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The Impact of Total Equity, Risk-Based Capital Ratio, Adequacy Investment Ratio, Direct Premium Receivable Ratio, Liquidity Ratio, and Loss Ratio toward The Early Warning System of General Insurance

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Equity;

Abstract

This study aims to analyze the impact of simultaneous and partial Total Equity, Risk-Based Capital Ratio (RBC), Investment Adequacy Ratio (RKI), Direct Premium Receivable Ratio, Liquidity Ratio, and Loss Ratio on the Early Warning System of General Insurance in Indonesia. Results of the analysis show that EWS is simultaneously influenced by the variables of Equity, Risk-Based Capital (RBC), Investment Adequacy Ratio (RKI), Direct Premium Receivable Ratio, Liquidity Ratio, and Loss Ratio. While partially EWS is not influenced by the Liquidity Ratio and Loss Ratio variables, but EWS is partially influenced by the variables of Equity, Risk-Based Capital (RBC), Investment Adequacy Ratio (RKI), and the Direct Premium Receivable Ratio. The regression coefficient that connects the variables of Equity, Risk-Based Capital (RBC), Investment Adequacy Ratio (RKI), and the Direct Premium Receivable Ratio with the EWS variable in general insurance companies in Indonesia has a significant positive value.

1. Introduction

Several studies have been conducted related to the Early Warning System. Rusmita et al.(2018) conducted study of Early Warning System research on Islamic insurance companies in Indonesia and Malaysia. Assessment of financial performance with the Early Warning System with the ratio of

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changes in the surplus ratio, underwriting ratio, loss ratio, commission ratio, management ratio, investment return ratio, premium growth ratio, and retention ratio (Chen & Wong, 2004). The results showed that all ratios of Islamic insurance companies in Indonesia and Malaysia were in good health. However, when viewed from each ratio, the health level of Islamic insurance companies in Malaysia is better than Islamic insurance companies in Indonesia.

Insurance is an important source of funds that plays a role in protecting the insured against financial losses and is a source of security (Waqas, 2018). During the period 2006 to 2020, the regulator has revoked 40 business licenses for insurance companies and reinsurance companies. There are 25 general insurance companies, or 62.5% whose business licenses were revoked for reasons of financial soundness and business mergers. Total of 13 life insurance companies or 32.5% had their business licenses revoked for reasons of financial soundness and business combination, and there was 1 reinsurance company or 2.5% whose business licenses were revoked for reasons of financial soundness and business combination. Based on the data, it is known that most of the revocations of business licenses are due to the company's financial soundness problems (OJK, 2020). This condition shows that the company's sustainability is a part that must be the main concern of the company to continue to be able to grow and develop.

Specifically for insurance companies in Indonesia, the Indonesia Financial Services Authority (OJK) has issued OJK Regulation Number 71/POJK.05/2016 concerning Financial Soundness of Insurance Companies and Reinsurance Companies (POJK 71/2016). The regulation stipulates that the company must at all times meet the requirements for the level of financial soundness. The measurement of the Company's financial soundness level as referred to is the Solvency Level, technical reserves, investment adequacy, Equity, Guarantee Fund, and other provisions related to financial health. According to POJK 71/2016, the minimum solvency level is 100% (one hundred percent) of the risk-based minimum capital (MMBR). Internal Solvency Level target is set at 120% (one hundred and twenty percent) of the MMBR by taking into account the company's risk profile and taking into account the results of the change scenario simulation (stress test).

OJK as an independent institution that acts as a regulator and supervisor of the financial services sector, including the insurance industry sector, already has tools to measure the Early Warning System (EWS) for insurance companies and reinsurance companies. Based on the EWS Guidelines for Insurance and Reinsurance Companies, it is known that OJK uses 3 ratios in its EWS calculations. The ratios referred to include 1) Risk-Based Capital (RBC), 2) Total Equity, and 3) Investment Adequacy Ratio (RKI).

This research is different from previous studies which generally categorize companies into two major criteria, namely bankrupt and not bankrupt. However, this research was conducted for the first time based on three criteria, namely normal, alert, and warning using the variables Risk-Based Capital, Total Equity, and Investment Adequacy Ratio (RKI) following the provisions set by the Financial Services Authority plus several other ratios that considered relevant to EWS, namely the ratio of direct premium receivable based on Statutory Accounting Principle (SAP) balance to direct premium receivable based on Financial Accounting Standard (SAK) balance (direct premium receivable), liquidity ratio and loss ratio.

The purpose of this study was to analyze the effect of Simultaneous and partial Total Equity, Risk-Based Capital Ratio (RBC), Investment Adequacy Ratio (RKI), Direct Premium Receivable Ratio, Liquidity Ratio (Udin, 2017; Wanjohi, 2017), and Loss Ratio (Restianti, 2018; Rianti, 2018; Wanjohi, 2017) to Early Warning System for General Insurance Companies in Indonesia.

