



# Asymmetrical influence of inflation variables, industrial production index, return on assets on corporate sukuk and sbsn

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## ABSTRACT

This research examines the influence of inflation factors, industrial production index (IPI) and return on assets (ROA) on corporate sukuk and SBSN. This research takes the form of time series data originating from the Financial Services Authority (OJK), Bank Indonesia (BI) and the Central Statistics Agency (BPS) from monthly data, namely from January 2011 to December 2022. The analysis method in this research uses a non-linear model. Autoregressive Distributed Lag Model (NARDL). The research results show that in the long term the inflation variable has a symmetrical effect on corporate sukuk and an asymmetrical effect on SBSN. Meanwhile, in the short term, inflation has no effect on corporate sukuk or SBSN. In the long term, the Industrial Production Index variable has an asymmetrically significant effect on SBSN but has no effect on corporate sukuk. Meanwhile, in the short term, IPI has a symmetrically significant effect on corporate sukuk and SBSN. The Return On Assets (ROA) variable has an asymmetrically significant effect on corporate sukuk but has no effect on SBSN. Meanwhile, in the short term, ROA has a symmetrically significant effect on corporate sukuk and SBSN.

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## 1. INTRODUCTION

Indonesia is one of the largest Muslim countries in the world, with the largest Muslim population in the world, it should also be a large market for the existing sharia financial industry. Apart from having a majority Muslim population, Indonesia as a developing country still needs a lot of funds to build and improve the country's infrastructure. This process is a good opportunity as well as a challenge for sharia business players. The large demand for halal products and in accordance with Islamic law has made sharia-based industries develop rapidly in Indonesia (Munir 2018).

The phenomenon of increasing interest in the sharia financial industry has experienced encouraging developments for Indonesia, because investment has an important role in creating better economic growth. One of the sharia financial industries that is currently developing is the sharia capital market. The capital market has an

important role for the economy, especially in increasing the rate of economic growth. This is because the development of the capital market in Indonesia, which is reflected in the main indicators of the capital market, which continues to grow from year to year, is able to drive economic growth by increasing investment activities (Fathoni 2020).

Financing carried out by an industry or company to meet needs comes from investors who invest in the company. Investment is an activity where capital owners invest their capital in an asset and hope to get a return or profit from the asset they invest. PT Bursa Efek Indonesia is a conventional capital market owned by Indonesia, founded in 1912. In the sharia capital market, one of the types of investment used is sukuk or sharia bonds. Sukuk is an investment instrument that produces higher returns than deposits and savings and has lower risk. Therefore, corporate sukuk products are in great demand by investors in the capital market at the global level. Basically, corporate sukuk used as investment instruments can be issued based on a sharia contract or underlying transaction, or the transaction can be in the form of an ijarah, mudharabah and musyarakah contract. The issuance of this investment instrument is seen as a new innovation in sharia finance. Sukuk are not interest-based debt and receivable instruments (riba) like the bonds we know with conventional finance, but sukuk are issued as principles that contain clear sharia elements.

Sukuk can be used as a financial instrument as an investment that can increase economic growth. Likewise with inflation, high inflation levels are usually associated with economic conditions that are too hot. This means that economic conditions experience demand for products that exceeds the capacity of product supply, so prices tend to increase. High inflation will also cause a decrease in the purchasing power of money. In general, sukuk issuance in Indonesia has increased every year. This is also inseparable from the role of the government which has made Law no. 19 of 2008 concerning SBSN, so that it can encourage the growth of sukuk issuance in Indonesia. SBSN, which is also commonly called state sukuk, is one of the APBN financing instruments which is also an investment instrument for the community. As a fiscal instrument, SBSN has several important characteristics, including being in the form of state securities using sharia principles.

With the high contribution of society in investing in sukuk investment instruments and with the composition of the population in Indonesia being the largest Muslim, sukuk has become a potential market that can be developed in Indonesia in the future. When macroeconomic conditions are stable or shaken, this can influence issuers' decisions to issue sukuk and also influence investors' decisions to buy sukuk. As stated by Valentin (2018), macroeconomic stability plays an important role in the development of the sukuk market. Stable macroeconomic conditions cause the issuance of sukuk to become more attractive to investors because this investment instrument is freer from existing risks, such as interest rate, exchange rate, inflation and liquidity risks.

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## 2. RESEARCH METHOD

The type of data used in this research is secondary data. The data is in the form of time series data, which is monthly data starting from January 2011 to December 2022. The

monthly data source is published by the Financial Services Authority (OJK), the Ministry of Trade of the Republic of Indonesia and the Central Bureau of Statistics (BPS), Bank Indonesia (BI). Data collection techniques are carried out by means of documentation, namely collecting, recording and processing data related to research. The analytical method used in this research uses quantitative analysis using time series data. The model used in this research is the Non-linear Autoregressive Distributed Lag Model (NARDL) and as a tool for data processing it uses the Eviews 10 program. Variable description testing, data stationarity test, optimum lag length test, cointegration test, long-term and long-term asymmetric tests short, and classical assumption tests include the autocorrelation test and heteroscedasticity test.

