

## ASSESSING INVESTMENT ALLOCATION FUNDS ON THE GROWTH OF TOTAL ASSETS AMONG ISLAMIC INSURANCE FIRMS IN INDONESIA



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### Abstract

The objective of this research is to examine the impact of Islamic insurance funds' asset allocation, which includes *mudharabah* deposits, sovereign sukuk, corporate sukuk, and Islamic mutual funds, on the asset growth of Islamic insurance funds in Indonesia. This study employs quantitative methodology, utilizing Vector Autoregression (VAR) and Ordinary Least Square (OLS) to analyze data series spanning from January 2016 to April 2023. The findings of the ordinary least squares (OLS) analysis indicate that the proportion of funds invested in Islamic mutual funds, government sukuk, corporate sukuk, and *mudharabah* deposits has a substantial and positive impact on the expansion of Islamic insurance assets. Moreover, the findings from the VAR indicate that a positive and statistically significant short-term relationship exists exclusively with government sukuk and its impact on the expansion of Islamic insurance assets. To optimize the allocation of investment funds for investors and stakeholders, sovereign sukuk and corporate sukuk may be considered, in light of the Impulse Response Function and Variance Decomposition analysis.

**Keywords:** Islamic Insurance, *Takaful*, Asset Allocation Funds

## INTRODUCTION

Indonesia is a country with the second-largest Muslim population worldwide. According to *The Muslim 500: The World's 500 Most Influential Muslims 2024*, published by the Royal Islamic Strategic Studies Centre (2023), Indonesia's Muslim population is expected to reach 240,62 million by 2023. This number represents 86.7% of the country's total population of 277,53 million people. Even though Indonesia is home to the second-largest Muslim population in the world, this contrasts sharply with the country's low rate of Islamic Financial literacy, which stands at just 9.14% (OJK Indonesia, 2023b). However, the Islamic finance industry in Indonesia has experienced significant growth in recent years, particularly in the areas of Islamic investment and insurance (Ayuni et al, 2023). In terms of contribution income, the role of Islamic life insurance in Indonesia is getting bigger, indicated by the market share of the contribution of Islamic life insurance sales reaching 11.8% in 2022. The market share jumped significantly where the contribution of Islamic life insurance only reached 5.8% 5 years ago. In Islamic general insurance, the contribution reached 3.8% of the total general insurance industry in 2022 (OJK Indonesia, 2023a)

This growth indicates that Islamic insurance is an alternative system in the insurance sector in Indonesia. *Takaful* or Islamic Insurance is a system that provides risk protection based on Islamic principles which distinguishes itself from conventional insurance by the avoidance of forbidden elements of *riba* (usury), *gharar* (uncertainty), and *maysir* (zero-sum game); (Rahim & Amin, 2011; Dikko, 2016) Therefore, ensuring that everyone has access to the advantages and protections that will make them feel safe, secure, and free from harm is one of the main objectives of Islamic law (Islamic) (Khorshid, 2004). One thing that can be improved is the execution of investments and business decisions that are compliant with Islamic law. Participants' premium payments in *takaful* contracts are split into two accounts: one is for the participant's savings, and the other is for the *tabarru`* (gift) fund. The funds in the first account will be invested by the *takaful* operator into any appropriate Islamic-compliant securities (Ab Rahman & Mohamad, 2010). Investing operations are particularly important since, according to Nissim, (2010), for many insurers, the difference between the interest cost of insurance liabilities and the return on assets is their primary source of income. Insurers accumulate substantial amounts of money due to the delay between premium

collection and claim payout, which they subsequently invest and utilize to generate investment income.

This is why investment income is important to insurers. Moreover, to stay profitable and efficient, the majority of insurers rely on investment income or the resolution of claims rather than revenue from a variety of sources (Akhtar, 2018). Therefore, the task of the investment manager of an Islamic insurance company is to manage the company's investment funds with an optimal portfolio for each investment instrument they manage to achieve the return target set by the company. In Indonesia, due to increasing complaints about fraud related to Investment Linked Insurance Products (PAYDI) to the Financial Services Authority (OJK) yearly since 2019, there were three insurance companies whose customers complained to the OJK, namely AIA, Prudential, and AXA Mandiri. In total 260 PAYDI customers complained about their cases to the OJK. OJK's rule (POJK) number 6 of 2023 was issued regarding the second amendment to POJK number 72/POJK.05/2016. OJK explained that the adjustments to the POJK in question aimed to maintain the company's financial health and optimize investment performance. Moreover, on 11 July 2023, OJK issued a new regulation PJOK number 11 of 2023 requires Insurance and Reinsurance Companies to separate Islamic Insurance Units into new Islamic Insurance Companies or other Islamic Insurance Companies that have obtained business permits. This allocation investment limit provision can encourage Islamic insurance companies to be more vigilant in placing investments by considering the Islamic insurance company's capital capacity to bear investment risks (Hidayat et al, 2023; Fatkhurrozi, 2024).

However, earnings and income from investment is an important long-term source of capital (Hernawati et al., 2021). From the research result, the coefficient of investment income indicates that the investment income is positively related to EAR (Effective Annual Interest Rate) and ETR (Effective Tax Rate) (Abduh & Zein Isma, 2017). Several studies on investment in the growth of assets of Islamic insurance companies usually use the total investment portfolio and investment returns. Baroroh, (2021) showed that investment had a positive and significant effect on the growth of assets of Islamic insurance companies in Indonesia for the 2016-2020 period. Amrulloh and Aziz, (2022) presented that investment results had a positive and significant effect on the growth of assets of Islamic insurance

companies in Indonesia. Moreover, Rustamunadi & Asmawati, (2020) unearthed that investment growth had a significant negative impact on the growth of Islamic Life Insurance assets in Indonesia.

