

ADVERSE SELECTION IN BID ASK SPREAD FOR INDONESIAN BLUE CHIP STOCKS

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ABSTRACT

The objectives of this study were to observe the relationship among adverse selection, corporate governance, and ownership pattern in Indonesia. There are several conclusions that can be taken from the result. First, adverse selection exists in Indonesian companies. Second, corporate governance may not affect adverse selection. Third, the pattern of ownership may not affect adverse selection. These conclusions show that it is wiser for investors not to use only corporate governance or ownership pattern for investment decisions in Indonesia.

Keywords: adverse selection, corporate governance, ownership patter, bid and ask prices, OLS, GARCH

INTRODUCTION

The 2008 United States subprime crisis had brought the world's economy to a downfall. The crisis had caused prices of commodities and services to decrease significantly, resulting in massive unemployment, lowered gross domestic product, lowered return, and several other economic problems. Other than that, the fall of large financial companies was accompanied by the fall of other companies in different industrial sectors, which then led the economy to a worse condition.

Investors all around the world suffered losses from their investments because almost all of their investments are also affected by the crisis. Investors slowly lose their confidence and trust in the companies they invested in as the crisis had brought even big companies to collapse. The crisis in 2008 made investors to be more aware and picky in making their investment decisions, especially for the investments in stock exchange. Investors started to study more about the companies they are interested in before making their investments. One of the key factors that can help investors in their investment decision is the level of corporate governance of the companies as it might help investors to know the degree of adverse selection between both buyers and sellers in the stock exchange.

Since corporate governance is one of the ways for investors to identify which companies are putting their shareholders interest as their priority, international investors who do not understand the Indonesian stock exchange market would think that all Indonesian companies are not a wise investment. Therefore, companies with a poor corporate governance system with high returns would not be able to capture investors' interest and would not be able to receive

funds from outside parties. Investors would also miss the chance of having a high return as a result of the asymmetric information that exists in the market.

One of the problem of adverse selection is that existing businesses might go out of business because investors in the stock exchange might fail in seeking out the true potential of the business when they look at the corporate governance of the company. Corporate governance is the ways in which companies are directed and controlled. However, an Indonesian company might yield a high return for the investors despite having a bad corporate governance. A bad corporate governance might not mean a high level of adverse selection. Therefore, investors who are interested in investing in the Indonesian stock exchange should study more about the economic condition of the related country and also about the companies they are interested in.

In this research, it is aimed to test whether there is adverse selection in the Indonesian blue chip stocks. As when adverse selection exists, the dealer would suffer losses. It would also be impossible for the dealer to never suffer losses, as there would always be one investor who is more informed than the others. Knowing the characteristics of Indonesia, a country in the emerging market category, we could assume that families of the owners and the owners of the company themselves, would hold more private information than the investors in the market.

This research uses trading data and corporate governance index of 58 Indonesian companies that are listed in the Indonesian Stock Exchange. 45 of the 58 companies used are included in the LQ45. The data taken would start from 4 January 2010 to 30 December 2010. However, the data range would not be fixed, as there would be some companies that had just started to go public in the year 2010.

Table 1. List of Companies

Sampoerna Agro Tbk	Unilever	Astra Graphia
Elnusa Tbk	Bumi Serpong Damai	Perusahaan Gas Negara
Intaco Penta Tbk	Semen Gresik	PT Timah
Hotel Sahid Jaya Int'l Tbk	Bumi Resources	Barito Pacific
Bakrie & Brothers	Bank Tabungan Negara	Indosat
Wijaya Karya Tbk	Aneka Tambang	BNI 46
Alam Sutera Realty Tbk	Bank Central Asia	Indofood
Benaket Petroleum Energy Tbk	Bank Danamon	Panin Bank
Millenium Pharmacon International Tbk	Gudang Garam	Energi Mega Persada Tbk
London Sumatera Tbk	Bukit Asam	Indocement Tunggul Prakarsa
International Nickel	United Tractor	OCBC NISP

Indonesia		
Astra International	Bakrie Telecom	Adira Finance
Bakrie Land Development	Berlian Laju Tanker	
Indika Energy	Adaro Energy Tbk	
Bisi International	Bank Mandiri	
Bakrie Sumatera Plantation	Bank Rakyat Indonesia	
Hexindo Adi Perkasa	CIMB Niaga	
Indo Tambangraya Megah	Global Mediacom	
Jasa Marga	Kalbe Farma	
Medco Energy International	Lippo Karawaci Tbk	
Truba Alam Manunggal Engineering Tbk	Holcim Indonesia Tbk	
Delta Dunia Makmur Tbk	Darma Henwa	
Telekomunikasi Indonesia	Astra Agro Lestari	

NUSANTARA LITERATURE REVIEW

According to Michael S. Gibson (2003), companies in emerging markets with large domestic shareholders would have less CEO turnover than those companies that are mainly held by foreign shareholders. He also mentioned that the firms in emerging markets might only prioritize the majority shareholders than the other small shareholders. When this happen, asymmetric information may exists, leading to adverse selection in the market of the stocks. The shareholders who are holding a large portion of the shares might have more information than the investors in the market and even the smaller shareholders.

