FACTORS AFFECTING SOLVENCY IN INSURANCE COMPANIES IN INDONESIA 2015–2019 PERIOD

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Abstract

This study aims to determine the effect of Firm Size, Investment Return Ratio, Self-Retention Ratio and Underwriting Results on Solvency (proxied by the Risk Based Capital ratio). This study uses secondary data with a population of 74 insurance companies registered with the Financial Service Authority (OJK) during 2015–2019. The Sample selection was done by purposive sampling technique which resulted in 40 insurance companies for 5 years. Thus, the total research observations amounted to 200. This study uses panel data regression analysis with the help of the Eviews 11 program. The result of this study indicate that the Self-Retention Ratio and Underwriting Results affect the solvency of insurance companies. While the Firm Size and Investment Return Ratio have no effect on the solvency of insurance companies.

Keywords: ***Solvency, Risk Based Capital, Company Size, Investment Return Ratio, Self-Retention Ratio dan Underwriting Results.***

1. INTRODUCTION

Insurance is an agreement of an insurer who binds himself to the insured to provide an obligation to compensate for loss or damage that may be suffered by the insured (KUHD Pasal 246, 2009). A healthy and reliable insurance company is very much needed by the community. Because the trust in an insurance company from the insured is based on the insurance company's financial health factors (Arzelan, 2017). An insurance company can be said to be healthy if it always fulfills the claim obligations submitted by the insured and has a solvency ratio above the minimum threshold set by the Government (Tarigan & Mahfud, 2015).

General insurance companies experienced a decrease in the number of companies starting from 2012–2018. The following is data on the number of insurance companies in Indonesia according to the 2019 Insurance Statistics Report.

Table 1 Number of Insurance Companies in 2012-2019

Description	2012	2013	2014	2015	2016	2017	2018	2019
General insurance	**84**	**82**	**81**	**80**	**80**	**79**	**79**	**78**
National Private	66	65	64	64	58	55	56	55
Joint Venture	18	17	17	16	22	24	23	23

Source: Financial Services Authority, Indonesia Insurance Statistics 2019

The decline in the number of general insurance companies was due to the operating licenses of several companies having been revoked by the Financial Services Authority (OJK) because they could not fulfill the stipulated provisions, namely having a solvency

level below 120%. An example of the case occurred in PT Asuransi Recapital and PT Asuransi Himalaya Protector in 2020. This issue related to solvency has become a major problem in the insurance industry in Indonesia for the past few years.

Solvency in insurance companies is influenced by various factors. According to researches by Ambarwati & Hasib (2018), Joo (2013), and Haan & Kakes (2010) states that firm size has a positive effect on solvency. However, in contrast to the research conducted by Kumar & Kumar (2016) and Verma (2014), which states that firm size has a negative effect on solvency.

Research conducted by Alamsyah & Wiratno (2017) on a loss insurance company that has been registered with the OJK for the period 2011-2015 states that investment returns have a positive effect on the achievement of solvency ratios. However, research conducted by Ambarwati & Hasib (2018) and Joo (2013) states that investment returns have no significant effect on the solvency of insurance companies.

Utami & Khoiruddin (2016) in his research stated that the retention ratio itself had no effect on solvency. Then, research conducted by Aniseh et al. (2019) and Tarigan & Mahfud (2015) show that underwriting results have an effect on the solvency of insurance companies.

Research from Aniseh et al. (2019) and Tarigan & Mahfud (2015) show that underwriting has an effect on the solvency of insurance companies. Underwriting results are the results of underwriting activities which are a process of identifying and selecting risks from prospective insured who will buy an insurance product.

This study will contribute to the literature, where to the best of the researcher's knowledge, there are still few previous studies regarding solvency in insurance companies in Indonesia and there are different (contradictory) results from previous studies related to firm size and investment return ratios. Based on the background explanation above, this research takes the title **"Factors Affecting Solvency in Insurance Companies in Indonesia for the 2015-2019 Period".**

2. THEORY REVIEW

2.1 Bankruptcy Theory

Research on corporate bankruptcy was first proposed by Beaver in 1996. Beaver in his research compared 30 ratios in 79 failed companies and non-failed companies in 38 industries. The purpose of Beaver's research is to determine whether the selected financial ratios can be used to detect bankruptcy.

The theory of bankruptcy is related to this research, because if the insurance company has problems paying its financial obligations to the insured at maturity, it is very possible for the company to be in an insolvable condition. If these conditions are not addressed quickly, it can lead to business bankruptcy.

