessary with deeply analyzed by investors.

A condition where there is the detention of insufficient information about the company by managers becomes a strong reason why price crashes stock. Yin and Tian (2017) state that stock price crash risk focuses on three matters: asymmetry information, market share, and differences in investor opinion based on information that needs to be more detailed, as well as the type of investing behavior. Whereas research conducted by Habib et al. (2018), in a manner empirical to the study literature believe that detention of bad news made by manager parties with interest specific is essential for stock price crash risk.

Stock price crash risk occurs concretely and empirically in pior president, Soeharto era, where happen turmoil economy. As we already know, Soeharto, who has 32 years, finished serving as president and then took office in 1998. The period position president by Soeharto gives turmoil economy and the impact of Indonesia's economic crisis in particular companies that connect with President Soeharto. Sato (2004) and Harymawan et al. (2019) prove that a decline in President Soeharto affects stock price crash risk because of the uncertain economy in Indonesia.

Concrete evidence exists of stock price crash risk in the Soeharto era because of the turmoil in the economic Indonesian macro. There are macro factors that give cause the economy of an affected country. In the middle of the Covid19 pandemic, these factors happen globally, especially in Indonesia. Even 45 companies in LQ45 indexed companies, Indonesia's most significant market capitalization, were also shaken. Boys (2021) say that there are 22 issuers the reported LQ45 index net profit company corrected in

a manner significant up to 91.76% and net profit growth reached -64%. LQ45 indexed companies during the Covid19 pandemic have decreased performance, more volatile than before Covid19, and prices falling stock drastically after the covid19 announcement. Leading indications to the stock price crash risk make base election sample this study.

Stock price crash risk connected with board gender diversity as the only influencing factor. The conditions in Indonesia can be seen based on the observations of Badan Pusat Statistik (2021), saying that the number of women occupying managerial positions from 2019 to 2021 is experiencing in positive trend. In 2019, the concentration of women in top management positions reached 30.37%, increasing in 2020 which reached the proportion of 33.08%. The proportion of women serving as top management of public companies in Indonesia is experiencing an increasing trend (Srinidhi et al., 2011).

Agency Theory becomes the background behind the problem of manager motives in detention companies bad news. The manager did detention on information bad Certain have a motive. Of course, this motive is to interest different managers with interest causing company inequality information or asymmetry information. Asymmetry information between owner company as principals and management as agent. This relates to existing detention information negative by management. This condition occurs in the scope of management which makes one difference in the goal of organizational members and their interests. A manager may hold information that results in information asymmetry in a short time, but managers cannot do it for a long time so that information explosion occurs which results in a stock price crash risk in a short time. Kothari et al. (2009) say that a manager can do this because of several motives including to get personal and instant benefits, to extend the length of service, factors to reduce litigation costs, and some compensation.

Several literature explain that detention causal information asymmetry ocurs in companies with a board of directors and commissioners with homogeneous gender (Qayyum et al., 2021). In this study, management with heterogeneous gender trusted in a manner literature have risk do detention causal information of stock price crash risk. Based on a number of research that has carried out, board gender diversity on the ranks manager can reduce asymmetry information and managerial behavior (Usman et al., 2019). Besides it, Gul et al. (2011) prove that board gender diversity can increase transparency, reduced bad governance, and more disclosure. Jebran et al. (2020) say board gender diversity can reduce stock price crash risk. Whereas Canter (1987) argue that the board of directors and the board of commissioners with female gender own influence to results spared company from fraud or tokenism. This study opinionated that board gender diversity can reduce stock price crash risk

A number of study earlier about board gender diversity and stock price crash risk have been done. First, research by Jebran et al. (2020) who researched board gender diversity and stock price crash risk. This Study conducted in 2003-2015 in China for companies listed on the Shenzhen and Shanghai stock exchanges. Research results This show that the more many board diversity then the more low stock price crash risk. Second, research conducted by Qayyum et al. (2021) who researched variable board gender diversity and stock price crash risk on Asia- Pacific stock markets. This research was conducted by Qayyum show that company Woman directors or heterogeneous in directors and commissioners positions have lower stock price crash risk compared to with company that has concentration lower heterogeneity. Other studies prove different results carried out by Jodinesia and Chalid (2022) which was conducted for companies listed on the Indonesia Stock Exchange in 2019-2021. This study will focuse on the female board of directors and commisioners have negative significant influence to stock price crash risk.

