

Cointegration Between Corporate Sukuk, Consumer Price Index, Consumer Confidence, and the Balance of Trade

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ABSTRACT

Purpose – The research goals is to determine whether the use of corporate sukuk in Saudi Arabia and Indonesia has long-run and short-run cointegration with the balance of trade, consumer confidence, and consumer price index.

Design/methodology/approach – Data is time series and tested with ADF test for looking unit roots. For analysis, we using autoregressive distributed lag to examine cointegration between variables and find long-term causality.

Finding/Results – There is cointegration between sukuk and CPI in Saudi Arabia, indicated by the F value of 8.187 greater than 1.244; between sukuk and CC in Saudi Arabia, indicated by the F value of 17.13 greater than 3.574; and between sukuk and the balance of trade in Indonesia, indicated by the F value of 9.72 greater than 3.62. The upward trend of corporate sukuk in Saudi Arabia is in line with the upward trend of CPI with an ECT value of 0.09% and a downward trend of CC with an ECT value of 123%. Meanwhile, in Indonesia, the upward trend of corporate sukuk is offset by the fluctuating trend of BOT, where, in the short term, the impact of corporate sukuk on BOT is significant in the current period and period -4.

Originality/Value – This study focuses on comparing the cointegration between the use of corporate sukuk with the consumer price index, consumer confidence and balance of trade in Saudi Arabia and Indonesia. These findings will be a major concern for the government and debt securities users so they can allocate funds wisely.

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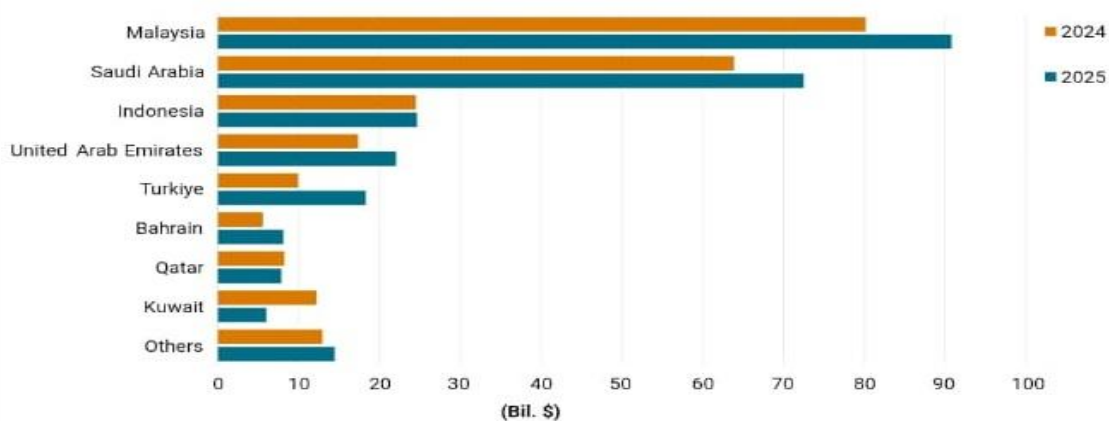
1. Introduction

Economic growth is closely linked to business confidence. Essentially, strong economic growth will enhance business confidence. (Kleynhans & Coetzee, 2021) Research from Du (2023) shows a significant relationship between business confidence and key economic indicators. The results from Syahputra et al.,(2021) show that economic growth, inflation, and the composite stock price index have a positive impact, while government spending, interest rates, and exchange rates show a negative impact on the business confidence index, in other words, the consumer price index and consumer confidence also determine business confidence. (Los & Ocheretin, 2019)

Bonds and Sukuk are long-term investment instruments in the form of debt securities with fixed interest rates. Both can be issued by governments or companies to raise funds for financing. Government bonds may impact on economic growth positively, while corporate bonds can have a negative impact on economic growth. (Nneka et al., 2025) The fundamental difference between bonds and Sukuk is that Sukuk are based on Sharia principles. Sukuk has been shown in other studies to be an effective sustainable financing mechanism for reducing poverty and promoting long-term growth in ASEAN nations. Sukuk is not only intended to improve the standard of living and develop the people's economy (Bella, 2023), but also an increase in Sukuk financing resulted in an increase in GDP growth, as well as job creation and infrastructure development.(Yusuf & Maryam, 2025) Sukuk provides several other major benefits, including an ideal way to finance investments in huge public-interest projects and an indirect impact on long-term economic growth.(Naz & Gulzar, 2026; Siregar et al., 2022) The Malaysian and Bahraini economic growth from 2001 to 2018 revealed that sukuk had a beneficial impact on economic growth (El et al., 2023). Sukuk finance also had an impact on economic growth in ASEAN countries from 2013 to 2019. (Ledhem, 2026)

In the global Sukuk market, Malaysia is the largest contributor to issuance growth in 2025. Saudi Arabia is the second largest contributor to growth in 2025, with sukuk issuance worth \$72.5 billion, including \$38 billion in foreign currencies up 35% from 2024.

Figure 1. Global Sukuk Market (in Billion \$)



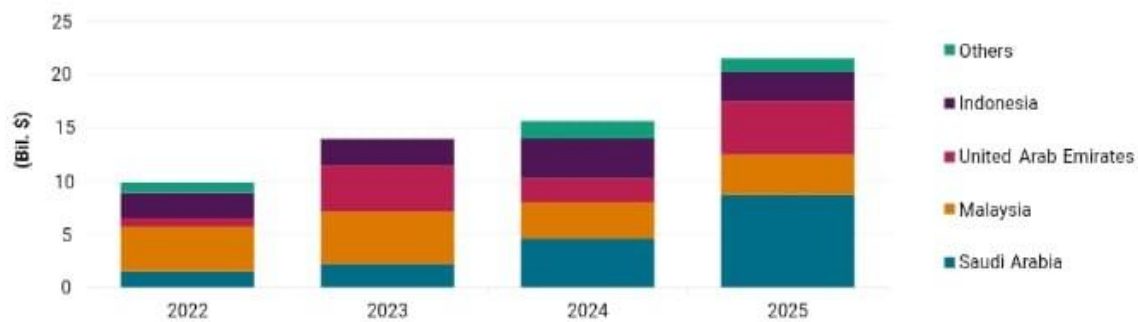
Source: S&P Global, 2026

While overall sustainable sukuk issuance increased by 38% to \$21.5 billion in 2025 from \$15.6 billion in 2024, Saudi Arabian issuers accounted for more than 40% of the total, followed by the United Arab Emirates and Malaysia. (Figure.1) Domestic and international sukuk issuances have surged significantly, making Saudi Arabia one of the largest centers of sharia capital markets in the Gulf (GCC) region. The corporate sukuk market in Saudi Arabia has