2. Materials and Methods

Early Warning System (EWS)

Risk-Based Supervision (RBS) is a supervision concept that is currently being used in several countries, especially in the supervision of the financial services sector, including the insurance sector. In risk-based supervision, supervisory activities of the company are carried out with different focus and depth according to the risks faced by the company. For this reason, an analytical method is needed that can describe the company's profile related to risks.

One of the methods for early identification, measuring, and assessing the risks faced by insurance companies is the Early Warning System (EWS). Early Warning System (EWS) is a tool to identify and measure potential problems that may arise early and identify aspects that require more intensive and immediate monitoring In general, EWS is calculated using a financial ratios approach. EWS is oriented towards preventing future problems (forward-looking) by taking into account current conditions and past trends (current and historical trends). In general, EWS can be used to analyze the risk profile of an insurance company. In the end, the results from the EWS analysis can be used as one of the considerations for monitoring the company, namely to find out the condition of the company comprehensively, identify problems that the company is currently facing or will potentially face, and determine a supervisory action plan.

Research variable

The analysis of the Early Warning System for General Insurance Companies in Indonesia has been standardized into 3 (three) indicators, namely 1) RBC Ratio, Total Equity, and Investment Adequacy Ratio. As part of the model developed in this study, 3 new variables related to EWS were added, namely 1) Direct Premium Receivable Ratio, 2) Liquidity Ratio, and 3) Loss ratio.

Measurement of Research Variables

The scale used for the independent variables is the RBC Ratio, Total Equity, Investment Adequacy Ratio, Direct Premium Receivable Ratio, Liquidity Ratio, and Loss Ratio is a ratio scale. The scale used for the dependent variable is the Early Warning System (EWS). Measurement of the Early Warning System in this study consisted of 3 (three) criteria, namely normal, alert, and warning. Standard measurement in this study can be seen in the following table.

Table 1. Early Warning System Measurement

No	EWS Indicator	Normal	Alert	Warning
1	Total Equity	Equity > Rp150 billion	Rp105 billion < Equity < Rpl50	Equity < Rp105 billion
2	Risk Based Capital	RBC >	130% < RBC <	RBC < 130%
3	Adequacy Investment Ratio	Ratio >	105% < Ratio <	Ratio < 105%
4	Direct Premium Receivable Ratio	Ratio >80%	50% < Ratio < 80%	Ratio < 50%
5	Liquidity Ratio	Ratio>150%	110% < Ratio < 150%	Ratio < 110%
6	Loss Ratio	Ratio < 50%	50% < Ratio < 75%	Ratio > 75%

Research methods

The objects used in this study are general insurance companies registered with the OJK during the period 2016 to 2020. The number of insurance companies that are the object of this research is 70 general insurance companies.

The research method approach used in this research is the descriptive quantitative research method. Through descriptive research, a description of each variable can be obtained. Quantitative research according to Uma Sekaran (2017: 76) is a scientific method whose data is in the form of numbers or numbers that can be processed and analyzed statistically.

The framework developed in this research is related to the EWS variables that have been developed by the Financial Services Authority which consist of Total Equity, RBC Ratio, Investment Adequacy Ratio, Direct Premium Receivable Ratio, Liquidity Ratio, and Loss Ratio. The six variables are constellated in the following research framework;

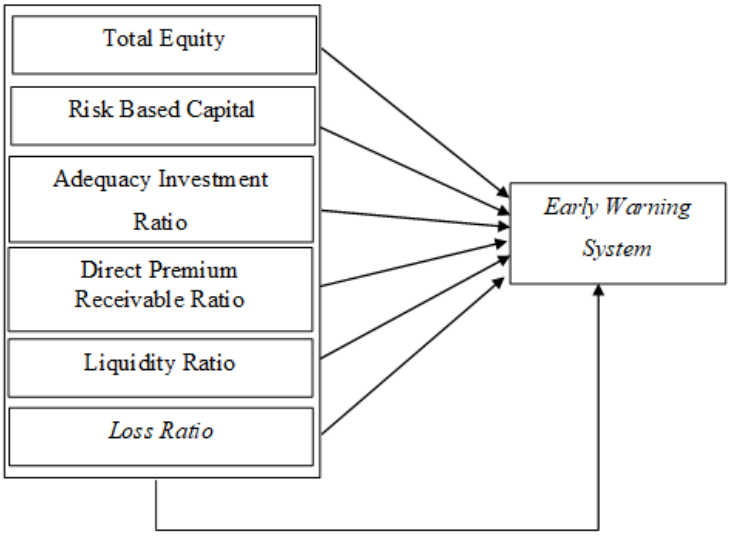


Figure 1. Research Framework
Source: Data processed by Researchers (2021)

Hypothesis Formulation

The hypotheses developed in the research are as follows:

H1: There is a simultaneous effect of the variable Total Equity, Risk-Based Capital Ratio, Investment Adequacy Ratio, Direct Premium Receivable Ratio, Liquidity Ratio and Loss Ratio on the Early Warning System of General Insurance Companies in Indonesia.

H2: There is a partial effect of the Total Equity, Risk-Based Capital Ratio, Investment Adequacy Ratio, Direct Premium Receivable Ratio, Liquidity Ratio and Loss Ratio on the Early Warning System of General Insurance Companies in Indonesia.

