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ISLAMIC FINANCE AS A CATALYST FOR ECONOMIC GROWTH: INSIGHTS FROM INDONESIA

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ABSTRACT - Islamic finance has emerged as a viable alternative to conventional financial systems, playing an increasingly important role in promoting financial inclusion both in Indonesia and globally. This study investigates the dynamic relationship between macroeconomic variables, Islamic finance, and economic growth in Indonesia, considering both short- and long-term perspectives. Employing the Vector Error Correction Model (VECM), the research utilizes monthly time series data spanning from January 2011 to December 2023. The model includes gross fixed capital formation, trade openness, and inflation as macroeconomic indicators; Islamic bank financing, Sharia mutual funds, and sukuk as proxies for Islamic finance; and GDP at constant prices as a proxy for economic growth. The findings indicate that, in the short run, inflation has a significantly negative effect on economic growth. In contrast, in the long run, all selected Islamic finance indicators—as well as gross fixed capital formation and trade openness—exhibit a significant positive relationship with economic growth. Granger causality tests reveal unidirectional causality from economic growth to both capital formation and Sharia mutual funds, and from trade openness to inflation. Additional unidirectional relationships are observed from inflation to both economic growth and sukuk issuance; from capital formation to sukuk and mutual funds; and from Islamic bank financing to both inflation and sukuk. These results highlight the critical role of Islamic financial development in supporting economic growth and contributing to poverty alleviation. This study offers a valuable contribution as one of the first empirical investigations into the macroeconomic significance of Islamic finance in Indonesia.
Keywords: Islamic finance, economic growth, macroeconomic variables, Indonesia, VECM

ABSTRAK - Keuangan Syariah sebagai Katalisator Pertumbuhan Ekonomi: Bukti dari Indonesia. *Keuangan syariah telah muncul sebagai solusi kredibel terhadap sistem keuangan konvensional, dengan peran yang semakin signifikan dalam mendorong inklusi keuangan, baik di Indonesia maupun global. Kajian ini mengeksplorasi dinamika hubungan antara variabel makroekonomi, keuangan syariah, dan pertumbuhan ekonomi di Indonesia, baik dalam jangka pendek maupun jangka panjang. Analisis didasarkan pada data time series bulanan periode Januari 2011 sampai Desember 2023, menggunakan metode VECM, dengan indikator makroekonomi seperti pembentukan modal tetap bruto, keterbukaan perdagangan, dan inflasi; indikator keuangan syariah berupa pembiayaan bank syariah, reksa dana syariah, dan sukuk; serta PDB atas harga konstan sebagai proksi pertumbuhan ekonomi. Hasil penelitian menunjukkan bahwa dalam jangka pendek, inflasi berdampak negatif signifikan terhadap pertumbuhan ekonomi. Sebaliknya, dalam jangka panjang, seluruh indikator keuangan syariah yang diuji, bersama dengan pembentukan modal tetap bruto dan keterbukaan perdagangan, menunjukkan hubungan positif yang signifikan terhadap pertumbuhan ekonomi. Uji Kausalitas Granger menunjukkan bahwa hubungan kausalitas hanya terjadi dalam satu arah, yaitu dari pertumbuhan ekonomi ke pembentukan modal tetap bruto dan reksadana syariah, keterbukaan perdagangan ke inflasi, inflasi ke pertumbuhan ekonomi dan sukuk, pembentukan modal tetap bruto ke sukuk dan reksada syariah, pembiayaan bank syariah ke inflasi dan sukuk. Hasil penelitian ini menunjukkan bahwa pertumbuhan lembaga keuangan syariah akan memberikan kontribusi positif terhadap pertumbuhan ekonomi yang menjadi elemen krusial dalam mengurangi kemiskinan. Studi ini berkontribusi sebagai salah satu kajian empiris awal mengenai peran makroekonomi keuangan syariah di Indonesia.*
Kata Kunci: *Keuangan syariah, pertumbuhan ekonomi, variabel makroekonomi, Indonesia, VECM*

INTRODUCTION

Islamic finance has gained considerable traction as an ethical and Sharia-compliant alternative to conventional financial systems, with notable contributions to inclusive and sustainable economic development globally and in Indonesia (Khan & Senhadji, 2000; Valickova et al., 2015). Grounded in principles of risk-sharing, asset-backing, and prohibition of speculation and interest (riba), Islamic finance offers a framework that integrates financial returns with social justice and sustainability (Kadri et al., 2024). Its ability to expand access to financial services—through both banking and capital markets—positions it as a strategic tool for supporting economic growth (Younsi et al., 2022; Muhammad et al., 2019a; Zarrouk et al., 2017).

