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An analysis of factors affecting the investment growth of Indonesian Islamic insurance

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Abstract

The development of Islamic insurance undergoes a noticeable growth of investment. As Islamic insurance companies have a better ability to manage investments, it is predictable that the companies will be able to better grow assets. The objective of this study is to analyze the factors that influence the growth of Islamic insurance investment in Indonesia. This study used an Ordinary Least Square (OLS) method along with the monthly timeline data from January 2014 until October 2016. The results of this study show that a variable yield of mudharabah and an industrial production index enhance a positive impact on the Islamic insurance investment growth. While the inflation, BI rate, and oil price variables negatively affect the growth of Islamic insurance investment.

Keywords: Investment, Islamic insurance, OLS, timeline

Introduction

The Indonesia's real gross domestic product (GDP) in 2016 reached 5.02 percent compared to the previous year's growth. This growth rate occurred in the business sector, including financial and insurance services that underwent the highest growth of 8.90 percent (BPS 2017).

Table 1 The Development of Indonesian Islamic Insurance

Indicators	Q1 2015 (billion)	Q1 2016 (billion)	Growth (per cent)
Asset	23 803	28 967	21.69
Investment	20 808	25 726	23.64
Premium	2 497	2 753	10.25
Unit	49 units	55 units	6 units

Source: Association of Indonesian Islamic Insurance (2016)

The Indonesia's insurance growth is supported by the growth of Indonesian Islamic insurance, as can be seen in Table 1.

As Table 1 proves, the growth of Islamic insurance can be estimated through a number of Islamic insurance companies, asset growth, investment and premiums resulting in the contribution of Islamic insurance in Indonesian Islamic finance industries (AASI, 2016). The first Islamic insurance in Indonesia is PT (a Limited Liability Company) Syarikat Takaful Indonesia (STI) that was established on February 24, 1994. Until now, Islamic insurance has widely grown marked by the increasing number of Islamic insurance companies. Based on the October 2016 Islamic Financial Authority (OJK) of Non-Bank Financial Industry (IKNB) Statistics, the number of Indonesian Islamic insurance companies is 58 units, consisting of 11 Islamic business entities (full fledged) and 47 Islamic business unit insurance companies.

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The growth of Islamic insurance is marked by the growth of its investment. As a Takaful company has a better ability to grow its investment, the company will predictably be able to grow its assets better. This is because the results of these investments will increase the assets of the company (Sastrodiharjo et al. 2015).

Islamic insurance companies have investment managers who are particularly be responsible for placing investment funds into several investment portfolios that can provide large returns with a small level of risks. The funds investment is mainly concerned with Islamic principles based on the Minister of Finance Regulation number 11 / PMK.010 / 2011 regarding the financial health of insurance and reinsurance businesses in the context of Islamic principles. The Indonesian Islamic investment portfolio is an integral part of the Islamic Financial Authority (OJK) and the IKNB Statistics in October 2016 can be viewed in Table 2.

As Table 2 shows, the majority of investment in Islamic insurance companies in October 2016 was placed in the form of short-term investments, namely Islamic stocks and deposits. The short-term investment placement because Islamic insurance companies have liquidity risks, for example, insurance companies must get ready to withdraw their funds if Islamic insurance participants do not cooperate with Islamic insurance companies. As a result, the company must be able to return the customers' funds that have been transferred to it considerably.