Thomas E. Copeland and Dan Galai (1983) stated that dealers usually acquire shares when prices fall and sell it when the prices rise. The inventory days would also automatically increase when the price is declining, and decrease when the price is rising. Therefore, when informed traders are present in the market, dealers would never be able to gain profit.

Charlie Charoenwong, David K.Ding, and Vasan Siraprasasiri (2011) did a research on the effect of Singaporean firms' corporate governance on the adverse selection component of its stock. Charoenwong, Ding, and Siraprasasiri used 42 Singaporean firms of which 37 firms were listed on the SGX. The data used consist of trade sizes, share prices, the best bid-ask prices, and the trade sizes posted throughout each trading day.

The paper written by Charoenwong, Ding, and Siraprasasiri uses two methodologies from Lin et al. and Huang and Stoll in order to classify the

components of the bid-ask spread. The study uses the two methods to find out more accurately about the components of the bid-ask spread of the stocks. By using these two methods, the three researchers were able to differentiate the adverse selection, inventory holding, and the order processing cost of the stocks they are researching.

In the paper that Charoenwong, Ding, and Siraprapasiri wrote, results from the study performed by Credit Lyonnais Securities Asia (CLSA) were used as a measure of corporate governance. CLSA conducted a research to calculate the corporate governance index of companies in markets all around the world. The calculation was done by handing out questionnaires to different analysts who will then assess the corporate governance of the company they cover. The answer of the questionnaires would be a choice between yes or no, and a yes would mean 1, and a no would mean 0. The numbers would then be calculated according to the weight of the categories.

Charoenwong, Ding, and Siraprapasiri concluded the paper by saying that a firm's corporate governance affects the adverse selection component of its stock. The research also proves that higher quality corporate governance would lower the adverse selection component. This relationship works both ways. In order to lower the level of adverse selection, a company should reveal more information into financial statements and improve the accounting standards of the company. However, a good corporate governance can only lowers the cost of adverse selection and not the cost of capital.

DATA AND METHODOLOGY

In this research, the writer will use the daily bid and ask price, and the price of the stocks of the 58 Indonesian companies chosen to find several variables. The variables that can be found from the data listed before are the signed effective half-spread, and also the quote midpoint. The data taken would start from 4 January 2010 to 30 December 2010. However, the data range would not be fixed, as there would be some companies that had just started to go public in the year 2010.

The report would also use the corporate governance index of the 58 companies chosen. The corporate governance index used would also be taken from the year 2010. However, the corporate governance index used would be a yearly data. The index would be able to help the researcher to learn about the level of corporate governance of the companies.

The main model that would be used in the research is taken from the research that is done by Charlie Charoenwong, David K. Ding, and Vasan Siraprapasiri (2011). These researchers used the methodology that Lin et al. (1995) founded in order to estimate the empirical components of the bid-ask spread. The methodology uses ordinary least square in getting results. However, the writer might need to use the GARCH method in order to be able to attain the optimum result.

The other variable, which is the corporate governance index, is already calculated by the IICD, an institution that specialized in measuring the corporate governance index of a company. The parameters used in measuring the corporate governance index are the right of the shareholders, the equitable treatment of shareholders, the role of stakeholders, disclosure and transparency, and also the responsibility of the board.

The model that Lin et al. founded would be used to capture the components of the bid-ask spread of Indonesian companies. The model would need the signed effective half-spread, the transaction price, and also the quote midpoint. The signed effective half spread would allow us to know whether the transaction is buyer initiated or seller initiated. A negative value of the signed effective half spread would mean it is seller initiated, and a positive value would mean it is buyer initiated. The main model would look like this:

$$M_{t+1} - M_t = \lambda Z_t + e_{t+1} \quad (3.1)$$

Where M_{t+1} is the midpoint of bid and ask price from the following period; M_t is the midpoint of bid and ask price; Z_t is the transaction price minus the quote midpoint (M_t); and e_{t+1} would be the Error or disturbance term from following period. The Z_t is also known as the signed effective half-spread, and from the variable Z_t , we can also see whether the transaction is seller initiated or buyer initiated (Lin et al., 1995).

