An Empirical Study of Relationships between Islamic Insurances and Economic Growth

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Abstract: This study aims to examine simultaneous relationships between Islamic insurance demand and economic growth in Indonesia during the period of 2002-2015. This study will also evaluate statistical models by incorporating other variables such as gross premium income, gross domestic product, the percentage of poverty, dependancy ratio and rate of inflation. The relationships among those variables were analyzed using the simultaneous equation modelwhereas the parameters have been estimated using the two stage least squares technique. The result shows that forthe economic growth model, there are only two variables i.e gross domestic product and dependancy ratio which contribute significantly to the economic growth. On the other hand, the inflation variable does not affect the growth since the p-values are equal to 0,66. Moreover, the variables affecting the Islamic insurance demand are the economic growth, inflation rate and dependancy ratio with p-values equal to 0,01, 0,09 and 0,03 respectively. The simultaneous model gives the result that significant Islamic insurance demand affects the economic growth at α = 10%, but economic growth does not affect Islamic insurance premium income.

Index Terms: Keywords: Economic Growth, Islamic Insurance, Simultaneous Equation Model.

I. INTRODUCTION

Insurance provides the risk control for financial protection includes life, health, property and other benefits. The insurance industry with all its aspects and forms has a very large influence on economic activity in general. Insurance is a collector and community funders through the accumulation of premiums invested in various economic activities to support development, in addition to insurance is an institution that provides employment for the community and also the object of financial income State. These days the number of insurance companies in Indonesia is growing each year. The insurance industry is a potential resource and source of domestic funds that have not been utilized optimally. Although industry development continues to increase but penetration insurance in Indonesia is still low. From 2007 to 2011, insurance penetration in Indonesia is still below 2% showed in Fig. 1.
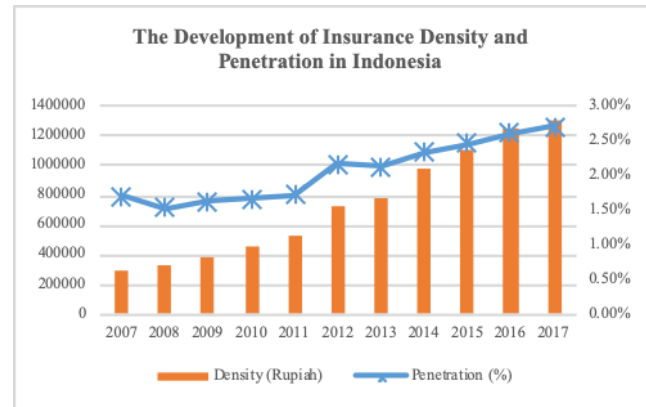

Fig. 1. Indonesian Insurance Density and Penetration

On the other hand, the development of Islamic insurance industry is seen based on penetration rate and its density reaches only 0.08% and 40.000 Rupiah by the end of 2015. The low penetration and density of Islamic insurance can't be separated from a number of challenges, including limited capital, human resource capacity, product innovation and public understanding. There are many differences between conventional and Islamic insurance where Indonesia is a country with a majority of Islamic people population. Islamic insurance activity in Indonesia has been ongoing since 1994 which at that time pioneered by PT Asuransi Takaful Indonesia. According to data from the Association of Takaful Indonesia (AASI) for the first quarter in 2016, Indonesia currently has 55 Islamic companies both insurance and reinsurance consisting of five life Islamic insurance companies (own spin-off), four Islamic insurance companies (own spin-off), 19 units of Islamic life insurance companies, 24 Islamic general insurance companies unit, and three units of Islamic reinsurers.

Some parameters that are commonly used to assess the performance of the Islamic insurance industry show that its numbers continue to increase from year to year. Abdou, Ali and Lister (2014) look at the performance levels of Takaful and conventional insurance industries in Malaysia in which that conventional insurers perform better than Takaful companies in terms of profitability and risk measurement but Takaful outperform conventional insurance when the ratio of premium to surplus is used. The average premium income of all Islamic insurances is increasing from year to year in Indonesia. It is scientifically proved from the data in Indonesian Financial Services Authority or *Otoritas Jasa Keuangan* (OJK).

Economic growth means the process of increasing the production capacity of an economy embodied in the form of an increase in national income.