Based on the Indonesian Insurance Roadmap (2023-2027) and the results of research conducted by the OJK research team, the main factors taken into consideration in insurance investment allocation are risk factors (69%) and investment returns (21%). This result is reinforced by the allocation of Islamic life insurance investment to Islamic stock which decreased by 10% from 2018 to 2022. According to Abdullah, (2018), factors affecting the investment growth of Indonesian Islamic insurance were the yield of Mudarabah and the Industrial Production Index (IPI) which had a positive impact on it. This study addresses a research gap in the field, focusing on the underexplored topic of investment allocation and its Impact on total asset growth. The lack of specific research on investment fund allocation, particularly the correlation between portfolio investment and total asset growth, prompted this investigation (Fatkhurrozi & Rahmawati, 2023). The main objective of this is to examine the Islamic asset allocation investments can yield the most optimal portfolio value for the growth of Islamic insurance assets in Indonesia.

## **REVIEW OF LITERATURE**

### **Islamic Insurance**

For Muslims, conventional insurance is not coherent with their religion of Islam. Firstly, the contract between the insurer (e.g., insurance company) and the insured contains some degree of avoidable uncertainty (*gharar*), Secondly, the insurance contract per se is *riba* since the investment made by the insurance companies involves the element of *riba*. Thirdly, the excessive element of *gharar* can lead to the issue of maysir or gambling (Rahim & Amin, 2011). Takaful is a financial transaction based on the principles of co-operation, *mudarabah*, and *tabarru'* whereby the takaful operator and participants or the beneficiaries share profits made on the contribution. Islamic insurance is an innovative modern approach to dealing with demand for an instrument that can reduce one's exposure to certain types of risk. Based on (Redzuan et al., 2009) Insurance in general is a product that was developed

out of people's desire for security and stability and is intended to safeguard people and businesses against certain events. Meanwhile, *Takaful* is a system of Islamic insurance based on the principle of cooperation (*ta'awun*) and donation (*tabarru'*), where the risk is shared collectively and voluntarily by the group of participants.

### **Islamic Investment in Islamic Insurance Firms**

Islamic insurance companies, as one of the financial institutions that manage large amounts of public funds, are very dependent on the success of managing investments to realize the company's goals. To realize this goal, it is necessary to form an integrated investment collection to obtain investment profits, which is called a portfolio. According to (Markowitz, 1952), a portfolio is defined as an investment made across a variety of financial instruments, also known as diversification. The main objective of forming an investment portfolio is to obtain optimal results with minimal risk. According to *Fatwa No.21/DSNMUI/X/2001*, Islamic insurance companies must make investments as they are responsible for the cash collected from participants. To maximize investment returns, the investment fund must be administered by Islamic rules. Islamic investment instruments and fatwas from DSN-MUI:

### ***Mudharabah* Deposit**

Islamic deposits, also known as Islamic deposits, are funds entrusted by consumers to Islamic banks or other financial institutions operating under Islamic rules. They are often organized on the concept of *mudharabah*, which entails a partnership between the bank and the customer, with the bank serving as manager and the customer providing capital (Fahmi et al., 2022). Based on the MUI Fatwa Number: 03 / DSN-MUI / IV / 2000, the provisions of Islamic bank deposits are customers acting as *shahibul maal* or fund owners and banks acting as *mudharib*. Banks can carry out various types of investment by Islamic principles and develop them. Capital must be stated in clear amounts in cash and not accounts receivable. Distribution of profits must be stated in the form of a ratio and stated in the agreement. Banks such as *Mudarib* cover all operational costs taken from the profits earned. The Bank cannot reduce the portion of the profit ratio agreed upon without the consent of the

customer. Sawitri, (2017) revealed that Islamic deposit portfolios had a positive and significant effect on Islamic insurance assets.

### **Sukuk (Sovereign and Corporate)**

The word sukuk comes from the Persian language, namely "*jak*", then entered into Arabic with the name "*shak*". Goitein, (1966) stated that "*shak*" comes from the word "check" which is found in English and means debentures. In terminology, a Sukuk is a piece of paper or a note on which there is an order from someone to pay a certain amount of money to another person whose name is written on the paper (Rodoni et al., 2008). Based on the fatwa of the National Islamic Council of Indonesia No. 32/DSN-MUI/IX/2002, sukuk is a long-term security based on Islamic principles issued by issuers to Islamic bondholders which require the issuer to pay income to Islamic bondholders in the form of profit sharing or margin or fees, as well as repay the bond funds when maturity. According to the Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI), sukuk is defined as "a certificate of equal value representing an undivided share in the ownership of tangible assets, results, and services, certain project assets from specific investment activities". Sukuk is classified into two categories in a type of issuer those are government issuers called sovereign sukuk and industry issuers called corporate sukuk. Sawitri, (2017) uncovered that a portfolio of sukuk or Islamic bonds has a positive and significant effect on Islamic insurance assets.

### **Islamic Mutual Fund**

Soemitra, (2017) defined mutual funds as pulling fund management that investing policies comply with Islamic principles. Islamic mutual funds abstain from investing in financial instruments issued by entities that contravene Islamic law through their management or products. Examples of such entities include alcoholic beverage factories, swine farming industries, financial services that employ usury systems, or businesses that partake in unethical practices. Furthermore, according to the DSN MUI fatwa Number: 20/DSN-MUI/IV/2001 concerning Investment Implementation Guidelines for Islamic Mutual Funds, Islamic mutual funds are mutual funds that operate according to the provisions of Islamic principles either in the form of a contract between the investor as the owner of the property and the investment manager as the *shahibul mal* representative, according to

Sawitri, (2017) showed that Islamic mutual fund portfolios had a positive and significant effect on Islamic insurance assets.