experienced rapid growth, driven by the need to diversify corporate funding to support ambitious Vision 2030 projects. Giant non-financial companies such as Saudi Arabian Mining Co. have successfully issued jumbo-value sukuk, such as 10-year tenors. Other issuers such as Saudi Electricity Company and Almarai also utilized this market to raise capital with massive oversubscription. The market share of corporate sukuk in Indonesia is still relatively small, accounting for less than 4% of total outstanding debt securities, with the market still dominated by conventional bonds and sovereign sukuk. Of the total number of corporate sukuk issuances, 47 series have been issued compared to 120 for corporate bonds. The outstanding value of corporate sukuk, at IDR 44.35 trillion, also lags behind the outstanding value of corporate bonds, which stands at IDR 408.62 trillion. However, the Financial Services Authority (OJK) continues to encourage corporations and state-owned enterprises (SOEs) to further optimize sharia sukuk issuance to fund business expansion and strategic projects.

Figure 2. Sustainable Global Sukuk (in Billion \$)

Sustainable sukuk issuance continues to expand



Source: S&P Global, 2026

From an economic perspective, access to sukuk financing enables Saudi companies to fund growth and capital investment at competitive costs, supporting broader private sector development (Vision 2030. 2026) Indonesia companies can use sukuk as an instrument to obtain long-term financing without relying entirely on bank credit. Furthermore, sukuk helps deepen the Islamic capital market by increasing product variety, increasing liquidity, and increasing investor participation.(Wulandari. 2025)

However, uncertainty is a significant part of investing, the risk and return of sharia-compliant assets can vary, giving investors the option to select a portfolio that best fits their risk tolerance. Market volatility, the potential for credit default, inflation, foreign debt instability, debt repayment stability, and exchange rate volatility are the main ways that sukuk can be harmful to the economy. The stability of the sukuk market may be directly impacted by several macroeconomic variables. (Najib & Roudhotus, 2025) Study conducted by Islam et al. (2024), between 2008 and 2018 showed a connection between the performance of the bond and sukuk markets and important macroeconomic factors. A study of European Union countries from 2005 to 2021 showed a strong negative relationship between corporate bond issuance and economic growth. This suggests that excessive reliance on debt financing hinders productive investment.(Ela-Andrada, 2025) The relationship between Sukuk can be demonstrated through research results (Arsad et al., 2025), where Bank Indonesia Sukuk has a negative effect on the CPI. Meanwhile, research results through asset prices indicate that in the long run Bonds significantly impact inflation. Short-term inflation is significantly impacted by SBI in

Islamic monetary variables. In the short-run, Sukuk did not impact positively on inflation. Changes in domestic debt levels, on the other hand, can have an impact on a country's trade balance through factors like currency valuation, interest rates, and inflation.(Annan, 2025).

Many studies have indicated that sukuk or bond issuance has an positive impact on economic growth. Research from Shemshaki et al.(2025) indicates that Sukuk issuance significantly impacts the economic growth of Islamic countries in the ASEAN region, and Sukuk issuance also impacting economic growth in Indonesia. (Andriza et al., 2021) However, findings from Pimada & Miranti (2024) provide empirical evidence on the impact of sukuk on inflation in Indonesia. The results of the study show relationship between sukuk and inflation, indicating that an increase in the number of sukuk in circulation is associated with a higher inflation rate. Sukuk are regarded to be more stable and effective than bonds in terms of preserving trade balance. Marie & Moslem (2023) research shows a direct relationship between debt and trade balance, as well as an inverse relationship between foreign debt and the trade balance. This results in a one-unit rise in foreign debt and a decrease in the net trade balance.

The above research findings illustrate that government policies using bonds and sukuk to support economic growth can have both positive and negative consequences. In this study, we focus on the issuance of corporate bonds, which are specifically used to support investment activities and company development. As a novelty, we attempt to compare the impact of corporate sukuk issuance on consumer price index, consumer confidence and balance of trade in Saudi Arabia and Indonesia.

2. Literature Review & Hypothesis Development

Corporate sukuk are directly a positive financing instrument for companies and the Islamic capital market, but large issuances or volatile market conditions can bring several positive and negative impacts or risks to the macroeconomic. Funds raised from corporate sukuk issuances are used by companies for expansion and project financing, which then directly contributes to increasing Gross Domestic Product (GDP). Asset-based sukuk channel financing to tangible and productive projects in the real sector, thereby accelerating real economic activity. Sukuk become an alternative funding source for the business world outside of bank loans or foreign debt, which helps maintain corporate financial resilience. Meanwhile, the depreciation of the exchange rate against foreign currencies (such as the USD) can increase the risk of sukuk issuing companies, especially those with obligations and trade activities, resulting in increased yields that must be offered and ultimately trigger high or unstable inflation (CPI). Changes in the central bank's benchmark interest rate can also affect corporate sukuk yields (especially in the short term).

The CPI tends to have a negative effect on economic growth. The relationship between Sukuk can be demonstrated through research results (Arsad et al., 2025), where Bank Indonesia Sukuk has a negative effect on the CPI. Meanwhile, research results through asset prices indicate that in the long run Bonds significantly impact inflation. Short-term inflation is significantly impacted by SBI in Islamic monetary variables. In the short-run, Sukuk didnt impact positively on inflation. In the meantime, sukuk, interest rates, and the money supply all contribute to inflation over the long term. Findings from (Pimada & Miranti, 2024) provide empirical evidence on the impact of sukuk on inflation in Indonesia. The results of the study show relationship between sukuk and inflation, indicating that an increase in the number of sukuk in circulation is associated with a higher inflation rate.

Hypothesis

Ho1: there is no cointegration between Sukuk and CPI.

Ha1: There is cointegration between Sukuk and CPI.