The research used one methodology. The data would be regressed using either by using ordinary least square (OLS) or Generalized Auto Regressive Conditional Heteroscedasticity (GARCH).

EMPIRICAL RESULT

Descriptive Statistic

From the overall descriptive statistics for the variable delta m, ASII has the largest standard deviation, and BTEL has the lowest standard deviation value out of the 58 companies. A lot of the companies have data distributions that are positively skewed, and there is only one type of kurtosis for delta m, which is leptokurtic. The descriptive statistics for the variable delta m can be seen in table 2.

Different with the variable delta m, for the descriptive statistics of variable z, the highest standard deviation is from NISP and the lowest value of standard deviation is from BIPI. The rest of the descriptive statistics are almost similar with delta m. The difference is that for variable z, there are two types of kurtosis in the data distributions, which are leptokurtic and platykurtic. The descriptive statistics for the variable z can be seen in table 3.

Results

The main model requires the regression to be done in Ordinary Least Square (OLS). However, there might be some data that cannot be regressed using OLS. These data would then be regressed using the Generalized Autoregressive Conditional Heteroscedasticity (GARCH). GARCH can be used when ARCH effect exists in the data. Therefore, all the data that would be regressed needs to be checked with ARCH test before going through regression.

From the 58 companies chosen for the research, there were 36 companies that are regressed using GARCH. The rest of the companies, which are 22 companies, were then regressed using OLS. The results show that there are 19 companies that are proven significant in having adverse selection.

As we can see from table 4, there are 19 regressions that are significant. These significance leads to a conclusion that these 19 companies have adverse selection. The highlighted results are the results that are proven to be significant in the 5% level. The highlighted results are divided into two types, the red and

the blue one. The results that are highlighted in red are the results that have negative values for the adverse selection component. On the other hand, the results that are highlighted in blue color are the results that are proven to be significant and have positive values. The explanation of these two types of result can be found in the following paragraph. There are several companies that have a negative adverse selection; these companies are the included in the first result type, which is highlighted in red. Logically, it is impossible for adverse selection to be negative, as there would always be at least one individual that is better informed than the others. The negative value of adverse selection might mean that the regression model had failed to capture the components of the bid ask spread in the related companies.

The second type of results is companies that are highlighted in blue. The positive values of adverse selection speak for itself. This value is the amount of the adverse selection that exists in the company's bid and ask spread. Since the model divides the bid and ask spread into two components, by knowing the amount of adverse selection in the bid and ask spread we would automatically know the amount of the other component, which is the order processing cost. In order to calculate the order processing cost we can subtract one by the adverse selection value.

The order processing costs are costs that occurred when an ordered is processed. The higher the adverse selection is, the lower the order processing cost will be. This opposite relationship can be explained by the fact that when an individual is better informed than the others, he or she would not need to pay for any more information. This individual is one step ahead of the other uninformed traders who rely on dealers for information. In other words, when uninformed traders trade, they would need to pay for the information received from the dealers. The interpretation above proves to us that adverse selection does exist in Indonesian companies. Therefore, the first hypothesis of the research cannot be rejected.

There are several important points that can be obtained from the regression results. The first point is that the corporate governance index does not affect the adverse selection. The table above is sorted from the company with highest corporate governance index to the company with the lowest corporate governance index. The table is organized specially in that manner in order for the reader to be able to compare and distinguish the relationship between the adverse selection and the corporate governance.

As we can see from the table, companies with adverse selection do not necessarily have a low corporate governance index. A company with a high corporate governance index might have adverse selection and on the other hand, a company with a lower corporate governance index might not have any adverse selection. BNI 46 is one of the companies that have a high adverse selection component in its bid and ask spread. Logically, a company with high adverse selection should have a low corporate governance index. However, the table above tells us a different story. The corporate governance index of BNI 46 is 85.09%, which can already be categorized as high. We can see from the result that the companies with adverse selection are randomly spread throughout the corporate governance index ranking.

From the 19 companies that have a significant regression, only 13 is able to give us the information about the adverse selection and the order processing cost. The company with the highest adverse selection is CIMB Niaga. However,

the adverse selection value is over one. In reality, the adverse selection should be between zero and one. This high value of adverse selection might be another weakness of the model. The data used for CIMB Niaga might not be suitable for the model or, the data used contains other components of the bid and ask spread that cannot be explained by the model. Nevertheless, the high value of adverse selection for CIMB Niaga would still proof that adverse selection do exists in the company.