Despite the authority's longstanding implementation of investment risk mitigation measures, insurance companies must still contemplate the risk associated with capital market investment allocation, given the highly sensitive nature of stock prices to external sentiment. Elevated levels of stock price volatility will ultimately expose insurance companies to heightened risks about their liquidity and solvency (Tumbelaka and Harjanti, 2021). Investment activities in the capital market with high levels of risk are feared to deeply impact the ability of insurance companies to settle their obligations to the customers. Based on the discussion above, the authors propose several hypotheses in this study. These are:

H1: *Mudharabah* Deposit have a significant effect on Islamic Insurance Assets.

H2: Sovereign Sukuk has a significant effect on Islamic Insurance Assets.

H3: Sukuk has a significant effect on Islamic Insurance Assets.

H4: Mutual Funds have a significant effect on Islamic Insurance Assets.

H5: *Mudharabah* Deposit, Sovereign Sukuk, Sukuk, and Islamic Mutual Funds simultaneously have a significant effect on Islamic Insurance Assets.

## RESEARCH METHOD

This study was conducted among Islamic Insurance companies in Indonesia. This study was in nature of quantitative research based on tangible data measured in numbers and frequently uses statistical methods for analysis (Sugiono, 2016). The study gathered data on all Islamic Insurance Assets and Investment Portfolios, including Islamic Deposits, Corporate Sukuk, Sovereign Sukuk, and Islamic Mutual Funds. The study used E-Views 12 Student Version with the Vector Autoregression (VAR) model to analyze time-series data from January 2016 to April 2023 retrieved from the Financial Services Authority (OJK) data set. To assist the research, data was collected using the Documentation technique, which included archives, books, documents, and report material.

**Table 1.**  
**Operational Definition of Variables**

<b>Variable</b>	<b>Definition</b>	<b>Scale</b>	<b>Source</b>
Assets (ASET)	Total Assets from Islamic Life Insurance, Islamic General Insurance, and Islamic Reinsurance in Indonesia.	Nominal	Financial Services Authority (OJK)
<i>Mudharabah</i> Deposits (DPST)	A form of deposit that adheres to Islamic principles, where the bank uses the funds in an Islamic-compliant manner, avoiding interest-based transactions.	Nominal	Financial Services Authority (OJK)
Corporate Sukuk (SKUK)	Islamic financial certificates, like bonds, comply with Islamic principles. Sukuk represents ownership in a tangible asset or service and generates returns through profit-sharing rather than interest.	Nominal	Financial Services Authority (OJK)
Sovereign Sukuk (SBSN)	Islamic-compliant bonds issued by a government, backed by tangible assets or services, following Islamic finance principles.	Nominal	Financial Services Authority (OJK)
Islamic Mutual Funds (RKDN)	Investment funds that follow Islamic guidelines, investing in assets compliant with Islamic principles. These funds avoid investments in companies involved in activities such as gambling, alcohol, or interest-based transactions.	Nominal	Financial Services Authority (OJK)

Source: Author Owns

### Data Analysis Technique

This research will be tested using the Vector Autoregression (VAR) analysis method, VAR was first proposed by (Sims, 1980). The advantage of the VAR method compared to other regression methods is that all variables are interconnected so there is no need to position variables in dependent and independent positions. Another advantage of the VAR analysis method is that it can determine which variables have a dominant influence in the long term, apart from that, this analysis method can also determine the existence of reciprocal relationships between related variables. VAR makes all variables endogenous and reduces

their distributed lag. In general, the regression equation model in VAR can be written as follows:

$$Y_t = A_0 + A_1 Y_{t-1} + A_2 Y_{t-2} + \dots + A_p Y_{t-p} + s_t$$

with:

$p$  = Number of variables in the equation system

$k$  = Number of lags in the equation system

$Y_t$  = Vector of dependent variables ( $Y_{1t}, Y_{2t}, \dots, Y_{nt}$ ) with size  $n \times 1$ ,

$A_0$  = Intercept vector with size  $n \times 1$ ,

$A_i$  = Parameter matrix with size  $n \times n$ , for each  $i = 1, 2, \dots, p$ ,

$\varepsilon_t$  = Residual vector ( $\varepsilon_{1t}, \varepsilon_{2t}, \dots, \varepsilon_{nt}$ ) with size  $n \times 1$ .

### **Data Stationarity Test**

The stationarity test or unit root test is carried out to find out whether the related variables contain unit root elements, according to (Gujarati, 2003) if the data used contains unit root elements, it will be difficult to estimate a model because the data trend tends to fluctuate not around the average value. Therefore, researchers must test the stationarity of the data using the Summary Augmented Dickey-Fuller (ADF) and Philip Peron (PP) tests.

### **Determining the Optimal Lag**

This test was carried out to form a good VAR model by selecting the optimum lag length. Gujarati, (2003) determines the lag length (order) to be used in the VAR model can be determined using the Akaike Information Criterion (AIC), Schwarz Information Criterion (SC), or Hannan Quinon Criterion (HQ). The lag that will be selected in this research model is the model with the smallest value because if there is too much lag length it will increase the degree of freedom, so a smaller lag is recommended to reduce the specification error.