Several factors that influence consumer confidence include inflation, unemployment and job security, interest rates, household wealth, and political stability. Sukuk issuance has positive and negative impacts on the economy. The positive impact of sukuk can encourage macroeconomic stability, accelerate real infrastructure development, and reduce dependence on foreign debt. Excessive sukuk issuance in the long term can trigger crowding out. sensitive to exchange rate fluctuations and interest rate changes, has default risk, and can trigger inflation. Several empirical studies show that, in the short and long term, Islamic capital market instruments such as sukuk sometimes have a correlation or negative influence on economic growth if they are not effectively absorbed into the real sector. (Ma'rifah & Riskayanto, 2026) The indirect relationship between Sukuk and consumer confidence can occur because sukuk can trigger inflation or stimulate economic development. The positive and negative impacts of sukuk will indirectly affect consumer confidence. Sovereign sukuk are commonly used to attract investment, because Sukuk issuance had a beneficial impact on economic growth (Bella, 2023; Yusuf & Maryam, 2025; Shemshaki et al., 2025; Andriza et al., 2021; Naz & Gulzar, 2026; Siregar et al., 2022; El et al., 2023; Ledhem, 2026) The higher consumer confidence represents good and stable economic conditions, and it encourages economic players to issue various investment instruments in response to the high degree of investor confidence. The research results above shows that sukuk issuance impacts economic growth, and economic growth will instill consumer confidence in economic conditions. In this case, it can be interpreted indirectly that sukuk issuance may have a positive impact on consumer confidence. But in other side, financial crises can be caused by the high-risk issues of corporate bonds, such as high yields, lower liquidity, and the probability of default. These negative effects increase during periods of recession and declining market conditions. Thus, consumer confidence in businesses will decrease. (Zhao, 2022) The level of consumer confidence also has a domino effect on bond yields. Meanwhile, research from Zhou (2025) found that CCI has strong predictive power in the bond market.

Hypothesis

Ho2: there is no cointegration between Sukuk and CCI.

Ha2: there is cointegration between Sukuk and CCI.

All foreign transactions are calculated using the balance of trade, which is the ratio of the value of exports to imports. A trade surplus frequently promotes economic stability and supports debt issuance to fund infrastructure and real sector projects, boosting the competitiveness of domestic products and stimulating exports, which account for a sizable amount of the surplus. Global sukuk issuance supports governments in raising foreign funds, thereby increasing foreign exchange reserves and contributing to the balance of payments. Sukuk are regarded to be more stable and effective than bonds in terms of preserving trade balance. Changes in domestic debt levels, on the other hand, can have an impact on a country's trade balance through factors like currency valuation, interest rates, and inflation. (Annan, 2025). Marie & Moslem (2023) research shows a direct relationship between debt and trade balance, as well as an inverse relationship between foreign debt and the trade balance. This results in a one-unit rise in foreign debt and a decrease in the net trade balance. Debt finances, both local and external, must be directed towards the development and expansion of productive capacity. Borrowing should be limited to public investment rather than consumption. Sukuk has also

been proved to contribute to economic development, particularly infrastructure, and as a low-cost alternative funding source. (Tanjung & Windiarto, 2021).

Hypothesis

Ho3: There is no cointegration between Sukuk and BOT.

Ha3: There is cointegration between Sukuk and BOT.

3. Methodology

3.1 Data collection

This study uses two countries: Saudi Arabia and Indonesia. The variables used are corporate sukuk, consumer price index, consumer confidence, and balance of trade. The research using time series (monthly) data from January 2022 to December 2025 or data sampel of 48 periods. The testing method used is Autoregressive Distributed Lag (ARDL). The Autoregressive Distributed Lag (ARDL) method is used to analyze long-term and short-term relationships between time series variables and is used when the independent and dependent variables are non-stationary to the same degree. Furthermore, the ARDL method is also considered when the variables in the model have different lag lengths.

Table 1. Operational variables

Variabel	Code	Data	Source
Corporate Sukuk	SK	Volume trade	OJK, Saudi Exchange
Consumer Price Index	CPI	Index points	tradingeconomics.com
Consumer Confidence	CC	Index points	tradingeconomics.com
Balance of Trade	BOT	USD currency	tradingeconomics.com

3.2 Pre-test Data

The assumption of data stationarity is an important notion for studying time series data. Stationarity means that there are no significant changes in the data. Data fluctuations revolve around a fixed mean value and are unaffected by time and variance. To find out whether there is a unit root, Dickey Fuller created a formula known as the ADF test.

$$\Delta y_t = \alpha + \beta t + \gamma y_{t-1} + \sum_{s=1}^p \delta_s \Delta y_t - s + \epsilon_t \quad (1)$$

Which:

Δy_t : The change in the variable

α : Constant intercept.

βt : Linear time trend component.

γy_{t-1} : lag-1 autoregressive term, testing for the unit root.

$\sum_{s=1}^p \delta_s \Delta y_t - s$: Sum of lagged differences.

ϵ_t : error term

The ADF test is a typical approach for determining if a unit root exists (H0) or not (H1) in stationary data. The acceptance scale for this test is as follows: comparing critical value with t value or if the absolute value of the ADF is larger than $\alpha = 1\%$, 5% , or 10% , it is stationary; if the absolute value of the ADF statistic is less than $\alpha = 1\%$, 5% , or 10% , it is not stationary. Optimum lag is a method for determining how much lag will be employed in the model; thus, selecting the optimum number of delays is one of the most significant aspects of getting better outcomes. The optimum lag length can be determined using Vector Autoregressive (VAR), which uses the smallest Akaike Information Criterion (AIC) criteria and the largest number of stars obtained based on the smallest criterion value for each criterion provided. After

determining the maximum lag length (k), it is important to calculate the lag length of each variable in order to obtain the optimal ARDL model estimate. To determine the optimal lag length, the Akaike Information Criteria (AIC) can be used, which is obtained from the AIC calculation value that gives the smallest value.

$$AIC = \ln \left(\frac{RSS}{n} \right) + \frac{2k}{n} \quad (2)$$

Which:

$\ln(RSS/n)$: goodness of fit, based on the Residual Sum of Squares

$2k/n$ penalty term for model complexity

k is the number of estimated parameters

n : number of observations

3.2 Analysis Method

Autoregressive distributed lag (ARDL)

Autoregressive Distributed Lag combines the autoregressive approach distributed lag of the independent and dependent variable. Autoregressive Distributed Lag is a regression model that uses variable values to explain both current and past values of the independent variable, as well as previous values of the dependent variable as an explanatory variable. Whether the explanatory variable is $I(0)$ or $I(1)$, the ARDL approach has the advantage of consistently generating estimates with good long-run coefficients. This model separates the dependent variable's short- and long-term reactions to a one-unit change in the explanatory variable's value. The rate of adaption to changes is calculated using the ECT coefficient. An ECT value with a substantial probability of 5% and a negative coefficient is considered valid. We can calculate the F-statistic by estimating the initial step in the ARDL Whether or not the variables have a long-term association will be shown by the computed F-statistic. The following is the hypothesis for this F-test. Reject H_0 (there is cointegration): If the F-statistic value > Upper Bound Critical Value ($I(1)$). Accept H_0 (no cointegration): If the F-statistic value < Lower Bound Critical Value ($I(0)$). The ARDL model in the long-run equation can be stated as:

$$Y_t = \beta_0 + \sum_{i=1}^p \phi_i y_{t-i} + \sum_{j=0}^p \beta_j x_{t-j} + \epsilon_t \quad (3)$$