Classification Accuracy Test

The definition of classification accuracy evaluation is an evaluation to show the probability of error by the classification function in multinomial logistic regression. A good model is a model that has a minimal chance of misclassification, through the correct classification table or table of classification accuracy (Hosmer and Lemeshow, 2000). The classification accuracy table depicts the two-way frequency of the predicted and actual data sets. The value of classification accuracy is measured by the number of correct predictions according to the number of data samples.

3. Results and Discussions

Simultaneous Testing Result

The results of simultaneous testing of the influence of all research variables can be seen in the following table.

Table 2 of Simultaneous Testing Results of All Research Variables

	Model Fitting Criteria	Likelihood Ratio Tests		
Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	144.000			
Final	33.625	110.375	12	.000

Source: SPSS Output

Table 2 shows that there is a decrease in the value of -2 log-likelihood from intercept only to final, namely from 144.00 to 33.63 with a Chi-square value of 110.38 and significant at 0.000, meaning that the multinomial logistic regression model with the presence of independent variables can provide accuracy. a better predictor of EWS based on normal, alert, and alert criteria. Based on the results of this test, it can be concluded that the hypothesis H1 which states that there is at least one independent variable that is statistically significant in influencing the EWS criteria variable is accepted, so it is necessary to do a partial test for each independent variable used in the study.

Partial Test of Research Variables

The partial test aims to determine which independent variables affect the EWS variable. The partial test of the research variables was carried out after it was known that simultaneously the

independent variables in the study affected the EWS variable. The results of the partial test of each independent variable can be seen in the following table.

Table 3 of Partial Test Results of Research Variables

Effect	Model Fitting Criteria	Likelihood Ratio Tests			Description
	-2 Log Likelihood of Reduced Model	Chi-Square	df	Sig.	
Intercept	56.685	23.060	2	0.000	Significant
Equity	46.034	12.409	2	0.002	Significant
RBC	44.805	11.180	2	0.004	Significant
RKI	42.321	8.696	2	0.013	Significant
Direct Premium Receivable Ratio	45.489	11.864	2	0.003	Significant
Liquidity Ratio	34.734	1.109	2	0.574	Not Significant
Loss Ratio	34.446	0.821	2	0.663	Not Significant

Table 3 shows that there are variables Equity, RBC, RKI, and Direct Premium Receivable Ratio showing a significance value lower than the value (alpha = 0.05) which means these variables affect the EWS criteria. While the Liquidity Ratio and Loss Ratio variables do not affect the EWS criteria, so the Liquidity Ratio and Loss Ratio variables are excluded from the EWS modelling.

Simultaneous Test of Equity Variables, RBC, RKI, and Direct Premium Receivable Ratio

A simultaneous test was used to determine whether the independent variables Equity, RBC, RKI, and Direct Premium Receivable Ratio had a significant effect on the model. After the Liquidity Ratio and Loss Ratio variables were removed from the EWS modeling. The results of simultaneous testing of the effects of all research variables can be seen in the following table 4. Table 4 shows that there is a decrease in the value of -2 log-likelihood from intercept only to final, namely 144.00 to 35.329 with a Chi-square value of 108.671 and significant at 0.000, meaning the model multinomial logistic regression in the presence of independent variables was able to provide better accuracy to predict EWS based on normal, alert, and alert criteria. Based on the results of this test, it can be concluded that the hypothesis H1 which states that there is at least one independent variable that statistically significantly affects the EWS criteria variable is accepted so it is necessary to do a partial test for each of the variables Equity, RBC, RKI, and Direct Premium Receivable Ratio used in research.

Table 4 Results of Simultaneous Testing of Equity Variables, RBC, RKI, and Direct Premium Receivable Ratio

Model	Model Fitting Criteria	Likelihood Ratio Tests		
	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	144.000			
Final	35.329	108.671	8	0.000

Source: SPSS Output

Partial Test of Equity Variables, RBC, RKI, and Direct Premium Receivable Ratio

The partial test aims to determine whether the variables of Equity, RBC, RKI, and Direct Premium Receivable Ratio affect the EWS criteria variables. The partial test of the research variables was carried out after it was known that simultaneously the Equity, RBC, RKI, and Direct Premium Receivable Ratio variables in the study affected the EWS criteria variable. The results of the partial test of Equity, RBC, RKI, and Direct Premium Receivable Ratio variables can be seen in table 5. Table 5 shows that the variables Equity, RBC, RKI, and Direct Premium Receivable Ratio show a lower significance value than the value (alpha = 0.05) which means these variables affect the EWS criteria.

Table 5 Results of Partial Equity Test, RBC, RKI, and Direct Premium Receivable Ratio

	Model Fitting Criteria	**Likelihood Ratio Tests**			
Effect	**-2Log Likelihood of Reduced Model**	**Chi-Square**	**df**	**Sig.**	**Description**
Intercept	97.970	62.641	2	0.000	Significant
Equity	48.431	13.102	2	0.001	Significant
RBC	46.261	10.933	2	0.004	Significant
RKI	44.070	8.741	2	0.013	Significant
Direct Premium Receivable Ratio	48.453	13.124	2	0.001	Significant

Source: SPSS Output

After partially knowing that each variable has a significant effect on the EWS variable, the next step is to perform a model fit test (Goodness of Fit).