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Factors affecting economic growth in Indonesia in general namely factor of production, investment, factors of foreign trade and balance of payments, monetary policy and inflation, and state financial factors. According to Statistic Indonesia, the lowest point of Indonesia's economic growth is in the year 2001 shown in Fig. 2.
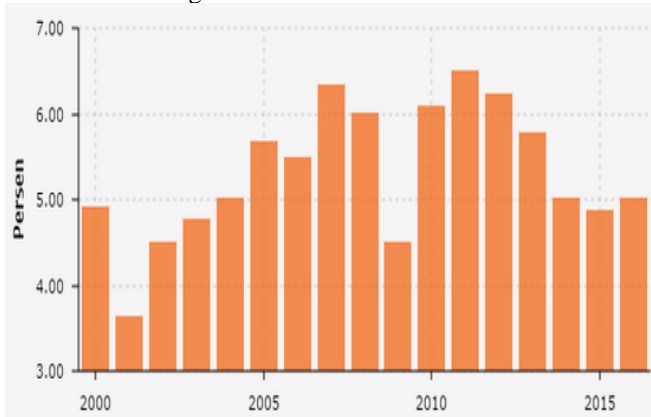

Fig. 2. Indonesia Economic Growth in Percentage

Fig. 2 showed that economic growth in Indonesia is highly volatile. In the year 2016 there is a slight increase in the economy due to several things, namely the growth of household consumption, improvement of investment performance, and increased exports. Household consumption still grew strongly supported by controlled inflation. Much empirical research has shown the positive relationship between insurance industry development and economic growth. According to empirical evidences which show that the determinants for life insurance demand vary widely not only between developing and developed countries, but also within the group of developed nations. Hence, due to the reaction to increase in demand for insurance services resulting from growth in the economy.

The awareness of the importance to buy insurance is indicated of the economic growth getting increased as well. The economic growth is the development of an economic activities that cause to the increase of both the number of the goods and services produced and the prosperity of society. The economic growth rate is calculated from data on GDP (Gross Domestic Product) estimated by countries statistical agencies. This study builds 3 models which involve many exogenous variables whose values are not influenced by other variables in the model, e.g GDP, depedancy ratio, rate of inflation and poverty. In this study, it is expected there is a simultaneous relationship between economic growth and Islamic insurance demand referring to the study from Wolde-Rufael, (2009) they found that due to the reaction to increase in demand for financial services resulting from growth in the economy, more institutions offering financial products and services enter the market.[1] Another information from Abduh & Omar (2012) who considered the development in the Islamic banking sector and how it affects economic growth in Indonesia.[2] There is no previous study has yet analyzed how the relationship between the Islamic insurance sector and economic growth in Indonesia. The purposes of this study :

1. To investigate the relations between Islamic insurance and economic growth
2. As an Addition, to find out does Islamic Insurance reduce poverty in Indonesia.

II. LITERATURE REVIEW

The research that related to both economic growth and Islamic insurance are very numerous. Referring to the importance the existence of the insurance industry for a country, study on causal relationship between the development of insurance industry activities and economic growth has been carried out in detail. Among the seminal works done in this field is a study by Haiss & Sümegi (2008), Muye & Hassan, (2016), Ward & Zurbruegg (2000), Enz (2000), Beck and Webb (2002), Ward & Ralf (2002), Lim & Haberman (2003), and Hwang & Gao (2003).

Haiss & Sümegi (2008) revealed a positive influence from life insurance on GDP for 15 EU member states with mature financial markets and a short-run connection between nonlife expenditure and GDP for the emerging-market-type CEE/NMS countries, while for the new EU members, there was a larger effect for liability insurance. They found the impact of the real interest rate and the level of economic development on the insurance-growth nexus. They also argue that the insurance sector needs to be paid more attention in financial sector analysis and macroeconomic policy.[3] Another study from Muye & Hassan (2016) who give evidence that there exists a robust relationship between the insurance market and growth with both the life and non-life segments positively and significantly causing economic growth. For the life segment, positive results are driven by industrialized economies while for the non-life segment, both the developing and industrial economies influence the results.[4]