Which;

Y_t : The dependent variable at time t

β_0 : intercept or constant

$\sum_{i=1}^p \phi_i y_{t-i}$: represents the sum of the weighted past p values

$\sum_{j=0}^p \beta_j x_{t-j}$: sum of lagged varianle

ϵ_t : error term

In the short term, one method for estimating parameters is to use the Error Correction Model (ECM). The following is an estimation using the error correction model based on the short-term equation:

$$\Delta y_t = \gamma + \rho_i = 1 \beta_i \Delta x_{t-i} + \alpha (y_{t-1} - \beta_0 - \beta_1 x_{t-1}) + v \quad (4)$$

Which:

Δy_t and Δx_t : The first differences of the variables

$\sum \beta_i \Delta x_{t-i}$: Short-run coefficients

α (Error Correction Term/Coefficient): Speed of adjustment, It must be negative.

$(y_{t-1}-\beta_0-\beta_1x_{t-1})$: lagged residual (or error) from the long-run cointegration equation.

v_t : error term

It is crucial that ECT be negative while estimating the ECM model. The estimated model is considered valid if the ECT value is negative. All of the coefficients in the short-run equation above relate the dynamic model in the short run to the equilibrium, as well as the pace of adjustment from the short run to the long run equilibrium. The cointegration model is expressed as follows::

$$\Delta y_t = \alpha_0 + \sum \phi_i \Delta y_{t-i} + \sum \beta_j \Delta x_{t-j} + \lambda ECT_{t-1} + \mu_t \quad (5)$$

Which:

α_0 : speed of adjustment parameters

$\sum \phi_i \Delta y_{t-i}$: short-run fluctuations around a long-run equilibrium.

$\sum \beta_j \Delta x_{t-j}$: sum of short-run lagged effects

λECT_{t-1} : Error Correction Term

μ_t : error vector

4. Result and Discussion

Table 2. ADF Test

Variable	SAUDI ARABIA			INDONESIA		
	ADF t	C.value	Sig.	ADF t	C.value	Sig.
Sukuk	-7.17	-2.945	Level	-5.83	-2.926	First Difference
CPI	-5.48	-2.948	Level	-6.11	-2.926	First Difference
CC	-7.24	-2.951	First Difference	-7.28	-2.927	First Difference
BOT	-8.07	-2.948	First Difference	-6.72	-2.925	Level

Source: Eview 10

The unit root test findings (table 2) indicate two levels of stationarity: level and first difference. As a result, the ARDL model will be employed in the next test because the variables exhibit varying degrees of stationarity. Testing at the sig.0.05 level in Saudi Arabia shows that the Sukuk variable is stationary at the level level (critical value > t (-7.17) and the CPI at the level level (critical value > t (-5.48) while the CC and BOT variables are stationary at the first difference level. Meanwhile, testing in Indonesia shows that the BOT variable is at the level level (critical value > t (-6.72), and the Sukuk, CC and CPI variables are at the first difference because the critical value < t value.

4.1 Cointegration Sukuk with Consumer Price Index

Table 3. Optimum Lag

Lag	LogL	LR	FPE	AIC	SC	HQ
Saudi Arabia						
0	-630.29	NA	4.88e+13	37.193	37.283	37.22461
1	-556.36	134.82*	7.9e+11*	33.080*	33.349*	33.17202*
2	-552.44	6.6759	8.05e+11	33.085	33.534	33.23835
3	-550.70	2.7654	9.26e+11	33.218	33.846	33.43246
Indonesia						
0	-365.13	NA	60598.91	16.687	16.768	16.71785
1	-225.06	261.04*	124.89*	10.502*	10.746*	10.59302*

2	-222.70	4.1790	134.78	10.5774	10.982	10.72784
3	-220.68	3.4032	147.96	10.667	11.235	10.87783

Source: Eview 10

The optimum lag length test results indicate that the LR, FPE, AIC, SC, and HQ values are at lag 1. Therefore, the Saudi Arabia test has an optimal lag length of 1. Indonesia's test is at optimal latency 1, with values of AIC, SC, LR, HQ, and FPE all at lag 1. (Table 3).

Table 4. F-Bounds Test

Statistic	Saudi Arabia				Indonesia			
	Value	Sig.	I(0)	I(1)	Value	Sig	I(0)	I(1)
F	8.187	5%	3.62	4.16	1.244	5%	3.62	4.16

Source: Eview 10

Table 4 shows the cointegration between Sukuk and CPI, indicating that cointegration between Sukuk and CPI in Saudi Arabia is evident. This is indicated by the F value of 8.187, which is greater at 5% (3.62). This contrasts with the test in Indonesia, which shows F value of 1.244 is smaller at 5% (3.62). In other words, there is no cointegration between Sukuk and CPI in Indonesia. The Saudi Arabian cointegration equation can be written as follows.

$$EC = CPI - (-0.0000*SK + 287.1142)$$

Table 5. Long Run and Short Run

Var.	Coeff.	Std.Error	t	Sig.
Long Run				
C	0.259475	1.944094	0.133468	0.8946
CPI(-1)*	-0.000904	0.019148	-0.047198	0.9626
SK**	-3.43E-09	6.62E-09	-0.518193	0.6078
Short Run				
CointEq(-1)*	-0.000904	0.000177	-5.103909	0.0000

Source: Eview 10

The ECM test results in Saudi Arabia indicate short-run cointegration between Sukuk and CPI, as the ECT or CointEq(-1) value is negative and significant at the 0.0000 level (Table 5).