The goodness of Fit Test Model

The model fit test was carried out after simultaneously or partially the variables Equity, RBC, RKI, and Direct Premium Receivable Ratio affected the EWS variable. Tests are carried out based on the Pearson or Deviance test. The results of the model fit test can be seen in the following table.

Table 6 Model Fit Test Results

	Chi-Square	df	Sig.
Pearson	92.029	130	.995
Deviance	35.329	130	1.000

Source: SPSS Output

Based on the results of the model fittest, it is known that the Pearson significance value is 0.995 and the Deviance value is 1,000, this value is greater than 0.05, thus it can be concluded that Ho is accepted so that the model is feasible to use or the multinomial logistic regression model formed according to the observation data.

Testing the Reliability of the Logistics Regression Model

The coefficient of determination is used to measure the level of reliability of the formed logistic regression model. The value of the coefficient of determination shows how much the model can explain the research data. Testing the coefficient of determination of logistic regression can use one of the Cox and Snell, Nagelkerke, and McFadden tests. The results of testing the coefficient of determination can be seen in the following table.

Table 7 Testing the Reliability of the Formed Logistic Regression Model

Cox and Snell	0.788
Nagelkerke	0.904
McFadden	0.755

Source: SPSS Output

Based on table 7, it is known that there are three test models produced, namely Cox and Snell, Nagelkerke, and McFadden. Based on the Nagelkerke test, it shows that the independent variables consisting of Equity, RBC, RKI, and Direct Premium Receivable Ratio variables can explain the Early Warning System (EWS) of 90.4% while the remaining 9.6% is influenced by other variables that are not used. in research.

Early Warning System (EWS) Model for General Insurance Companies in Indonesia

The Early Warning System (EWS) model of general insurance companies can be formed after the independent variable is declared to have a significant effect on the EWS and has a high level of reliability. In the EWS logistic regression modeling which has 3 criteria, 2 models of logistic regression equations will be obtained. The results of the analysis of the formation of the EWS model can be seen in the following table.

Table 8 Multinomial Logistic Regression Model

EWS		B	Std. Error	Wald	df	Sig.
Equation 1	Intercept	-51.590	20.961	6.058	1	.014
	Equity	.016	.008	4.238	1	.040
	RBC	.101	.052	3.934	1	.049
	RKI	.175	.089	3.891	1	.049
	Direct Premium Receivable Ratio	.081	.040	4.010	1	.045
Equation 2	Intercept	-43.455	20.828	4.353	1	.037
	Equity	.014	.008	3.421	1	.042
	RBC	.104	.052	4.046	1	.044
	RKI	.158	.088	3.189	1	.044
	Direct Premium Receivable Ratio	.043	.039	5.240	1	.035

a. The reference category is: 3,00.

Source: SPSS Output

1. *Logistics Regression Model 1*

Table 8 shows the constant (intercept) in logistic equation 1 has a value of -51.590. In logistic regression model 1 the Wald statistical value for the constant (intercept) is 6.058, the value of the Wald statistical constant (intercept) has a significant value that is smaller than the value (alpha = 0.05) which is 0.014. Based on the results of this statistical test, it can be concluded that the constants in the logistic regression model 1 negatively affect the EWS variable. The equity variable in logistic equation 1 has an efficiency value of 0.16. The Wald statistical value for the Equity variable coefficient is 4.238, the Wald statistical value for the Equity coefficient has a significant value that is smaller than the value (alpha = 0.05) which is 0.04. Based on the results of this statistical test, it can be concluded that the coefficient of the Equity variable positively affects the EWS variable.

The RBC variable in logistic equation 1 has a coefficient of 0.10. The Wald statistical value for the RBC variable coefficient is 3.934, the Wald statistical value for the RBC coefficient has a significant value that is smaller than the value (alpha = 0.05) which is 0.04. Based on the results of this statistical test, it can be concluded that the coefficient of the RBC variable positively affects the EWS variable.

The RKI variable in logistic equation 1 has a coefficient of 0.18. The Wald statistical value for the RKI variable coefficient is 3.891, the Wald statistical value for the RKI coefficient has a significant value that is smaller than the value (alpha = 0.05) which is 0.49. Based on the results of this statistical test, it can be concluded that the coefficient of the RKI variable positively affects the EWS variable.

The variable Direct Premium Receivable Ratio in logistic equation 1 has an efficiency value of 0.08. The Wald statistical value for the variable coefficient of Direct Premium Receivable Ratio is 4.010, the value of the Wald statistical coefficient of Direct Premium Receivable Ratio has a significant value that is smaller than the value (alpha = 0.05) which is 0.45. Based on the results of this statistical test, it can be concluded that the coefficient of the Direct Premium Receivable Ratio variable positively affects the EWS variable. Based on the results of the Wald test, a logistic regression model 1 for EWS1 can be formed as follows.