Ward & Zurbruegg (2000) analyzed the relationship between economic growth and growth in the insurance industry for nine OECD countries using the error correction model. Their findings showed that both short-run and long-run dynamics determined significant causal relationship from insurance growth to GDP growth for Australia.[5] Enz (2000) introduced an econometric estimation called the S-curve, which exhibits the income elasticity of demand of one at certain low and high level of income, but may exceed one, even reaching two or more at intermediate income levels.[6] The results of a work by Beck & Webb (2002) showed that countries with higher income, lower inflation, and better developed banks have higher life insurance consumption. In addition, a higher private savings rate and a higher real interest rate were also associated with higher life insurance consumption.[7] Ward & Ralf (2002) found that the consumption of life insurance in the OECD countries is around three times less sensitive to changes in income compared to the Asian sample.[8] Lim & Haberman (2003) focused on the Malaysian life insurance market. They found that savings deposit rate has a positive effect on life insurance demand, while insurance price has a negative impact on demand.[9] An empirical investigation by Hwang & Gao (2003) showed that the main factors that influenced the people in China to purchase life insurance are directly related to successful economic reform, which resulted in a higher level of economic security, increase in the level of education and the change in social structure. [10]

Under these circumstances, this research methodology is based on the indicators which are the annual amount of the insurance premiums, per Capita Income in Indonesia, poverty, rate of inflation, depedancy ratio, and gross domestic product. In order to uncover the correlation between Islamic insurance and economic growth in Indonesia, this study have tested several statistical methods in the analysis of the causal link of those variables. The conclusion will show to what extent economic growth and insurance growth mutually intensify in Indonesia, within both the field of life insurance and that of non-life Islamic insurance.

III. METHODOLOGY/MATERIALS

A. Data

This research utilizes the secondary data accessed from OJK and Statistics Indonesia website which is usually called time series data. It analyze the sequence data taken from 2000 until 2015. These variable used in this research are the gross premium earned, the number of policy, income per capita, and rate of inflation. Those variables are numeric. Table I describes the measurement and source of data for each regressor depicted in equations (1), (2) and (3).

Table 1. Variable Definition and Measurement of Data

No	Abbreviation	Variables	Measurement	Symbol	Unit
1	DII	The demand of Islamic Insurance	Gross Premium Earned	Y_{1t}	Million Rupiahs
2	EGW	Economic Growth	Income per Capita	Y_{2t}	Million Rupiahs
3	PVT	Poverty	Head Count Index (HCI-P0): percentage of population below the Poverty Line	Y_{3t}	Percent
4	INF	Rate of inflation	Percentage of annual price changes	X_{1t}	Percent
5	DEP	Dependancy Ratio	Population under 15 and above 65 to 15-64 population	X_{2t}	Percent
6	GDP	Gross Domestic Product	Nominal GDP percapita	X_{3t}	Million Rupiahs

In this study, the relationship between Islamic insurance demand and economic growth variables are explored by considering the following regression equation:

$$DII_t = \beta_{10} + \beta_{11}EGW + \beta_{12}PVT + \gamma_{11}INF + \gamma_{12}DEP + \varepsilon_1 \quad (1)$$

$$EGW_t = \beta_{20} + \gamma_{21}INF + \gamma_{22}GDP + \gamma_{22}DEP + \varepsilon_2 \quad (2)$$

$$PVT = \beta_{30} + \beta_{31}EGW + \gamma_{31}GDP + \gamma_{32}DEP + \varepsilon_3 \quad (3)$$

B. Variables Related to Economic Growth and Islamic Insurance Demand

1) Inflation

According to Babbel (1981) showed that the demand for life insurance in Brazil still declined during inflationary periods. During economic volatility and high inflation, consumers prefer short-term and more liquid investments rather than long-term financial instruments, such as life insurance [11]. In this research, inflation is expected to reduce life insurance consumption and the economic growth.

2) Percentage of Poor Population

According to Stevans (2002) while increases economic growth are indeed significantly related to reductions in the poverty rate for all families, ceteris paribus, economic growth has become less effective as a poverty reducing tool than it was during 1960s.[12] The relationship between the percentage of poverty and economic growth is expected to be negative which means the economic growth can reduce the percentage of poverty.

3) Dependancy Ratio

According to Li, Moshirian, Nguyen, & Wee (2007) the desire to protect dependents from financial difficulties in the event of death to the wage earner is the major driving force for life insurance purchase.[13] The dependency ratio used in this study based on Statistics Indonesia is the ratio of the total number of children under 15 to the total number of persons between 15 and 64. The relationship between the number of dependents and Islamic insurance demand is expected to be positive.

4) Gross domestic Product

The gross domestic product (GDP) measures of national income and output for a given country's economy. The gross domestic product (GDP) is equal to the total expenditures for all final goods and services produced within the country in a stipulated period of time. Diacon & Maha, (2015) revealed an increase in the national income per capita is followed by the increase GDP per capita. Therefore, the national income per capita is expected to have a positive relation with GDP. [14]

The study from Arena, (2006) showed that even though the potential contribution of the insurance markets on economic growth has been recognized, the assessment of the potential causal relations between the insurance business and economic growth has not been studied in as much as that of banks.[15] Therefore, the Islamic insurance demand is expected to have a positive relation with GDP.