The table above also tells us the majority shareholder of the companies. In order to analyze further the relationship between corporate governance and adverse selection, it is very important to know who the majority shareholders of the companies are. By knowing the majority shareholder, we would know the ownership pattern of the companies. This knowledge would help us see the effectiveness of corporate governance when used as a measurement tool for investing decision in Indonesia.

The ownership patterns of the companies that have adverse selection in Indonesia are random. From the regression results, we would be able to see that some of the companies' majority shareholders are the government, the public, and other companies. However, there are several companies that are closely held, meaning that the ownership of the company only revolves around the owner's family or relatives. This ownership pattern can be seen in companies like CIMB Niaga, Adira Finance, OCBC NISP, Astra Graphia, and others. These companies are proven to have adverse selection and mostly, the majority shareholders of these companies are either their subsidiaries or head branch. In other words, these companies are owned and controlled by companies that are indirectly related to them.

CIMB Niaga majority shareholder is the CIMB Group Sdn Bhd. The majority shareholder of this company is still part of the CIMB group. Similar with CIMB Niaga, Adira Finance's shares are mostly held by Bank Danamon, a bank who supports Adira Finance. As for OCBC NISP, this bank majority shareholder is the OCBC Overseas Investments Pte. Ltd. Unlike the companies before, OCBC NISP is controlled by the overseas branch of OCBC. Even so, the ownership pattern is still the same as OCBC NISP and the overseas branch of OCBC are still related. Another example is, Astra Graphia, the majority shareholder of this company is PT Astra International Tbk., which is another branch of the Astra group. However, not all Indonesian companies that are closely held are proven to have adverse selection.

When a company is owned by close relatives or families, private information tends to get around pretty easily. The leak of private information would therefore lead to a high adverse selection. However, in Indonesia, a high adverse selection does not always equal to bad corporate governance system. Looking at the data in the previous table, it may be seen that the corporate governance index may not affect the level of adverse selection in a company.

A previous research had been done that analyze the relationship between the government owned companies and the level of adverse selection. According to Eng and Mak (2003), government ownership is supposed to lower the adverse selection level of the company and would increase the level of voluntary disclosure. However, the results from this research proof to us that in Indonesia, government-owned companies may also have a high level of adverse selection.

Disclosure of information is one of the things that companies do to achieve a better corporate governance index. As we can see, the IICD uses disclosure and

transparency as one of the major benchmark in assessing the corporate governance of a company. Nevertheless, government-owned companies in Indonesia like Perusahaan Gas Negara and BNI 46 are proven to have adverse selection. Perusahaan Gas Negara has an adverse selection level of 0.275517, which is quite small. However, BNI 46 has a very high level of adverse selection, which is 0.996021. As a whole, it may be seen that the government ownership in Indonesia does not guarantee a better transparency or corporate governance level or even adverse selection. Therefore, the type of ownership of a company in Indonesia may not affect its adverse selection.

In conclusion, the regression results of the research are able to answer the hypothesis of this research. The hypothesis cannot be rejected, as out of the 58 companies chosen for this research (45 out of 58 companies are listed in the LQ45), 19 companies are proven to have adverse selection.

CONCLUSION

The research had proven to us that there is indeed the existence of adverse selection in Indonesian companies. There are only 19 companies that are proven to be significant. However, from these 19 companies, there are several companies that have negative values and values that are over 1. The researcher failed to interpret these two types of values. The main reason for this failure might be because of the insufficient ability of the model to capture all the components of the bid and ask spread.

The result of the help us see that companies with high adverse selection may also have a high corporate governance index. Similarly, companies with none or low adverse selection might not have a high corporate governance index. The research can also help us see that the ownership pattern of a company may not affect the adverse selection of Indonesian companies. In fact, there is a government-owned company which has both high adverse selection and corporate governance index. In the same way, there are several family-owned companies that have both high adverse selection and corporate governance. Therefore, after looking at this result, the writer can conclude that adverse selection exists in Indonesian blue chip stocks.

