

# The Efficiency of General Insurance Companies in Indonesia

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**Abstract**—This study investigates the efficiency of General Insurance companies in Indonesia for the period 2014-2015 as a result of the policy on recapitalization of insurance company's core capital as stated in the Financial Services Authority (POJK) Regulation No. 67/POJK.05/2015. The study employed the Data Envelopment Analysis, CCR and BCC model with an output orientation to see the efficiency value of each company from time to time. There were 70 insurance companies involved in this study. The input variables included operational expenses and equity capital, while the output variables included underwriting and investment returns. From the value of efficiency scales, i.e. a combination of CCR and BCC, there are 7 efficient companies in 2014 and 5 efficient companies in 2015. The values of the efficiency scale show different average efficiency of companies in 2014 and those in 2015. This indicates that the OJK's policy of raising core capital funds encourages companies to be more efficient.

**Index Terms**—general insurance, DEA, CCR, BCC

## I. INTRODUCTION

Studying the efficiency of an insurance company is important because it helps in determining how the insurer responds to the challenges and how likely it is to survive the challenge [1]. Insurance contributes greatly to the economic growth of society in general by providing stability to the functioning of the process. The insurance industry develops financial institutions and reduces uncertainty by improving financial resources. The relationship between insurance and macroeconomic liquidity is three according to Trainar [2]: first, insurance contributes to ensuring liquidity by incorporating the risks involved; second, increasing liquidity by reducing the cost of financial intermediation; and third, insurance can be a source of settlement from liquidity crisis and systemic risk. According to Parida and Acharya, there are two important objectives for measuring efficiency in insurance companies that are to help compare the relative efficiency of individual firms against the best insurance companies and help evaluate the impact of policies on the performance of the insurer itself [3].

Given the important role of the insurance industry, several studies have been undertaken to analyze the efficiency of this industry, especially the policy on capital recapitalization. Orea and Kumbhakar stated that the company can achieve efficiency and growth if there is an increase in the capital base [4].

This increase has led to high industry performance, increasing competition as well as impacting the country's economic growth [5]. Efficiency involves firms capable of operating with minimum resource level (input) to produce output and remain competitive for long periods of time [6]. In addition, efficiency is the success that an organization uses its resources to produce the output of a certain quality [7].

In the context of Indonesia, the government issued the provisions of Government Regulation 39/2008 which explains the implementation of insurance business which insists that every insurance company must have a minimum capital of 40 billion rupiahs at the end of 2008. Then, the government gives revision to this rule as stipulated in Article 6B of Government Regulation No. 81/2008 which increases the capital value of 40 billion rupiahs in 2010 into 70 billion rupiahs in 2012 and 100 billion rupiah in 2014. Then in 2015 came out the Regulation of Financial Services Authority (POJK) No. 67/POJK.05/2015 in which the Article 6 states that insurance companies must have paid up capital of at least 150 billion rupiahs. The recapitalization of deposit capital at this insurance company has a purpose to improve the efficiency of the insurance industry in Indonesia.

From the issues mentioned above, it is necessary to calculate the efficiency of the insurance industry in Indonesia, especially in general insurance. In this case, studying the efficiency of general insurance companies in Indonesia is very important for Indonesia because one of the main goals of recapitalization is to improve industrial efficiency. Thus, the recapitalization is expected to improve industrial efficiency. Expected by checking the performance of the insurance industry in aggregation will certainly reveal the individual efficiency of this insurance company. According to Kubai, the insurance industry provides financial security and financial intermediation for both individuals and business people in the economy, thus improving a country's financial and economic development [8]. The important roles played by insurance companies are not limited to certain countries but also to the rest of the world. Interestingly, Indonesia's insurance market, both soul and non-life, is recognized as part of the most advanced insurance market among Asian countries due to favorable market conditions despite low penetration [9]. To compensate for the development of the Indonesian market, companies must

understand these changes and how to find the most promising growth opportunities.

The measurement of the performance of insurance companies in Indonesia usually uses a model that emphasizes the solvency ratio (RBC) and financial ratios such as ROA, ROE, and other financial ratios. Meanwhile, the policy changes made by the government regarding the minimum capital provisions of insurance companies became the basis for measuring efficiency in the general insurance companies that became the research objects. The measurement of the model does not account for the involvement of other variables, such as underwriting results, which have the potential for efficient company performance. Therefore, this study empirically investigates the efficiency of selected companies among general insurance companies in Indonesia to see their technical efficiency values upon the implementation of a minimum capital recapitalization policy for insurance companies.