Logistics Regression Model 1:
*EWS1 = -51.59 + 0.16*Equity + 0.10*RBC + 0.18*RKI + 0.08* Direct Premium Receivable Ratio*

Model Logit 1 (EWS1) is a comparison log between the probability of the alert criteria against the probability of the normal criteria on the EWS. Based on the model, it is known that there is a constant value in the model of -51.59. The constant value of -51.59 indicates that if there is no increase in Equity, RBC, RKI, and Direct Premium Receivable Ratio, the probability value of the company's EWS is very low.

Each additional unit of equity will increase the probability of EWS criteria by 0.16, this increase assumes RBC, RKI, and Direct Premium Receivable Ratio remain. The value of the equity coefficient of 0.16 indicates that if there is no increase in the company's equity, the probability of the company entering the alert category is higher than the normal category.

Each addition of one RBC unit will increase the EWS criteria by 0.10, this increase assumes that the Equity, RKI, and Direct Premium Receivable Ratio are fixed. The RBC coefficient value of 0.10 indicates that if there is no increase in the company's RBC, the probability of the company entering the alert category is higher than the normal category.

Each addition of one RKI unit will increase the EWS criteria by 0.18, this increase assumes the Equity, RBC, and Direct Premium Receivable Ratio remain. The RKI coefficient value of 0.18 indicates that if there is no increase in the company's RKI, the probability of the company entering the alert category is higher than the normal category.

Each additional unit of Direct Premium Receivable Ratio will increase the EWS criteria by 0.08, this increase assumes that Equity, RBC, and RKI are fixed. The coefficient value of Direct Premium Receivable Ratio 0.08 indicates that if there is no increase in the company's Direct Premium

Receivable Ratio, the probability of the company entering the alert category is higher than the normal category.

2. Logistics Regression Model 2

Table 8 shows the constant (intercept) in logistic equation 2 has a value of -43,455. In logistic regression model 2, the Wald statistical value for the constant (intercept) is 4.353, the value of the Wald statistical constant (intercept) has a significant value that is smaller than the value (alpha = 0.05) which is 0.037. Based on the results of this statistical test, it can be concluded that the constants in the logistic regression model 1 negatively affect the EWS variable.

The equity variable in logistic equation 2 has a coefficient value of 0.14. The Wald statistical value for the Equity variable coefficient is 3.421, the Wald statistical value for the Equity coefficient has a significant value that is smaller than the value (alpha = 0.05) which is 0.04. Based on the results of this statistical test, it can be concluded that the coefficient of the Equity variable positively affects the EWS variable.

The RBC variable in logistic equation 2 has a coefficient value is 0.10. The Wald statistical value for the RBC variable coefficient is 4.046, the Wald statistical value for the RBC coefficient has a significant value that is smaller than the value (alpha = 0.05) which is 0.44. Based on the results of this statistical test, it can be concluded that the coefficient of the RBC variable positively affects the EWS variable.

The RKI variable in logistic equation 2 has a coefficient of 0.16. The Wald statistical value for the RKI variable coefficient is 3.189, the Wald statistical value for the RKI coefficient has a significant value that is smaller than the value (alpha = 0.05) which is 0.44. Based on the results of this statistical test, it can be concluded that the coefficient of the RKI variable positively affects the EWS variable.

Variable of Direct Premium Receivable Ratio in logistic equation 2 has a coefficient value of 0.04. The Wald statistical value for the variable coefficient of Direct Premium Receivable Ratio is 5.240, the value of the Wald statistical coefficient of Direct Premium Receivable Ratio has a significant value that is smaller than the value of alpha = 0.05 which is 0.35. Based on the results of this statistical test, it can be concluded that the coefficient of the Direct Premium Receivable Ratio variable positively affects the EWS variable. Based on the results of the Wald test, a logistic regression model 2 for EWS2 can be formed as follows.

Logistics Regression Model 2:
*EWS2 = -43.46 + 0.14*Equity + 0.10*RBC + 0.16*RKI + 0.04* Direct Premium Receivable Ratio*

The EWS2 Regression Model is a log comparison between the alert criteria odds against the alert criteria odds on the EWS. Based on the model, it is known that there is a constant value in the model of -43.46. The constant value of -43.46 indicates that if there is no increase in Equity, RBC, RKI, and Direct Premium Receivable Ratio, the probability value of the company's EWS is very low.

Each additional unit of equity will increase the probability of EWS2 criteria by 0.14, this increase assumes RBC, RKI, and Direct Premium Receivable Ratio remain. The value of the equity coefficient of 0.14 indicates that if there is no increase in the company's equity, the probability of the company entering the warning category is higher than the alert category.

Each addition of one RBC unit will increase the EWS criteria by 0.10, this increase assumes that the Equity, RKI, and Direct Premium Receivable Ratio are fixed. The RBC coefficient value of 0.10 indicates that if there is no increase in the company's RBC, the probability of the company entering the warning category is higher than the alert category.