RECOMMENDATIONS

The researcher is fully aware that the research done is not perfect. In other words, the research still has many flaws and limitations. Therefore, in this section, the researcher would give recommendations for future researcher so that in the future, a better result can be obtained. The recommendations are as follow:

1. Take a wider sample. In this research, only 58 listed Indonesian companies are used. The data availability in Indonesia is limited. Therefore, the researcher can only find the data for the 58 listed Indonesian companies. In the future, it is best to use more samples in the research as it might help future researchers to see the relationship among the adverse selection, corporate governance, and also the pattern of ownership.
2. Use another methodology. As it had been mentioned, the previous research done by Charlie Charoenwong, David K.Ding, and Vasan Siraprapasiri uses two method of estimating the bid and ask components. These two methods are from Lin et al. and Huang and Stoll. This research Angelia Josephine and Daulat H.H. Pohan: "Adverse Selection In Bid ..." 98

is done using method from Lin et al. Even though the research is able to proof several things, it is better for the future researcher to use the methodology from Huang and Stoll. It would be even better to use both methodologies and compare them.

3. Gather the information on each of the components of the corporate governance index. This research only used the corporate governance index that had been calculated. In the future, the research might have more precise results if the researcher is able to acquire the values of each of the components that measure the corporate governance index.
4. Find the relationship between adverse selection, corporate governance, and pattern of ownership in Indonesia. The writer had only managed to gather the information, it would be better for the future researcher to be able to find out the real relationship between the three variables.

Table 2: Descriptive Statistics for delta m

	ADMF_ADRO_ANTMASGR_					ASRI_BBCA_BBNI_BBRI_BBTN_BDMN_					BISI_MBLTA_M		
	AALI_MM	M	_M	M		ASII_MM	M	M	M	M	M		
Mean	15.57377	21.92623	3.196721	0.614754	1.506148	78.38115	0.770492	5.737705	7.653689	10.75820	3.258197	4.559426	2.172131
Median	12.50000	0.00000	0.00000	0.00000	0.00000	25.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Maximum	2000.000	1850.000	237.500	150.000	355.000	4300.000	25.000	525.000	3137.500	850.000	130.000	425.000	275.000
Minimum	-1225.000	-1450.000	-0.26250	-175.01875	-2825.000	-27.000	-400.000	-2987.54500	-100.000	-100.000	-350.000	-287.500	-92.50000
Std. Dev.	520.4741	230.7970	50.04089	49.54506	29.36154	995.9467	6.353330	122.0816	291.7839	196.3650	38.88014	132.9579	59.72369
Skewness	0.810558	1.626115	0.091556	0.021104	6.190487	0.498384	0.310734	0.380808	0.633376	0.417633	0.638173	0.102941	0.945876
Kurtosis	4.706983	26.38212	8.042521	3.891237	94.30542	4.792093	5.631650	5.307790	100.6977	4.079205	4.433123	3.407381	9.338120
Probability	0.000000	0.000000	0.000000	0.017479	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.346769	0.000000
Observations	244	244	244	244	244	244	244	244	244	244	244	244	244

Source: Own Data Analysis

	BMRI_	BMTR			BRPT	BSDE_		BUMI_	DEWA_	DOID	ELSA_	ELTY_	ENRG	
	M	_M	BNBR_M	BNGA_M	_M	M		BTEL_MM	M	_M	M	M	_M	GGRM_M
Mean	6.4036	1.79	-	5.08196	0.532	0.1639	0.3688	2.4590	0.2540	0.4500	0.1229	0.157	0.286	75.8196
	89	3033	0.0819677	787	34	52	16	98	820	51	787	885	7	
Median	0.0000	0.00	0.00000	0.00000	0.00	0.0000	0.0000	0.0000	0.0000	0.00	0.000	0.000	0.00	0.00000
	00	0000	0	0	0000	00	00	00	0000	000	000	0000	0	
Maximum	450.00	197.	27.5000	412.500	160.	100.00	15.000	332.50	23.000	200.	80.00	25.00	67.5	5250.00
	00	5000	0	0	0000	00	00	00	0000	000	000	0000	0	
Minimum	400.00	117.5-	-	145.0	170.00	15.000	323.00	21.000	160.040	0.000	30.00	22.00-	-	-
	00	000	26.50000	0350.0000000	00	00	00	00	000	00	000	000	2575.000	
Std. Dev.	127.94	22.5	5.23927	58.1615	28.6	28.713	4.1770	80.641	3.3217	41.0	13.93	7.091	6.72	884.714
	11	4482	9	1	4072	39	50	72	37	0087	272	459	0743	9
Skewness	0.0521	2.79	0.28707	0.55487	0.51	1.1630	0.6513	0.2714	0.5985	0.48	2.593	0.329	4.27	1.35393
	11	1619	7	3	2156	09	22	01	13	4743	419	822	8862	2
Kurtosis	3.7274	29.9	20.3760	23.7494	9.86	11.545	5.7301	5.9716	19.038	6.96	14.98	6.229	46.3	9.85622
	04	4934	7	1	5682	92	81	39	84	6323	817	948	1324	7
Probability	0.0642	0.00	0.00000	0.00000	0.00	0.0000	0.0000	0.0000	0.0000	0.00	0.000	0.000	0.00	0.00000
	55	0000	0	0	0000	00	00	00	0000	000	000	0000	0	
Observations	244	244	244	244	244	244	244	244	244	244	244	244	244	244