## II. LITERATURE REVIEW

### A. Data Envelopment Analysis

The measurement of the efficiency of insurance companies can be done in two methods, namely parametric and non-parametric. Efficiency measurements with parametric methods are performed using SFA (Stochastic Frontier Analysis), TFA (Think Frontier Approach), and DFA (Distribution Free Approach) while those with non-parametric methods are performed using DEA (Data Envelopment Analysis) and FDH (Free Disposable Hull). Lampe and Hilgers (2015) made a comparison between the number of publications regarding the DEA and SFA methods with as many as 4,782 articles on the SFA and DEA methods published in scientific journals, of which 761 journals on SFA and 4021 pertained to DEA. The results of the research conducted by Lampe and Hilgers suggest that most publications analyze efficiency in the fields of health, banking, insurance, and agriculture. Therefore, it can be stated that the DEA method is widely applied by several countries to measure efficiency. For example, Rees and Keesner (2000) and Diacon, Starkey, and O'Brien [10] conducted a study comparing internationally the efficiency of insurance companies in Europe. Cummins and Misas (2006) conducted a study of the efficiency of insurance companies in Spain by looking at the effects of deregulation and consolidation in the financial sector. Wei Huang (2007) calculated cost efficiency and efficiency gains on insurance in China in 1999-2004. In addition, Eling and Luhnen (2010) state that DEA can measure the efficiency of decision units for a certain time which means it is possible to analyze changes in efficiency according to time.

Data Envelopment Analysis (DEA) can be used to evaluate the performance of an activity on an entity. The measurement is expressed as the ratio of input to output that is the unit of the productivity measurement. It can also be determined what input factors are most influential in generating output or vice versa—what output factors that affect the input use are.

According to Oral and Yolalan, DEA can be measured by financial ratios [11]. The insurance industry in Indonesia uses

the financial ratio method to measure performance that has limits because the multi-dimensional performance aspect is not like the frontier estimation method like SFA whereas DEA is more suitable on single input with input-output scenario respectively [12]. The method in question is the comparison of the accounting calculation ratio by comparing the single output with the single input. Some input and output ratios can be calculated by calculating the ratio of multiples of each Decision-Making Unit (DMU) separately and finally comparing them to draw a conclusion. However, this makes it difficult to calculate the overall efficiency of a company. Therefore, the overall efficiency measure can be calculated by consolidating all inputs and outputs by assigning weights to each of the input and output variables. The weight requirement remains uniformly applied to all inputs and outputs of the evaluated entity known as the concept of total factor productivity (TFP) in the economy. DEA gives weight to inputs and outputs using linear programming. No decisions were made regarding the importance of each input and output because each operating unit's efficiency was compared to that of an efficient operation unit rather than the average performance of the firms studied [13].

### B. Previous Research

Qiu and Chen evaluated the relative efficiency of Chinese life insurance during the years 2000-2003, using DEA [14]. They calculated the value of technical efficiency, pure technical efficiency, and scale efficiency for various life insurance groups. The results show that the value of life insurance TE in China is dispersed. Traditional life insurance is technically efficient during the sample years. This reflects the market situation that traditional life insurance still has monopoly power and smaller life insurance is not competitive enough. The results also show that the average TE of the life insurance industry has decreased from year to year. Meanwhile, the efficiency of new insurance companies is forced to be low by large investments and delayed yields. On the other hand, life insurance is facing tougher competition and bigger challenges in China.

Lin, et al. (2009) used DEA for the analysis of Taiwan's life insurance business for the period 2005-2009. The results show that the average TE life insurance industry in Taiwan is relatively small and most life insurance companies need to increase their efficiency. Getting most insurance companies continues to show increased productivity. The average portfolio of various life insurance companies grew by 4.1% during 2008-2009.