2.2 Solvency

The solvency ratio according to Kasmir (2013:151) is the company's ability to pay all obligations, both long-term and short-term with all its assets if the company is dissolved or liquidated. Harahap (2015) explains solvency, which is a financial ratio used to measure a company's ability to pay debts when they fall due.

2.3 Risk Based Capital (RBC)

Cheng & Weiss (2012) explained that RBC is the minimum amount of capital required based on the risk accepted by insurance companies in terms of supporting business

activities and minimizing the possibility of bankruptcy. According to Utami & Khoiruddin (2016) RBC is the ratio of capital adequacy to risk borne and is one of the main indicators for assessing the health of insurance companies, especially those related to the ability of insurance companies to fulfill all their obligations (solvability).

2.4 Company Size

Firm size according to Ponziani & Azizah (2017) is a reflection of the number of assets used for the company's operating activities. While Brigham & Houston (2018) define company size as the size of a company assessed by total assets, total sales, total profit, tax expense and others.

2.5 Investment Return Ratio

According to Ningrum (2014), the ratio of return on investment is the ratio used to determine the health of insurance companies. Meanwhile, Ambarwati & Hasib (2018) states that the investment return ratio can be used to assess investment policies carried out by insurance companies. Because most of the investment results obtained are intended to be used as reserves to pay future claims, the insurance company's investment must be safe.

2.6 Own Retention Ratio

According to Yuliana (2008:81), the retention ratio itself reflects the comparison between the net premium and the gross premium. If the retention ratio is close to one, it means that the company is increasingly willing to take the risk of its own claims. On the other hand, if the retention ratio is close to zero, it means that the company is less willing to take the risk of its own claims (Sumartono & Harianto, 2018:5).

2.7 Underwriting Yield Ratio

Nasution (2020) explained that underwriting is a risk selection activity carried out by insurance companies, including in determining the premium level and other provisions that will be imposed on the prospective insured. According to Sastri (2017), underwriting results are profit/loss from the main insurance activities obtained from the difference between underwriting income and underwriting expenses.

2.7 Theoretical Framework and Hypothesis Development

a) Company Size Against Solvency

If the insurance company is large, the premiums obtained as the insurance company's income are also high so that it can also contribute high to the level of solvency of the insurance company. This is in accordance with research by Ambarwati & Hasib (2018), Joo (2013), and Haan & Kakes (2010) which show that firm size has a positive effect on solvency.

H_1: Firm size has a positive effect on the solvency of insurance companies

b) The Effect of Investment Return Ratio on Solvency

Basically, insurance companies have a need to get high investment returns from their investment assets. Therefore, good investment management will provide big profits for insurance companies, which will have a positive impact on solvency levels (Joo, 2013). This is consistent with research by Alamsyah & Wiratno (2017), which states that investment returns have a positive effect on RBC.

H_2: The investment return ratio has a positive effect on the solvency of insurance companies

c) The Effect of Own Retention Ratio on Solvency

The retention ratio itself can measure the company's retention rate to compare the company's actual ability with available funds. If the retention rate is high, it means that the company's ability to manage premium income is also high, which will have an impact on the financial health of the insurance company. According to the research results of Utami & Khoiruddin (2016), they stated that the retention ratio itself partially has no effect on the level of solvency.

H_3: The retention ratio itself has a positive effect on the solvency of insurance companies

d) Effect of Underwriting Results on Solvency

Insurance companies with high risk require more capital. Because of this, insurance companies must be able to obtain sufficient profits from underwriting results for these high risks. According to research Aniseh et al. (2019), Tarigan & Mahfud (2015) and Pitselis (2006) state that underwriting has a significant effect on the company's solvency level. The greater the underwriting results of an insurance company, the greater the solvency level will be.