Source: Own Data Analysis



	HEXA_M	INCO_M	INDF_	MINDY_M	INTA_M	INTP_M	ISAT_M	ITMG_M	JSMR_M	KLBF_M	LPKR_M	LSIP_	MEDC_	MNISP_M
Mean	16.4446	4.0983	4.9180	10.2459	7.0491		2.51024	76.7418	6.48565	7.8790	0.6967	17.82	3.2786	4.8360
	7	61	33	0	80		8.5040986	0	6	98	21	787	89	66
Median	0.00000	0.0000	0.0000	0.00000	0.0000		0.00000	75.0000	0.00000	0.0000	0.0000	0.000	0.0000	0.0000
	0	00	00	0	00		0.0000000	0	0	00	00	000	00	00
Maximum	700.000	362.50	400.00	300.000	280.00		450.000	4175.00	250.000	175.00	70.000	650.0	550.00	1412.5
	0	00	00	0	00		1500.0000	0	0	00	00	000	00	00
Minimum	500.000	362.500	350.00	-	175.000		-	-	-	250.000	120.000	650.002	50.000	525.00
	0	0	00	200.00000	-1200.000	300.00002	400.000	175.00000		0	00	0	0	00
Std. Dev.	138.510	100.99	94.907	76.3175	40.154		113.235	939.359	48.8912	55.368	15.648	202.4	81.654	167.34
	4	74	06	8	69		340.17964	7	1	53	74	917	75	21
Skewness	0.79618	0.2538	0.0443	0.75781	2.2447		0.35694	0.50979	0.82672	0.36287	1.23816	0.149	1.4595	2.5292
	3	26	08	7	45		0.3925914	0	4	1	5	095	07	48
Kurtosis	7.71843	4.6276	5.8627	4.63953	17.132		4.90519	5.05257	7.15832	5.8976	18.411	3.749	11.747	26.174
	5	98	15	3	29		5.3935379	9	1	32	24	913	92	24

Source: Own Data Analysis



	PGAS_MM	PNBN_	PTBA_M	SDPC_M	SGRO_	SHID_	SMCB_	SMGR_	TINS_MM	TLKM_	TRUB_	UNSP_	UNTR_M	UNVR_M	
Mean	21	1.9467	1.5163	21.413	0.0245	0.0000	2.6536	2.6331	7.3770	2.5614	6.5573	0.1967	0.8504	32.479	22.1311
Median	00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	12.5000
Maximum	00	225.00	135.00	1400.0	50.000	85.000	60.000	150.00	1225.0	300.00	400.00	27.000	85.000	2625.0	1300.00
Minimum	0	250.000	120.00	1300.00	50.0000	100.00	70.000	175.00	725.00	175.00	450.00	22.000	65.000	1125.00	-1200.000
Std. Dev.	09	77.322	26.084	387.57	9.6311	17.671	18.302	47.134	167.93	70.053	138.19	3.5204	14.637	432.70	309.564
Skewness	89	0.2322	0.3984	0.3652	0.2415	0.0282	0.1151	0.1215	1.6371	0.7782	0.0185	1.0254	0.8917	1.1521	0.20517
Kurtosis	07	4.1158	7.9202	4.7878	16.282	17.304	5.0366	3.8395	15.455	5.3625	3.7337	23.189	12.259	8.6030	6.41843

Source: Own Data Analysis

	BIPI_Z	WIKI_M
Mean	-0.610599	1.465164
Median	-0.500000	0.000000
Maximum	2.500000	60.00000
Minimum	-2.500000	-35.00000
Std. Dev.	1.177225	13.90665
Skewness	-0.392891	0.729253
Kurtosis	2.569719	5.272133