C. Methodology

There are two variables used in this study namely endogenous variables and exogenous variables. The income per capita and the premium earned are endogenous variables, while poverty, inflation rate, and the number of policy are exogenous variables. The method of analysis used in this research is descriptive analysis and methods of simultaneous equations, following the analysis phase performed:

1. Form the structural equations model for each equation
2. Identify the model with ordo condition
3. Estimating parameters using the Two Least Square Method
4. Model of regression assessment with regression model. The larger the R-Square, the more dependent dependent variables can be explained by the variation of the independent variable.
5. Interpretate the result
6. Define the conclusion of this study.

D. Simultaneous Equation Model

Simultaneous is a situation where there is a two way relationship between independent variables and dependent variables. Variable Y is not only determined by X because some of the X variables are also determined by Y. There are several equations in this model and each dependent variables are endogenous which can be shown by the following equations.[16]

$$Y_{1t} = \quad + \beta_{12}Y_{2t} + \beta_{13}Y_{3t} + \cdots + \beta_{1M}Y_{Mt} \\ + \gamma_{11}X_{1t} + \gamma_{12}X_{2t} + \\ \cdots + \gamma_{1K}X_{Kt} + u_{1t} \tag{4}$$

$$Y_{2t} = \beta_{21}Y_{1t} + \quad + \beta_{23}Y_{3t} + \cdots + \beta_{2M}Y_{Mt} \\ + \gamma_{21}X_{1t} + \gamma_{22}X_{2t} + \\ \cdots + \gamma_{2K}X_{Kt} + u_{2t} \tag{5}$$

$$Y_{3t} = \beta_{31}Y_{1t} + \beta_{32}Y_{3t} + \quad + \cdots + \beta_{3M}Y_{Mt} \\ + \gamma_{31}X_{1t} + \gamma_{32}X_{2t} + \\ \cdots + \gamma_{3K}X_{Kt} + u_{3t} \tag{6}$$

$$Y_{MT} = \beta_{M1}Y_{1t} + \beta_{M2}Y_{3t} + \cdots + \beta_{M,M-1}Y_{M-1,t} \\ + \gamma_{M1}X_{1t} + \gamma_{M2}X_{2t} + \\ \cdots + \gamma_{MK}X_{Kt} + u_{Mt} \tag{7}$$

Where Y_1, Y_2 ..., Y_M = The number of M endogenous variables, X_1, X_2 ..., X_K = The number of K exogenous variables, u_1, u_2 ..., u_M = the amount of residual M, t = observation, β = endogenous variable coefficient (parameter) and γ = exogenous variable coefficient (parameter).

Simultaneous equation model with two stages least square estimation can only be performed on an equation which met the classification namely exactly identified and over identified. Besides those classification, that estimation can not be executed. The classification follows the following rules.

1. Over Identified or too identified if K-k > m-1 means parameters in the equation have more than one estimation result that can be used.
2. Exactly Identified if K-k = m-1 means parameters can be uniquely estimated and there is only one estimate.
3. Under Identified if K-k < m-1 means the parameters cannot be estimated by any method.

Where, K is the number of variables present in the model, either in the structural equation or in the identity equation (the same variable in one equation in the other equation is only counted once). k is the sum of all variables in each equation tested by its order condition (including its independent variables). m is the number of equations contained in the model being tested, including the identity equation.

There are several methods to estimate the parameters of an equation, those are:
- Ordinary Least Square (OLS)
- Two-stage Least Square (2SLS)
- Indirect Least Square (ILS)
- Three-stage Least Square (3SLS)

The 2SLS method is a commonly used method of model estimation simultaneous equations because of the unusable OLS method with the reason the existence of interdependence between variables that explain with the element of interference. The basic idea of 2SLS is to replace a stochastic endogenous variable with a linear combination with a predetermined (non stochastic) variable in the model and use this combination as a variable explaining instead of the original variable.