The role of financial development, particularly through banking and capital market systems, in promoting economic growth is well-documented. Efficient financial intermediation mobilizes savings, facilitates investment, and reduces transaction costs, thereby increasing capital accumulation and productivity (Furqani & Mulyany, 2009; Ghosh, 2023). These efficiencies, in turn, support broad-based and sustainable economic development (Konstantakopoulou, 2023). However, financial systems in emerging economies like Indonesia remain vulnerable to global economic shocks. In this context, Islamic finance has emerged as a resilient financial model, offering stability through its ethical foundations and risk-sharing mechanisms (World Economic Forum, 2023; ING Think, 2022).

Globally, the Islamic finance sector continues to expand, with total assets reaching USD 2.88 trillion in 2019, and projected to grow to USD 3.69 trillion by 2024 (Damak, 2022; Izhar & Kasri, 2021). Indonesia plays a key role in this global development, ranking 6th in the Global Islamic Finance Industry and 4th in the Islamic Economy Index (Sakinah et al., 2022). As of December 2022, the total assets of Indonesia's Islamic finance sector stood at IDR 2,375.84 trillion, marking a 27.65% increase from the previous year. The Islamic capital market, with assets of IDR 1,350.60 trillion, has become the largest segment, surpassing Islamic banking and non-bank Islamic financial institutions (Otoritas Jasa Keuangan – OJK, 2022).

Despite the robust development of Islamic finance in Indonesia, empirical research on its macroeconomic role remains limited. Existing studies have predominantly focused on Islamic banking as the sole proxy for Islamic

finance, leaving out other significant instruments such as sukuk (Islamic bonds), Sharia-compliant mutual funds, and Islamic microfinance (Batorshyna et al., 2021; Muhammad et al., 2019a; Raza et al., 2019). Moreover, research on the contribution of Islamic capital market indicators—such as market capitalization, trading volume, and sukuk issuance—to economic growth remains underdeveloped, even though this segment has demonstrated significant growth (OJK, 2024).

This research gap is particularly striking given that the Islamic capital market has become a central component of Indonesia's financial landscape. These instruments play a critical role in mobilizing long-term funds, supporting infrastructure projects, and enhancing investor confidence—factors that are essential for stimulating economic growth, innovation, and job creation (Martalena & Malinda, 2019; Abbas, 2018). Furthermore, capital market indicators can provide early signals of financial instability, support better decision-making, and help policymakers design more effective, inclusive, and resilient economic policies.

Therefore, this study seeks to fill the existing gap by comprehensively analyzing the dynamic relationship between Islamic finance—represented by Islamic bank financing, Sharia mutual funds, and sukuk—and economic growth in Indonesia. Using a Vector Error Correction Model (VECM) framework, this research also incorporates key macroeconomic variables such as gross fixed capital formation, trade openness, and inflation to capture both short-term dynamics and long-run equilibria. A distinctive contribution of this research lies in its integration of a wider spectrum of Islamic financial instruments, aiming to provide novel empirical insights that extend the current understanding of Islamic finance's macroeconomic role.

Therefore, this study is crucial for expanding empirical knowledge and providing actionable insights for financial policy and economic management. The findings will guide regulatory authorities and market participants in leveraging Islamic finance for economic revitalization, financial inclusivity, and resilience in Indonesia and beyond. The paper is structured as follows: Section 2 reviews the literature and outlines the theoretical framework. Section 3 describes the employed methodology, and Section 4 presents and discusses the empirical findings. Finally, Section 5 concludes the study and provides recommendations for future research.

