“The impact of the supervisory board on bond ratings of non-financial companies”

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THE IMPACT OF THE SUPERVISORY BOARD ON BOND RATINGS OF NON-FINANCIAL COMPANIES

Abstract

Issuing bonds is one of the alternative ways for non-financial companies to get money from the public besides borrowing money from banks. Compared with getting money banks, obtaining money from the bond market is slightly economical because the companies are not essential to borne the intermediation cost anymore. As a consequence, the companies in the bond market will get the assessment from the appointed agency. Furthermore, the rating of bonds will determine their reputation.

Mentioning the literature review, the bond ratings are affected by the features of the supervisory board: size, independence, and audit committee. Therefore, this research intends to attain two goals. Firstly, it aims to prove and analyze the impact of the supervisory board size and independence, as well as the audit committee size on the company's possibility to get a high bond rating with profitability as the control variable. Secondly, it intends to know the accuracy rate of grouping the company bond ratings through the classification matrix.

The population originates from the non-financial companies. The total samples are determined by the Slovin formula with a boundary of the fault of 10%. Based on this formula, the total samples are 36 companies. Furthermore, they are randomly grabbed from the population. The ordered probit regression model and the classification matrix are utilized to analyze the data.

Based on the data analysis, this research finds out that the supervisory board size and independence, the audit committee size, and profitability positively affect the bond ratings. It means that the number of the commissioner board and the members of the audit committee have to be added until achieving the maximum level to monitor the performance of the directors so that the company can reach a high bond rating. To sum up, board governance is effective in improving the company's bond rating.

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INTRODUCTION

The assets are the resource of the firm to generate cash flow (Brealey, Myers, & Allen, 2006). They must be fixed assets because they can create profits (Gitman & Zutter, 2012) to the shareholders as the firm owners (Ehrhardt & Brigham, 2012). The determination of these types of fixed assets that companies invest and the ways to get profits becomes the responsibility of the financial managers (Brealey et al., 2006). To obtain it, they have to seek for an inexpensive source of funds at the convinced risk (Hanafi, 2017).

According to the pecking order theory, as disclosed by Brealey et al. (2006), using the debt is the second sequence if the retained earnings of the firms are not adequate to finance the available projects. The source of debt can be from a bank and a capital market. If the firms choose the loans from the bank, they have to endure the intermediary cost (the difference in the lending rate and the deposit rate), which is more expensive than the issuing bonds in the capital market. On the other hand, if they issue bonds, they do not pay this intermediary cost (Husnan, 2009). The firms deciding to issue bonds are mandatory to be monitored and evaluated by the government-appointed rating agencies (Hartono, 2017), such as KASNIC Credit Rating and PEFINDO in Indonesia (Marfuah & Endaryati, 2016).

From previous literature, firm governance is vital to raise the bond rating. The mechanism of this governance covers the role of the supervisory board reflected by its size (Setyaningrum, 2005; Aman & Nguyen, 2013; Altwijry, 2015; Zemzem & Zouhari, 2016; Elhaj, Muhamed, & Ramli, 2017), its independence (Bhojraj & Sengupta, 2003; Ashbaugh-Skaifea, Collins, & LaFond, 2006; Grassa, 2016; Marfuah & Endaryati, 2016; Mariana, 2016), and the presence of individuals becoming the audit committee (Setyaningrum, 2005; Syakhroza, 2005; Rianingsih, 2009; Marfuah & Endaryati, 2016).

Unfortunately, the results of previous research related to the impact of board size on the bond rating are still arguable. For example, Setyaningrum (2005), Aman and Nguyen (2013), Elhaj et al. (2017) find a positive impact. On the other hand, Altwijry (2015), Zemzem and Zouhari (2016) discover a negative. Meanwhile, Sareen and Vij (2015), Grassa (2016), Marfuah and Endaryati (2016), as well as Mariana (2016) fail to prove this impact.

The impact of supervisory board independence on bond rating also shows similar results. The results of this impact can be positive (Bhojraj & Sengupta, 2003; Ashbaugh-Skaifea et al., 2006; Grassa, 2016), negative (Marfuah & Endaryati, 2016; Mariana, 2016). Meanwhile, Aman and Nguyen (2013), Sunarjanto and Tulasi (2015), Altwijry (2015), Zemzem and Zouhari (2016), Elhaj et al. (2017) are not successful to show this impact.