The ECT value indicates how quickly the imbalance (disequilibrium) in the previous period will be corrected or adjusted back to the long-term equilibrium point within a given time period. The ECT value is -0.000904, meaning that approximately 0.09% of the short-term imbalance or deviation will be corrected and return to the equilibrium point within the next month. Meanwhile, the long-run equation can be written as follows:

$$Y = 0.259475 - 0.000904CPI(-1) - 3.43E-09SK$$

Table 6. ARDL

Saudi Arabia				Indonesia			
Var.	Coeff.	t	Sig.*	Var.	Coeff.	t	Sig.*
CPI(-1)	0.999	52.17	0.00	CPI(-1)	0.844	10.16	0.00
SK	-3.4E-09	-0.518	0.60	SK	0.0007	0.23	0.813
C	0.259	0.133	0.89	C	16.408	1.79	0.080
R-squared	0.994674			R-squared		0.702746	
Adjusted R-squared	0.994293			Adjusted R-squared		0.689234	

Source: Eview 10

Table 6 shows that changes in the SK have an impact on changes in the CPI. Changes in the SK in Saudi Arabia have an impact on the CPI (-1) with a sig. 0.60 level. While changes in the SK in Indonesia have an impact on changes in the CPI (-1) with a sig. of 0.813. Changes in SK and changes CPI (-1) in Saudi Arabia are at the coefficient of determination of 99.4674 percent, which means that changes in the model CPI(-1) and SK can be explained by 99.4674 percent. Changes in SK and CPI(-1) in Indonesia at the coefficient of determination of 70.2746 percent, which means that changes in the model CPI(-1) and SK can be explained by 70.2746 percent.

4.2 Cointegration Sukuk with Consumer Confidence

Table 7. Optimum Lag

Lag	LogL	LR	FPE	AIC	SC	HQ
Saudi Arabia						
0	-521.54	NA	7415	23.797	23.87*	23.827
1	-515.07	12.04*	6632*	23.685*	23.92	23.775*
2	-514.54	0.94	7776	23.843	24.24	23.993
3	-509.62	8.28	7482	23.800	24.36	24.011
Indonesia						
0	-380.60	NA	8318	17.004	17.08	17.034
1	-256.24	232.1*	395.3	11.655	11.89*	11.7*
2	-252.15	7.26	394.3*	11.651*	12.053	11.800
3	-249.18	5.01	414.2	11.697	12.25	11.906

Source: Eview 10

The optimum lag length test results indicate that the LR, FPE, AIC, and HQ values are at lag 1. Therefore, the optimal lag length for the Saudi Arabia test is 1. As with the Indonesian test, the LR, SC, and HQ values are all at lag 1. (Table 7).

Table 8. F-Bounds Test

Statistic	Saudi Arabia				Indonesia			
	Value	Sig.	I(0)	I(1)	Value	Sig.	I(0)	I(1)
F-statistic	17.130	5%	3.62	4.16	3.574	5%	3.62	4.16

Source: Eview 10

Table 8 shows there is a cointegration between Sukuk and CC in Saudi Arabia. This is indicated by the F value of 17.130, which is greater at 5% (3.62). This contrasts with the test in Indonesia, which shows F value of 3.574 is smaller at 5% (3.62). The cointegration equation for Saudi Arabia can be written as follows.

$$EC = CC - (-0.0000*SK + 9.0671)$$

Table 9. Long Run and Short Run

Var.	Coeff.	S.Error	t	Sig.
Long Run				
C	11.15651	2.199920	5.071324	0.0000
CC(-1)*	-1.230443	0.172445	-7.135275	0.0000
SUKUK**	-1.32E-07	1.79E-07	-0.736294	0.4668
Short Run				
CointEq(-1)*	-1.230443	0.166662	-7.382863	0.0000

Source: Eview 10

The ECM test results in Saudi Arabia show that Sukuk and CC cointegrate in the short-run, as the ECT or CointEq(-1) value is negative and significant at the 0.0000 level (Table 9). The ECT value is -1.230443, Indicates an adjustment that is overshooting (exceeding the equilibrium point -1) before finally stabilizing again within the next month. Meanwhile, the long-run equation can be stated as follows.

$$Y = 11.15651 - 1.230443CC(-1) - 1.32E-07SK$$

Table 10. ARDL

Saudi Arabia				Indonesia			
Variable	Coeff.	t	Sig	Variable	Coeff	t	Sig
CC(-1)	-0.2304	-1.33	0.19	CC(-1)	0.613	5.18	0.00
SK	-1.3E-07	-0.73	0.46	SK	-0.002	-0.04	0.96
C	11.15	5.07	0.00	C	47.53	3.21	0.00
R-squared	0.057985			R-squared	0.379156		
Adjusted R-squared	0.015167			Adjusted R-squared	0.350936		

Source: Eview 10

Table 10 depicts the effect of changes in SK on CC. Changes in SK in Saudi Arabia have no significant impact on CC (-1) because sig. 0.46 is larger than 0.05. While changes in SK in Indonesia have a statistically not significant impact on CC (-1). Changes in SK and changes CC (-1) in Saudi Arabia are at the coefficient of determination of 5.7985 percent, which means that changes in the model CC(-1) and SK can be explained by 5.7985 percent. Changes in SK and CC(-1) in Indonesia at the coefficient of determination of 37.915 percent, which means that changes in the model CC(-1) and SK can be explained by 37.915 percent.

4.3 Cointegration Sukuk with Balance of Trade

Table 11. VAR Lag Order

Lag	LogL	LR	FPE	AIC	SC	HQ
Saudi Arabia						
0	-580.90	NA	1.1e+09	26.49	26.57	26.52
1	-521.32	111.5*	880859*	23.96*	24.21*	24.0*
2	-520.45	1.5349	1.2e+08	24.11	24.51	24.26
3	-516.09	7.3298	1.0e+08	24.09	24.66	24.30
Indonesia						
0	-631.43	NA	1.1e+10	28.79	28.87	28.82
1	-518.03	211.32	758728	23.81	24.06	23.91
2	-509.83	14.533	627880	23.62	24.0*	23.77
3	-507.47	3.9689	678836	23.70	24.27	23.91
4	-497.55	15.78*	521892*	23.4*	24.16	23.70*

Source: Eview 10

The optimum lag length test results indicate that the LR, FPE, AIC, SC, and HQ values are at lag 1. Therefore, the Saudi Arabia test has an optimal lag length of 1. This test differs from the one for Indonesia, where the LR, FPE, AIC, and HQ values are all at lag 4. (Table 11).