Source: Own Data Analysis

Table 3: Descriptive Statistic for variable z

	AALI_Z	ADMF_Z	ADRO_Z	ANTM_Z	ASGR_Z	ASII_Z	ASRI_Z	BBCA_Z	BBNI_Z	BBRI_Z	BBTN_Z	BDMN_Z	BISI_Z	BLTA_Z
Mean	14.89796	1.734694	5.244898	5.326531	2.714286	15.612024	0.930612	4.540816	19.67347	16.32653	2.397959	10.40816	0.744898	2.448980
Median	25.000000	0.000000	5.000000	12.500000	2.500000	25.000000	0.500000	12.500000	12.500000	25.000000	5.000000	25.000000	5.000000	2.500000
Maximum	200.0000	350.0000	25.0000	25.0000	5.0000	250.0000	2.5000	100.0000	212.5000	275.0000	5.0000	75.0000	45.0000	10.0000
Minimum	1425.0000	500.0000	37.50000	25.00000	310.0000	250.0000	2.500000	225.0000	3000.0000	175.0000	12.50000	50.00000	25.0000	55.0000
Std. Dev.	109.5234	101.4978	9.3700	10.74316	19.99821	83.24633	1.288856	37.42025	194.6758	39.31764	4.724998	26.00612	9.494456	4.657583
Skewness	8.855335	1.025738	0.624735	1.088958	14.89175	0.250407	0.473393	0.848385	14.79064	1.398457	0.736800	1.032301	0.556548	5.429305
Kurtosis	113.8895	8.890894	3.156493	2.726998	229.4024	4.406055	3.340413	7.363143	226.2120	16.07887	2.203865	3.443639	4.622293	67.82959

Source: Own Data Analysis

	BMRI_Z	BMTR_Z	BNBR_Z	BNGA_Z	BRPT_Z	BSDE_Z	BTEL_Z	BUMI_Z	DEWA_Z	DOID_Z	ELSA_Z	ELTY_Z	ENRG_Z	GGRM_Z
Mean	19.28571	2.81637	3.365306	0.397959	3.326531	3.061224	0.989796	-6.665306	0.185713	13.102041	1.918367	0.746939	0.532653	-15.71429
Median	25.000000	2.500000	5.000000	5.000000	5.000000	5.000000	0.500000	-12.500000	0.500000	5.000000	2.500000	0.500000	0.500000	-25.000000
Maximum	75.000000	5.000000	0.500000	310.0000	10.0000	15.0000	2.500000	12.5000	0.5000	10.0000	2.5000	2.5000	1.0000	575.0000
Minimum	150.0000	200.0000	25.00000	62.5000	85.0000	10.0000	10.5000	-25.000000	1.000000	10.0000	5.0000	2.5000	57.0000	-425.0000
Std. Dev.	22.95420	13.61905	8.105492	21.89229	7.060592	4.175495	1.232624	8.627552	0.478214	4.045058	2.121675	1.403027	3.651431	103.5388
Skewness	0.235976	12.94292	2.294972	11.51446	5.996657	1.584985	1.997068	1.201011	0.686556	1.533654	1.190922	0.389415	15.18427	0.816111
Kurtosis	10.06717	183.2798	6.284839	165.0456	74.34016	4.258784	16.04220	3.166102	1.637097	3.608285	3.635255	2.874128	235.3573	10.75192

Source: Own Data Analysis



	INCO_												MEDC_	
	HEXA_Z	Z	INDF_Z	INDY_Z	INTA_Z	INTP_Z	ISAT_Z	ITMG_Z	JSMR_Z	KLBF_Z	LPKR_Z	LSP_Z	Z	NISP_Z
Mean	0.918367	10.05102	11.63265	11.02041	3.02048	17.14286	10.91832	1.83673	3.571429	6.683673	2.755102	8.979592	5.571426	1.55102
Median	0.000000	12.500000	12.500000	12.500000	5.000000	25.000000	12.500000	25.000000	5.000000	12.500000	5.000000	25.000000	12.500000	5.000000
Maximum	75.000000	137.500000	37.500000	12.500000	25.000000	275.000000	125.000000	275.000000	12.500000	25.000000	10.000000	100.000000	237.500000	212.500000
Minimum	75.000000	50.000000	50.000000	37.500000	45.000000	200.000000	100.000000	600.000000	25.000000	37.500000	5.000000	75.000000	25.000000	1425.000000
Std. Dev.	25.38986	14.05757	11.97195	6.769749	9.000204	49.19433	31.14817	96.30836	9.922856	8.579841	3.608850	29.52804	19.28486	202.1384
Skewness	0.144088	5.465094	0.84235	2.564098	2.22849	0.976947	0.132548	1.081813	0.456487	0.948331	1.587659	0.902597	8.392722	3.164275
Kurtosis	3.089937	53.06730	5.812435	11.38338	4.415342	9.278000	4.213011	8.980018	1.905766	4.133945	4.065509	3.503168	104.1357	15.84844