The penetration of Islamic insurance deals with the amount of premiums accepted as it can indirectly influence the growth of Islamic insurance investments, because the Islamic insurance will manage the premiums by investing them in other types of Islamic investments. The OJK's IKNB Islamic Statistics in October 2016 indicated that the penetration of Islamic insurance reached 0.098 percent. The growth of Islamic insurance and Islamic insurance investment penetration can be viewed in Figure 1.
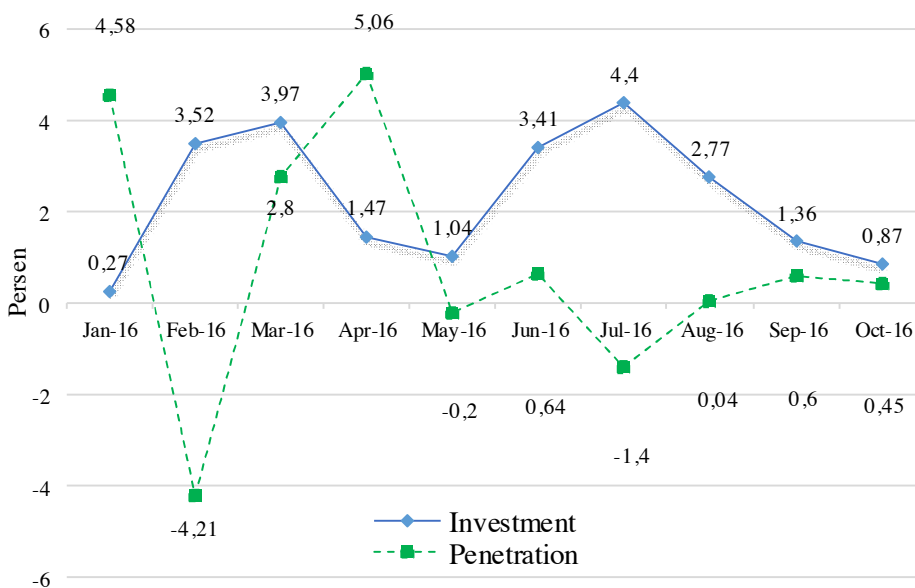
Source: Financial Services Authority 2016 (analyzed)

Figure 1 The penetration growth and investment of Indonesian Islamic Insurance from January-October 2016 (percent)

Figure 1 shows the penetration of Islamic insurance that sustains a slow growth over time. The average growth of an Islamic insurance penetration from January 2016 to October 2016 was 0.84 percent. However, the Islamic insurance investment experiences a greater growth than the penetration of Islamic insurance. The average growth of Islamic insurance investments from January 2016 to October 2016 was 2.31 percent. If the penetration of Islamic insurance grows, this will affect the growth of Islamic insurance investments. In what follows, the penetration of Islamic insurance

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has experienced a slower growth compared to the growth of Islamic insurance investments.

The growth of Islamic insurance investment is inseparable from key factors that influence it. Changes in these factors can impact the growth of Islamic insurance investments. Hence, this study discusses factors that influence the growth of Islamic insurance investments.

A Review of Literature

Only a few research reports on such factors may reflect the growth of Indonesian Islamic insurance investments. Arisah's research (2015) discusses the factors that influence the results of Islamic insurance investments. The title of her research is The Influence of Inflation and Exchange Rates on Investment Results (Study on PT Asuransi Jiwa XYZ Syariah) using the Ordinary Least Square (OLS) method. The results of the study show that the inflation and exchange rate variables do not have a positive influence on the results of Islamic insurance investments.

Several studies on Islamic investment instruments may vary. The research entitled An Analysis of Development of the Net Asset Value (NAV) of Islamic Mutual Funds in Indonesia by Putratama (2007). This study uses the Error Correction Model (ECM) method along with the variables of a gross domestic product, real exchange rate, Jakarta Islamic Index, the number of Islamic mutual funds, the amount of money in circulation, inflation, and the SWBI bonus level. The study results show a long term gross domestic product, real exchange rate, Jakarta Islamic Index, and the number of Islamic mutual funds that have a positive impact on the NAV of Islamic mutual funds. The amount of money in circulation, inflation, and the SWBI bonus level have a negative impact. The research conducted by Othman, Kameel A, and Aziz AH (2015) is entitled The Relationship between Macroeconomic Variables and the Net Asset Value (NAV) of Islamic Equity Unit Trusts: Cointegration Evidence from Malaysian Unit of Trust Industries. Using the Vector Auto Regression (VAR) method, the results of this study indicate that the variable industrial production index, money supply, exchange rate, oil price, corruption index have a significant impact on the Net Asset Value (NAV) in the Malaysian capital market in the long run. Short-term debt variables, national political elections and the global financial crisis do not have any significant impacts on the long-term NAV. Another research conducted by Ardiansyah (2016) is entitled An Analysis of Macroeconomic Variables Impacts on the Sukuk Corporate Growth in Indonesia. Using the Ordinary Least Square (OLS) method, the results of this study prove that the variable money supply, industrial production index, and inflation have a positive impact on the growth of Sukuk corporate. The exchange rate, oil price, and profit sharing of mudharabah deposits have a negative impact on the sukuk growth.

What makes this research distinguish from the subsequent research is that it uses variables in terms of inflation, BI rate, profit sharing of mudharabah deposits, industrial production index, and oil price. Then the object of this study is the growth of Islamic insurance investments in Indonesia.