This study contribute detailed that discusses about stock price crash risk in terms of unique social psychological perspective that is about composition women on directors and commissioners position. Different with prior study, this study will research more detailed in women board, not only focuse. Through opinion literature and proven in a manner empirical how company board influence stock price crash risk. This research contribute to proof importance perspective of board gender diversity in corporate governance. So that, deepen discussion corporate governance with reduce unethics practics in the managerial scope. Besides that, this research contribute for investors' interests will perspective analysis more detailed investment. There is monitoring of corporate investors can reduce hoarding information negative by company managers.

II. LITERATURE RIVIEW AND HYPOTHESIS

A. *Stock Price Crash Risk*

Based on literature of stock price crash risk is defined as negative tilt of individual stock return (Chen et al., 2001a; Y. Kim et al., 2014). Basicly, stock price crash risk illustrates condition where investors experience loss caused by the crash of stocks price in a short time, so that important thing for investors about detailed analyse will risk this, especially in portfolio and asset option-pricing models (J.-B. Kim and Zhang, 2016).

Jin and Myers (2006) state that stock price crash risk caused exists asymmetry information between internal company and parties external company. This condition push manager to hold the information, doesn't do disclosur report, negative information or bad news that aims for maximizing compensation, protect employee and avoid bad news disclosed (Kothari et al., 2009). So that

manager have interests that are not aligned with company existing interest. Then happen a condition where manager faced manner cumulative negative information flow to the market in short time because of bad news hold.

Agency costs become intermediate framework between manager as agent and company owner or stackholders as agent that cause stock price crash risk. Prior study explain stock price crash risk occurs because real earning management (REM). Managerial opportunism carried out by management company (Cohen et al., 2014; Habib et al., 2018). Managerial negative activities has negative impact to disclosure quality and financial information statements quality presented by the company. Disclosure quality and information financial statements quality presented by the company without publishing cause stock price crash risk (Hutton et al., 2009; D. Zhang et al., 2020). Other research states that stock price crash risk will have higher overconfident pssibility for company CEOs compared to non-overconfident CEOs (Y. Kim et al., 2014). Several study explain stock price crash risk determinant, however in general, this determination variable is corporate governance and corporate board of directors. However, there is a few research about board gender diversity.

B. *Female Board of Directors and Commissioners*

Gender diversity is defined as a social, psychological, and cultural constructs the difference in a manner biological (Nanda, 2014). Female Board of Directors and Commisioners in this study, two types of diversity were used, namely men and women in the top management of a company. This study argues that the more heterogeneous the top management of a company which includes the board of directors and the board of commissioners, the lower the manager's negative activities. This opinion is strengthened by the research conducted by (Jebran et al., 2020; Qayyum et al., 2021) which states that heterogeneity of the company's top management can reduce the presence of corporate information asymmetry. Mechanisms for gender differences, gender role expectations, and discrimination have an impact on corporate strategic decisions (Cook and Glass, 2018).

Gender Diversity nowadays is still hot topic in Board diversity studies. Female board of directors and female board of commissioners have taking decision with lower risk behavior compared to with a male board. This arguments strengthened with research conducted by Faccio (2006) which stated that female board have risk-avoiding behavior. Whereas Khaw et al. (2016) stated that male board have risk-taking behavior.

C. *Stock Price Crash Risk and Board Gender Diversity*

This study argue that the gender diversity board has influence to stock price crash risk. Female board of directors and commissioners trusted can reduce agency costs in asymmetry information matters. This argument strengthened with research that has conducted by Abad et al. (2017), Gul et al. (2011), Khaw et al. (2016), and Zhang et al. (2020). So that lower asymmetry information can also reduce stock price crash risk. (Jebran et al., 2020; Lee, 2022; Qayyum et al., 2021). Those study believe that heterogeneity of board of directors and commissioners specially female board of directors and commisioners, can work with transparent, reducing information assymetry, and good information disclosure on the capital market. So, the existence of an independent female board of directions and commissioners, this study believe can reduce stock price crash risk.

H1: Female Directors and Board of Commissioners are negative significant to stock price crash risk.

III. RESEARCH METHODOLOGY

A. *Samples and Methods*

This Study conducted on the companies data population on the Indonesia Stock Exchange. Whereas taking sample, this study use purposive sampling technique. The specified criteria of purposive sampling of this study is LQ45 indexed companies on the Indonesia Stock Exchange, listed companies on LQ45 index during 2019-2021, companies that don't issued from LQ-45 index during 2019-2021, has completeness information report for this study, and companies that do not delisted or experience loss during 2019-2021.