### **Impulse Response Function (IRF)**

According to Sims, (1980), the best way to characterize the dynamic structure in a model is to analyze the response of the model (system) to shocks. IRF can do this by showing

how each endogenous variable responds over time to shocks and other endogenous variables. In other words, IRF can measure the magnitude of the shock (innovation) to other variables and the variable itself.

### Variance Decomposition (VD)

The method that can be used to see how changes in a variable are indicated by changes in variance error which are influenced by other variables is Variance Decompositions (VD). This method can characterize the dynamic structure in the VAR model. With this method, the strengths and weaknesses of each variable can also be seen in influencing other variables over a long period.

## RESULTS AND DISCUSSION

### Stationarity Test

The first step in analyzing time series data is to conduct a stationarity test to determine whether the tested variables are stationary or not. Stationary tests are carried out with unit root tests using Augmented Dickey-Fuller (ADF) and Phillips Perron (PP) at the level so that stationary data is obtained. With the assumption that if the probability  $< 0.05$  = stationary data. Conversely, if the result of the probability  $> 0.05$  = the data is not stationary. The following are the results of the stationary test (summary) with several suggested methods.

**Table 2.**  
**Stationarity Test**

<b>Group Unit Root Test: Summary</b>		
<b>Method</b>	<b>Statistic</b>	<b>Prob.**</b>
Levin, Lin & Chu t*	-7.05579	0.0000
Im, Pesaran and Shin W-stat	-4.15835	0.0000
ADF - Fisher Chi-square	41.1865	0.0000
PP - Fisher Chi-square	35.9093	0.0001

Source: E-Views 12 SV Results

Based on Table 2, the stationary test results show that the data has been stationary at the level. Furthermore, based on the ADF and PP methods, the results show that all data are stationary. All suggested methods show significant results at the level with results smaller than 0.05. This research will use the VAR method which is more recommended if the data has been stationary at the level.

### Optimal Lag

In the VAR and VECM approaches, lag length is very sensitive in determining the results. Determining the optimal lag length aims to determine the length of the period of influence of a variable on its past variables and other endogenous variables. In determining the optimal lag length, it is recommended to use a relatively smaller lag length. To determine the optimal lag length, it can be seen from several criteria, namely: Final Prediction Error (FPE), Akaike Information Criterion (AIC), Schwarz Information Criterion (SC), and Hannan-Quinn Information Criterion (HQ). The optimal lag length test results can be seen in the following table.

**Table 3.**  
**Optimal Lag**

Lag	LogL	LR	FPE	AIC	SC	HQ
0	739.6228	NA	2.14E-14	-17.28524	-17.14156	-17.22745
<b>1</b>	<b>1164.827</b>	<b>790.3789*</b>	<b>1.74e-18*</b>	<b>-26.70180*</b>	<b>-25.83969*</b>	<b>-26.35504*</b>
2	1183.425	32.38309	2.04E-18	-26.55118	-24.97064	-25.91544
3	1200.426	27.60134	2.50E-18	-26.36296	-24.06400	-25.43825

Source: E-Views 12 SV Results

In Table 3, the optimal lag test results can be seen. All criteria suggest that the optimal lag is at lag 1. Based on the most centric sign (\*), the optimal lag suggested and used is at lag 1.

### Stability Test

After determining the optimal lag, the next step is to see if the lag value that has been determined is stable in the model. The stability test is important so that the variable

composition forms a stable model. The following are the results of the stability test in this study.

**Table 4.**  
**Stability Test**

Root	Modulus
0.943961 - 0.016970i	0.944114
0.943961 + 0.016970i	0.944114
0.753540 - 0.049711i	0.755178
0.753540 + 0.049711i	0.755178
0.506773	0.506773

Source: E-Views 12 SV Results

After the VAR model is said to be stable if all modulus values are at a radius  $< 1$ , and unstable if the modulus value is at a radius  $> 1$ . In the stability test results above, the largest modulus value is 0.944114 which is smaller than 1. So that the variable composition is in an optimal and stable position.

### Granger Causality

The next step is to conduct a Granger Causality test. The Granger Causality test is conducted to determine the causal relationship between groups of variables. Causal relationships, both one-way and two-way, can be tested with the Granger Causality test. The following are the results of the Granger Causality test in this study.

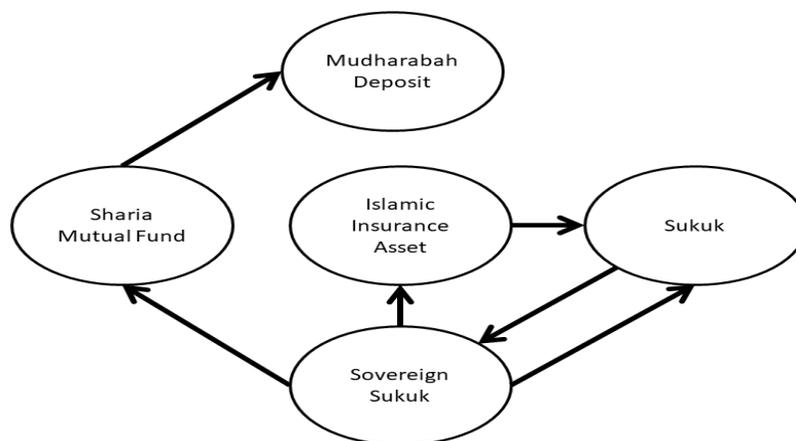
**Table 5.**  
**Granger Causality**

Null Hypothesis:	F-Statistic	Prob.
DPST > ASET	0.61831	0.4339
ASET > DPST	3.92638	0.0508
SKUK > ASET	1.33135	0.2518
<b>ASET &gt; SKUK</b>	<b>5.05976</b>	<b>0.0271*</b>
<b>SBSN &gt; ASET</b>	<b>6.00533</b>	<b>0.0163*</b>
ASET > SBSN	0.17773	0.6744

