The impact of board diversity on energy and mining firms in the emerging countries in South East Asia and their stock price crash risk in 2015–2019

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ABSTRACT: This research aims to determine the impact of board diversity on energy and mining firms in the emerging countries in South East Asia and each firm's stock price crash risk in 2015–2019. The diversity in this research includes the board's background diversity and the board's quantity diversity. This research applied a cross-sectional data panel of ordinary least squares (OLS) to obtain its final data. The result of this research shows that board diversity does not influence the stock price crash risk. Significantly, the influence of the independent variable on the dependent variable was found only for the quality of board's education background and board's average tenure of the firm.

1 INTRODUCTION

This research's main objective is to determine the impact and influence of board diversity on energy and mining firms in the emerging countries around South East Asia and their stock price crash risk potential. Apparently, the striking difference between this research and its predecessor is the subject of the research, which is the energy and mining firms in the emerging countries around South East Asia. The energy and mining industry historically has been dominated by men, and one of the variables used for this research is the gender of the board members (Mayes and Pini, 2014). The relation between male-dominated firms and stock price crash risk of the firm in question is one of the benchmarks set for this research in order to determine the impact of the said diversity and the financial performance shown by the firm as the lasting effect of the former.

2 THEORETICAL BACKGROUND AND HYPOTHESIS DEVELOPMENT

Each type of board diversity is categorized into different groups, such as observation attribute and non-observation attribute. Observation attribute is deemed as the visible attribute, and demographic characteristics, such as age, ethnics, race, and gender, are covered. On the other hand, non-observation attribute includes education history, work tenure, professional background, and behavior (Kilduff et al., 2000). Observation attribute is the main focus of a majority of the research studies about board diversity (Erhardt et al., 2003). Non-observation attribute would show the clear differences between each firm in regard to the firm's problem and its interaction style.

The lack of information exchanged between manager and stakeholders would potentially cause significant stock price crash risk. In this kind of situation, the manager has a special authority to control the spread of the information to public. This special authority to control the spread of information to public leads to the possibility of the manager's discretion to hide negative news that is ready to be published at the stock market in order to keep the firm's interests intact (Kothari et al., 2009). However, the manager cannot hide that negative information forever; in the end,

the information would be eventually published. This is one of the reasons behind the significant downturn on the firm's stock price.

Board diversity could very well have an impact on the stock price crash risk potential of a firm. Observation attribute (age and gender) is deemed to reduce the stock price crash risk. This statement is based on past researches that prove the tendency of a diverse board to increase its information efficiency (Gul et al., 2011) and decrease the asymmetric information on the stock market (Abad et al., 2017). Additionally, the board with gender diversity would tend to increase disclosure of stock price informativeness as a transparency tool for the firm. This affects the disclosure and transparency of stock price informativeness to public, which automatically reduces hiding of bad news and stock price crash risk significantly (Kaur and Singh, 2017).

2.1 Hypothesis development

Based on comprehensive facts obtained from a few past researches and the current development of board's diversity and firm's stock price crash risk, the hypothesis for this research was then developed. The first hypothesis is that the board's background diversity has a significant impact on stock price crash risk, and the second hypothesis is that the board's quantity diversity has a significant impact on stock price crash risk.

3 SAMPLE, VARIABLES, AND METHODS

The sample and data tabulated for this research consist of the firm's financial report, corporate governance report, and the historical stock price data of energy and mining firms in the emerging countries in South East Asia during the five-year period, starting from 2015 to 2019. The primary source of data from each firm for this research is compiled from Thomson Reuters. Based on these data, 19 firms from the energy and mining industry in four different emerging countries in South East Asia, namely, Indonesia, Malaysia, Thailand, and Philippines, are selected as the main object and sample of this research.

The dependent variable applied for this research is the representation of firm's stock price crash risk. Stock price crash risk is represented as NSKEW (Negative conditional return skewness) for its math equation (Chen et al., 2001). The equation is as follows:

$$NSKEW_{i,t} = -[n(n-1)^{3/2} \Sigma W_{i,t}^3] / [(n-1)(n-2)(\Sigma W_{i,t}^2)^{3/2}] \quad (1)$$

The independent variable for this research includes a handful of variables that can be used to prove the hypothesis of the research, such as gender of the board, board size, independent board size, and number of board meetings held each year. The regression analysis was basically done to prove the impact of the independent variable on the dependent variable, T. The majority of independent variables for this research have been used before by Yeung and Lento (2018) and Jebran, et. al (2020).