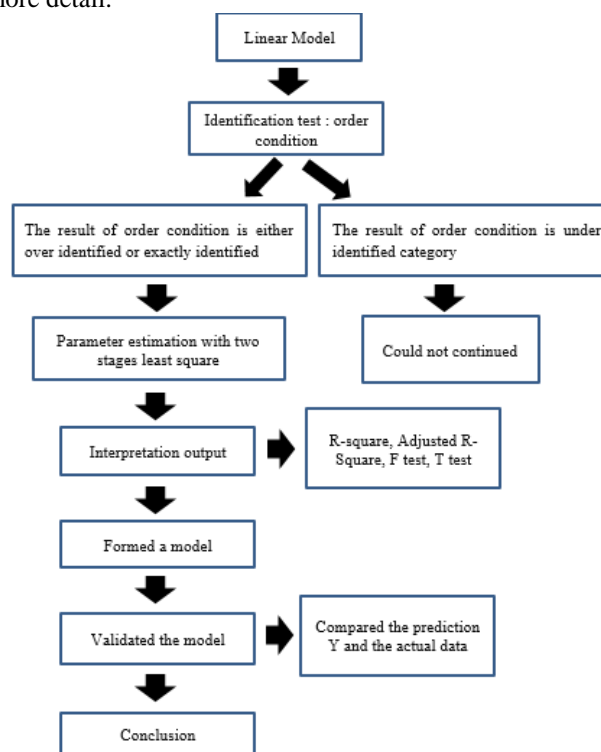The Fig. 1 shows the flowchart ofthis research to explain more detail.

Fig. 3. Research Flow Chart

IV. RESULTS AND FINDINGS

According to Statistics Indonesia, the per capita income increased constantly each year from 2002-2015. It can be caused by the economic development of regions has increased, factor of the high gross domestic product and large population with quite high income, and equitable infrastructure development. Equal to the Islamic insurance demand in Indonesia which also increased very significantly. There is a significant increased demand from 2010-2011 which was affected by the high gross domestic product and high puchasing power. Fig. 4. shows the development of income per capita and Islamic insurance demand which increase every year.
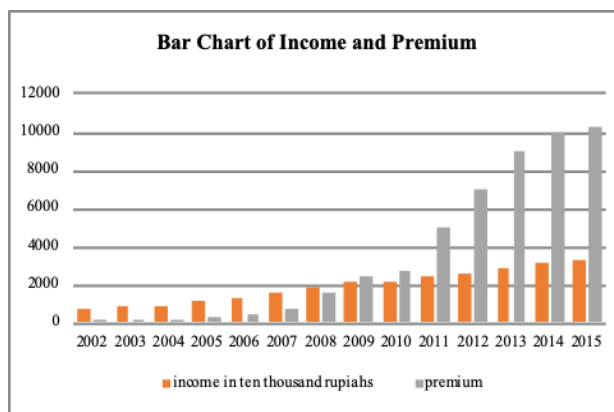

Fig. 4. The Development of Income and Premium 2002-2015

From Fig. 4. From 2002 until 2008 the level of per capita income is higher than the islamic insurance premium. But in periode 2009-2015, the level of islamic insurance premium is growing faster than the level of national income per capitaa. Both variables are rising year to year. The national income per capita tends to grow slowly. On the other hand, the islamic insurance premium increased significantly because of several reasons such as interest rates are down, the society started to be aware about the importance of insurance, and other cause.

The rate of inflation characteristic decreased every year which means disinflation. From 2002 until 2015 the highest inflation rate in which its values higher than 10 occured was in 2002, 2005, and 2008. While the characteristic of poverty in Indonesia 2002-2014 also decreased every year. According to Statistics Indonesia, in September 2014, the number of poor people is still around 27.73 million people or 10.96% of the population of Indonesia. Compared to September 2015, the number of poor people increased about 780 thousand inhabitants or 11,17%.
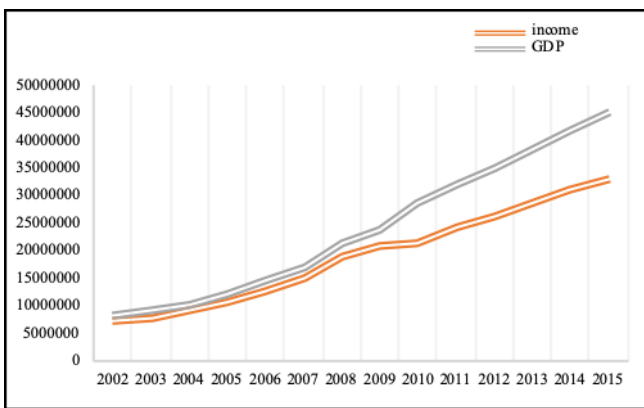

Fig. 5. The Development of per Capita Income and GDP 2002-2015

Fig. 5 showed the point that can be drawn from this dynamic graph is the level of gross domestic product has grown more than the level of per capita income. The level of prosperity of a country is not only seen from the size of GDP or GNP (Gross National Product), because GDP or GNP can't show how many people must live from GDP or GNP. While income per capita is the average income of the population in a country at a certain period for example in one year taking into account the rate of price increase or inflation.