RKDN > ASET	0.29745	0.5869
ASET > RKDN	23.9012	5.00E-06
SKUK > DPST	0.61523	0.4350
DPST > SKUK	0.45772	0.5006
SBSN > DPST	2.65323	0.1071
DPST > SBSN	0.01126	0.9157
<b>RKDN &gt; DPST</b>	<b>8.38195</b>	<b>0.0048*</b>
DPST > RKDN	0.54634	0.4619
<b>SBSN &gt; SKUK</b>	<b>6.02172</b>	<b>0.0162*</b>
<b>SKUK &gt; SBSN</b>	<b>7.02971</b>	<b>0.0096*</b>
RKDN > SKUK	1.51588	0.2217
SKUK > RKDN	2.81087	0.0973
RKDN > SBSN	0.67100	0.4150
<b>SBSN &gt; RKDN</b>	<b>13.9803</b>	<b>0.0003*</b>

Source: E-Views 12 SV Results

Based on the results of the Granger Causality test, there are 6 causal relationships. With the assumption that if the prob value is smaller than the significance value of 5% or 0.05, it is stated to have a causal relationship. The results that show a two-way relationship are SBSN and SKUK. In addition, some other causality test results only have a one-way relationship such as ASET > SKUK, SBSN > ASET, RKDN > DPST, and SBSN > RKDN. All of them have probability values smaller than 0.05. The author focuses on ASET, and then the one-way relationship to ASET is SBSN. This result concludes that the portfolio in sovereign sukuk has a significant effect on Islamic insurance assets. The map for all Granger Causality test results can be seen as follows:



**Figure 1.**  
**Granger Causality Significant Map**

Source: Authors, 2024

### Ordinary Least Square

Ordinary least squares (OLS) are a method used in statistics to estimate the parameters of linear regression models. OLS can provide simultaneous test results by focusing on the probability F-statistic. Simultaneous analysis is carried out to determine the effect of independent variables on the dependent variable together. With the provision of a significance value of 0.05, if the probability F-statistic result is smaller than the predetermined significance level, it can be concluded that together the independent variables affect the dependent variable.

**Table 6.**  
**OLS Result**

Dependent Variable: ASET				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.868049	0.279968	10.24419	0
DPST (-1)	0.123412	0.053370	2.312381	0.0233
SKUK (-1)	0.068799	0.021464	3.205247	0.0019
SBSN (-1)	<b>0.169670</b>	0.016197	<b>10.47546</b>	0.0000
RKDN (-1)	0.106465	0.022062	4.825667	0.0000
R-squared	0.964350	Mean dependent var		4.610507
Adjusted R-squared	0.962611	S.D. dependent var		0.053457
F-statistic	554.5281			
<b>Prob(F-statistic)</b>	<b>0.0000</b>			

Source: E-Views 12 SV Results

In the table above, the probability F-statistic result is smaller than 0.05. OLS results use lag 1 for each independent variable, so it can be concluded that simultaneously, all independent variables have a significant effect on the dependent variable. These results are under the fifth hypothesis, namely Corporate Sukuk, Islamic Deposit, Sovereign Sukuk, and Islamic Mutual Funds have a significant effect on Islamic Insurance Assets. In addition, the partial effect of each variable can be seen based on the probability result if it is smaller than 0.05 in linear regression. Variables that have probability results smaller than 0.05 are DPST, SKUK, SBSN, and RKDN. These results conclude that each variable partially has a positive and significant effect on the ASET variable.

### Vector Autoregression (VAR)

The causality relationship in VAR is a causality relationship between two variables that can include the element of time. In the optimal lag selection section, it has been determined for the period according to lag 1, which means 1 period before the last period. Significance for the short term can be seen based on the results of the T-statistic value (Standard errors in) & T-statistics in [ ]. If the T-statistic value is greater than 1.98, it can be concluded that the effect is significant on the dependent variable.

**Table 7.**  
**VAR Result**

	<b>ASET</b>
<b>ASET (-1)</b>	<b>0.743512</b>
	<b>(0.07797)</b>
	<b>[ 9.53581]</b>
DPST (-1)	0.006646
	(0.03884)
	[ 0.17112]
SKUK (-1)	0.013932
	(0.0159)
	[ 0.87619]
<b>SBSN (-1)</b>	<b>0.040102</b>