Each addition of one RKI unit will increase the EWS2 criteria by 0.16, this increase assumes that the Equity, RBC, and Direct Premium Receivable Ratio are fixed. The RKI coefficient value of 0.18 indicates that if there is no increase in the company's RKI, the probability of the company entering the warning category is higher than the alert category.

Each additional unit of Direct Premium Receivable Ratio will increase the EWS criteria by 0.08, this increase assumes Equity, RBC, and RKI. The coefficient value of Direct Premium Receivable Ratio 0.08 indicates that if there is no increase in the company's Direct Premium Receivable Ratio, the probability of the company entering the warning category is higher than the alert category.

EWS Model Interpretation Based on Odds Ratio Value

The EWS model which has been proven to be statistically significant can be interpreted using the odds ratio test. The odds ratio test is used to find out how big or small the chance of a company is to fit into the criteria developed in the study. The results of the odds ratio test can be seen in the following table.

Table 9 Odds Ratio Test Results

EWS[a]		Sig.	Exp(B) or Odd Ratio
Normal	Intercept	0.014	
	Equity	0.040	1.016
	RBC	0.049	1.107
	RKI	0.049	1.191
	Direct Premium Receivable Ratio	0.045	1.084
Alert	Intercept	0.037	
	Equity	0.042	1.014
	RBC	0.044	1.109
	RKI	0.044	1.171
	Direct Premium Receivable Ratio	0.035	1.044

a. The reference category is: 3,00.

Table 9 shows that the odds ratio test for the Equity variable on the normal criteria shows that the more the company's equity increases, the greater the chance that the company will enter the normal category 1.02 times. The alert criteria show that the more the company's equity increases, the greater the chance that the company will enter the alert category 1.01 times. These results indicate that high equity will result in the company entering the normal criteria when compared to the opportunity for the company to enter the alert criteria.

The odd ratio test for the RBC variable on normal criteria shows that the more the company's equity increases, the greater the chance that the company will enter the normal category 1.11 times. The alert criteria show that the more the company's equity increases, the greater the chance that the company will enter the alert category 1.11 times. These results indicate that high equity will result in the company having the same opportunity to enter into the normal criteria and the alert criteria.

The odd ratio test for the RKI variable on the normal criteria shows that the more the company's RKI increases, the greater the chance that the company will be 1.19 times into the normal category. The standby criteria show that the more the company's RKI increases, the greater the chance that the company will enter the alert category 1.17 times. These results indicate that a high RKI will result in

the company entering the normal criteria when compared to the opportunity for the company to enter the alert criteria.

The odd ratio test for the Direct Premium Receivable Ratio variable on the normal criteria shows that the more Direct Premium Receivable Ratio a company has, the greater the chance that the company will enter the normal category 1.08 times. The alert criteria show that the more the company's Direct Premium Receivable Ratio, the greater the chance that the company will enter the alert category 1.04 times. These results indicate that a high Direct Premium Receivable Ratio will result in the company entering the normal criteria when compared to the opportunity for the company to enter the alert criteria.

Grouping Accuracy

A good model is a model that has a high grouping accuracy because the results of the model grouping accuracy show the correct prediction of the observed data. The results of the accuracy of grouping models can be seen in the following table.

Table 10 Model Grouping Accuracy

	Predicted			
Observed	**Normal**	**Alert**	**Warning**	**Percent Correct**
Normal	34	1	1	94.4%
Alert	3	15	0	83.3%
Warning	0	1	15	93.8%
Overall Percentage	52.9%	24.3%	22.9%	91.4%

Source: SPSS Output

Based on table 10, it is known that of the 36 general insurance companies that are grouped into the normal EWS criteria, it is known that there are 34 companies or 94.4% right classified in the normal EWS criteria. From 18 general insurance companies classified into the EWS alert criteria, it is known that there are 15 companies or 83.3% right classified in the alert EWS criteria, and from 16 general insurance companies or 93.8% right classified in the EWS warning criteria. The percentage level of accuracy in general for the normal, alert, and warning criteria based on the logistic regression equation model formed is 91.4%. These results indicate a very high percentage of accuracy.

Discussion

Risk-Based Supervision (RBS) is a supervision concept that is currently being used in several countries, especially in the supervision of the financial services sector, including the insurance sector. In risk-based supervision, supervisory activities of the company are carried out with different focus and depth according to the risks faced by the company. The effectiveness of the implementation of risk-based supervision will greatly depend on the method used to analyze the risks faced by the company. The risk analysis process includes identifying, measuring, and assessing the risks that exist in insurance companies. For this reason, an analytical method is needed that can describe the company's profile related to risks.

One of the methods for early identification, measuring, and assessing the risks faced by insurance companies is the Early Warning System (EWS) method. The Early Warning System (EWS) is a tool to identify and measure potential problems that may arise early and identify aspects that require more

intensive and immediate monitoring. In general, EWS is calculated using the financial ratios approach. EWS is oriented towards preventing future problems (forward-looking) by taking into account current and historical trends. In general, EWS can be used to analyze the risk profile of an insurance company. In the end, the results from the EWS analysis can be used as one of the considerations for supervising the company, namely to find out the condition of the company comprehensively, identify problems that are being faced or have the potential to be faced by the company, and determine a supervisory action plan.