Fig. 6. The Number of People Who Live under the Poverty Line 2002-2015

According to Fig. 6, the blue line is a percentage of poor household while the green bar is the number of people who live under the poverty line. The economic growth averaging 5,8% since 2010 has helped to lift 3,3 million Indonesians out of poverty. Yet 28 million were still leaving below government's poverty line in March 2014. Table II describes the descriptive statistics of the income per capita and Islamic insurance demand.

Table 2. Descriptive Statistics of Characteristics the Income per capita and Islamic Insurance Demand

	Economic Growth	Premium Income	Rate of Inflation	Poverty	Dependen-cy Ratio	Gross Domestic Product
Mean	19302193,11	3586,78	7,200714	14,547 14	51,17	24278183,93
Median	20011869,56	2029,55	6,595	14,785	50,8	22622706,24
Minimum	7544406,62	124,13	2,78	11,1	48,6	8563420,23
Maximum	32999500	10230	17,11	18,2	53,76	45176200
Variance	7,73159E+13	151562 48	14,160 87	7,0149 3	2,2814	1,61201E+14

The pattern of relationships among variables, especially income percapita and Islamic insurance demand which is measured by premium income of syariah insurance, can be seen in the following scatter plot at Fig. 3. The scatter plot of income percapita and poverty form a increased linear line. It shows that the relationship which is if income percapita is increased then automatically premium income did as well. Vice versa, if the income percapita is getting low then the premium income decreased as well. The relationship between income percapita and poverty rate in Fig. 7 shows if income percapita increased then the poverty rate is decreased and if income percapita decreased then the increasing of poverty rate occured.
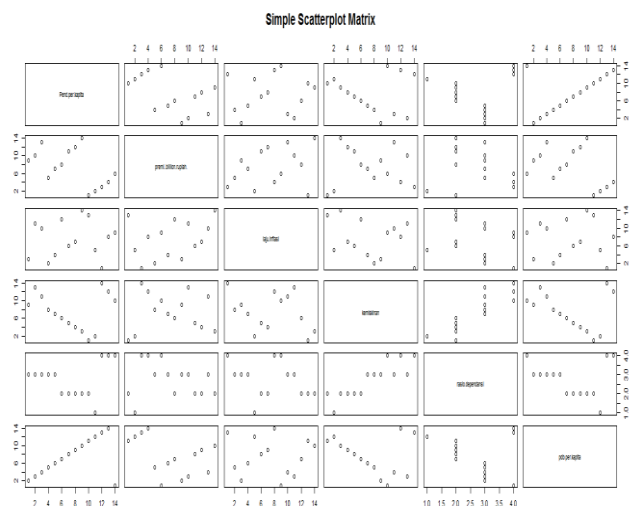

Fig. 7. The Scatterplot among Variables

Besides using scatter plot, how much relation among variables can also be known using correlation value testing in which there can be a positive or negative relation. Coefficient of correlation is shown in Table III below.

Table 3. All Variables Coefficient of Correlation

	Income per capita	Islamic Insurance Premium	Rate of inflation	Poverty	Dependancy ratio	Gross Domestic Product
Income per capita		0,945	-0,355	-0,960	-0,805	0,995
Islamic Insurance Premium	0,945		-0,301	-0,931	-0,652	0,963
Rate of inflation	-0,355	-0,301		0,303	0,129	-0,357
Poverty	-0,960	-0,931	0,303		0,708	-0,967
Dependancy ratio	-0,805	-0,652	0,129	0,708		-0,779
Gross Domestic Product	0,995	0,963	-0,357	-0,967	-0,779	

Table III showed that testing of the correlation between the income per capita, poverty and Islamic insurance demand as a dependent variable, and the depedancy ratio, the rate of inflation, and GDP has led to obtaining results that give evidence in support of an important correlation with direct influence between the variables.The correlation between islamic insurance demand and per capita income is categorized as positively high. Another positive strong correlations in which between per capita income and GDP, islamic insurance demand and GDP, poverty and depedancy ratio. The correlation between poverty and per capita income is said to be negatively high. Another negative strong correlations are between poverty and islamic insurance deman, GDP and poverty, and GDP and depedancy ratio. The rest is the relationship between variables with a weak correlation.