Khalid, et al. (2012) examined the technical efficiency of insurance companies (general or mental) in Gulf Cooperation Council (GCC) countries using DEA and MPI methodologies to describe efficiency changes into intrinsic components that reflect individual changes in TE and both components that reflect the impact of market technology changes on technical efficiency of each insurance company. This study involved 39 insurance companies in the region, with panel data covering the period 2005-2007. Their study found that the insurance

industry in GCC is quite efficient and there is a large room for improvement.

Nandi (2014) measured the relative performance efficiency of 13 life insurance companies in India (1 public sector and 12 private sectors) covering the 10-year period from 2002-2003 to 2011-2012. This study employed the DEA technique to measure efficiency individually, on an annual basis, in a sector, and as a whole. It also used two inputs and two outputs, namely commissions paid and operating costs and premiums and net profits. Because this study sought to maximize output, output-oriented DEA was used. The results showed that the overall life insurance that runs the life insurance business at the TE average is 82.6%, PTE is 87.5% and SE is 94.7%. On the other hand, in the analysis of individual and sectoral performance, LIC performs better than the others.

Saad and Idris examined the efficiency of the life insurance industry in Brunei and Malaysia [15]. DEA was used to explore the contribution of technical change and efficiency to productivity growth in Malaysia and Brunei life insurance industry by applying Malmquist index for 2000-2005 using output orientation. The input-output data consists of nine life insurance companies in Malaysia and two in Brunei. This study used two inputs, commissions and management, and two outputs, premium income and net investment income. The study results indicated that productivity in the life insurance industry experienced a change seen from the average value of TFP efficiency results in life insurance changed due to technical changes and efficiency.

### III. RESEARCH METHODOLOGY

The current study was aimed to test the operational efficiency of the general insurance industry in Indonesia by using the DEA model. This study employed non-parametric DEA, i.e. a frontier analysis method to measure relative efficiency because it provides overall numerical values, which can be determined objectively and efficiently. The most efficient companies are given the efficiency of unity (100%) while efficient companies with lower than one and zero numerical values were the most inefficient companies. This section describes the research design, data collection, and data analysis. This study used two DEA models, namely CCR which produces CRS (constant return to scale) and BCC that produces VRS (variable return to scale) by focusing on the output orientation. The output-oriented DEA model was used to determine the potential output of a company given the operation of inputs that are run efficiently that year. The performance measurement with the DEA model was performed with the help of DEAP software version 2.1.

This study was conducted in general insurance companies in Indonesia. The total number of general insurance in Indonesia reaches 80 companies by 2015, but it is necessary to limit the research scope. The number of studied samples was 70 general insurance companies. This number was obtained based on the criteria of variable data completeness in 2014 and 2015. The DEA method cannot accommodate negative data variables,

therefore to get all the positive data variables, all data were checked back.

The secondary data was collected from the financial report of public insurance publication in the websites of each general insurance company during the observation period from 2014 to 2015. From the financial statement data, research variables were taken from the side balance of profit and loss.

The input and output variables were obtained after an intensive literature review of previous studies by Saad and Idris [15], Diacon [10], and Aksah [16] which used similar variables and indicated successful measures of efficiency. The input variables used in the current study included operating expenses and total equity while the output variables included investment returns and underwriting results. The selection of investment yields and underwriting results as output was based on the core activities of an insurance company in channeling funds obtained back to the company itself in order to gain profits. For the input variables, the equity was used to represent how insurance companies absorb funds while operating expenses were used to see the company's performance on marketing costs, general and administrative costs, and other costs to support company activities.

The efficiency value was sought using the CCR method to obtain the TE (technical efficiency) value of the CRS assumption as Charnes, Cooper, and Rhodes (1978) said that in the use of this model, there is an assumption that each entity operates at an optimal scale. The CCR assumption is only appropriate if all companies operate at an optimal scale. But in the real world, many factors such as financial constraints, government regulations, and imperfect competition can cause some DMUs to not operate at an optimal scale. Therefore, Banker, Charnes, and Cooper (1984) suggest an extension of the CCR model which is a constant return to scale (CRS) to the return to scale (VRS) variable. They propose a model that takes into account the effects of returns to scale in a DMU called the VRS model or BCC model. The aim of the VRS assumption is to try to determine the most efficient scale for each DMU and at the same time to identify the TE. BCC method was performed to obtain the PTE (pure technical efficiency) value of the VRS assumption with both output-oriented models. After obtaining the TE and PTE values, the next process was performed to find the SE (scale efficiency) value by dividing the TE value by the PTE value. The SE value obtained in the year of observation was used to test the hypothesis to see a comparison of the mean values of insurance companies' capital recapitalization policies that occurred in 2014 and 2015. This generated the value of efficiency to be used as the material analysis. An analysis of efficiency changed with an independent mean test was used to compare efficiency values in 2014 by 2015.