Table 12. F Bound Test

Saudi Arabia					Indonesia			
Statistic	Value	Sig.	I(0)	I(1)	Value	Sig	I(0)	I(1)
F-statistic	2.09	5%	3.62	4.16	9.72	5%	3.62	4.16

Source: Eview 10

Table 12 displays the results of the cointegration test between Sukuk and BOT, which demonstrate no cointegration in Saudi Arabia. This is supported by the F-statistic of 2.09, which is lower at 5% (3.62). This contrasts with the test in Indonesia, which shows a greater F value of 9.72 at 5% (4.16), demonstrating cointegration between Sukuk and BOT in Indonesia. The cointegration equation for Indonesia is as follows.

$$EC = BOT - (-11.7857*SK + 6176.3107)$$

Table 13. Long Run and Short Run

Variable	Coeff.	t	Sig.
Long Run			
C	5015.639	3.333546	0.0021
BOT(-1)*	-0.812077	-4.176114	0.0002
SK(-1)	-9.570890	-3.404387	0.0017
D(BOT(-1))	-0.391708	-2.313262	0.0269
D(BOT(-2))	-0.217681	-1.380535	0.1764
D(BOT(-3))	-0.242220	-2.068137	0.0463
D(SK)	66.16348	2.405558	0.0217
D(SK(-1))	66.56698	2.106351	0.0426
D(SK(-2))	113.1289	3.647993	0.0009
D(SK(-3))	108.9779	3.786822	0.0006
Short Run			
CointEq(-1)*	-0.812077	-5.557555	0.0000

Source: Eview 10

The results of the ECM test in Indonesia indicate short-run cointegration between Sukuk and BOT, as the ECT or CointEq(-1) value is negative and significant at the 0.0000 level (Table 13). The ECT value is -0.812077, meaning that approximately 81.20% of the short-term imbalance or deviation will be corrected and return to the equilibrium point within the next month. Meanwhile, the long-run equation can be written as follows.

$$Y = 5015.639 - 0.812077 \text{ BOT}(-1) - 9.570890 \text{ SK}(-1) - 0.391708 \text{ D}(\text{BOT}(-1)) - 0.217681 \text{ D}(\text{BOT}(-2)) - 0.242220 \text{ D}(\text{BOT}(-3)) + 66.16348 \text{ D}(\text{SK}) + 66.56698 \text{ D}(\text{SK}(-1)) + 113.1289 \text{ D}(\text{SK}(-2)) + 108.9779 \text{ D}(\text{SK}(-3))$$

Table 14. ARDL

Saudi Arabia				Indonesia			
Var.	Coeff.	t	Sig.*	Var.	Coeff.	t	Sig.*
BOT(-1)	0.769	7.77	0.00	BOT(-1)	-0.20	-1.57	0.12
SK	7.8E-08	0.36	0.71	BOT(-2)	0.17	1.37	0.17
				BOT(-3)	-0.02	-0.20	0.84
				BOT(-4)	0.24	2.06	0.04
				SK	66.1	2.40	0.02
				SK(-1)	-9.16	-0.25	0.79
				SK(-2)	46.5	1.32	0.19
				SK(-3)	-4.15	-0.12	0.90
				SK(-4)	-108.9	-3.78	0.00
C	4.899	1.49	0.14	C	5015.6	3.33	0.00

R-squared	0.918400	R-squared	0.554773
Adjusted R-squared	0.914691	Adjusted R-squared	0.436919

Source: Eview 10

Table 14 depicts the effect of changes in SK on BOT. Changes in SK in Saudi Arabia have a minor impact on BOT(-1) at the 0.71 level. Changes in SK and changes BOT (-1) in Saudi Arabia are at the coefficient of determination of 91.84 percent, while Changes in model SK and BOT in Indonesia at the adjust R squared of 43.6919 persen. SK have significant impact on BOT at recent period and (-4) period, while did not have significant impact at periods (-2) and (-3). The link between SK and BOT yields a coefficient of determination of 43.6919 percent, or adjusted R2 of 0.436919, implying that variations in Indonesia's BOT can be explained by changes in SK of 43.6919 percent.

4.4 Robustness

Table 15. Autocorrelation and heteroscedasticity SK and CPI

Correlation			
F	0.749637	Prob. F(4,38)	0.5644
R ²	3.364344	X ² (4)	0.4988
Heteroscedasticity			
F	0.476222	Prob. F(4,37)	0.7529
R ²	2.056434	X ² (4)	0.7254

Source: Eview 10

The results of the autocorrelation and heteroscedasticity tests for the long and short run between Sukuk and CPI are shown in Table 15 shows Breusch-Godfrey test findings with a Chi-Square Prob. of 0.4988 that are greater than 0.05, showing that the data are free of autocorrelation. Meanwhile, the ARCH test results, with a Chi-Square Prob. of 0.7254, are greater than 0.05, showing that the data are not heteroscedastic.

Table 16. Autocorrelation and Heteroskedasticity SK and CC

Correlation LM Test			
F	0.071358	Prob. F(1,43)	0.7906
R ²	0.077867	X ² (1)	0.7802
Heteroscedasticity			
F	1.462325	Prob. F(1,44)	0.2330
R ²	1.479619	X ² (1)	0.2238

Source: Eview 10

The results of the autocorrelation and heteroscedasticity tests for the long and short runs between Sukuk and CC are shown in Table 16, where the Breusch-Godfrey test results with a Chi-Square Prob. of 0.7802 are greater than 0.05, indicating that the data are free from autocorrelation. Meanwhile, the ARCH test results with a Chi-Square Prob. of 0.2238 are greater than 0.05, indicating that the data are free from heteroscedasticity.

Table 17. Autocorrelation and Heteroscedasticity SK and BOT

Correlation LM Test			
F	0.755489	Prob. F(4,30)	0.5624
R ²	4.026595	Prob. Chi-Square(4)	0.4024
Heteroscedasticity			
F	0.246347	Prob. F(4,35)	0.9099

R ²	1.095319	Prob. Chi-Square(4)	0.8950
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Source: Eview 10

The results of the autocorrelation and heteroscedasticity tests for the long and short runs between Sukuk and BOT are shown in Table 17, where the Breusch-Godfrey test results with a Chi-Square Prob. of 0.4024 are greater than 0.05, indicating the data is free from autocorrelation. Meanwhile, the ARCH test results with a Chi-Square Prob. of 0.8950 are greater than 0.05, indicating the data is free from heteroscedasticity.