In this study, the relationship between Islamic insurance demand and economic growth variables are explored by considering the following regression equation (1), (2) and (3):

$$DII_{1t} = \beta_{10} + \beta_{11}EGW_{2t} + \beta_{12}PVT_{3t} + \gamma_{11}INF_{1t} + \gamma_{12}DEP_{2t} + u_{1t}$$

$$EGW_{2t} = \beta_{20} + \gamma_{21}INF_{1t} + \gamma_{22}DEP_{2t} + \gamma_{23}GDP_{3t} + u_{2t}$$

$$PVT_{3t} = \beta_{30} + \beta_{31}DII_{1t} + \beta_{32}EGW_{2t} + \gamma_{32}DEP_{2t} + \gamma_{31}GDP_{3t} + u_{3t}$$

Next, to identify the model with the order condition which must met the criterion K-k > m-1, the following table shows the analysis.

Table 4. Order Condition of Economic Growth and Islamic Insurance Demand Model

Equation	K value	k value	m value	Category
DII_t	6 $(DII_t, EGW_t$	5 (DII_t, EGW_t, DEP_t)	3 $(DII_t, EGW$	Over identified
EGW_t	6 $(DII_t, EGW_t$	4 $(EGW_t, INF_t DEP_t, GDP_t)$	3 $(DII_t, EGW$	Over identified
PVT_t	6 $(DII_t, EGW_t$	4 $PVT_t, EGW_t, DEP_t, GDP_t)$	3 $(DII_t, EGW$	Over identified

Table III shows, for economic growth model with K=6, k=5, and m=4, which belongs to the category over identified and for Islamic insurance demand model with K=6, k=4, and m=3 which also met the criterion over identified. This category shows the analysis can be continued. The variables were modelled with simultaneous equation model and estimating the parameters with two stages ordinary least square. The following table show the cofficient estimates to form the model.

Table 5. Coefficient Estimates of Economic Growth and Islamic Insurance Demand Model

Model 2: Economic Growth				Model 1: Islamic Insurance Demand			
Regressor	Coefficient	P Value	Std. Err	Regressor	Coefficient	P Value	Std. Err
Constant	2864979 8,4	0,08	14754 640	Constant	-86430, 1	0,04	3488 1,9
DEP	-482031, 9	0,10	27229 6,3	EGW	0,001	0,01	0,0
INF	-33014, 7	0,66	73471, 9	PVT	586,47	0,35	598,5
GDP	0,6	0,00	0,03	DEP	1270, 1	0,03	489,7
				INF	158,44	0,09	111,8
R-Square		99,2 %		**R-Square**			92,9 %
Adjusted R Square		99,0 %		**Adjusted R Square**			89,7 %

From Table IV. The model can be formed as follows

$$DII_{1t} = -86430,1 + 0,001EGW_{2t} + 586,47PVT_{3t} + 158,44INF_{1t} + 1270,1DEP_{2t}$$

(8)

$$EGW_{2t} = 28649798,4 - 33014,7INF_{1t} - 482031,9DEP_{2t} + 0,6GDP_{3t}$$

(9)

Under the Islamic insurance demand (8) model, the coefficient of the change in per capita income has a positive sign and is significant at the 5 percent level.

Another coefficient of depedancy ratio is also statistically significant at 5 percent level and has a positive sign to Islamic insurance demand as hypotesized because of referring to the study from Li, Moshirian, Nguyen, & Wee (2007). Inflation is hypotesized to reduce the Islamic insurance demand, but the empirical result showed it has a positive effect on the insurance demand. This fact leads to the conclusion that it does not fit the theory refer to Black Jr & Skipper D, (2000) eventhough the inflation coefficient is significant at 10 percent level. In Islamic insurance demand model, the value of R-square is 92,9%. This shows that the exogenous variable is able to explain the variability of endogenous variable 92.9%.

Under the economic growth (9) model, the depedancy Ratio (DEP) has a negative and significant effect on economic growth at α = 10%. Viewed in macro, This condition can be interpreted that the greater dependency ratio tends to increasingly drain the economic endurance of the region and family. The regression coefficient of -482.031,9 means that any 1 increase in the ratio of the dependent burden of the population will lead to a decline in economic growth of 482.031,9. This is very rational because the income of productive population is more allocated to finance the consumption of unproductive population, therefore the income for saving is decreasing. Based on the correlation test, there is a negative correlation between inflation and economic growth which is 35.5%, as well as in regression model 9, the coefficient has a negative sign as hypothesized but not significant at the level of 10 percent. In economic growth model, the value of R-square is 99,2%. This shows that the exogenous variable is able to explain the variability of endogenous variable 99.2%. The following table is coefficent estimates of Poverty Model.