### IV. RESULTS

#### A. Statistical Review of Variables

The statistical test of samples was conducted to determine the characteristics of general insurance companies that can be represented from the used variables. Of the four variables, the

TABLE I  
STATISTICAL DESCRIPTION INPUT AND OUTPUT VARIABLES

	Output Variable		Input Variable	
	Underwriting Result	Investment Return	Operational Expenses	Equity
Mean	146,645	56,832	116,190	580,034
Median	65,670	17,966	62,536	174,069
Std. Dev	195,171	111,081	125,261	1,106,010
Minimum	33	990	406	10,664
Maximum	1,016,658	649,323	643,890	7,759,217

total equity variable has the highest average of 580 billion rupiahs. Nevertheless, the range is very large as can be seen from the minimum value (10 billion rupiahs) and the highest value (7,759 billion rupiahs) of these variables. Other variables also follow similar characteristics. Thus, it can be seen that most general insurance companies in Indonesia are middle to lower companies in terms of capital and expenditure.

### B. Results of CCR-O

Viewed from the average per year, the efficiency of general insurance companies in Indonesia has not been efficient, i.e. 54% in 2014 and 63% in 2015. From the test results, it can be concluded that general insurance companies in Indonesia have performed their function well but not been yet efficient at utilizing existing inputs to produce a certain level of output.

In 2014, there are five general insurance companies that work efficiently, i.e. Asuransi Astra Buana, BCA General Insurance, Ramayana Insurance, Sumit Oto Insurance, and Simas Net Insurance. Meanwhile, in 2015, there are also five general insurance companies that work efficiently, i.e. Asuransi Astra Buana, Asuransi Bina Dana Arta, Asuransi Bhakti Bhayangkara, Asuransi Kredit Indonesia, and Sumit Oto Insurance. Nevertheless, there are only two general insurance companies that work efficiently in 2014 and 2015, i.e. Asuransi Astra Buana and Sumit Oto Insurance. Therefore, it can be concluded that the two general insurance companies can be said to have worked efficiently based on the CCR-O modeling.

### C. Results of BCC-O

Viewed from the average per year, the efficiency of general insurance companies in Indonesia has not been efficient, i.e. 67% in 2014 and 72% in 2015. From the test results, it can be concluded that general insurance companies in Indonesia have performed their function well but not been efficient at utilizing existing inputs to produce a certain level of output.

In 2014, there are 13 general insurance companies that work efficiently, i.e. Asuransi Astra Buana, Asuransi Kredit Indonesia, Asuransi Sumit Oto, Victoria Insurance, Asuransi Bangun Aksrida, Pan Pacific Insurance, Ramayana Insurance, Simas Net Insurance, BCA General Insurance, Insurance Binagriya Upakara, Insurance Raya, Insurance Tugu Krishna Pratama, and Insurance Parolamas. Meanwhile in 2015, there are 14 general insurance companies that work efficiently, i.e. Asuransi Astra Buana, Asuransi Kredit Indonesia, Sumit Oto Insurance, Victoria Insurance, Asuransi Bangun Askrida, Pan

Pacific Insurance, Ramayana Insurance, Simas Net Insurance, Videi Insurance, Asuransi Mandiri Axa General Insurance, Adira Dinamika Insurance, Asuransi Bina Dana Arta, Bhakti Bhayangkara Insurance, and Meritz Korindo Insurance. According to two years of observation, there are eight general insurance companies that work efficiently, i.e. Asuransi Astra Buana, Asuransi Kredit Indonesia, Sumit Oto Insurance, Victoria Insurance, Asuransi Bangun Askrida, Pan Pacific Insurance, Ramayana Insurance, and Simas Net Insurance. Therefore, it can be concluded that the eight general insurance companies can be said to have worked efficiently based on the BCC-O modeling.