Figure 3. Cusum Test SK and CPI

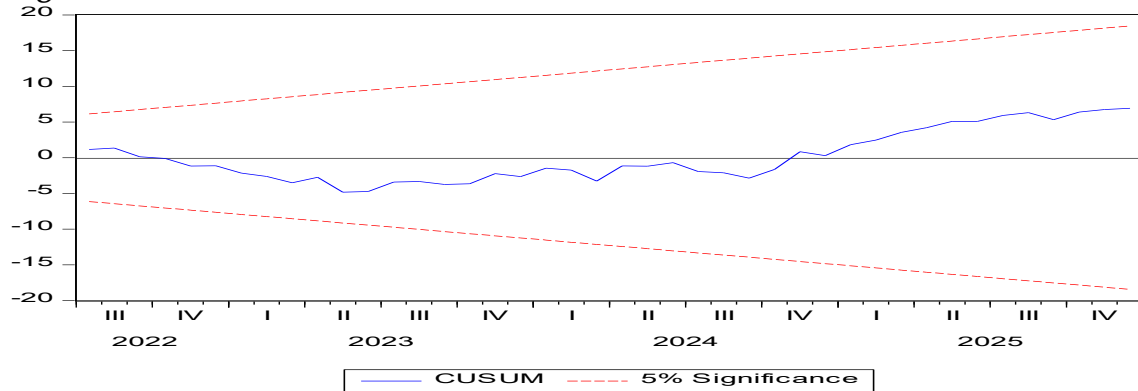


Figure 4. Cusum Test SK and CC

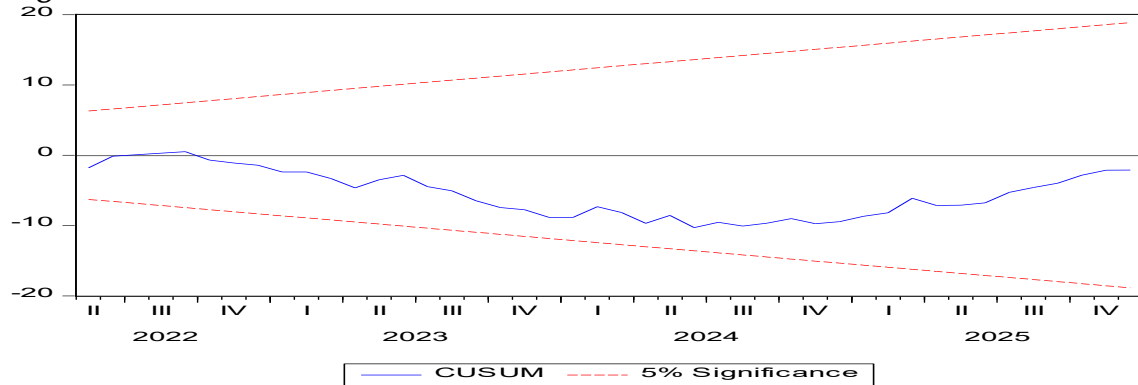


Figure 5. Cusum Test SK and BOT

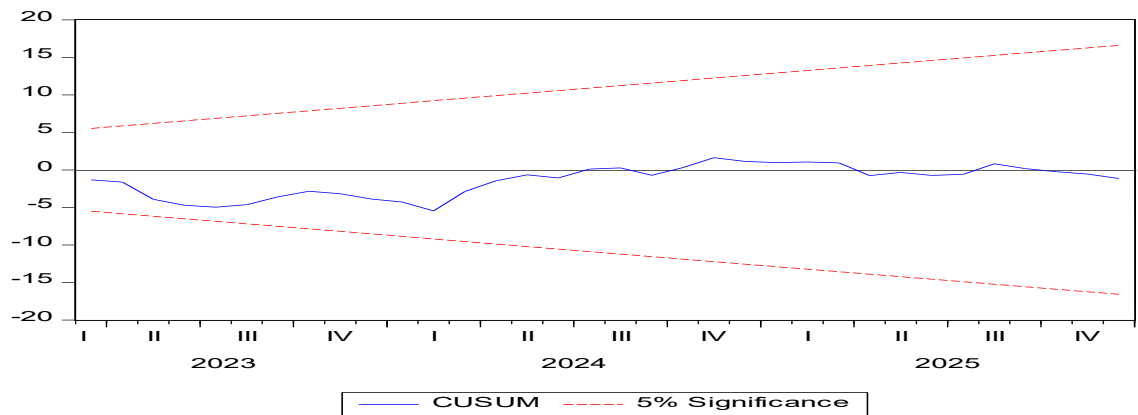


Figure 3, 4, and 5 shows the results of the Cusum Test, where the blue line moves between the red lines. This indicates that the long-run and short-run equations produced by the ARDL test are valid and stable.

4.5 Discussion

Cointegration in Saudi Arabia

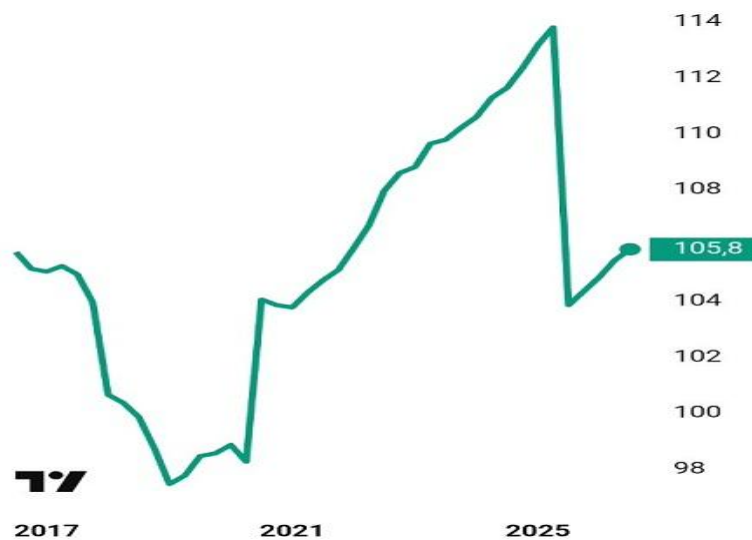
Based on the results of the ECT test in Saudi Arabia, long-term cointegration occurs between sukuk and the Consumer Price Index and between sukuk and Consumer Confidence. The short-term equilibrium between sukuk and the Consumer Price Index is characterized by a model equilibrium adjustment of 0.009%, requiring only minor adjustments in the following month to return to long-term equilibrium.