The contradictory impacts of committee audit size on the bond rating also still exist. This condition stands for the research illustrating a positive impact (Setyaningrum, 2005; Rianingsih, 2009; Marfuah & Endaryati, 2016) and the absent impact (Sareen & Vij, 2015; Mariana, 2016).

Because the previous research evidence does not yield the consensus yet, the research with the probit regression model is essential to do. The use of this model because of the ability to estimate the regression coefficients (Widarjono, 2013) and to get the accuracy rate of grouping the bond ratings through the classification matrix (Gray, Mirkovic, & Ragunathan, 2006). Hence, this study intends to examine and analyze the impact of supervisory board size and independence, audit committee size on company possibility to get a high bond rating, and know the accuracy rate of categorizing the bond rating through the classification matrix.

1. LITERATURE REVIEW

The company with good governance can assure the return of the invested money to their providers (Shleifer & Vishny, 1997): dividends to shareholders (Mitton, 2004), interest and principal to banks (Gitman & Zutter, 2012), coupon and the principal to bondholders (Tandelilin, 2010). To implement good governance, the company issuing the bonds needs to control top management (Abor, 2007) by appointing the supervisory board (Tjager, Alijoyo, Djemat, & Soembodo, 2003). The following section discusses the role of the supervisory board and its components with the bond rating.

Indonesia adopts the dual board system. As a consequence, the commissioner board and director board exist in the companies (Tjager, Alijoyo, Djemat, & Soembodo, 2003). In Indonesia, the board of commissioners and directors is appointed based on the decision of the general meeting of shareholders (Syakhroza, 2005). Furthermore, the board of commissioners supervises the board of directors (Sukamulja, 2004). The effectiveness of the supervisory board depends on the number. The resource dependence theory argues that a large number of the supervisory board consisting of many experts is needed to give advice to the board of directors to improve the company's per-

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formance (Pfeffer, 1972). According to the study of Setyaningrum (2005), Aman and Nguyen (2013), Elhaj, Muhamed, and Ramli (2017), this condition will make the company to get a high bond rating status. Based on this information, the first research hypothesis is as follows:

H1: *The supervisory board`s size has a positive impact on the company's possibility to get a high bond rating.*

The presence of individuals becoming the independent supervisory board uses to create the virtuous monitoring of the board of directors (Bhojraj & Sengupta, 2003). Through it, directors are prevented from investing the money from the issued bonds on hazardous projects that the controlling shareholders like (Easterbrook, 1984) or distribute the cash from the issued bonds as dividends to the firm shareholders (Kalay, 1982). If this prevention is successful, the risk of outstanding bonds will decline so that the firm bond rating status will improve as Bhojraj and Sengupta (2003), Ashbaugh-Skaifea, Collins, and LaFond (2006), and Grassa (2016) declare. According to this information, the second research hypothesis is as follows:

H2: *The independence of the supervisory board has a positive impact on the company's possibility to get a high bond rating.*

An audit committee is made by the supervisory board to ensure that board directors already implement the transparency and disclosure principle consistently (Tjager et al., 2003). Two principles intended are related to the accuracy of financial information delivered to its users. If this committee can function properly, the deduction of the opportunistic behavior of the board of directors happens (Ashbaugh-Skaifea et al., 2006). After that, the quality of financial statement reporting increases; hence, the issuers of bonds will have a low default risk and the improvement of their rating status (Setyaningrum, 2005; Ashbaugh-Skaifea et al., 2006). The effectiveness of the audit committee to do this function depends on the number of individuals in this position (Setyaningrum, 2005). The research of Setyaningrum (2005), Rianingsih (2009), and Marfuah and Endaryati (2016) affirms that the bigger the number of individuals in the audit committee, the better the bond rating status. According to this information, the third research hypothesis is as follows:

H3: *Audit committee`s size has a positive impact on the company's possibility to get a high bond rating.*

Following Setyaningrum (2005), Ashbaugh-Skaifea et al. (2006), Rianingsih (2009), Aman and Nguyen (2013), Zemzem and Zouhari (2016), Elhaj et al. (2017), the position of profitability in this research is as the control variable. Profitability is the ability of the company to sustain its business continually. For bond issuers, this ability will reduce its default risk and upgrade their rating (Purwaningsih, 2008). The study of Setyangrium (2005), Ashbaugh-Skaifea et al. (2006), Purwaningsih (2008), Hadianto and Wijaya (2010), Aman and Nguyen (2013), and Sunarjanto and Tulasi (2013) confirms. According to this information, the fourth research hypothesis is as follows:

H4: *Profitability has a positive impact on the company's possibility to get a high bond rating.*

2. RESEARCH METHOD

The population of this research is the non-financial companies issuing the bonds until June 2018 with a total of 56. Since one company does not have a rating, it is removed from the population so that the relevant population (N) consists of 55. To get the representative total samples (n), the formula of Slovin with the boundary of the fault of 10% is used. By using it, the number of samples (n) is

$$\frac{N}{1+Ne^2}=\frac{55}{1+55(10\%)^2}=35.5\approx 36.$$

Furthermore, 36 companies are grabbed from the population by the simple random sampling method, and their names are presented in Appendix A. To get the information about them, the data are collected by the archival method. According to Hartono (2012), this method gathers secondary data. The data intended, moreover, come from the Indonesia Bond Market Directory (IBMD) 2018–2019.

Variable is the concept that has a variety of values (Sugiyono, 2012). The definition of this research variable is in Table 1.

Table 1. Description to measure research variables

Variables	Description	Scale
The company's bond rating (*BR*)	The bond rating of the company in July 2018. Point 5 is for the company with grades *AAA* and *AAA*. Point 4 is for the company with grades AA^+, *AA*, and AA^-. Point 3 is for the company with grades A^+, *A*, and A^-. Point 2 is for the company with grades BBB^+, *BBB*, and BBB^-. Point 1 is for the company with grades BB^+, *BB*, and BB^-. Point 0 is for the company with grades C and D	Ordinal
Supervisory board's size (*SBS*)	The number of board commissioners (*NBC*) at the end of 2017	Ratio
Supervisory board's independence (*SBI*)	The number of people becoming the audit committee at the end of 2017	Ratio
Audit committee size (*ACS*)	The number of people becoming the audit committee at the end of 2017	Ratio
Profitability (*ROA*)	Return on assets (*ROA*) at the end of 2017. The use of ROA follows the study by Setyaningrum (2005), Ashbaugh-Skaifea et al. (2006), Hadianto & Wijaya (2010), as well as Elhaj et al. (2017)	Ratio

The variables related-data are analyzed by the ordered probit regression model. This model adopts the maximum likelihood technique to create the coefficients of regression (Ronning & Kukuk, 1996) that make the highest probability of the outcome variable incidence (Widarjono, 2013). In addition, the regression model intended is in the first equation:

$$BR_i^* = \beta_0 + \beta_1 SBS_i + \beta_2 SBI_i + \\ + \beta_3 ACS_i + \beta_4 ROA_i + \varepsilon_i. \tag{1}$$

In this model, the association between the unobserved BR^* and the observed BR is displayed in the second equation:

$$BR = \begin{cases} 0 \text{ if } BR^* \le \mu_1 \\ 1 \text{ if } \mu_1 < BR^* \le \mu_2 \\ 2 \text{ if } \mu_2 < BR^* \le \mu_3 \\ 3 \text{ if } \mu_3 < BR^* \le \mu_4 \\ 4 \text{ if } \mu_4 > BR^* \end{cases}. \tag{2}$$

Parameter μ shows the limit point to determine the area of the bond ratings. If BR is equal to 0 and 1, the companies having grade C and D is lower than μ_1 and companies having grade BBB^-, BBB, and BBB^+ is between μ_1 and μ_2, and so on.

Furthermore, the data are analyzed by the classification matrix to get the accuracy rate of categorizing all firm bond ratings (Gray et al., 2006). Mentioning Ghozali (2016), the accuracy rate is calculated by dividing the number of the correct prediction of the firm bond ratings with the number of the actual firm bond ratings.

3. RESULTS AND DISCUSSION

Table 2 demonstrates the number of companies based on the group of bond ratings. Overall, 94.4% of the companies becoming the samples dominantly own the investment grade (BBB^- until *AAA*). Only 33.3% of companies with grade A^+, *A*, and A^- have the largest domination. Conversely, the smallest one comes from the companies with grade D and C (5.6%).