Hypothesis

The hypothesis in this study is divided into five distinct sections, as stated below:

a. The inflation has a negative impact on the growth of Islamic insurance investments in Indonesia.

b. The BI rate has a negative impact on the growth of Islamic insurance investments in Indonesia.

c. The profit sharing of mudharabah deposits has a positive impact on the growth of Islamic insurance investments in Indonesia.

d. The Industrial Production Index has a positive impact on the growth of Islamic insurance investments in Indonesia.

e. Oil Price has a negative impact on the growth of Islamic insurance investments in Indonesia.

Methodology

Types and Data Sources

The data in this study are secondary as they are data of time series taken within months ranging from January 2014 to October 2016. The data consist of Islamic insurance investments data, inflation, BI rate, mudharabah deposits, industrial production index, and oil prices. The data are derived from the Financial Services Authority (OJK), Bank Indonesia, the Organization for Economic Co-operation and Development (OECD), the U.S. Energy Information Administration (EIA). In addition, data from the previous research in terms of journals, books, internet searches and other literary sources are needed to support this research.

Analysis Method

The analytical method in this study is a quantitative analysis, and the quantitative analysis deals with a multiple linear regression method (an Ordinary Least Square) to see the factors that influence the growth of Islamic insurance investments in Indonesia. To process the data, the Microsoft Excel 2013 program and Eviews 8 software are used considerably.

Model Evaluation

After completing data processing, what to do next is to carry out an evaluation of the estimation model. Estimation methods are generated through the Ordinary Least Square (OLS) analysis, method and evaluation based on econometric, statistical, and economic criteria (Ardiansyah, 2016).

Econometric Criteria Test

For multiple linear regression models, several assumptions must fully be underpinned, so that the resulting estimator meets the criteria of the Best Linear Unbiased Estimator (BLUE). The tests of these assumptions include a normality test, a multicollinearity test, an autocorrelation test, and a heteroscedasticity test. These tests are commonly called classic assumption tests.

1. **Normality Test**

    A normality test seeks to determine whether or not the variable is normally distributed. The normality test aims to determine the distribution of data in the variables to study. Good and feasible data have a normal distribution. The Jarque-Bera test is used to see the normality of data by looking at the plot of the side. The hypothesis within a testing normality is as follows:

    H0: Residuals are normally distributed.

    H1: Residuals are not normally distributed.

    The basis for the rejection of H0 is likely to compare the value of Jarque-Bera Test and a real level of α of 0.05. If the value of Jarque-Bera Test is greater than that of the real level of α = 5 percent, there is insufficient evidence to reject H0. Hence, the residual is normally distributed.

2. **Multicollinearity Test**

    A multicollinearity test is a condition whereas independent variables have a correlation between one another. If independent variables have an equal correlation to others or they are perfectly correlated to one another, the regression coefficients become unpredictable and the standard error value for each regression coefficient becomes infinite. To find out whether or not a multicollinearity can be viewed through the Variance Inflation Factor (VIF), the VIF value must not exceed 10, so that there is no longer multicollinearity. The way to overcome multicollinearity problems is to add data or reduce the amount of observation data, increase or reduce the number of independent variables that have a linear relationship with other variables and transforming variables.

3.   **Autocorrelation Test**

Firdaus (2011) shows that autocorrelation is a disturbance in the regression function in the form of a correlation between disturbance factors. Autocorrelation is easier to emerge in the time series data. Based on its nature, presenting the data is strongly influenced by the data of previous times. A model is said to have autocorrelation if errors from different time periods are correlated. This autocorrelation will result in an inefficient model even though it is still unbiased and inconsistent. A test is needed to detect the symptoms of autocorrelation using the Breusch and Godfrey Serial Correlation Lagrange Multiplier Test, along with the following hypothesis:

H0: ρ = 0 (no serial correlation)

H1: $\rho \neq$ 0 (there is a serial correlation)

The test criteria:

If the probability of Obs value * R-squared > real level (α) is used, then the equation does not undergo autocorrelation;

If the probability of Obs value * R-squared < real level (α) is used, then there is autocorrelation in the equation.