### 3. RESULTS AND DISCUSSIONS

Table 3.1 Variable Description Statistics

Variable	Mean	Std. Dev	Max	Min	N
Corporate Sukuk (SK)	17,215.17	11,701,793	42,497.00	1,894.00	144
SBSN	217,811.83	92,069.86	302,747.76	38,500.00	144
Inflation	4.23	1,905	8.79	1.32	144
Industrial Production Index (IPI)	129.83	15,836	159.29	94.86	144
Return On Assets (ROA)	1.72	0.365	2.52	0.13	144

In table 3.1 the descriptive statistical results provide information that there are 144 total research observation data. The corporate sukuk variable has a minimum value of 1,894.00 trillion and a maximum value of 42,497.00 trillion, the average value is 17,215.17 trillion and the standard deviation value is 11,701.793 trillion, where the value is lower than the average value so it indicates that the variable The corporate sukuk used have good, clear and even data. The SBSN variable has a minimum value of 38,500.00 billion and a maximum value of 92,069.86 billion, the average value is 217,811.83 billion and the standard deviation value is 92,069.86 billion, where the value is lower than the average value, thus indicating that the SBSN variable The data used is good, clear and even data.

Table 3.2 Stationarity Test (Unit Root Test)

Variable	Augmented Dicky Fuller			
	Levels		First Different	
	T-Statistics	P-Value	T-Statistics	P-Value
Corporate Sukuk	0.089	0.963	-15,362	0,000***
SBSN	-3,715	0.004***	-15,949	0,000***
Inflation	-2,333	0.162	-9,3821	0,000***
Master Production Index (IPI)	-1,876	0.342	-12,680	0,000***
Return On Assets (ROA)	-4,057	0.001***	-16,070	0,000***

Based on the stationarity test in the table above, it is known that the SBSN and ROA variables are stationary at level level, namely the probability is below the 1% real level. Meanwhile, corporate sukuk, inflation, IPI are not stationary at the level with a real level  $>$  alpha 5%. In testing at the first difference level, it can be concluded that all independent variables are stationary at the first difference level by looking at the ADF statistical value  $<$  1%. Thus there is no stationary data at the second level of differentiation so that NARDL estimation can be carried out.

Table 3.3 Cointegration Test (Bound Test Cointegration)

F-statistic Value of Corporate Sukuk		4,266	
SBSN F-statistic Value		3,774	
Significance	I (0) Lower Bound	I(1) Upper Bound	
10%	1.99	2.94	
5%	2.27	3.28	
2.5%	2.55	3.61	
1%	2.88	3.99	

From table 3.3, it is known that the F-statistic value of the dependent variable corporate sukuk is 4,266 and the F-statistic value of the SBSN variable is 3,774, which is greater than the Lower Bound value at the 10% level, namely 1.99 and the Upper Bound value at the 10% level, namely 2.94, which means this explains there is a long-term relationship between inflation, IPI and ROA on corporate sukuk and SBSN.

Table 3.4 NARDL Asymmetric Test of Corporate Sukuk

Variable	Coefficient	Std. Error	Prob
Inflation	-21,404	38,684	0.581
IPI_log	-0.996	2,796	0.722
ROA	54,675	11,961	0,000***

Based on the results of the asymmetric test in the table above, the probability value for the ROA variable is 0.000, which is smaller than the real level of 1%, so there is an asymmetric influence in the long term between the return on asset (ROA) variable on corporate sukuk. Meanwhile, the IPI variable has a probability value of 0.722, which is greater than the real level of 5%, so there is no asymmetric influence on the corporate sukuk variable, then the inflation variable with a probability value of 0.581 is greater than the real level of 5%, so it does not have an asymmetric effect on corporate sukuk. To study in more depth, researchers present long-term and short-term asymmetric coefficients to find out how big the asymmetric effect of the return on assets (ROA) variable is on corporate sukuk

Table 3.5 NARDL SBSN Asymmetric Test

Variable	Coefficient	Std. Error	Prob
Inflation	-64,455	30,432	0.036**
IPI_log	8,530	2,218	0,000***
ROA	-26,159	170.192	0.878

Based on the results of the asymmetric test in the table above, it was found that the Inflation variable has a probability value of 0.036 < from the 5% level so that there is a long-term asymmetric influence between the inflation variable on SBSN. Furthermore, the IPI variable shows a probability value of 0.000 < from the 1% level so that there is a long-term asymmetric influence on SBSN. Meanwhile, the Return On Asset variable has a probability value > from the 5% level it is 0.878 so it does not have an asymmetric effect on SBSN. To study in more depth, researchers present long-term and short-term asymmetric coefficients to find out how big the asymmetric effect of the Inflation and IPI variables is on SBSN.