H_4: Underwriting results have a positive effect on the solvency of insurance companies

The relationship between the factors studied related to corporate philanthropy can be seen in the following figure:

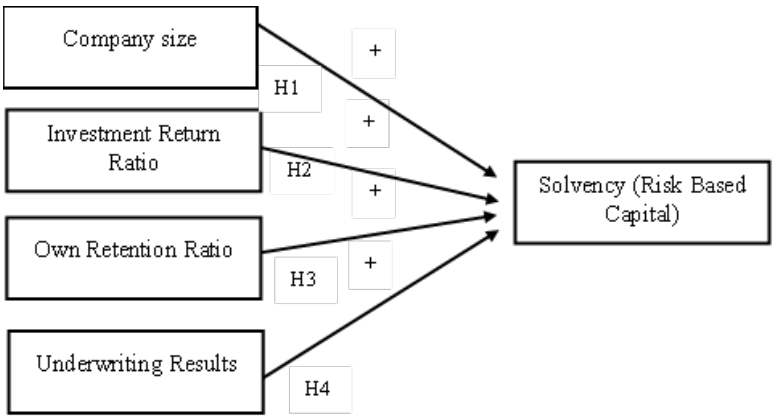


Figure 1 Conceptual Framework

3. RESEARCH METHODS

The unit of analysis and the scope of this research is a general insurance company which is officially registered and supervised by OJK in the 2015–2019 period. This study uses a quantitative approach with the analytical technique used is multiple regression panel data which will be processed with the help of EViews 11 software.

The population used in this study are general insurance companies that are officially registered and supervised by the OJK for the 2015–2019 period, totaling 74 companies. By using the purposive sampling method, the samples obtained are those that meet certain criteria, including:

1. General insurance company registered and supervised by OJK for the period 2015–2019;
2. A general insurance company that publishes an annual report and/or financial statement for the period 2015–2019 and publishes it on the Indonesia Stock Exchange (IDX) website or on the respective websites of the insurance company.
3. A general insurance company that publishes an annual report and/or financial statement in Rupiah.

The number of purposive sampling results that meet the criteria mentioned above are 40 companies. The selected companies were used as research samples with an observation period of each company for 5 years, so in this study there were 200 observations.

Research variables are classified into two groups of variables, namely the independent variable and the dependent variable. The dependent variable in this study is solvency (Y). Meanwhile, the independent variables are company size (X1), investment return ratio (X2), own retention ratio (X3) and underwriting results (X4). For more details, the variables and their indicators can be seen in the following table:

Table 2 Operationalization of Variables

Variable	Measurement	Measuring Scale
Solvency (RBC) (Y)	$\frac{Solvency\ level}{RBMC\ (Risk\ Based\ Minimum\ Capital)}\ x\ 100\%$	Ratio
Company Size (X1)	$Ln\ total\ asset$	Nominal
Investment Return Ratio (X2)	$\frac{Investment\ return}{Total\ investment}\ x\ 100\%$	Ratio
Self-Retention Ratio (X3)	$\frac{Net\ Premium}{Gross\ Premium}\ x\ 100\%$	Ratio
Underwriting Results (X4)	$Underwriting\ Income - Underwriting\ Expenses$	Nominal

Source: OJK Regulation No.71/POJK.05/2016, Ambarwati & Hasib (2018), Alamsyah & Wiratno (2017), PSAK Nomor 28 Tahun 2012

4. RESULTS AND DISCUSSION

4.1 Descriptive Statistical Analysis

Descriptive statistical analysis was conducted to find out the general picture or description of a data seen by the average (mean), median, maximum value, minimum value, and standard deviation. The results of the descriptive statistical analysis processed using the EViews 11 program are presented in table 4.2 below.

Table 3 Results of Descriptive Statistics

	RBC	SIZE	INVT	RTS	UDW
Mean	1.075932	1.443187	0.071672	0.593702	2.033316
Median	1.000040	1.443442	0.064279	0.612871	1.199625
Maximum	3.201316	1.485309	0.238653	0.999275	12.56559
Minimum	0.232210	1.407028	0.001952	0.147084	-0.342760
Std. Dev.	0.560986	0.018116	0.032350	0.203178	2.220136
Observations	200	200	200	200	200

Source: Output EViews 11, 2021

Description:
RBC = *Risk Based Capital*

SIZE = Company Size
INVT = Investment Return Ratio
RTS = Own Retention Ratio
UDW = Underwriting Results

4.2 Panel Data Regression Model Selection

a) Chow Test on Fixed Effect Model

According to Basuki & Prawoto (2017), Chow test is used to select a model that is more appropriate to be used in the study by choosing between the common effect and the fixed effect. Below is a test table of the Chow test on the fixed effect model.