Table 2. Number of the companies based on the group of bond ratings

Source: Modified output of EViews 6.

Bond-rating	The code of bond rating	Actual observation	Valid Percent	Cumulative Percent
D, C	0	2	5.6	5.6
BBB^+, *BBB*, BBB^-	2	5	13.9	19.4
A^+, *A*, A^-	3	12	33.3	52.8
AA^+, *AA*, *AA*	4	11	30.6	83.3
AAA, AAA^-	5	6	16.7	100.0
Total		36	–	100.0

Table 3 displays the descriptive statistics for supervisory board size (*SBS*), supervisory board independence (*SBI*), audit committee size (*ACS*), and profitability (*ROA*). The explanation is as follows:

a) for *SBS*, the number range of people becoming the board of commissioners is between 2 and 10, with a mean of 5.4167 and a standard deviation of 1.90301;

b) for *SBI*, the range value of the independent commissioner's board ratio is between 0.14 and 0.60, with a mean of 0.3720 and a standard deviation of 0.1100;

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c) for *ACS*, the number range of people appointed as an audit committee is between 2 and 6, with a mean of 3.3611 and the standard deviation of 0.83333;

d) for profitability, the range value of *ROA* is between –24.48% and 16.48%, with a mean of 3.0269% and a standard deviation of 0.6432.

Table 3. Descriptive statistics of *SBS*, *SBI*, *ACS*, and *ROA*

Source: Output of IBM SPSS 20.

Variables	N	Min	Max	Mean	Std. deviation
SBS	36	2.00	10.00	5.4167	1.90301
SBI	36	0.14	0.60	0.3720	0.11000
ACS	36	2.00	6.00	3.3611	0.83333
ROA	36	–24.48	16.48	3.0269	6.43295

The maximum likelihood technique makes the standard errors of the ordered probit regression model to follow the normal distribution. Therefore, the normality of standardized errors has to prove by using the statistical test of the Jarque-Bera (JB) (Widarjono, 2013). Figure 1 exhibits the normality test result. In this figure, the probability value of the Chi-square of the JB statistic is 0.627967. Since this value exceeds the 5% significance value, the null hypothesis declaring that errors follow the normal distribution is not rejected and this accomplishes the requirement of this model.

After the normality condition is reached, estimating the coefficients of the ordered probit regression model is the following stage. Moreover, the estimation result is in Table 4.

Table 4. Estimation result of the ordered probit regression model: the impact of supervisory board size and independence, audit committee size, and profitability on bond rating

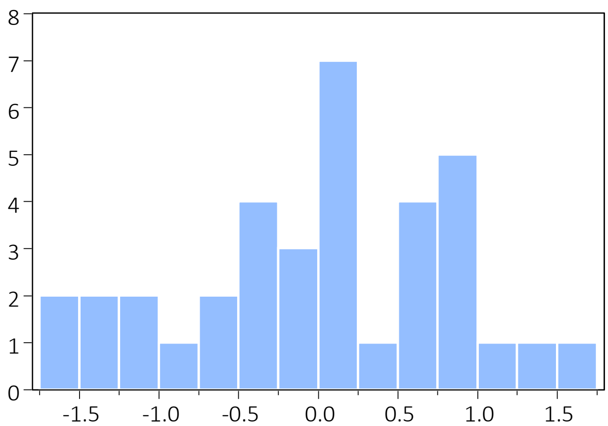
Source: Output of EViews 6.

Variables	Coefficient	Std. error	*z*-statistic	Prob.
SBS	0.541194	0.154466	3.503642	0.0005
SBI	5.493061	2.233809	2.459056	0.0139
ACS	1.415013	0.458790	3.084229	0.0020
ROA	0.319446	0.081273	3.930522	0.0001
Limit points				
LIMIT_2:C(5)	6.454418	2.088065	3.091100	0.0020
LIMIT_3:C(6)	8.869111	2.293683	3.866755	0.0001
LIMIT_4:C(7)	10.75079	2.451098	4.386113	0.0000
LIMIT_5:C(8)	12.77300	2.778341	4.597348	0.0000
Pseudo *R*-squared	0.464717	Akaike info criterion		2.009460
Schwarz criterion	2.361354	Log-likelihood		–28.17029
Hannan-Quinn criteria	2.132281	Restr. log-likelihood		–52.62691
LR statistic	48.91325	Avg. log-likelihood		–0.782508
Prob(LR statistic)	0.000000	–	–	–

To test the null hypothesis, we compare each probability value of the *Z*-statistic of the regression coefficient of *SBS*, *SBI*, and *ACS*, and *ROA* with a 5% significance value. If the probability value is lower than a 5% significance value, the null hypothesis is rejected. Instead, the alternative hypothesis is acknowledged.