Table 3.6 Short-Term Asymmetric Coefficient of Corporate Sukuk

Variable	Coefficient	Prob
C	-8,801	0.003***
LOG_SK (-1) *	-0.133	0,000***
INFLATION**	-6,194	0.160

LOG_IPI**	0.247	0,000***
ROA**	5,320	0.010**
D(LOG_SK(-1))	-0206	0.010**
CointEq (-1) *	-0.133	0,000***

### **Analysis of the Effect of Inflation on Corporate Sukuk and SBSN**

In the short term, inflation does not have a significant effect on the corporate sukuk or SBSN variables, seen from the respective probability values of 0.160 and 0.728 < alpha 5%. The results of this research indicate that researchers cannot reject H0 or accept H0 which states that the inflation variable has no asymmetric or symmetric effect on the corporate sukuk and SBSN variables. This research is in accordance with research conducted by Hanifah and Pantas (2022), with the title "The Influence of Macroeconomic Indicators on Retail Sukuk Trading Volume in Indonesia". The results of his research in the short term are that all inflation, exchange rate, JUB, SBIS and GDP variables have no influence on retail sukuk. The fall in the value of the currency will affect buyers, because buyers will spend a lot of money that must be paid to buy bonds.

Meanwhile, in the long term, the coefficient of the inflation variable post -24,910 has a negative and symmetrically significant effect on the corporate sukuk variable, seen from the probability value of 0.034 and is smaller than the real level of 5%, meaning that when there is an increase in inflation of 1% it will reduce corporate sukuk by 24,910 %. The results of this research show that the researcher rejects H0 which states that the inflation variable in the long term does not have an asymmetric or symmetric effect on the corporate sukuk and SBSN variables. The results of this research are in accordance with research conducted by Gusniarti (2019), with the title "Internal and External Factors that Influence Demand for Retail Government Sukuk". The results of the research show that the US dollar exchange rate and deposit interest rates have an influence on demand for sukuk, while the yield, Prices and inflation have no effect on demand for retail government sukuk.

Postal inflation has a significant asymmetric effect on SBSN with a postal inflation coefficient value of 13,327 with a probability of 0.050 which is smaller than the real level of 5%. This means that when there is an increase in inflation of 1%, SBSN will increase by 13,327% and vice versa. Neg inflation has a significant effect on SBSN with a coefficient value of -7.778 with a probability of 0.000 which is smaller than the real level of 1%. This means that when there is an increase in inflation of 1%, SBSN will decrease by 7,778%. This condition is where increases and decreases in inflation have different impacts on the SBSN variable. The results of this study accept the hypothesis or cannot reject the hypothesis which states that inflation has an asymmetric effect on SBSN. The results of this study accept the hypothesis or cannot reject the hypothesis which states that inflation has an asymmetric effect on SBSN. The results of this research are in accordance with research conducted by I.H Ardiansyah & D. Lubis (2018) that macroeconomic variables influence the growth of corporate sukuk. The variables JUB, IPI and inflation have a positive relationship to the growth of corporate sukuk in Indonesia, while world oil prices, exchange rates and mudharabah profit sharing have a negative effect on corporate sukuk in Indonesia.

This happens because sukuk can have different reactions to increasing inflation and decreasing inflation so that the effect of inflation on sukuk is asymmetric. Therefore, the government needs to pay attention to which impact is greater, between increasing inflation and decreasing inflation. An increase in inflation will have a greater impact on SBSN than a decrease in inflation. This happens because sukuk can have different reactions to increasing inflation and decreasing inflation so that the effect of inflation on sukuk is asymmetric. Therefore, the government needs to pay attention to which impact is greater, between increasing inflation and decreasing inflation. An increase in inflation will have a greater impact on SBSN than a decrease in inflation.

### **Analysis of the influence of the Industrial Production Index (IPI) on corporate Sukuk and SBSN.**

In the short term, the Industrial Production Index (IPI) has a positive and symmetrically significant effect on corporate sukuk and SBSN, seen from the coefficient values of 0.247 and 0.205, while the respective probability values, namely 0.000 and 0.045, are smaller than the real level of 5%. In the long term, IPI has no effect on corporate sukuk, while the POS industrial production index has a positive and asymmetrically significant effect on SBSN with a coefficient value of 2.043 and a probability of 0.001. This means that when there is an increase in IPI of 1%, SBSN will increase by 2,043%. Meanwhile, LOG\_IPI\_NEG has a positive and asymmetrically significant effect with a coefficient of 6.486 and a probability value of 0.000 which is smaller than the real level of 5%. This means that when there is an increase in IPI of 1%, SBSN will increase by 6,486%. This condition, where increases and decreases in the IPI have a positive effect, has a different impact on the SBSN variable. The decline in IPI was greater and had more impact on the increase in SBSN than the increase in IPI.