Specifically for insurance companies in Indonesia, OJK has set three variables that can be used to measure the level of EWS of insurance companies in Indonesia. The three variables are Equity, RBC, and RKI. To improve the quality of the EWS grouping in this study, 6 financial ratio variables were used, namely Equity, RBC, RKI, Direct Premium Receivable Ratio, Liquidity Ratio, and Loss Ratio. Discussion of the results of the analysis of the influence of Equity, RBC, RKI, Direct Premium Receivable Ratio, Liquidity Ratio, and Loss Ratio is as follows;

Effect of Equity on Early Warning System (EWS)

Testing the effect of Equity on the Early Warning System (EWS) in this study was measured using the company's equity variable. Equity is the company's net assets which is the difference between the company's assets and liabilities based on the assessment of Financial Accounting Standards (SAK). The EWS variable was measured based on the criteria of normal, alert, and alert. Empirically the results of the analysis show that the Equity variable affects the EWS. The regression coefficient that connects the Equity variable with the EWS variable in general insurance companies in Indonesia has a significant positive value. The results of this study are following the provisions of Article 33 of the POJK 71/2016.

This provision stipulates that an insurance company must have equity of at least Rp. 100,000,000,000.00 (one hundred billion rupiah). Under normal conditions (without any deposit or withdrawal of capital from shareholders or other reasons), the company's total capital should tend to increase in each period. This shows that the company's operations during the period compared have made a profit.

Effect of Investment Adequacy Ratio on Early Warning System (EWS)

Testing the effect of the investment adequacy ratio on the EWS in this study is measured by using the total investment divided by the sum of technical reserves and claims payable. Based on the results of the analysis of the effect of the investment adequacy ratio on the EWS, it shows that the variable of the investment adequacy ratio affects the EWS. The regression coefficient that relates the investment adequacy ratio variable to EWS in general insurance companies in Indonesia has a significant positive value. This means that an increase in the Investment Adequacy Ratio variable in general insurance companies in Indonesia will increase the company's EWS status. These results indicate that an increase in the investment adequacy ratio (RKI) in general insurance companies in Indonesia has an impact on the company's ability to invest its assets or the company's assets are used by companies for short, medium, or long term investment purposes.

Empirically the results of the analysis show that the Investment Sufficiency Ratio variable affects EWS. The regression coefficient that connects the Investment Adequacy Ratio variable with the EWS variable in general insurance companies in Indonesia has a significant positive value. The results of this study are following the provisions of Article 25 of POJK 71/2016 which stipulates that insurance companies are required to have Admitted Assets in the form of investments plus Admitted Assets in

the form of cash and banks, at least amounting to the number of technical reserves for own retention, plus the liability for payment of own retention claims, and other liabilities to policyholders or the insured.

Effect of Risk-Based Capital (RBC) on Early Warning System (EWS)

Testing the effect of RBC on EWS in this study RBC is measured by the difference between the number of Allowable Assets minus the level of liability, then divided by the Risk-Based Minimum Capital (MMBR). MMBR is the number of funds needed to anticipate the risk of loss that may arise as a result of deviations in asset and liability management. EWS is measured using 3 criteria normal, alert, and warning.

The results of the analysis of the effect of the RBC variable on the EWS show that the RBC variable has a positive effect on the EWS. The logistic regression coefficient that connects the RBC variable with EWS in general insurance companies in Indonesia has a significant positive value. The results of this study are following the provisions of Article 3 of the POJK 71/2016 which stipulates that insurance companies must at all times meet a solvency level of at least 100% of the Risk-Based Minimum Capital (MMBR).) and insurance companies are required to set a target of internal solvency level of at least 120% of the MMBR every year by taking into account the risk profile of each company and taking into account the results of the change scenario simulation (stress test).

Effect of Direct Premium Receivable Ratio with Early Warning System (EWS)

Testing the effect of the Direct Premium Receivable Ratio on EWS in this study The Direct Premium Receivable Ratio ratio is measured by the comparison between direct premium receivable based on SAP balances and direct premium receivable based on SAK balances. EWS is measured using 3 criteria normal, alert, and warning.

The results of the analysis of the effect of the Direct Premium Receivable Ratio variable on the EWS indicate that the Direct Premium Receivable Ratio variable has a positive effect on the EWS. The logistic regression coefficient that connects the Direct Premium Receivable Ratio variable with EWS in general insurance companies in Indonesia has a significant positive value.

The results of this study are following the provisions of Article 17 POJK 71/2016 which regulates restrictions on assets that are permitted in the form of non-investment in the form of direct closing premium claims only recognized with a billing age of no longer than 2 months calculated from the date of coverage for policies with a single premium payment or maturity. premium payment period for policies with installment premium payments. If the comparison of direct premium receivable based on SAP balances against direct premium receivable based on SAK balances is getting smaller, it shows that the collectibility level of premium claims for production obtained by insurance companies is low. This has the potential to reduce the health ratio of insurance companies.