Table 6. Coefficient Estimates of Poverty

Model 3: Poverty			
Regressor	**Coefficient**	**P Value**	**Std. Err**
Constant	14,366	0,679	33,62
EGW	-2,204E-7	0,644	0,00
GDP	1,264E-7	0,827	0,00
DEP	0,067	0,911	0,59
DII	-0,001	0,549	0,00
R-Square	89,6%		
Adjusted R Square	85,5%		

Then it formed a model as follow.

$$PVT_{3t} = 14,366 - 0,001 DII_{1t} - (2,204E - 7)EGW_{2t} + 0,067 DEP_{2t} + (1,264E - 7)GDP_{3t}$$

(10)

Under the poverty model (10), the coefficient of economic growth is hypothesized to be negative on poverty. This is rational and fit to the theory from the study by Stevans & Sessions (2008) who revealed increases in economic growth are indeed significantly related to reductions in the poverty rate for all families, *ceteris paribus*, economic growth has become less effective as a poverty-reducing tool than it was during the 1960s in US. Although the coefficient of economic growth satisfies the hypothesis of negatively affecting poverty variable, it is statistically insignificant, this study suggesting that the economic growth does not determine poverty in Indonesia. Referring to Hamid, S.A., Roberts, J. & Mosley, P (2010) who revealed that health microo insurance can reduce

poverty in Bangladesh, [19] the coefficient of Islamic insurance demand also satifies the hypothesis of negatively affecting poverty variable, but it is insignificant. In this poverty model, the value of R-square is 89,6%. This shows that the exogenous variable is able to explain the variability of endogenous variable 89,6%.

For economic growth model, there are only two variables, gross domestic product and Islamic insurance demand which contributes significantly toward the economic growth and inflation and poverty rate does not influence it at $\alpha = 10\%$.

In Islamic insurance demand model, variables which influence at $\alpha = 10\%$ the dependant variable are economic growth and dependancy ratio. While on the poverty model, no variables give significant effect toward the endogenous variable, poverty.

Table 7. F-statistics for Testing the Economic Growth and Islamic Insurance Demand Model

Model	Number of Regressor	F test	Sig.
Economic Growth	3	410,59*	0,00
Islamic Insurance Demand	4	29,38*	0,00
Poverty	4	10,78	0,00

According to Table VI, it explains that for economic growth model, 3 regressors (depedancy ratio, rate of inflation, and GDP) simultaneosly affect the Indonesia's economic growth which is measured as per capita income with the large value of F test, 410,59. For Islamic insurance demand Model, analysis of variance with simultaneous test shows that 4 regressors (economic growth, poverty, depedancy ratio, and rate of inflation) simultaneously have a significant effect on Islamic insurance variable. The last model, poverty in Indonesia as dependantly endogenous variable is simulatneously affected by 3 regressors which are economic growth, GDP, depedancyratio, and the demand of islamic insurance.

V. CONCLUSION

According to empirical result, under the Islamic insurance model, the economic growth and dependency ratio are found to positively influence the Islamic insurance. The inflation rate has a significantly negative impact on Islamic Insurance. In economic growth model, inflation rate, GDP and depedency ratio variables are significant determinants of national income per capita in Indonesia which have positively influence on economic growth. Inflation rate is found to have negative effect on economic growth but insignificant. In poverty model, economic growth and Islamic insurance have negative effect on poverty but insignificant. For the future, many years on this sequence of annual data series can be added to show more tangible empirical results.

Indonesia is one of the countries with the largest population in the world and more than 87% of its population are Muslims but penetration and density of the Islamic insurance market is still categorized as low.

The widespread adoption of sharia from the insurance industry requires regulations that do not conflict or overlap with conventional insurance system rules. For policies-maker to consider, Islamic insurance is in need of regulation for this sharia economic system can make it easier for them to expand instead of limiting. Reflecting on Malaysia, the growth of Islamic insurance industry there is higher than the growth of conventional insurance due to high domestic consumption and full support from the Malaysian government because they have been researching that it can support their country's economic growth significantly.

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