In the statistical test, each research hypothesis in section 2, furthermore, will become an alternative hypothesis. From Table 4, the probability value of *Z*-statistic standing for *SBS*, *SBI*, *ACS*, and *ROA* is 0.0005, 0.0139, 0.0020, and 0.0001, respectively and each regression coefficient shows a positive

Source: Output of EViews 6.



Series: Standardized Residuals
Sample 136
Observations 36

Mean	3.92e-10
Median	0.034948
Maximum	1.614894
Minimum	-1.692246
Std. Dev.	0.835767
Skewness	-0.263258
Kurtosis	2.414221
Jarque-Bera	0.930534
Probability	0.627967

Figure 1. The normality test result on residuals

sign. This condition means research hypotheses one, two, three, and four are not rejected.

The test outcome of the first hypothesis pronounces that the supervisory board size has a positive impact on the company's possibility to get a high bond rating. This outcome confirms the resource dependence theory stating the big number of this board is needed to improve the performance of the company issuing the bonds so that its rating can go up. This positive impact verifies the research of Setyaningrum (2005), Aman and Nguyen (2013), Elhaj et al. (2017).

The test outcome of the second hypothesis pronounces that the supervisory board's independence has a positive impact on the company's possibility to get a high bond rating. The independent members of this board are important to protect the interest of bondholders by prohibiting the board directors to utilize money from the issued bond to be invested in the risky projects and paid as dividends. This positive impact verifies the research of Bhojraj and Sengupta (2003), Ashbaugh-Skaifea et al. (2006), Grassa (2016).

The test outcome of the third hypothesis pronounces that the audit committee size has a positive impact on the company's possibility to get a high bond rating. By having many individuals in this position, the power of this committee becomes stronger to prevent the opportunistic actions of board directors. As a consequence, they improve the quality of financial reporting leading to an increase in bond rating status. This positive impact verifies the research of Setyaningrum (2005), Rianingsih (2009), Marfuah and Endaryati (2016).

The test outcome of the fourth hypothesis pronounces that profitability has a positive impact on the company's possibility to get a high bond rating. It means that only companies with profits that can pay coupons for bondholders are needed to get a high grade of bond rating. Conversely, the companies with loss are assumed in financial distress and bankruptcy and get a speculative grade. This positive impact verifies the research of Setyangrium (2005), Ashbaugh-Skaifea et al. (2006), Purwaningsih (2008), Hadianto and Wijaya (2010), Aman and Nguyen (2013), and Sunarjanto and Tulasi (2013).

Ideally, to make this quantitative research have a high external validity, the sample selection is needed to create the generalization (Hartono, 2012). To realize it, the samples have to be randomly grabbed from the population (Sugiyono, 2012). This research already meets this required condition because of the use of the simple random sampling method. Therefore, the utilization of 36 companies as the sample is totally sufficient.

To answer the second purpose of this study, the classification matrix of the ordered probit is used. This matrix, according to Gray et al. (2006), has the function to measure the accuracy rate of grouping the ratings based on the explanatory variables used. Based on the matrix presented in Table 5, the accuracy rate is 58.333%. This rate is low and reasonable because this research focuses on theory testing and does not aim to make the prediction model that requires a high accuracy rate.

To get a high bond rating, the controlling shareholders are expected to increase the number of the supervisory board. The next question that may arise is the ideal maximum number of CB. To answer it, the research suggests that firms should have the number of CB in between 5 (rounded) as the average value and 10 as the maximum value (see Table 3).

Table 5. The accuracy of grouping bond rating based on SBS, SBI, ACS, and ROA

Source: Modified output of EViews 6.0.