Using eviews 12, we analyze quantitative approach aim for test hypothesis that has formulated. This Research using secondary data obtained from the company annual report that can accessed through idx.co.id and yahoo finance pages for accessed stock price. Data collected is published company data and data analyzed in the company annual report year 2019 until with 2021. Sampling was based on purposive sampling criteria, there were 40 companies studied from 2019 to 2021. Because there were 28 companies that entered and left the LQ45 index during the observation period, one company went IPO in 2020.

B. *Stock Price Crash Risk (NCSKEW)*

Dependent variable of this study is the stock price crash risk variable. This variable is measured on the basis of its slope with the symbol NCSKEW. First, determine return share specific-firm in each company sample on week certain.

$$R_{it} = \alpha_i + \beta_1 R_{m,t-2} + \beta_2 R_{m,t-1} \alpha_i + \beta_3 R_{m,t} + \beta_4 R_{m,t+1}$$

$$+\beta_4 R_{m,t+2} + \varepsilon_{i,t}$$

R_{it} : stock return rate of company i in week t

$R_{m,t}$: average market rate of return in week t

$\varepsilon_{i,t}$: stock returns can not be explained by market returns volatility

To determine the average return of spesific firm or $W_{i,t}$, we use the natural logarithm of one plus the residual. Here is a proxy for the average return of spesific firm's stock.

$W_{i,t}$= LN $(1 + \varepsilon_{i,t})$

$W_{i,t}$: average return of specific firm

LN : natural logs

$\varepsilon_{i,t}$: stock returns cannot be explained by the volatility of market returns

This variable measurement referring to prior study conducted by Chen et al. (2017) which defines stock price crash risk with negative tilt or skewness of return distribution compared to negative returns. This following is stock price crash risk measurement method.

$$NCSKEW = \frac{-[n(n-1)^{\frac{3}{2}} \sum W_{i,t}^3]}{[(n-1)(n-2)(\sum W_{i,t}^2)^{\frac{3}{2}}]}$$

$W_{i,t}$: company's weekly stock return i week t

n : Total weeks of stock i trade in year t

C. Board Gender Diversity

This variable is independent variable in this study. Female is proxied by the number of female board members compared to the total number of commissioners and directors (Hillman and Dalziel, 2003; Jebran et al., 2020) . The following is the formula for determining the value of the gender diversity board variable.

$$BGD = \frac{\text{Woman in Board of Director and Board of Commisary}}{\text{Total of board of director and board of commisary}}$$

D. *Control Variables*

This Study use variable control as control from several possible factors out of this study's topic influence stock price crash risk. We use six ariable controls, those are ROA (Return on Assets), Size company (SIZE), stock returns year (RET), market to book value (MB), leverage (LEV), and Sigma. ROA and Leverage due research conducted by Chen et al. (2017), Jebran et al. (2020), J.-B. Kim et al. (2011), Qayyum et al. (2021) prove can reduce stock price crash risk one year future. ROA is calculated with comparison profit to total assets. While Leverage (LEV) is calculated with distribution of total debt to total assets in the year before stock price crash risk predicted. This study use variable size company (SIZE) and market to book value (MB). Because prior study prove influential positive to stock price crash risk in the year next (Chen et al., 2017; Jebran et al., 2020). Size company (SIZE) is measured with the natural log on the company's total assets year before guess stock price crash risk occurs. Whereas market to book value (MB) is formulated with distribution equity market price to mark book company in year before guess stock price crash risk occurs.

This study also controls stock price crash risk using variable stock returns (RET) because high stock returns in previously will have good company performance (Chen et al., 2001a; J.-B. Kim et al., 2011) and can reduce stock price crash risk (Chen et al., 2017). Stock returns calculated with an average stock return weekly company in year before guess stock price crash risk occurs. While sigma (SIGM) is used in control variable dependent because Chen et al. (2017) argue that calculation standard deviation from stock returns weekly company certain year before, this is proxy from stock volatility. So that sigma is trusted can increase stock price crash risk (J.-B. Kim et al., 2011). Sigma (SIGM) is calculated with formula standard deviation from stock returns company one year before stock price crash risk predicted.