### D. Results of Scale Efficiency

The comparison between the efficiency rating of the CCR-O model and the efficiency rating of the BCC-O model will result in a value of efficiency scale. The CCR-O model has the assumption of a constant return to scale, in which all general insurance companies operate optimally. The BCC-O model has the assumption of a return to scale variable, which looks at the comparison of further variables. From the model test results conducted in the previous section, below shows the efficiency values of the 70 general insurance companies.

Asuransi Astra Buana and Sumit Oto Insurance have an efficiency value of 1 during 2014 and 2015. Therefore, it can be said that the two insurance companies are fully efficient in two years of observation. In the case of the efficiency of general insurance companies in 2014 and 2015, the generated average efficiency values are 0.8156 and 0.8913, respectively. Meanwhile, the obtained probability value is 0.003 (lower than 0.05). A significant difference between the efficiency values of general insurance companies in 2014 and in 2015 means there is an influence of policy published by POJK Regulation No.67 regarding capital minimum recapitalization insurance companies to 150 billion rupiahs.

### E. Hypothetical Interpretation

In this study, to find out there were differences in the value of efficiency before and after the enactment of POJK Regulation No. 67 regarding the recapitalization of insurance company capital to 150 billion rupiahs. The data used is a population that has normally distributed data; both groups of data have pairs, and efficiency values obtained by interval data.

Table II shows the statistical results of the data on the efficiency values of general insurance companies in 2014 and 2015. The average efficiency values of general insurance

TABLE II  
STATISTICAL MEAN DEPENDENT TEST RESULTS

Efficiency Value of General Insurance Companies	Mean	Standard Deviation	t	Sig. (2-tailed)
Year 2014	0.8156	0.19496	-3.031	0.003
Year 2015	0.8193	0.10720		

companies in 2014 and in 2015 are 0.8156 and 0.8913, respectively. In addition to these average values, the standard deviation values can also be found in the two observations, i.e. 0.19496 for the general insurance companies in 2014 and 0.10720 for the general insurance companies in 2015.

The probability value or sig. (2-tailed) is 0.003. The value is lower than 0.05. A significant difference between the efficiency values of general insurance companies in 2014 and in 2015 means there is an influence of policy published by POJK Regulation No.67 regarding capital minimum recapitalization insurance companies to 150 billion rupiahs.

## V. DISCUSSION

According to the DEA calculation to find out the efficiency of general insurance companies in 2014, there are 6 general insurance companies that work efficiently based on the DEA CCR model and there are 13 general insurance companies that work efficiently based on the DEA BCC model. In addition, according to the calculation of efficiency scale, in 2014 there are only 7 or 10% of general insurance companies which are declared efficient at the efficiency scale. Meanwhile, the DEA calculation to find out the efficiency of general insurance companies in 2015, there are 5 general insurance companies that work efficiently based on the DEA CCR model and there are 14 general insurance companies that work efficiently based on the DEA BCC model. In addition, in 2015 there are only 5 or 7% of general insurance companies which are declared efficient based on the results of the efficiency scale. Based on these results, there is a decrease in the number of efficient general insurance companies from 2014 to 2015.

According to the ownership status of the general insurance companies as viewed through all the data, 87% of them are non-listed companies, 10% of them are listed companies, and 3% of them are limited companies. There is no significant difference between listed and non-listed companies in term of the efficiency of the general insurance companies in Indonesia during the implementation of POJK Regulation No. 67 regarding the minimum capital recapitalization of insurance companies to 150 billion rupiahs.

Based on the results, there are only two general insurance companies which are significantly efficient, i.e. Astra Buana Insurance and Summit Otto Insurance. The two companies are non-listed companies and have balanced values for Total Equity, Operational Expenses, Investment Return, and Underwriting Results. They are already fully efficient under the CCR and BCC DEA methods.

## VI. CONCLUSION

The results of statistical tests indicate that there is a significant difference between the efficiency of general insurance companies in 2014 and in 2015. It is evident that the issuance of POJK Regulation No.67 on the minimum capital of insurance companies has influenced the efficiency value of the general insurance companies. It also indicates that an increase in capital can increase the industry's efficiency.