LITERATURE REVIEW

Economic Growth

Economic growth refers to the increase in a nation's output of goods and services over time, typically measured using Gross Domestic Product (GDP). GDP growth is a primary indicator of macroeconomic performance and reflects a country's economic health and development (Ahmad & Ihsan, 2018). Real GDP, adjusted for inflation, offers a more accurate measure of growth compared to nominal GDP, which can be distorted by price level changes. According to Mankiw (as cited in Hanif & Hanafi, 2023), economic growth is quantified by the percentage increase in real GDP from one year to the next, calculated using constant prices to eliminate the effects of inflation.

Studies show that economic growth is influenced by various macroeconomic variables including investment, inflation, trade, and government spending. Hartati (2021) found that Indonesia has struggled to achieve consistent and inclusive economic growth, with public investment in education and health playing a crucial role. Furthermore, Al Madani and Dahruji (2022) identified Islamic banking and foreign investment as significant positive contributors to Indonesia's economic growth. Similarly, Sakinah et al. (2022) demonstrated both short- and long-term causality between Islamic finance instruments (sukuk, Islamic banks, and Sharia mutual funds) and GDP, highlighting a broader, systemic influence.

Macroeconomic Variables

Macroeconomics examines the aggregate behavior of the economy, encompassing GDP, inflation, unemployment, fiscal and monetary policies, trade balances, and labor markets (Nordhaus & Samuelson, 2005). Macroeconomic analysis is essential for assessing how internal and external shocks, as well as public policies, affect economic stability and growth (Nazamuddin, 2020).

Gross Fixed Capital Formation (GFCF)

GFCF reflects investments in long-term physical assets such as buildings, machinery, and infrastructure, which are critical to increasing a country's productive capacity. An increase in GFCF typically signals capital deepening, technological upgrading, and economic modernization (Adnyaswari &

Purbhadharmaja, 2023). Empirical evidence suggests a positive correlation between GFCF and economic growth (Zahir & Rehman, 2019; Riani & Iryani, 2023). However, some studies report contrasting findings. Sakinah et al. (2022) found a long-term negative relationship between GFCF and GDP in Indonesia, attributing the result to the economic contraction during the COVID-19 crisis. Likewise, Lestari et al. (2021) noted that GFCF had no significant short-term impact on economic growth.

H_1: GFCF has a significant positive effect on economic growth.

Trade Openness

Trade openness refers to the extent to which a country engages in international trade and integrates with the global economy. It is often measured by the ratio of exports and imports to GDP. According to Khalid (2016), open trade regimes encourage the flow of goods, services, capital, and technology, thereby enhancing productivity and economic performance. Studies by Muharromy and Auwalin (2021) and Fitriani et al. (2021) confirm a long-term positive impact of trade openness on Indonesia's economic growth, although short-term effects may vary. Zebua and Idris (2024) observed a short-run negative impact, suggesting that economic adjustments and domestic capacity constraints may temporarily hinder growth.

H_2: Trade openness has a significant positive effect on economic growth.

Inflation

Inflation is the sustained increase in the general price level, which can affect growth through its impact on consumption, investment, and real income. Moderate inflation may indicate healthy demand, while excessive or volatile inflation erodes purchasing power and distorts economic signals. Measured via indicators such as the Consumer Price Index (CPI) or GDP deflator, inflation remains a core macroeconomic concern. Research by Adzimatinur and Manalu (2021), Rizkiana (2022), and Muharromy and Auwalin (2021) suggests a mixed impact: inflation positively affects growth in the short term (lagged), but may exert a negative or insignificant effect in the long run (Lestari et al., 2021; Qisti & Budiman, 2023).

H_3: Inflation has a significant negative effect on economic growth.

Islamic Finance

Islamic finance operates within the framework of Sharia law, emphasizing ethical investments, risk-sharing, and the avoidance of interest (riba). Its development parallels the conventional financial system, fulfilling key roles such as financial intermediation, savings mobilization, and investment facilitation (Kassim, 2016; Zarrouk et al., 2017). The Islamic financial sector includes banking, capital markets, insurance (takaful), and asset management (Hanif & Hanafi, 2023; Karagiannis & Youssef, 2020).