E. *Research Models*

Analysis of research data, this study use panel data regression method with observation data in different times and have a lots of variable types in one time (Gujarati and Porter, 2009). As for the research panel data regression model as following.

$$NCSKEW_{t+1} = \alpha_0 + \alpha_1 BGD_{i,t} + \alpha_2 ROA_{i,t} + \alpha_3 SIZE_{i,t} + \alpha_4 RET_{i,t}$$
$$+\alpha_5 LEV_{i,t} + \alpha_6 SIGM_{i,t} + \alpha_7 MB_{i,t} + e_{i,t}$$

$NCSKEW_{t+1}$: Stock price crash risk next year

BGD : Gender Diversity in company i year t

ROA : Return on Assets at company i year t

SIZE : Market Value Equity in company i year t
RET : Average weekly stock return on company i year t
LEV : Leverage at company i year t
SIGM : Sigma at company i year t
MB : Market to book ratio at company i year t
α_0 : constant
$\alpha_1 - \alpha_8$: parameters
i : company
t : year of observation
e : error level

Testing hypothesis we use the coefficient test determination (R^2), simultaneous testing (F-test), and partial regression coefficient testing (t-test) with a significance level of 10%. The coefficient of determination (R^2) was tested to find out about the proportion of variation in the dependent or regressive variable in the study which was then explained by the regressor or explanatory variable . While Test simultaneous with F-test done purposely For determine the effect of independent variables simultaneously on the dependent variable. The t-test is a follow-up check to determine after estimating the regression, whether the linear restriction is fulfilled (Gujarati & Porter, 2009).

IV. RESULT AND DISCUSSION

A. Statistics Descriptive

Statistics descriptive in the form of average, maximum data, minimum data, and standard deviation can seen in table 1 below this. Stock price crash risk one year after period observation happens to objects of this study. Seen the minimum value of NCSKEW is -2.2652. The Board Gender Diversity average of 0.1552 is visible during observation show that the board of directors and board of commissioners are sufficient heterogeneous in a manner whole. While the average variable control in a manner whole sample study of 0.0860 on ROA, 0.0005 on size, 23.1654, 187.0383 on leverage, 0.0595 on Sigma, and 0.8563 on market to book value.

Table 1. Statistics descriptive.

	Means	Maximum	Minimum	std. Dev.
$NCSKEW_{t+1}$	0.663	2.468	-2.266	1.110
BGD	0.155	0.667	0.000	0.171
ROA	0.085	0.917	-0.042	0.130
SIZE	0.001	0.016	0.013	0.006
RET	23.162	28.1812	13.072	4.165
Lev	187.132	428.823	3.450	589.271
SIGM	0.060	0.112	0.022	0.021
MB	0.856	33.861	0.126	3.309

B. Determination Method Testing

The regression model used in this study is panel regression. Moreover, formerly writer test using chow test, hausman test, and lagrage multiplier test for choose method which one is appropriate in the regression model. Results show that method best in this study is fixed effect model (FEM) with showed that p value in the chow test is 0.000<0.05 and the hausman test p value of 0.000<0.05. The Fixed Effect Model or FEM uses a dummy variable technique that is added to estimate panel data regression parameters or often called the Least Square Dummy Variable Model (LSDV) (Baltagi, 2005).

C. Analysis Assumption Classic

Assumption test classic carried out in order to obtain a regression model good and unbiased research. Classical assumptions are needed in ensuring the regression model with normal data, not heteroscedasticity or there is variance that is not constant or there is data with confounding variables, and data that is not multicollinearity (Gujarati, 2003). The results show the p value of the normality test which can be seen in Figure 1. Probability value of 0.097610 > 0.05 then can stated that distribution of research data has fulfil assumption normality or normally distributed data. In the heteroscedasticity test with the white test show results p value of 0.2830 > 0.05 so results shows the regression model no contain symptom heteroscedasticity. Then on the autocorrelation test showed results p-value of 0.4478. So, There is no autocorrelation symptom in research data.