Table 4 Chow Test

Redundant Fixed Effects Tests Equation: MODEL_FEM Test cross-section fixed effects			
Effects Test	Statistic	d.f.	Prob.
Cross-section F	15.086017	(39,156)	0.0000
Cross-section Chi-square	312.532327	39	**0.0000**

Source: Data processed with EViews 11, 2021

Based on the test results on the chow test table, it shows that the prob value. The Chi-square cross-section is 0.0000 < 0.05 so that H0 is rejected, and Ha is accepted. So, the model that is suitable for conducting regression testing in this study uses the fixed effect model.

b) Hausman Test on Random Effect Model

According to Basuki & Prawoto (2017), Hausman test is used to determine whether a model with a fixed effect or random effect approach is more appropriate to use in a study. The results of the Hausman test can be seen in the following table.

Table 5 Hausman Test

Correlated Random Effects - Hausman Test Equation: MODEL_REM Test cross-section random effects			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	7.499397	4	**0.1117**

Source: Data processed with EViews 11, 2021

The results of the Hausman test in the table above show that the prob value. The random cross-section is 0.1117 > 0.05 so that H0 is accepted, and Ha is rejected. This means that the model chosen for panel data regression is a random effect model.

c) Lagrange Multiplier (LM) Test on Common Effect Model

According to Basuki & Prawoto (2017), in determining the right model between random effects and common effects, it can be done by using the Lagrange multiplier test. The following is a test table of the lagrange multiplier test.

Table 6 Lagrange Multiplier Test

Lagrange Multiplier Tests for Random Effects Alternative hypotheses: Two-sided (Breusch-Pagan) and one-sided (all others) alternatives			
	Cross-section	Test Hypothesis Time	Both
Breusch-Pagan	203.5880 (0.0000)	0.960138 (0.3272)	204.5481 **(0.0000)**

Source: Data processed with EViews 11, 2021

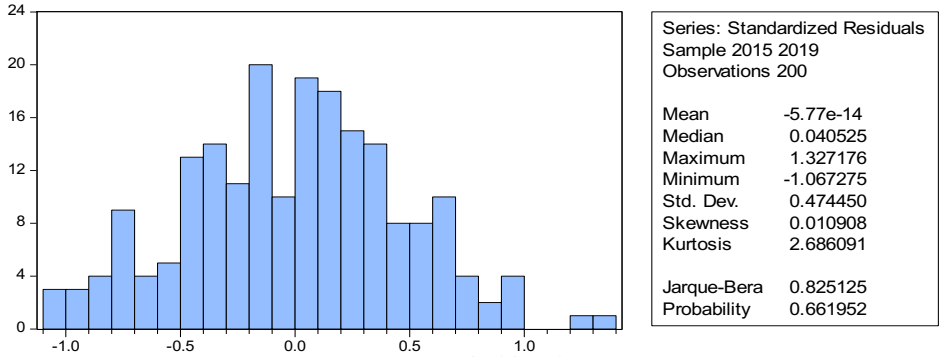
The results of the lagrange multiplier test show that prob. The Breusch-Pagan cross-section on panel data is 0.0000 < 0.05, which means that H0 is rejected, and Ha is accepted. Based on the three tests above, the right model for panel data regression is the random effect model.

4.3 Classic Assumption Test

Basically, panel data regression does not require autocorrelation test. This is because the autocorrelation test only occurs in time series data, while in panel data it is closer to cross section data (Basuki and Yuliandi, 2015:152-153). Therefore, the classical assumption test used is as follows.

a) Normality test

The normality test aims to test whether all variables in the regression model have a normal or abnormal data distribution (Ghozali, 2018:161). In this study, the normality test used the Jarque-Bera (JB) test.



Source: Data processed with Eviews 11, 2021

Figure 2 Normality Test Results

Based on Figure 2, it shows the JB value of 0.825125 which means it is smaller than 2. In addition, the probability value is above the alpha value (0.05 or 5%) which is 0.661952. So, it can be concluded that the data in this study are normally distributed.

b) Multicollinearity Test

The multicollinearity test aims to test whether the regression model is mutually correlated between one independent variable and the other independent variables (Ghozali, 2018:107). If the correlation coefficient value < 0.90, then the data does not experience multicollinearity problems.

Table 7 Multicollinearity Test Results

	SIZE	INVT	RTS	UDW
SIZE	1.000000	**0.127427**	-0.058429	**0.811135**
INVT	**0.127427**	1.000000	0.055325	**0.079228**
RTS	**-0.058429**	**0.055325**	1.000000	**0.080479**
UDW	**0.811135**	**0.079228**	**0.080479**	1.000000

Source: Data processed with Eviews 11, 2021

The results of the multicollinearity test in the table above, it is known that the value of the correlation coefficient between the independent variables SIZE, INVT, RTS and UDW is less than 0.90. This means that the regression model and the four independent variables used do not occur multicollinearity.

c) Heteroscedasticity Test

The heteroscedasticity test aims to test whether the regression model has an inequality of variance from the residuals of one observation to another (Ghozali, 2018:137). In this study, the heteroscedasticity test was carried out using the Glejser test method.