The results of long-term research on corporate sukuk state that we cannot reject the H0 hypothesis or accept the H0 hypothesis which states that IPI has no asymmetric or symmetric effect on corporate sukuk. Meanwhile, in the long term, SBSN states that it rejects the H0 hypothesis which states that IPI has no asymmetric and symmetric influence on SBSN. Meanwhile, the short-term hypothesis for corporate sukuk and SBSN states that it rejects the hypothesis H0 which states that IPI has no asymmetric and symmetric influence on SBSN. In line with the research results of I.H Ardiansyah & D. Lubis (2018) stated that the influence of IPI on total Sukuk Emissions is positive and significant. The Industrial Production Index (IPI) is an economic indicator with the aim of calculating output which covers all industrial sectors (except agriculture and services), namely mining, manufacturing, and other factories such as electricity and oil and gas. The Industrial Production Index shows the percentage of ups and downs in production value that took place in the current and previous periods.

The Industrial Production Index (IPI) describes the total output of the manufacturing and mining industries, both medium and large scale industries. The Industrial Production Index is also an indicator that shows the business cycle in a country. A decrease in IPI has a greater impact on sukuk than an increase in IPI, so the government needs to anticipate this. If there is a decline in the IPI, a country's business cycle will experience a contraction where companies will experience shrinkage. The decline in IPI has a greater impact on sukuk, this is because IPI affects company and state cash flows, while IPI also reflects real economic activity. The decline in IPI occurred due to a buildup of inventory, so the company reduced production, in addition to a decrease in orders. Domestic orders are still the dominant factor influencing the new orders variable index. Economic conditions can be reflected in the condition of the capital market. At a macro level, the economic condition of a country is correlated with the condition of its capital market, however, the capital market tends to be more reactive to potential crises. This tendency occurs because capital market players generally have forward looking, namely future estimates of the company's financial performance in the future.

### **Analysis of the Effect of Return on Assets (ROA) on Corporate Sukuk and SBSN**

Based on the research results, the variable Return On Assets (ROA) in the short term has a positive and significant effect on Corporate Sukuk and SBSN symmetrically, seen from the probability values of 0.010 and 0.027 respectively, which are smaller than the real level of 5%. Meanwhile, in the long term, the variable Return On Assets (ROA) has a positive and significant asymmetric effect on corporate sukuk with a probability value of ROA\_POS of 0.000 and a coefficient of 5.750, meaning that when there is an increase in ROA of 1%, corporate sukuk will increase by 5.75%, then if ROA\_NEG the probability is

equal to 0.012 and the coefficient is 2.285, meaning that when there is an increase in ROA of 1%, corporate sukuk will increase by 2.285%. This condition is where increases and decreases in ROA have a positive effect and have different impacts on the corporate sukuk variable. The increase in ROA is greater and has more impact on the increase in corporate sukuk than when the ROA decreases.

The results of long-term research on corporate sukuk state that they reject the hypothesis H<sub>0</sub> which states that ROA has no asymmetric or symmetric effect on corporate sukuk. Meanwhile, in the long term, SBSN states that it cannot reject the H<sub>0</sub> hypothesis or accept the H<sub>0</sub> hypothesis which states that ROA has no asymmetric or symmetric effect on SBSN. Meanwhile, the short-term hypothesis for corporate sukuk and SBSN states that it rejects the hypothesis H<sub>0</sub> which states that ROA does not have an asymmetric and symmetric effect on SBSN. This research is in accordance with research conducted by Dimas Pangga (2019) which states that ROA has a significant effect on sukuk ratings. This is in accordance with the theory put forward by Sartono (2000), that one of the objectives of this principle is to increase assets in a company which is part of the profits which will have a large influence on the increase in Sukuk. This profit will become income for the company which will influence the Sukuk level.

#### 4. CONCLUSION

In the long term, the inflation variable has a symmetrical effect on Corporate Sukuk, while in the short term inflation has no effect on Corporate Sukuk. In the long term, the Industrial Production Index (IPI) variable has no effect on Corporate Sukuk, while in the short term it has a symmetrical effect on Corporate Sukuk. In the long term, the Return On Asset (ROA) variable has an asymmetric effect on Corporate Sukuk, while in the short term ROA has a symmetric effect. In the long term, the inflation variable has an asymmetric effect on SBSN, while in the short term it has no effect on SBSN. In the long term, the Industrial Production Index has an asymmetric effect on SBSN, while in the short term the IPI has a symmetric effect on SBSN. In the long term Return On Assets has no effect on SBSN, while in the short term ROA has a symmetrical effect on SBSN.

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