Heteroscedasticity Test

A linear regression model should have the same variance (Gujarati 2006). If such assumptions are not met, there will be a heteroscedasticity problem. Heteroscedasticity test aims to test whether or not a regression model has a variance of the residual inequality for the known independent variable. The result of heterocedasticity is the possibility to draw incorrect conclusions from the F Test because the test of a significance level is in a medium strength. A test seeks to recornize this symptom using a heteroscedasticity test underpinned by the following hypothesis:

H0: γ = 0 (no heteroscedasticity)

H1: $\gamma \neq$ 0 (there are serial heteroscedasticity)

The test criteria:

If the probability of Obs value * R-squared > real level (α) is used, then the equation does not undergo heteroscedasticity;

If the probability of Obs value * R-squared < real level (α) is used, then there is heteroscedasticity in the equation.

The Statistical Criteria Test

Statistical tests are used to obtain whether or not the applied model is likely to describe the relationships between variables. Moreover, to find out whether or not there is a significant relationship between the independent variable and the dependent variable.

1.   **The Determination Coefficient Test (R^2)**

An analysis of determination in the multiple linear regression is used to show the percentage variation of independent variables used in the model to explain variations in dependent variables. If the R2 is equal to 0, there is no slightest percentage of the impact of the given variable on the dependent variable, or the variation of the independent variable used in the model does not explain the slightest variation in the dependent variable. If the R2 is equal to 1, the percentage contribution of the impact given to the dependent variable is perfect, or the variation of the independent variable used in the model explains 100 percent of the variation in the dependent variable.

2. **The F Statistics Test (The Simultaneous Test)**

The F test is conducted to recognize the impact of independent variables on the dependent variables. Moreover, the F test determines whether or not the linear regression model is correct. This test shows results of significance which are below 5 percent (0.05). If the value of sig < 0.05, the H0 is accepted, which means that the independent variables influence the dependent variables, but if the value of sig > 0.05, the H0 is rejected.

3. **The T Statistic Test (The Partial Test)**

The t test is used to determine the effect of independent variables (X_1, X_2, ... X_n) individually, or each of the dependent variables (Y). If a significant value is higher than α = 5 percent or α = 10 percent, it means that each independent variable does not have an influence on the dependent variable. Conversely, if the significance value is lower than the value of α = 5 percent or α = 10 percent, it means that each independent variable has an impact on the dependent variable.

The Economic Criteria Test

An evaluation of estimation models on the economic criteria aims to compare the suitability of signs and estimator values to the economic theory and conformity of logic. The influence of independent variables on the dependent variable must be explained using economic explanations.

An analysis is used to measure variables that affect the growth of Islamic insurance investments. The following regression model is particularly used in this context:

$$\text{Ln(Invest)}_t = \alpha + b_1\,\text{INF}_t + b_2\text{BIRATE}_t + b_3\,\text{DM}_t + b_4\text{IPI}_t + b_5\,\text{Ln(OP)}_t$$

Information:

$\text{Invest}_t\text{Invest}_t$	=	The t period of Islamic insurance investment (billions of Rupiah)
α	=	Intersep
INF_tINF_t	=	The t period of inflation (percent)
$\text{BIRATE}_t\text{BIRATE}_t$	=	The t period of BI interest rate (percent)
DM_tDM_t	=	Profit sharing for the t period of mudharabah deposits (percent)
IPI_tIPI_t	=	The t period of of industrial production index (percent)
OP_tOP_t	=	The t period of the world oil price (dollar / barrel)

Operational Variables and Definitions

1. Islamic insurance investment is a total investment in the Islamic insurance for all types of Indonesian Islamic insurance investments.
2. Inflation is the process of increasing prices in general and it is related to the market mechanism caused by various financial factors as expressed in percentage.
3. The BI rate is the Indonesia's benchmark interest rate.
4. Profit sharing of mudharabah deposits is a ratio or proportion of profits between customers and Islamic banks along with mudharabah contracts.
5. Industrial Production Index is an economic indicator that measures the increase and decrease in production.
6. Oil Price is the world oil price.

Results and Discussion

Stages of Model Evaluation Based on Econometric Criteria

A classical assumption test is admistered, so that the model can produce an estimator that meets the criteria of the Best Linear Unbiased Estimator (BLUE). The classical assumption test includes a normality test, a multicollinearity test, an autocorrelation test, and a heteroscedasticity test. The regression model in this study has connected to the classic assumption of BLUE, as described below.