4 METHOD

The data analysis used for this research is based on ordinary least squares (OLS) cross-sectional regression analysis and panel data with the EViews software. The main objective of this regression analysis is to investigate the impact of board diversity of the firm on its stock price crash risk. The movement of stock price on an annual basis for each firm was noted and included in the regression analysis. Historical data of all 19 firms were obtained from investing.com and Yahoo Finance. In addition to that, the independent variable-related data were acquired from Thomson Reuters via the ESG (Environmental Social Governance) report that represents the corporate governance practice run by each firm.

5 EMPIRICAL RESULTS

5.1 Preliminary test

5.1.1 Chow test

The Chow test is a mandatory test to determine the most appropriate model to be used for the research between the common effect model (CEM) and fixed effect model (FEM).

According to the Chow test, the probability of cross-section F from the regression (0.4442) is more than the significance value (5%). This finding indicates the common effect model (CEM) as the most appropriate model to be used for this research over fixed effect model (FEM).

5.1.2 Lagrange multiplier test

The Lagrange multiplier test is a mandatory test to determine the most appropriate model to be used for the research between the common effect model (CEM) and random effect model (REM). According to the Lagrange multiplier test, the probability of one-sided cross-section Breusch Pagan from the regression (0.6084) is more than the significance value (5%). This finding indicates the common effect model (CEM) as the most appropriate model to be used for this research over the fixed effect model (FEM).

5.1.3 Board diversity and stock price crash risk

After selecting the common effect model (CEM) as the main source of regression data, the relation between board diversity and stock price crash risk is deemed ready to be interpreted and further analyzed. The regression result according to CEM is as follows (Table 1).

Table 1. Regression using the Common Effect Model (CEM)

Variable	Coefficient Std.	Error	t-Statistic	Prob.
C	1.4923	1.2045	1.2389	0.2187
GENDER	0.1362	0.1324	1.0287	0.3064
EDUCATION	0.1964	0.0888	2.2114	0.0296
TENURE	-0.5335	0.2666	-2.0013	0.0484
SIZE	-1.0294	0.6320	-1.6288	0.1069
INDEPENDENT	-0.2232	0.4330	-0.5154	0.6076
MEETING	0.2229	0.2939	0.7585	0.4502
R-squared	0.1015			
Prob(F-statistic)	0.1412			

Using the 5% significance value for this research, the regression data given in table 4 are therefore fit enough to be interpreted and analyzed. According to regression result obtained via the common effect model (CEM), the probability (F-statistic) of the regression stands at 0.1412. This value is way higher than the significance value of this research (5%) and indicates the non-significant simultaneous impact of board diversity on the firm's stock price crash risk.

Additionally, the R-squared value from the regression mentioned above also explains the influence of all independent variables combined on the dependent variable. The R-squared value for this research stands at 0.1015, and this means that 10.15% of all possible influences that impacted stock price crash risk originated from all independent variables of this research.

5.2 Hypothesis test

For the first hypothesis, there are two independent variables that exist. These variables are board's education history and work tenure. The regression result indicated the significant impact of board's education background and work tenure on the firm's stock price crash risk. Additionally, a positive

figure on education's coefficient means that the impact of improvement board's education quality would increase firm's stock price crash risk, while the coefficient of board's work tenure shows that a more experienced group of board would decrease the firm's stock price crash risk altogether.

The second hypothesis focuses on board's quantity diversity, such as board's gender, size, independent board size, and amount of board meetings. All four variables possess identical numbers on its regression probability. These variables' probability suggests that the board's quantity diversity does not significantly impact firm's stock price crash risk.

6 CONCLUSIONS

The result of this research concludes that board diversity simultaneously does not influence the stock price crash risk. Significantly, the influence of the independent variable on the dependent variable was found only for the quality of board's education background and board's average tenure of the firm. The findings prove that the increasing quality of board's education background tends to increase the firm's stock price crash risk, while a more experienced group of board is likely to decrease the potential stock price crash risk of a firm. However, the board's quantity diversity is deemed not to have a significant impact on the firm's stock price crash risk, and the board diversity has nearly non-existent influence on stock price crash risk.

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