This study has some limitations. First, the efficiency measurement of general insurance companies only uses 4 variables, while in the field of insurance, there are many other variables such as risks and payoffs. Second, this study only uses two simple DEA models, namely CCR-O and BCC-O, while its development, DEA has had many models, including Malmquist Index, FDH, etc. Therefore, future studies can use other DEA models to investigate further efficiency development of general insurance companies from year to year. In addition, the determination of input and output variables can be based on the factors related to other insurance industries.

For insurance companies which are found to be efficient in this study are expected to maintain their performance. Meanwhile, those which are found to be less efficient should increase their performance by making a benchmark against insurance companies stated efficient according to the CCR and BCC methods.

The study results also confirm that the newly issued regulation regarding paid-up capital has contributed to the increase in the average efficiency of general insurance companies. Hence, the policy to raise minimum capital is the right decision. In general, the efficiency values of general insurance companies are increasing even though the number of fully efficient companies is not as many as those in the previous year.

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#### APPENDIX

**TABLE III**  
THE EFFICIENCY VALUE OF CCR-O MODEL, BCC-O MODEL AND SCALE EFFICIENCY SCORE

No	General Insurance Company	CCR		BCC		SE	
		2014	2015	2014	2015	2014	2015
1	PT Asuransi Adira Dinamika	0.826	0.946	0.832	1	0.993	0.946
2	PT Asuransi Artarindo	0.515	0.546	0.575	0.856	0.895	0.637
3	PT Arthagraha General Insurance	0.502	0.75	0.51	0.862	0.984	0.87
4	PT Asuransi Asoka Mas	0.469	0.625	0.702	0.641	0.668	0.974
5	PT Asuransi Astra Buana	1	1	1	1	1	1
6	PT Avrist General Insurance	0.316	0.43	0.509	0.575	0.62	0.749
7	PT Asuransi Bangun Askrida	1	0.882	1	1	1	0.882
8	PT Fairfax Insurance Indonesia	0.63	0.563	0.714	0.61	0.882	0.923
9	PT Berdikari Insurance	0.372	0.454	0.662	0.555	0.562	0.818
10	PT Asuransi Bhakti Bhayangkara	0.376	1	0.773	1	0.486	1
11	PT Asuransi Bina Dana Arta Tbk.	0.726	1	0.792	1	0.916	1
12	PT Asuransi Binagriya Upakara	0.666	0.639	1	0.677	0.666	0.944
13	PT Asuransi Bintang Tbk.	0.246	0.636	0.267	0.71	0.919	0.895
14	PT Asuransi Bosowa Periskop	0.345	0.597	0.609	0.598	0.567	0.998
15	PT Asuransi Bringin Sejahtera Artamakmur	0.524	0.818	0.635	0.888	0.824	0.922
16	PT Asuransi Buana Independent	0.5	0.674	0.571	0.7	0.876	0.962
17	PT Asuransi Umum Bumiputera Muda 1967	0.425	0.238	0.479	0.253	0.886	0.938
18	PT Asuransi Central Asia	0.453	0.553	0.509	0.553	0.889	0.999
19	PT Asuransi Umum BCA	1	0.663	1	0.734	1	0.903
20	PT Asuransi Dayin Mitra Tbk.	0.503	0.676	0.506	0.716	0.995	0.944
21	PT Asuransi Eka Lloyd Jaya	0.304	0.377	0.448	0.499	0.678	0.756
22	PT Asuransi Harta Aman Pratama Tbk.	0.445	0.577	0.696	0.583	0.64	0.99
23	PT Asuransi Himalaya Pelindung	0.344	0.575	0.545	0.577	0.631	0.997