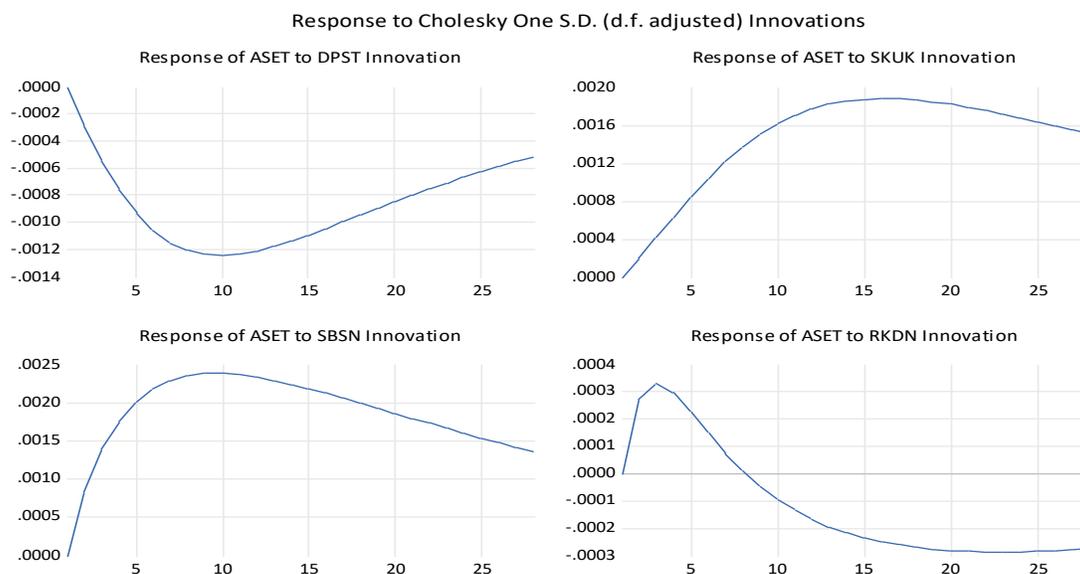
	<b>(0.0176)</b>
	<b>[ 2.27857]</b>
RKDN (-1)	0.012028
	(0.01817)
	[ 0.66187]
C	0.917179
	(0.28149)
	[ 3.25828]
R-squared	0.983204
Adj. R-squared	0.982168
F-statistic	948.3417

Source: E-Views 12 SV Results

The results on ASET (-1) show a T-statistic value greater than 1.98, which means that ASET with 1 previous period has a positive and significant effect with a coefficient of 0.74. In addition, the T-statistic results on the SBSN (-1) variable also show a positive and significant effect on the ASET variable with a coefficient of 0.04. These results conclude that the ASET dependent variable is influenced by the ASET variable itself in the previous 1 period. Meanwhile, the only independent variable that has a significant effect in the previous 1 period is SBSN.

### Impulse Response Function

Impulse Response Function (IRF) provides an overview of the movement of the dependent variable due to the influence of changes (shocks) of all independent variables. The figure below shows the duration of the effect of a change in a variable until the effect disappears or returns to the equilibrium point. This function tracks the response of the dependent variable from other variables when experiencing shocks. The period taken in IRF is 28 periods because this period can represent about 2 years from the last period. The following are the IRF results for each variable on the dependent variable.



**Figure 2.**

**Impulse Response Function**

Source: E-Views 12 SV Results

In Figure 2 above, a change of 1 standard deviation (S.D) of each variable has different effects but all tend to be stable. A change of 1 S.D of DPST will be responded to with a decrease in assets for 10 periods, then will increase again after the 10th period. In addition, a change of 1 S.D of SKUK will be responded to with an increase in assets for the first 15 periods and a decrease afterward. Furthermore, the ASET response will also increase during the initial 10 periods on the 1 S.D SBSN change. This increase is quite fast and significant as ASET increases by 0.0024 in the 10th period after the SBSN change. Finally, a change of 1 S.D RKDN will be responded to with an increase in ASET for 4 periods, then decreases quite sharply after 15 periods. After passing the 15<sup>th</sup> period, ASET tended to stabilize and increased slightly again.

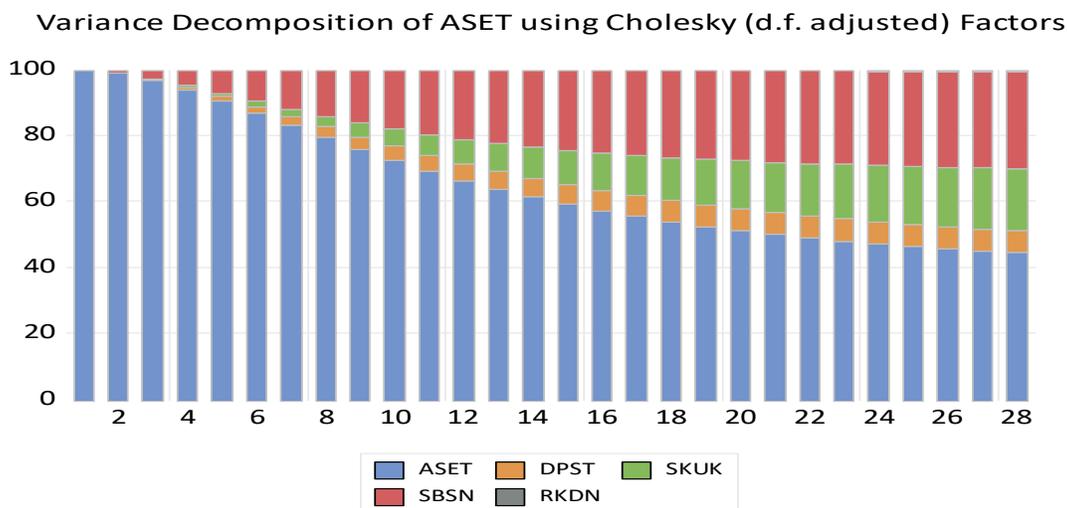
**Variance Decomposition**

Variance Decomposition (VD) analysis is used to see the contribution of each variable to the dependent variable, this analysis also shows which variable variance contribution is dominant in influencing the dependent variable. The following are the VD results to see the contribution of each variable to the ASSET variable.