1. **Normality test**

    The normality test for the residual model shows that the Jarque Berra probability value is 2.600418 greater than that of the real level of 5 percent, so that the residual normal spread model can be fulfilled.

2. **Multicollinearity Test**

    It is necessary to detect models undergoing a multicollinearity using the Variance Inflation Factor (VIF) for each of the independent variables. The results of the multicollinearity test show that the VIF value does not exceed 10, so that there is no correlation between the independent variables.

3. **Autocorrelation Test**

    Autocorrelation testing works in tandem with the Breusch and Godfrey Serial Correlation Lagrange Multiplier Test. In the test, the chi-square probability value of 0.3675 is greater than the 5 percent level, so that there is no autocorrelation in the model.

4. **Heteroscedasticity Test**

    Heteroscedasticity testing in this research model is also called the Breusch-Pagan-Godfrey test in that the F-statistical probability value is 0.8123 greater than the 5 percent level, so that there is no heteroscedasticity in the model.

Stages of a Model Evaluation Based on Statistical Criteria

1. **Determination Coefficient Test (R^2)**

    This test was conducted to find out the percentage of variation in terms of the independent variables used in the model to explain the variation of the dependent variable. The coefficient of determination (R^2) is 0.957660, indicating that 95.76 percent of the variability in Islamic insurance investment variables can influence the model of independent variables, while the remaining 4.24 percent is influenced by other variables beyond the regression model.

Table 3 The multiple linear regression analysis model of Islamic insurance investments

Variables	Coefficient	Probability
INF	-0.016307	0.0149
BIRATE	-0.116862	0.0000
DM	0.035892	0.0010
IPI	0.007234	0.0169
LOG (OP)	-0.212091	0.0000
C	31.29160	0.0000
R-squared	0.957660	
F-statistic	126.6635	
Prob(F-statistic)	0.000000	

This analysis shows that following Islamic Insurance Investment regression equation:

$$\text{Ln(Invest)}_t = 31.29160 - 0.016307\ \text{INF}_t - 0.116862\ \text{BIRATE}_t$$
$$+ 0.035892\ \text{DM}_t + 0.007234\ \text{IPI}_t - 0.212091\ \text{Ln(OP)}_t$$

2.   **The Model Reliability Test (The F Test)**

The probability value of the F-statistics is 0.000000. The F-statistics value on the model is smaller than that of the real level of 5 percent. This shows that the model is able to explain the diversity of growth in Islamic insurance investments. The results of the regression equation prove that all independent variables have been able to explain the diversity of the Islamic insurance investment as the dependent variable.

3.   **The Regression Coefficient Test (The t Test)**

The t-test was conducted to see each independent variable that statistically or significantly influences the growth of Islamic insurance investments in Indonesia. The test can be taken in terms of the t-statistics value of each variable which is smaller than that of the real level of 5 percent. The inflation-free variable, BI rate, the mudharabah deposit profit sharing, the industrial production index, and oil prices have a probability value smaller than the 5 percent of the real level. This means that the independent variables individually have a significant impact on the growth of Islamic insurance investments in Indonesia.

Stages of the Model Evaluation Based on Economic Criteria

The model estimation of data processing shows excellent results because it meets the requirements of model testing. Furthermore, evaluation and economic criteria need to put into practice by looking at the signs and quantities of each independent variable. The estimation results of the OLS method indicate five variables that partially have a significant impact on the growth of Islamic insurance investments in Indonesia.

The Influence of Inflation

The inflation variable has a negative impact on the variable of Islamic insurance investment along with a coefficient of 0.016307. This shows that each increase in the inflation by 1 percent can reduce the growth of Islamic insurance investments by 0.016307 percent assuming other ceteris paribus variables and vice versa. Insurance investment policies are directed towards productive investment objects, but in conditions of inflation and an unstable economy, productive investment policies are less profitable (Harsono, 1967). In general, inflation has an impact on the investments growth. The low inflation will influence the interest of business actors to invest, and the effect of high inflation will increase the risk of investments. Such results of the analysis are in line with the previous research by Putratama (2007) and Arisah (2015).

The Fisher's Effect Theory explains that inflation is related to the nominal interest rate. Changes in nominal interest rates result in changes in the real interest rate. The investment function indicates that the real interest rate negatively affects investments. Thus, the inflation rate has a negative impact on the investment (Mankiw, 2007).