Empirical studies have consistently demonstrated a positive relationship between Islamic finance and economic growth (Ahmad & Ihsan, 2018; Fathan & Arundina, 2019; Hasanah et al., 2022). These effects are often mediated through improved financial inclusion, ethical investment structures, and direct support for the real sector.

Islamic Banking

Islamic banks function as key intermediaries in channelling funds to the productive economy based on profit-sharing principles. In Indonesia, Islamic banking has grown rapidly and is regarded as a viable alternative to conventional banks. Numerous studies support its positive impact on GDP (Hanif & Hanafi, 2023; Anwar et al., 2020; Zarrouk et al., 2017). However, some findings present contrasting short-term outcomes. Andiansyah et al. (2022) observed no significant or even negative effects of Islamic bank financing during crisis periods, noting that Islamic banks prioritized restructuring over new financing, limiting their growth impact.

H_4: Islamic banking financing has a significant positive effect on economic growth.

Sharia Mutual Funds

Sharia mutual funds operate under Islamic contracts such as wakalah and mudharabah, offering compliant investment opportunities that avoid prohibited sectors (Nurwita et al., 2023). These funds provide retail investors access to capital markets with minimal investment thresholds. Recent studies (Riady & Arsidiq, 2024; Habib & Pimada, 2024; Auliyatusaa'adah et al., 2021) found that Sharia mutual funds positively influence short-term economic growth.

However, long-term effects may be mixed or negative, driven by market volatility and investor sentiment (Fathurrahman & Al-Islami, 2023).

H_5: Sharia mutual funds have a significant positive effect on economic growth.

Sukuk (Islamic Bonds)

Sukuk are Sharia-compliant securities representing ownership in underlying assets or projects, offering profit-sharing returns rather than interest (Fathurrahman & Al-Islami, 2023). They serve as vital tools for financing infrastructure and public spending. Studies have shown sukuk's potential to positively affect long-term economic growth through infrastructure development and public investment (Habib & Pimada, 2024; Julia & Diana, 2022). Nonetheless, short-term impacts are often limited due to the delayed economic returns of long-gestation projects (Andiansyah et al., 2022; Nurwita et al., 2023).

H_6: Sukuk has a significant positive effect on economic growth.

Financial Sector and Economic Growth

The link between financial development and economic growth has been widely explored in classical and contemporary literature. Keynes emphasized aggregate expenditure, while Harrod-Domar and Solow's models underscored the roles of savings and technological progress (Hagemann, 2009; Hochstein, 2017). Schumpeter and later McKinnon and Shaw asserted that financial institutions are central to mobilizing capital and promoting entrepreneurship (Akıncı, 2018; Mhadhbi et al., 2020).

Causality between finance and growth can be bidirectional. Asteriou and Spanos (2019) note that supply-leading financial systems drive economic activity, while demand-following systems evolve in response to economic growth. Song et al. (2021) argue that economic expansion enhances financial innovation, forming a reinforcing feedback loop (Domeher et al., 2022; Yang et al., 2023).

In the context of dual financial systems—conventional and Islamic—Islamic finance emerges as a faith-based alternative. Islamic banks contribute to inclusive development by promoting risk-sharing and discouraging speculative transactions (Nastiti & Kasri, 2019; Karagiannis & Youssef, 2020). Financing

activities, in particular, have a direct effect on capital formation and community welfare, reinforcing long-term development goals (Kassim, 2016; Sakinah et al., 2022).