**Table 8.**  
**Variance Decomposition**

Period	S.E.	ASET	DPST	SKUK	SBSN	RKDN
1	0.007139	100	0	0	0	0
2	0.009163	98.94254	0.095456	0.048596	0.825226	0.088181
3	0.010379	96.85677	0.347347	0.197077	2.428870	0.169934
4	0.011245	94.02516	0.752890	0.482943	4.525314	0.213696
5	0.011930	90.6882	1.279718	0.928932	6.877608	0.225539
24	0.018164	47.20183	6.749822	17.09161	28.58334	0.373390
25	0.018316	46.42747	6.754141	17.61040	28.81670	0.391283
26	0.018457	45.72703	6.752110	18.09159	29.02062	0.408644
27	0.018586	45.09301	6.745136	18.53753	29.19890	0.425417
28	0.018706	44.51876	6.734380	18.95048	29.35482	0.441562
Cholesky Ordering: ASET DPST SKUK SBSN RKDN						

Source: E-Views 12 SV Results



**Figure 3.**  
**Variance Decomposition Graph**

Source: E-Views 12 SV Results

Based on Figure 3 above, the VD results show that the contribution to ASET at the beginning of the period is still dominated by the ASET variable itself. After 6 periods, other variables began to make a large contribution to ASET. In detail, the 28th period can be seen

in the table above. The contribution of ASET to ASET itself was initially 100%, then began to decline until the 28th period by 44%. Furthermore, the contribution of the DPST variable is not too large because, in the 28<sup>th</sup> period, it only contributed 6% to ASET. In addition, a large contribution is found in the SKUK and SBSN variables. Both contributed 18% and 29% in the 28th period to ASET. Finally, the RKDN variable does not seem to contribute even though in the 28th period, RKDN has a contribution of 0.4% to ASET.

### **The Effect of *Mudharabah* Deposit on Islamic Insurance Assets**

Based on the results of the Ordinary Least Square test, the effect of *mudharabah* deposit (DPST) has a positive and significant effect on Islamic insurance assets (ASET). The probability result of *mudharabah* deposit is 0.02 which means it is smaller than the significance of 0.05. According to the first hypothesis in this study, *mudharabah* deposit has a positive and significant effect on Islamic insurance assets. These results are in line with Sawitri's research (2017) which explains the effect of *mudharabah* deposit has a positive and significant effect on Islamic insurance assets in Indonesia. In the Granger Causality test results, *mudharabah* deposit does not show any one-way or two-way relationship to Islamic insurance assets. Then, in the VAR estimation with lag 1 for short-term effect, *mudharabah* deposit also has no significant effect on Islamic insurance assets. In addition, *mudharabah* deposit still needs to be considered because it has a 6% contribution to Islamic insurance assets in the long run. Moreover, the IRF results on the response of Islamic insurance assets to *mudharabah* deposit shocks, although showing a decrease at the beginning of the period, began to increase again afterward. One of the allocations of Islamic insurance portfolio is *mudharabah* deposit. *Mudharabah* deposits do have a very high level of investment security, considering that investments in *mudharabah* deposits are usually made in large banks and financial institutions. As stated by (Fahmi et al., 2022) Consumers entrust money to Islamic banks or other financial institutions that follow Islamic law with *mudharabah* deposits, also referred to as Islamic deposits.

### **The Effect of Sovereign Sukuk on Islamic Insurance Assets**

Based on the results of the Ordinary Least Square test, the effect of sovereign sukuk (SBSN) has a positive and significant effect on Islamic insurance assets (ASET). The

probability result of sovereign sukuk is 0.00 which means it is smaller than the significance of 0.05. Under the second hypothesis in this study, sovereign sukuk has a positive and significant effect on Islamic insurance assets. These results are in line with Sawitri's research in 2017 which explains the effect of sovereign sukuk has a positive and significant effect on Islamic insurance assets in Indonesia. In the Granger Causality test results, sovereign sukuk shows a one-way relationship to Islamic insurance assets. Furthermore, in the VAR estimation with lag 1 for short-term effects, sovereign sukuk has a positive and significant influence on Islamic insurance assets. In addition, sovereign sukuk needs to be an important factor because it has a contribution of up to 29% to Islamic insurance assets in the long run. Finally, the IRF results on the response of Islamic insurance assets to sovereign sukuk shocks show a rapid increase at the beginning of the period, this can be a reference for the optimization of investment portfolios for investors who want to follow the Islamic insurance investment portfolio. Sovereign Sukuk or State Islamic Securities (SBSN) are securities denominated in rupiah and foreign currencies based on Islamic principles issued by the Republic of Indonesia, either directly by the Government or through the SBSN Issuing Company, as evidence of participation in SBSN Assets, and must be paid or guaranteed payment of compensation and nominal value by the Republic of Indonesia, by the provisions of the agreement governing the issuance of the SBSN (Soemitra, 2017). In addition, the outstanding value of Indonesia's sovereign sukuk has increased by 950 billion Rupiah over the past 10 years, the issuance of sovereign sukuk also aims to diversify investments for investors (Mitsaliyandito et al., 2017).