Source: Own Data Analysis



	SDPC_ SGRO_												TRUB_ UNSP_ UNTR_ UNVR_	
	PGAS_Z	PBNB_Z	ZPTBA_Z	Z	SHID_Z	SMCB_Z	ZSMGR_Z	TIINS_Z	TLKM_Z	Z	Z	Z	Z	Z
Mean	-8.214286	0.816328	28.36735	4.838776	1.887755	0.520408	6.540813	15.816311	1.15306	10.30610	1.7752	2.367351	21.63265	-11.63265
Median	-12.500000	5.000000	25.000000	0.500000	12.500000	2.500000	12.500000	25.000000	12.500000	25.000000	5.000000	2.500000	25.000000	-25.000000
Maximum	50.000000	15.000000	100.000000	34.000000	512.500000	15.000000	12.500000	75.000000	12.500000	100.000000	1.000000	5.000000	450.000000	325.000000
Minimum	-62.500000	-30.000000	-525.000000	-74.500000	37.500000	-10.000000	12.500000	75.000000	25.000000	75.000000	5.000000	5.000000	250.000000	-500.000000
Std. Dev.	11.9553558	7.267358	45.90158	18.56338	6.60507	4.732560	9.271539	27.48597	7.521965	27.13068	0.474888	2.219455	55.36196	71.48446
Skewness	1.0446406	0.236005	0.079708	3.055054	10.6851	0.014981	1.210859	0.756542	2.069425	0.988237	0.817023	1.727606	2.518177	-0.285371
Kurtosis	6.44232589	3.341658	58.01627	11.205135	81.207461	2.207463	2.817976	3.213585	8.312786	3.370523	1.753236	6.407836	26.01965	13.73120



	BIPI_Z	WIKI_Z
Mean	-0.610599	-2.061224
Median	-0.500000	-2.500000
Maximum	2.500000	5.000000
Minimum	-2.500000	-5.000000
Std. Dev.	1.177225	3.254305
Skewness	-0.392891	0.934609
Kurtosis	2.569719	2.551053

Source: Own Data Analysis

Table 4: Regression Result

Ticker	Name of Company	Significant	Adverse Selection	Order Processing Cost	Corporate Governance Index	Majority Shareholder
BNGA	CIMB Niaga	Yes	1.219196	-0.219196	86.38%	CIMB Group Sdn Bhd
BDMN	Bank Danamon	Yes	- 0.826344	1.826344	86.30%	Asia Financial Indonesia Private Limited
ADMF	Adira Finance	Yes	0.510123	0.489877	85.54%	PT Bank Danamon Indonesia Tbk
PGAS	Perusahaan Gas Negara	Yes	0.275517	0.724483	85.39%	Government
BBNI	BNI 46	Yes	0.996021	0.003979	85.09%	Government
NISP	OCBC NISP	Yes	0.45031	0.54969	81.83%	OCBC Overseas Investments Pte. Ltd
UNVR	Unilever	Yes	- 0.949015	1.949015	80.39%	Unilever Indonesia Holding B.V.
ASGR	Astra Graphia	Yes	0.393299	0.606701	79.80%	PT Astra International Tbk.
ASII	Astra International	Yes	- 1.662556	2.662556	79.77%	Jardine Cycle and Carriage Limited
ENRG	Energi Mega Persada Tbk	Yes	- 0.330994	1.330994	77.87%	Public
UNTR	United Tractor	Yes	- 1.041039	2.041039	77.50%	PT Astra International Tbk
SGRO	Sampoerna Agro Tbk	Yes	1.002375	-0.002375	76.61%	Sampoerna Agri Resources Pte. Ltd
LPKR	Lippo Karawaci Tbk	Yes	0.749946	0.250054	76.28%	Public
BMTR	Global Mediacom	Yes	0.599392	0.400608	75.63%	Bhakti Investama

BNBR	Bakrie & Brothers	Yes	1.044565	-0.044565	73.91%	Public
LSIP	London Sumatera Tbk	Yes	0.908999	0.091001	71.85%	PT Salim Ivomas Pratama
BRPT	Barito Pacific	Yes	0.365267	0.634733	68.65%	Magna Resources Corporation PTE LTD
SDPC	Millenium Pharmacoin International Tbk	Yes	0.350572	0.649428	68.06%	Pharmaniga International Corporation Sdn.Bhd.
BIPI	Benaket Petroleum Energy Tbk	Yes	-0.7286	1.7286	65.55%	PT Indotambang Perkasa

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