Figure 6. Saudi Arabia Sukuk Issuance



Source: S&P Global, 2026

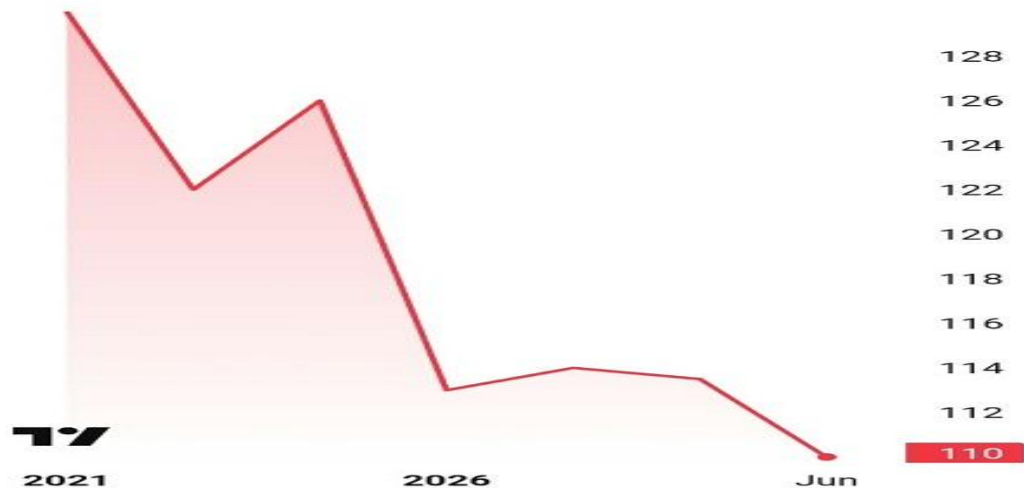
Figure 7. Saudi Arabia CPI



Source: Tradingview, 2026

Figure 6 shows the trend of Saudi Arabian corporate sukuk growth until 2026, while Figure 7 shows the trend of the Consumer Price Index (CPI). The CPI declines in 2025 but rebounds in the following period. Both figures illustrate the long-term equilibrium and the short-term equilibrium correction. The increase in corporate sukuk is offset or in line with the increase in the CPI. Cointegration between Sukuk and consumer confidence shows overlap (ECT value is -1.230443) before adjustment to the long-term equilibrium model.

Figure 8. Saudi Arabia Consumer Confidence



Source: tradingview, 2026

Figure 8 shows the development of consumer confidence in Saudi Arabia. The graph shows a downward trend, although there was an increase in 2023 and 2024. Long-term cointegration between sukuk and consumer confidence is evident in the upward trend in sukuk growth (Figure 6) and the downward trend in consumer confidence (Figure 8). This suggests that cointegration occurs in opposite directions or has an inverse relationship.

4.6 Cointegration in Indonesia

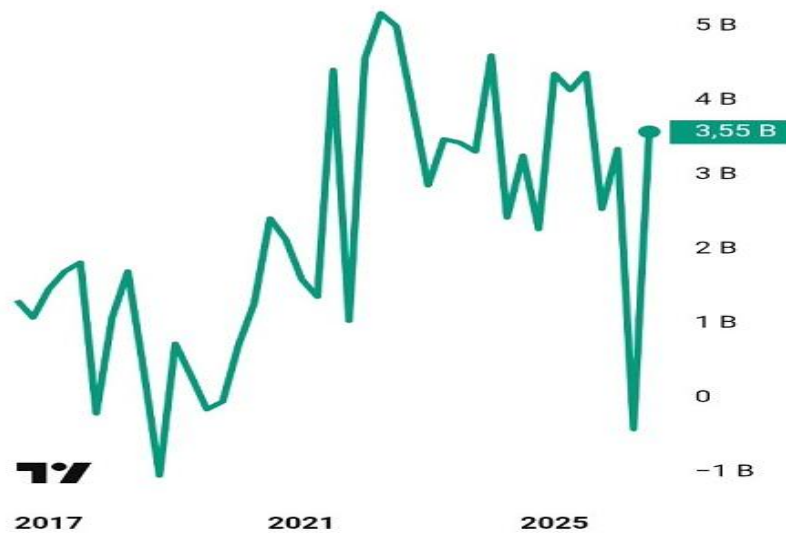
Cointegration in Indonesia occurs between sukuk and the balance of trade. In the short-term equilibrium, the cointegration of sukuk with the balance of trade has an ECT value of -0.812077, meaning it has an 81.20% rate of return to equilibrium after a shock to the model.

Figure 9. Corporate Sukuk Issuance



Soure: OJK, 2026

Figure 10. Indonesian Balance of Trade



Source: tradingview, 2026

Figure 9 shows the upward trend in Indonesian corporate sukuk, and Figure 10 shows fluctuations in Indonesia's balance of trade. Based on ARDL results, a significant impact of corporate sukuk on the balance of trade occurred in the current period and period (-4), while periods (-1, -2, and -3) were insignificant. The illustrations in both graphs illustrate the upward trend in corporate sukuk, not accompanied by a stable increase/decrease in the balance of trade.

Corporate sukuk's increased trend (Figures 6 and 9) is consistent with both the dropping consumer confidence and the rising consumer price index (inflation). Additionally, the growing trend in corporate sukuk does not stabilize the trend in the balance of trade. The evidence presented above supports the idea that corporate sukuk have no substantial impact on economic growth, and our research findings are consistent with those of other studies. (Ela-Andrada, 2025; Putri & Munawar, 2025) Conceptually and according to the results of several other studies, bonds and Sukuk function to fund investment and development. This clarifies that Sukuk will have a positive impact on economic development, not direct economic growth. If sukuk and bonds are repurposed as trade financing tools, it will impact the balance of trade in the future. An interesting aspect of Sukuk use is that excessive use can potentially lead to a crowding-out effect, as noted by Smaoui et al.(2021), Petlele et al.(2025), and Pitoyo et al.(2025).

5. Conclusions and Suggestion

Long-term cointegration between corporate sukuk and consumer confidence and the consumer price index is demonstrated by research conducted in Saudi Arabia. The rising trend in corporate sukuk is consistent with both the decline in consumer confidence and the rising trend in the consumer price index, even though it is not statistically significant. In the meanwhile, there is not the best cointegration between corporate sukuk and Indonesia's trade balance. The balance of trade either swings or does not show a favorable trend in tandem with Indonesia's increasing corporate sukuk. To find out if corporate sukuk issuance has a detrimental effect on the economy, more investigation is required.

Bonds and sukuk are tools that can be used to stimulate economic development by financing investment projects, and they should not be used to fund non-economic development sectors. It is also critical to consider the constraints of using debt securities in order to avoid long-term unfavorable consequences. The government and users of debt securities should pay attention to and investigate the positive and negative effects of debt securities use in order to achieve future economic growth.

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