Table 8 Heteroscedasticity Test Results

Heteroscedasticity Test: Glejser			
F-statistic	2.292105	Prob. F(4,195)	0.0610
Obs*R-squared	8.981233	Prob. Chi-Square(4)	**0.0616**
Scaled explained SS	8.419242	Prob. Chi-Square(4)	0.0774

Source: Data processed with Eviews 11, 2021

In the table of heteroscedasticity test results, it is known that the prob value. Chi-Square (on Obs*R-Squared) is 0.0616 > 0.05. Thus, it can be concluded that the data in this study did not experience heteroscedasticity problems.

d) Multiple Linear Regression Analysis

The equation model that was previously selected through the Chow test, Hausman test, and the Lagrange multiplier test is the random effect model (REM) with the results in the following table.

Table 9 Random Effect Model

Dependent Variable: RBC
Method: Panel EGLS (Cross-section random effects)
Date: 11/15/21 Time: 22:58 Sample: 2015 2019
Periods included: 5 Cross-sections included: 40
Total panel (balanced) observations: 200
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	**38.98050**	5.991000	6.506509	0.0000
SIZE	**-26.57563**	4.150574	-6.402882	0.0000
INVT	**0.198828**	0.651321	0.305268	0.7605
RTS	**0.389377**	0.189481	2.054960	0.0412
UDW	**0.100141**	0.028990	3.454288	0.0007
			S.D.	Rho
Cross-section random			0.417004	0.7539

Idiosyncratic random		0.238281	0.2461
Weighted Statistics			
R-squared	0.234930	Mean dependent var	0.266387
Adjusted R-squared	**0.219236**	S.D. dependent var	0.272077
S.E. of regression	0.240410	Sum squared resid	11.27039
F-statistic	14.96962	Durbin-Watson stat	1.109655
Prob(F-statistic)	**0.000000**		
Unweighted Statistics			
R-squared	0.284720	Mean dependent var	1.075932
Sum squared resid	44.79542	Durbin-Watson stat	0.279186

Source: Data processed with Eviews 112021

RBC = 38.98050 – 26.57563 SIZE + 0.198828 INVT + 0.389377 RTS + 0.100141 UDW

e) Model Feasibility Test (Statistical Test F)

In table 9 above, it is known that the F-statistic value is 14.96962 which is greater than Ftable (14.96962 > 2.42). In addition, the Prob F-statistic value is smaller than alpha (0.05), which is 0.000000. It can be concluded that the estimated regression model is feasible to use.

f) Coefficient of Determination (*Adjusted* R^2)

Based on table 9, the test results show that the value obtained from the coefficient of determination R-squared is 0.219236, which means the independent variables SIZE, INVT, RTS and UDW can explain the solvency dependent variable (RBC) of 21.92% while the remaining 78.08% (100% - 21.92 %) is influenced by other variables not examined in the study.

4.4 Hypothesis Test (Test Statistical t)

Based on the results of the t-statistical test in the table above, the hypothesis in this study is as follows.

1. In table 9 it can be seen the prob value. SIZE variable is 0.0000 < 0.05 and t-count is -6.402882 > 1.9722 t-table. The regression coefficient of -26.57563 indicates a negative direction. So, it can be concluded that the **first hypothesis** proposed by the author is **rejected.**
2. Based on the results of hypothesis testing, the prob value is known. the INVT variable is 0.7605 > 0.05 and the t-count is 0.305268 <1.9722 t-table with a regression coefficient of 0.198828 indicating a positive direction. So, the **second hypothesis** proposed by the author is declared **rejected.**
3. In the results of hypothesis testing, it shows the prob value. the RTS variable is 0.0412 < 0.05 and the t-count is 2.054960 > 1.9722 t-table. The regression coefficient is 0.389377 with a positive direction, which means that the **third hypothesis** proposed by the author is **accepted.**
4. The results of hypothesis testing indicate that the prob value. the UDW variable is 0.0007 < 0.05 and the t-value is 3.454288 > 1.9722 t-table. The regression coefficient has a positive direction of 0.100141, which means that the **fourth hypothesis** proposed by the author is **accepted.**