Effect of Liquidity Ratio on Early Warning System (EWS)

Testing the effect of the liquidity ratio on the EWS in this study. The liquidity ratio is measured by the comparison between current assets for the current period and current liabilities for the current period. EWS was measured using the 3 criteria normal, alert, and warning. Liquidity ratio analysis is intended to determine the company's financial ability to pay off all of its obligations immediately. In general, the liquidity ratio is 100%, which means that the company has sufficient liquid funds to pay off all its obligations, but there is still a risk if the market price of the investment value drops. A higher ratio indicates a greater ability to pay off all of its obligations and there is sufficient liquidity reserve

in the event of a decline in the market price of the investment value. In terms of wealth, changes in this ratio are strongly influenced by movements in the market value of the investment instruments owned by the company. Therefore, the analysis of this ratio is closely related to the composition of the investment portfolio.

The results of the analysis of the effect of the Liquidity Ratio variable on the EWS show that the Liquidity Ratio variable does not affect the EWS. The logistic regression coefficient that connects the Liquidity Ratio variable with EWS in general insurance companies in Indonesia has a positive value that is not significant. The results of this study are not following the provisions of Article 2 of the Regulation of the Minister of Finance Number 124/PMK.010/2008 concerning the Implementation of the Credit Insurance and Suretyship Business Lines low by 150%.

This ratio is not significant because currently there are no special provisions for minimum liquidity ratio rules that must be owned by general insurance companies that regulate it as a whole, there are only provisions that regulate Credit Insurance and Suretyship.

Effect of Loss Ratio on Early Warning System (EWS)

Testing the effect of Loss Ratio on EWS in this study. Loss Ratio is measured by a comparison between gross claims and gross premiums. EWS was measured using the 3 criteria normal, alert, and warning. The loss ratio analysis is intended to determine the quality of the company's underwriting in selecting risks and handling claims. In general, a smaller claims ratio indicates better underwriting quality than a larger ratio and vice versa. A high claim ratio, let alone exceeding 100%, is very dangerous for the company's financial condition because the funds that come in from premiums are not sufficient to pay the claims obligations that arise and finance the company's operations. This can also mean that the pricing set by the company is too low.

The results of the analysis of the effect of the Loss Ratio variable on the EWS show that the Loss Ratio variable does not affect the EWS. The logistic regression coefficient that connects the Loss Ratio variable with EWS in general insurance companies in Indonesia has a negative value that is not significant. This ratio is not significant because currently general insurance companies in Indonesia generally have better underwriting quality in selecting risks and handling claims.

4. Conclusion

Based on the results of testing and analysis, it is known that EWS is simultaneously influenced by the variables of Equity, Risk-Based Capital (RBC), Investment Adequacy Ratio (RKI), Direct Premium Receivable Ratio, Liquidity Ratio, and Loss Ratio. But partially EWS is not influenced by the Liquidity Ratio and Loss Ratio variables, but EWS is partially influenced by the variables of Equity, Risk-Based Capital (RBC), Investment Adequacy Ratio (RKI), and Direct Premium Receivable Ratio. The regression coefficient that connects the variables of Equity, Risk-Based Capital (RBC), Investment Adequacy Ratio (RKI), and the Direct Premium Receivable Ratio ratio with the EWS variable in general insurance companies in Indonesia has a significant positive value.

Related to the research results, some suggestions for further research that can be developed are:

1. For researchers, the Liquidity Ratio and Loss Ratio which are not significant are new findings in the study because based on the findings of previous studies, Liquidity Ratio and Loss Ratio have a positive effect on the financial distress. The influence of the Liquidity Ratio and Loss Ratio on the EWS is not significant because currently there are no special provisions for the minimum rules for the Liquidity Ratio and Loss Ratio that must be owned by general insurance companies that

regulate as a whole, there are only provisions that regulate the Liquidity Ratio of Credit Insurance and Suretyship.

2. Regulators need to review the current increase in the value of Risk-Based Capital which stipulates that the minimum RBC ratio is 120%. The purpose of this study is for insurance companies to have a good level of health which in the end is believed to be able to carry out their obligations to policyholders or the insured and not always depend on the reinsurer in fulfilling claim payments. In addition, regulators need to build a more comprehensive EWS assessment model so that it is more objective and accurate in predicting the health level of insurance companies.
3. Academically, it is expected to periodically test and improve the performance of the EWS prediction model, especially related to the variables of Equity, RBC, and Investment Adequacy Ratio. This result is very important because the use of the variables of Equity, RBC, and Investment Adequacy Ratio has been expanded for monitoring the financial situation of insurance companies by regulators in Indonesia. In addition, research on the EWS prediction model can be further improved by considering the latest methodological developments in the fields of econometrics and statistics as well as the recent improvement of databases including qualitative information.
4. For companies based on research findings if resources allow, the researcher recommends that companies need to look for strategies that can increase Equity, RBC, Investment Adequacy Ratio, and Direct Premium Receivable Ratio and reduce the Company's loss ratio so that the stability and health of the company can always be maintained.

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