The Influence of the BI Rate

The BI rate variable has a negative impact on the Islamic insurance investment variable along with a coefficient of 0.116862. This proves that every increase by 1 percent in the BI rate can reduce the growth of Islamic insurance investments by 0.116862 percent assuming other ceteris paribus variables and vice versa. The increase in the BI rate results in an increase in deposit rates, so that the investment in the money market is more profitable. People prefer to save their funds in banks rather than using them for consumption such as buying a policy on the Islamic insurance, so that premiums received by the Islamic insurance plummet. This will reduce the amount of premiums that will be invested in the Islamic insurance and ultimately reduce the growth of Islamic insurance

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investments. This research closely connected to the previous research by Mirazdianti (2014) points out that an increase in the BI rate can reduce the investment climate in the capital market because the investment in the money market is more profitable. People tend to save their funds on the money market because of the apparent increase in deposit rates.

The classical economic theory states that saving is a function of the interest rate. High interest rates will further encourage someone to save and sacrifice his or her current consumption in the future (Wibowo, 2007).

Impacts of Mudharabah Deposits

The variable profit sharing of mudharabah deposits has a positive impact on the growth variable of Islamic insurance investments followed by a coefficient of 0.035892. This shows that each increase in the mudharabah deposit by 1 percent can increase the growth of Islamic insurance investments by 0.035892 percent assuming other ceteris paribus variables and vice versa. The increase in the mudharabah deposits between deposit customers (Islamic insurance companies) and banks can increase the profitability of mudharabah deposits received by Islamic insurance companies. This increase in investment profits can increase the growth of Indonesian Islamic insurance investments. The results of this study pertain to the previous research conducted by Susanti (2015).

The Effect of Industrial Production Index

Industrial production index variables have a positive impact on the growth of Islamic insurance investments along with a coefficient of 0.007234. This marks that every increase in the industrial production index by 1 percent can increase the growth of Islamic insurance investments by 0.007234 percent assuming other ceteris paribus variables and vice versa. The industrial production index reflects an economic activity in real terms, so that it directly influences the company's cash flow. If the industrial production index increases, the company's as well as people's incomes increase. The increase in people's income has a positive impact on the demand for the Islamic insurance that will have an effect on the growth of Islamic insurance investments in Indonesia. In addition, equity markets are very sensitive to changes in the industrial production index (Othman et al. 2015). The five biggest types of investments in the Islamic insurance are deposits, shares, mutual funds, SBSN, and sukuk corporate. A change in the industrial production index affects the growth of Islamic insurance investment. The results of this study are likely to support the previous studies by Othman et al. (2015) and Ardiansyah (2016).

The Effects of Oil Prices

The oil price variable has a negative impact on the growth of Islamic insurance investments followed by a coefficient of 0.212091. This means that each oil price increase of 1 percent can reduce the growth of Islamic insurance investments by 0.212091 percent assuming other ceteris paribus variables and vice versa. The increase in world oil prices can affect the economic conditions of a country, one of which is by increasing the cost of producing goods and services. This increase results in the real income of the community to decrease, so that it will reduce people's desires to invest. The decline in the people's desires to invest will affect the public's desires for investments by buying a policy in terms of the Islamic insurance, so that the premiums in the Islamic insurance are managed through reduced investments. This can cause a decline in the growth of Islamic insurance investments in Indonesia. The results of this study are mainly concerned with the previous studies by Othman et al. (2015) and Ardiansyah (2016).

Conclusions and Recommendations

Conclusion

All in all, the variable profit sharing of mudharabah deposits and industrial production indices have a positive impact on the growth of Islamic insurance investments in Indonesia while the inflation variable, the BI rate, and the oil price have a negative effect.

Suggestions

A number of suggestions can influence an effort to increase the growth of Islamic insurance investments in Indonesia, namely:

1. The government and related parties are expected to increase the financial literacy, especially Islamic insurance products so as to increase the amount of Islamic insurance premiums that will affect the growth of Islamic insurance investments.

2. Achieving the expected growth rate of Islamic insurance investments in Indonesia, companies must maintain the company's ability to allocate funds in investment portfolios that can provide big profits.

3. For a further research, it is expected that other researchers will focus on the financial literacy, especially Islamic insurance products.

4. For a further research, it is expected that different measurements or other variables affect the growth of Islamic insurance investments in Indonesia.

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