Bond-rating	The code of bond rating	Actual observation	Prediction result		% correct	% incorrect
			Correct	Incorrect		
D, C	0	2	2	0	100.000	0.000
BBB⁺, BBB, BBB⁻	2	5	3	2	60.000	40.000
A⁺, A, A⁻	3	12	7	5	58.333	41.667
AA⁺, AA, AA⁻	4	11	6	5	54.545	45.455
AAA, AAA⁻	5	6	3	3	50.000	50.000
Total		36	21	15	58.333	41.667

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Regarding the bond rating being positively affected by the number of supervisory board and audit committee as well as the independent supervisory board, the investors who are interested in the bonds with low default risk are expected to choose the issuers having many independent supervisory and audit committee board members because they are effective to monitor the board of directors.

CONCLUSION

This research aims to prove and analyze the impact of supervisory board size and independence, as well as audit committee size on company possibility to get a high bond rating with profitability as the control variable and know the accuracy rate of grouping the firm bond ratings based on the explanatory variables used. Using 36 companies as samples, this research infers that supervisory board size and independence, audit committee size, and profitability have a positive impact on the company's possibility to get a high bond rating. It means that the monitoring of the supervisory board can improve the bond rating of companies when the board of directors can generate profits. In addition, the accuracy rate of grouping the bond rating is 58.333%.

This research owns some limitations. Firstly, the accuracy rate of grouping the bond rating is as high as 58.333%. It is due to the use of three main explanatory features of board governance. To make this rate increase, the next researchers are suggested adding the corporate governance index, institutional and managerial ownership, board duality, audit quality as the other main explanatory variables. Also, they are recommended using more other control variables, such as liquidity, leverage, size, interest coverage ratio.

Secondly, it only utilizes bond ratings resulted from PEFINDO, the domestic agency in Indonesia. As a consequence, it is impossible to compare the firm bond ratings in Indonesia with those of other countries in Southeast Asia. To compare the ratings among the countries, the next researchers are expected to search the same international agency assessing bond ratings. After that, they can use the countries as the moderating variable so that the theory related to bond rating determinant can be developed.

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APPENDIX A

Table A1. Names of the companies as the samples

Source: Reprocessed from IBMD 2018–2019.

No.	Code	Names of the firms
1	ADHI	PT Adhi Karya (Persero) Tbk.
2	AGII	PT Aneka Gas Industri Tbk.
3	AISA	PT Tiga Pilar Sejahtera Food Tbk
4	AKRA	PT AKR Corporindo Tbk.
5	AMRT	PT Sumber Alfaria Trijaya Tbk.
6	CTRR	PT Ciputra Residence
7	DILD	PT Intiland Development Tbk.
8	EXCL	PT XL Axiata Tbk.
9	FAST	PT Fast Food Indonesia Tbk.
10	GIAA	PT Garuda Indonesia (Persero) Tbk.
11	GWSA	PT Greenwood Sejahtera Tbk.
12	IMPC	PT Impack Pratama Industri Tbk.
13	INDF	PT Indofood Sukses Makmur Tbk.
14	ISAT	PT Indosat Tbk.
15	JPFA	PT Japfa Comfeed Indonesia Tbk.
16	JSMR	PT Jasa Marga (Persero) Tbk.
17	KAII	PT Kereta Api Indonesia (Persero)
18	LTLS	PT Lautan Luas Tbk.
19	MAPI	PT Mitra Adiperkasa Tbk.
20	MDLN	PT Modernland Realty Tbk.
21	MEDC	PT Medco Energi Internasional Tbk.
22	PANR	PT Panorama Sentrawisata Tbk.
23	PIGN	PT Pelabuhan Indonesia I (Persero)
24	PIHC	PT Pupuk Indonesia (Persero)
25	PJAA	PT Pembangunan Jaya Ancol Tbk.
26	PPLN	PT Perusahaan Listrik Negara (Persero)
27	PPNX	PT Perkebunan Nusantara X
28	PPRO	PT PP Properti Tbk.
29	SMAR	PT Sinar Mas Agro Resources And Technology (Smart) Tbk.
30	SMGR	PT Semen Indonesia (Persero) Tbk.
31	SMRA	PT Summarecon Agung Tbk.
32	STTP	PT Siantar Top Tbk.
33	TAXI	PT Express Transindo Utama Tbk.
34	TBIG	PT Tower Bersama Infrastructure Tbk.
35	TINS	PT Timah Tbk.
36	TLKM	PT Telkomunikasi Indonesia (Persero) Tbk.