24	PT Asuransi FPG Indonesia	0.581	0.605	0.586	0.651	0.993	0.929
25	PT Asuransi Intra Asia	0.381	0.564	0.712	0.619	0.536	0.911
26	PT MNC Asuransi Indonesia	0.627	0.558	0.706	0.583	0.888	0.956
27	PT Asuransi Jasa Indonesia (Persero)	0.657	0.743	0.723	0.835	0.91	0.89
28	PT Asuransi Jasa Raharja Putera	0.552	0.742	0.553	0.753	0.999	0.985
29	PT Asuransi Jasa Tania Tbk.	0.359	0.6	0.444	0.604	0.808	0.994
30	PT Asuransi Kredit Indonesia (Persero)	0.812	1	1	1	0.812	1
31	PT Lippo General Insurance Tbk.	0.752	0.641	0.949	0.651	0.793	0.985
32	PT Malacca Trust Wuwungan Insurance	0.255	0.289	0.417	0.371	0.612	0.778
33	PT Asuransi Umum Mega	0.64	0.921	0.65	0.935	0.984	0.984
34	PT Asuransi Mega Pratama	0.393	0.68	0.711	0.795	0.552	0.856
35	PT Asuransi Mitra Maparya	0.902	0.416	0.929	0.42	0.972	0.989
36	PT Asuransi Multi Artha Guna	0.78	0.674	0.83	0.679	0.941	0.993
37	PT Pan Pacific Insurance	0.795	0.765	1	1	0.795	0.765
38	PT Asuransi Parolamas	0.164	0.215	1	0.247	0.164	0.873
39	PT Asuransi Purna Artanugraha	0.331	0.699	0.397	0.727	0.833	0.962
40	PT Asuransi Raksa Pratikara	0.519	0.583	0.534	0.699	0.972	0.833
41	PT Asuransi Ramayana Tbk.	1	0.715	1	1	1	0.715
42	PT Asuransi Raya	0.516	0.559	1	0.625	0.516	0.893
43	PT Asuransi Reliance Indonesia	0.414	0.407	0.416	0.407	0.994	0.999
44	PT Asuransi Sinar Mas	0.572	0.627	0.678	0.897	0.844	0.699
45	PT Asuransi Sumit Oto	1	1	1	1	1	1
46	PT Staco Mandiri	0.288	0.353	0.737	0.469	0.391	0.752
47	PT Asuransi Tri Pakarta	0.507	0.474	0.539	0.538	0.939	0.881
48	PT Asuransi Tugu Kresna Pratama	0.331	0.409	1	0.515	0.331	0.795
49	PT Tugu Pratama Indonesia	0.761	0.81	0.877	0.814	0.868	0.995
50	PT Victoria Insurance	0.919	0.923	1	1	0.919	0.923
51	PT Asuransi Videi	0.452	0.775	0.929	1	0.486	0.775
52	PT Asuransi Wahana Tata	0.397	0.608	0.401	0.721	0.992	0.843
53	PT Asuransi Mitra Pelindung Mustika	0.53	0.779	0.5977	0.815	0.887	0.955
54	PT Asuransi Cakrawala Proteksi Indonesia	0.254	0.553	0.498	0.558	0.51	0.991
55	PT Asuransi Simas Net	1	0.526	1	1	1	0.526
56	PT Asuransi ASEI Indonesia	0.384	0.447	0.459	0.479	0.835	0.932
57	PT ACE Jaya Proteksi	0.461	0.578	0.545	0.815	0.844	0.709
58	PT Asuransi Allianz Utama Indonesia	0.477	0.457	0.512	0.579	0.933	0.788
59	PT Asuransi Axa Indonesia	0.444	0.487	0.469	0.554	0.945	0.878
60	PT Bess Central Insurance	0.374	0.535	0.516	0.593	0.726	0.902
61	PT AIG Insurance Indonesia	0.365	0.508	0.408	0.717	0.896	0.708
62	PT China Taiping Insurance Indonesia	0.426	0.585	0.445	0.645	0.957	0.907
63	PT Meritz Korindo Insurance	0.335	0.651	0.649	1	0.517	0.651
64	PT LIG Insurance Indonesia	0.259	0.468	0.279	0.515	0.928	0.908
65	PT Asuransi Mandiri Axa General Insurance	0.87	0.878	0.907	1	0.959	0.878
66	PT Asuransi MSIG Indonesia	0.666	0.902	0.674	0.947	0.988	0.952
67	PT Asuransi Sampo Japan Nipponkoa Indonesia	0.417	0.562	0.417	0.711	1	0.791
68	PT Asuransi QBE Pool Indonesia	0.555	0.642	0.646	0.661	0.859	0.972
69	PT Asuransi Samsung Tugu	0.479	0.811	0.524	0.831	0.913	0.976
70	PT Asuransi Tokio Marine Indonesia	0.552	0.765	0.567	0.789	0.973	0.969