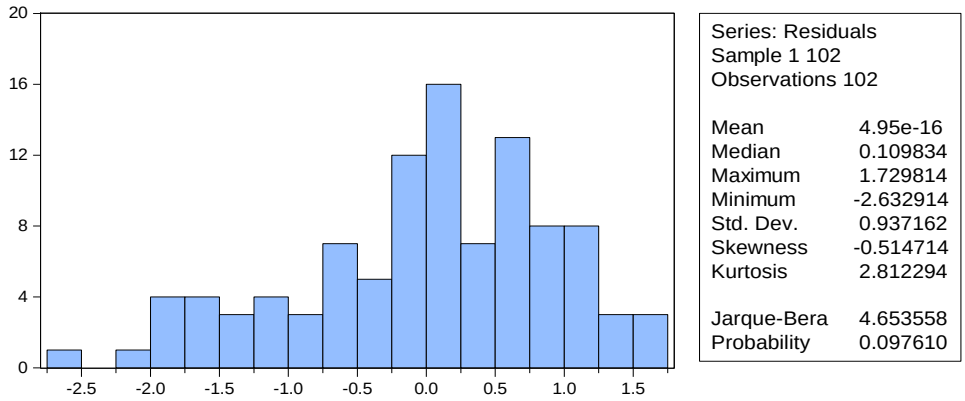

Figure 1. Data normality test

D. Analysis of Test Results Hypothesis

Testing hypothesis with EGLS or weight cross-section. We can see in table 1 which shows results various regressions. Results show that board gender diversity (BGD) has probability of 0.0377 with a significance level of 0.05 which means that H0 is rejected and H1 is accepted. The higher number of board gender diversity means lower possibility of negative slope of stock price crash risk that occurs in the company. This study have same result with Jebran et al. (2020) and Qayyum et al. (2021). This finding supported with research by Abad et al. (2017) who said that board gender diversity can increase transparency quality of disclosure information company, so that can reduce asymmetry information.

This studies also prove that female board of directors and board of commissioners have higher potency of risk posibility (Kaur and Singh, 2017; Zhang and Fang, 2013). Whereas, Kothari et al. (2009) prove that the higher board gender diversity have higher caution in taking decisions and higher worries about company reputation. Results are also onducted by Jebran et al. (2020), who said that board diversity can decrease stock price crash risk company. Because this can enhance information efficiency, lower information asymmetry, increase quality reporting, and reduce risk-taking.

Table 2. Panel Regression Model Analysis Results

Variables	coefficient	Prob.
BGD	-0.54023	0.0377*
ROA	-0.92904	0.91040**
SIZE	36.07558	0.0000*
RET	-0.79028	0.0000*
Lev	-0.00011	0.0654**
SIGM	7.04725	0.0068*
MB	-0.09714	0.0317*
C	18.90750	0.0000*

*p<0,05, **p<0,1

While on variables control generated ROA, leverage, and generated RET influential positive to stock price crash risk. this result in accordance with research arguments that the more high ROA, Leverage, and RET then the more low contribution opportunity happening stock price crash risk. This research conducted by Chen et al. (2017), Jebran et al. (2020), J. -B. Kim et al.(2011), and Qayyum et al. (2021). Then Sigma is shown positive significant to stock price crash risk. This finding consistent with research conducted by Chen et al. (2001b) and Jebran (2017). Size are shown positive significant to stock price crash risk, this finding has similar result with Lee and Wang (2017). Whereas, market to book value shows negative significant to stock price crash risk. Market to book value, as a control variable, have different result with prior studies. This means higher market to book value ratio effect lower stock price crash risk. This finding has similar result with Luo et al. (2016).

Table 3. Panel Regression Model Analysis Results

Name	Value

R-squared	0.981723
Adjusted R-squared	0.969233
S.E. of regression	0.642305
F-statistic	78.60372
Prob(F-statistic)	0

V. CONCLUSION

This study empirically show that is board gender diversity has negative influence to stock price crash risk. Research test 34 LQ45 indexed companies proof empirically that board gender diversity can reduce possible stock price crash risks happened in the company. Stock price crash risk is measured in negative slope on stock returns perspective**.** Results explained that female board prefer to not withholding negative company information that effect stock price crash risk. Variable control coefficient in regression model, this study show appropriate direction with prior study as well as significant. ROA, Leverage, and RET have suitable result with prior studies that have negative relationship to stock price crash risk. This result consistent with a number of prior research (Chen et al., 2017; Harymawan et al., 2019; Jebran et al., 2020; J.-B. Kim et al., 2011; Qayyum et al., 2021). Whereas, size and sigma prove that influential positive to stock price crash risk which consistent with research that has done previously (Chen et al., 2001b, 2017; Jebran et al.,2020; Lee and Wang, 2017). Whereas variable control market-to-book value produce negative significant to stock price crash risk. Sigma, as a variable control, has different direction with prio study, but this consistent with results research conducted by Luo et al. (2016).

VI. ACKNOWLEDGEMENT

Limitations of this study occurs in board diversity measurement which need to expanded, not only gender measurement. Besides, limitations happened to the sample of this study, which wider observation periode of research company. Furthermore, the limitation of this study is in stock price crash risk measurement. Not only refers to the level accompaniment of negative stock returns company. So the advice for study furthermore is adding board diversity perspective, addition study sample by adding period observations and adding DUVOL measurement on stock price crash risk variables.

This study argues that the regulator considers the role of having a gender diversity on board in an organization in order to improve corporate governance practices. The researcher also suggests consider the importance of the role of the gender diversity board so that the containment of negative information is still properly disclosed for stakeholders. Finally, for the sake of the feasibility of considering investment decisions, the opportunity for a stock price crash risk to occur in a company is considered by investors through an detail analysis of the board's gender diversity in the company.

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