### **The Effect of Corporate Sukuk on Islamic Insurance Assets**

Based on the results of the Ordinary Least Square test, the effect of corporate sukuk (SKUK) has a positive and significant effect on Islamic insurance assets (ASET). The probability result of sukuk is 0.0019 which means it is smaller than the significance of 0.05. Following the third hypothesis in this study, sukuk has a positive and significant effect on Islamic insurance assets. These results are in line with Sawitri's research in 2011 which explains the effect of sukuk has a positive and significant effect on Islamic insurance assets in Indonesia. In the Granger Causality test results, sukuk shows a one-way relationship to Islamic insurance assets. The result shows the influence of Islamic insurance assets on sukuk

investment. Furthermore, in the VAR estimation with lag 1 for short-term effects, sukuk does not have a significant influence on Islamic insurance assets. In addition, sukuk needs to be an important factor because it has a contribution of 18% to Islamic insurance assets in the long run. Finally, the IRF results on the response of Islamic insurance assets to sukuk shocks show a rapid increase at the beginning of the period. Based on a statistical report by (OJK Indonesia, 2023b) the outstanding value of corporate sukuk in Indonesia reached 234 trillion Rupiah in December 2023. The rapid development of corporate sukuk in Indonesia is one of the investment instruments with large and promising returns. However, the potential for default from companies that issue sukuk remains the biggest fear of investors. Sukuk ratings can be a reference for investors in considering investment options in this investment instrument (Melinda & Wardani, 2019).

### **The Effect of Islamic Mutual Funds on Islamic Insurance Assets**

Based on the results of the Ordinary Least Square test, the influence of mutual funds (RKDN) has a positive and significant effect on Islamic insurance assets (ASET). The probability result of *mudharabah* deposit is 0.00 which means it is smaller than the significance of 0.05. Per the fourth hypothesis in this study, mutual funds have a positive and significant effect on Islamic insurance assets. These results are in line with Sawitri's research in 2017 (Sawitri, 2017) which explains the effect of *mudharabah* deposit has a positive and significant effect on Islamic insurance assets in Indonesia. In the Granger Causality test results, mutual funds do not show any one-way or two-way relationship to Islamic insurance assets. Then, in the VAR estimation with lag 1 for short-term effects, mutual funds also do not have a significant influence on Islamic insurance assets. In addition, based on the Variance Decomposition results, mutual funds do not have a large contribution to Islamic insurance assets in the long run. Moreover, the IRF results on the response of Islamic insurance assets to mutual funds shocks although showing an increase at the beginning of the period, afterwards began to decline. Based on definition, Islamic mutual funds are defined as a container that contains funds collected from several investors which are then put together in a securities portfolio managed by investment managers to be invested in accordance with Islamic principles (Soemitra, 2017). Based on the (OJK, 2023), Roadmap for the Development and Strengthening of Indonesian Insurance, the Islamic insurance investment

portfolio in Indonesia has not added much to the investment portion of Islamic mutual fund instruments over the past 5 years. In addition, the Net Asset Value (NAV) of Islamic and conventional mutual funds in Indonesia has decreased compared to before the Covid-19 pandemic (Seto & Maulana, 2024).

### **The Effect of *Mudharabah* Deposit, Sovereign Sukuk, Sukuk, and Islamic Mutual Funds on Islamic Insurance Assets**

Based on the Ordinary Least Square test results, the Probability F-statistic shows a value of 0.00 which is smaller than the significance of 0.05. These results conclude that the effect of *mudharabah* deposits (DPST), sovereign sukuk (SBSN), sukuk (SKUK), and mutual funds (RKDN) together have a significant effect on Islamic insurance assets (ASET). Broadly speaking, all variables included in the investment portfolio in this study have a significant effect on Islamic insurance assets in Indonesia.

### **CONCLUSION**

The OJK has released a new regulation, PJOK number 11 of 2023, which mandates insurance and reinsurance companies to divide Islamic Insurance Units into new Islamic Insurance Companies or other Islamic Insurance Companies with business permits. In addition, OJK indicated that the changes to the POJK number 6 of 2023 in question were intended to maintain the company's financial health and optimize investor performance. For insurers, investment income is crucial for this reason. Furthermore, rather than relying on revenue from a range of sources, the majority of insurers rely on investment income or the settlement of claims to be profitable and efficient (Akhtar, 2018a). Therefore, this study shows how the allocation of Islamic investment funds affects Islamic insurance assets in Indonesia. Based on the results of the study, the authors found the effect of the investment portfolio on *mudharabah* deposits, sovereign sukuk, sukuk, and mutual funds has a positive and significant effect on the growth of Islamic insurance assets in Indonesia. Furthermore, this study found that all independent variables simultaneously have a significant effect on the growth of Islamic insurance assets. These results conclude that the investment portfolio had influenced Islamic insurance firms with a significant effect on the growth of Islamic

insurance assets in Indonesia. In the results of the Granger Causality test and Vector Autoregression (VAR) test, only the sovereign sukuk portfolio has a significant influence on the growth of Islamic insurance assets. This result can be a consideration for stakeholders and investors in seeing the optimization of investment in the financial sector in Indonesia. In addition, sovereign sukuk and corporate sukuk are important factors in the growth of Islamic insurance assets with a large contribution to the Variance Decomposition (VD) test results. Finally, a large increase in the allocation of investment in *mudharabah* deposits can affect the increase in Islamic insurance assets, this is concluded based on the results of the Impulse Response Function (IRF) test in this study. Based on the research that has been conducted, there are several limitations and concerns for further research in perfecting this research because this research certainly has several shortcomings or limitations that need to be corrected. In terms of research variables, this study only uses investment portfolio variables in *mudharabah* deposits, sovereign sukuk, sukuk, and mutual funds as independent variables. Of course, this is still lacking because there are still other factors that can affect the growth of Islamic insurance assets in Indonesia. In addition, the scope of this research is too broad by using data from OJK Indonesia with a total of all Islamic insurance companies in Indonesia. Future research can use the same variables with more specific coverage of Islamic insurance companies and types of Islamic insurance companies such as Islamic life insurance, Islamic general insurance, and Islamic reinsurance.

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