4.5 Discussion

a) The Effect of Firm Size on Solvency

This study states that there is a relationship between firm size which has a negative effect on the solvency of insurance companies. This means that all assets owned by the company do not always affect the increase in the solvency ratio of the insurance company. This is because not all of the total assets owned by the company can be included in the list of permitted assets as stated in the Financial Services Authority Regulation Number 71/POJK.05/2016 concerning the Financial Health of Insurance Companies and Reinsurance Companies. Assets allowed (admitted assets) is the amount of wealth that is considered in the calculation of the solvency level. Allowed assets are divided into two, namely: (1) permitted assets in the form of investment, (2) permitted assets in the form of non-investment. Thus, even though the company has high total assets, the assets that are allowed to be calculated in solvency are low, thereby reducing the solvency of the insurance company.

The results of this study support previous research conducted by Kumar & Kumar (2016) and Verma (2014) which obtained the results that firm size had a negative effect on solvency. This study obtained different results from research by Ambarwati & Hasib (2018), Joo (2013), and Haan & Kakes (2010) which stated that firm size had a positive effect on the solvency of insurance companies.

b) The Effect of Investment Return Ratio on Solvency

This study yields a positive relationship but does not affect the ratio of investment returns to the solvency of insurance companies. This can be assumed because the investment returns obtained by general insurance companies are less profitable. It can be seen that the average return on investment is 7.16% of the total investment each year. Therefore, investment returns have no effect on solvency.

The results of this study support research that has been carried out by Ambarwati & Hasib (2018) and Joo (2013) which says that investment returns have no effect on solvency. This study obtained different results from research by Alamsyah & Wiratno (2017), which stated that investment returns had a significant effect and had a positive relationship to the solvency ratio.

c) The Effect of Own Retention Ratio on Solvency

This study shows that the retention ratio itself has a positive effect on the solvency of insurance companies. This shows that the retention ratio itself can increase solvency, because increasing the retention ratio means the insurance company is able and reliable to manage its own premium income without having to spread the risk to other insurers (reinsurance companies) so that it has an impact on the company's financial health.

This research supports the research conducted by Agustiyani (2019) which results in the retention ratio having an effect on solvency. However, in contrast to previous research conducted by Utami & Khoiruddin (2016), it was stated that there was no relationship between the retention ratio itself and the level of solvency. If the retention ratio itself increases or decreases, it will not affect the solvency level of the insurance company.

d) Effect of Underwriting Results on Solvency

This study provides the results of the relationship between underwriting results that have a positive effect on the solvency of insurance companies. This is because when the underwriting income of the insurance company can cover all of its underwriting expenses, the difference can affect the profits earned by the insurance company. If profits increase, the solvency ratio can also increase. With increased solvency, the company will be seen as financially healthy and will give a positive signal to shareholders.

The results of this study support previous research conducted by Tarigan & Mahfud (2015) Which obtained the results that underwriting results had a positive effect on solvency. In addition, Aniseh et al. (2019) The results of this study support previous research conducted by Tarigan & Mahfud (2015) which obtained the results that underwriting results had a positive effect on solvency. In addition, Aniseh et al. (2019) also conducted research with the findings that there is a positive relationship between underwriting results and solvency.

5. CONCLUSION AND SUGGESTIONS

5.1 Conclusion

This study aims to examine how the effect of firm size (SIZE), investment return ratio (INVT), own retention ratio (RTS) and underwriting results (UDW) on solvency (proxied by Risk Based Capital ratio) in insurance companies. This research was conducted considering the phenomenon in the insurance world, which is required to meet the solvency ratio, the amount of which has been determined by the Government.

Based on the results of the tests and discussions that have been described previously, it can be concluded that company size has a negative effect on the solvency of insurance companies. The investment return ratio has no effect on the solvency of the insurance company. The retention ratio itself has a positive effect on the solvency of insurance companies. Underwriting results have a positive effect on the solvency of insurance companies.

5.2 Suggestions

Based on the explanation above, there are several recommendations for further researchers, namely as follows:

1. Future researchers are expected to add other independent variables that can increase the proportion in explaining the dependent variable in this study such as the ratio of claims expense and asset growth.
2. Future researchers are expected to increase the time period of the study so that observations on the solvency of insurance companies will later obtain a broader picture.
3. Future researchers are expected to use different methods, for example the selection of proxies in variables, sample selection, test equipment, and the type of analysis method used.

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