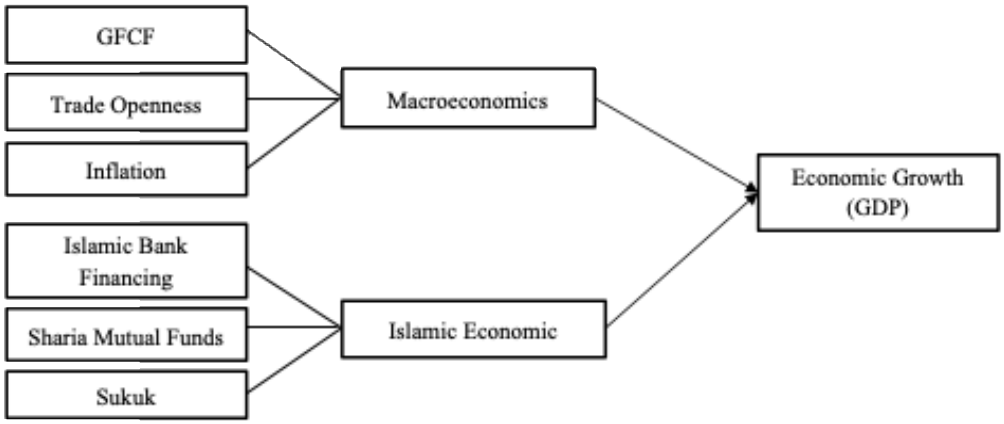

Figure 1. Research Framework

METHODOLOGY

Research Design

This study adopts a quantitative research design to empirically examine the short-run and long-run dynamic relationships between macroeconomic variables, Islamic finance, and economic growth in Indonesia over the period January 2011 to December 2023. By employing the Vector Error Correction Model (VECM), this study is able to capture both short-term fluctuations and long-term equilibrium relationships among the variables. VECM is particularly suitable for time series data where variables are non-stationary at level but integrated at the same order and exhibit cointegration (Adenigbo et al., 2023; Leiwakabessy & Payapo, 2022). Numerous prior studies have used VECM to analyze the interrelationship between macroeconomic indicators, Islamic finance, and economic growth in emerging and Muslim-majority economies (Furqani & Mulyany, 2009; Tabash & Dhankar, 2014; El Ayyubi et al., 2018; Sakinah et al., 2022; Ahmad & Ihsan, 2018).

Data Collection

This research utilizes monthly time-series data from January 2011 to December 2023, sourced from reliable institutional databases:

a. Gross Domestic Product (GDP) from Statistics Indonesia (BPS)

b. Gross Fixed Capital Formation (GFCF) and Trade Openness (TO) from the International Monetary Fund (IMF)
c. Inflation (INF) from Central Bank of Indonesia (BI)
d. Islamic Bank Financing (IBFinancing), Sharia Mutual Funds (SMF), Sukuk (SK) from Indonesia Financial Services Authority (OJK)

Due to the unavailability of monthly data for GDP and GFCF, annual data were interpolated into monthly data using the Quadratic-Match Sum method, a widely accepted time series interpolation technique suitable for transforming low-frequency to high-frequency data while preserving cumulative values (Andrini & Auwalin, 2020; Purnama & Johadi, 2017). This interpolation was performed using EViews 12.

Operationalization of Variables

Each variable is selected based on its relevance to macroeconomic theory and its empirical use in assessing the contribution of Islamic finance to economic performance. GDP is used as a proxy for economic growth, while GFCF, TO, and INF serve as macroeconomic indicators. Islamic finance is represented through three key instruments: Islamic bank financing, Sharia mutual funds, and sukuk.

Table 1. Variable Description

Variable	Symbol	Description	Source	Measurement
Dependent	GDP	Real Gross Domestic Product (IDR billion)	BPS	Annual to monthly interpolation
Independent	GFCF	Gross Fixed Capital Formation (IDR billion)	IMF	Annual to monthly interpolation
	TO	Trade openness (% of GDP)	IMF	TO = (Exports + Imports)/GDP × 100%
	INF	Inflation rate (%)	BI	Monthly CPI data
	IBFinancing	Islamic Bank Financing (Rp billion)	OJK	Monthly Islamic financing data
	SMF	Sharia Mutual Funds (IDR billion)	OJK	Monthly NAV of Sharia mutual funds
	SK	Sukuk (IDR billion)	OJK	Monthly total sukuk outstanding

(Source: Processed Data, 2024)

Addressing Endogeneity

One of the key strengths of the VECM approach lies in its ability to address endogeneity, a common problem in time series analysis. By including lagged terms, error correction mechanisms, and cointegration relationships, VECM mitigates the bias caused by omitted variable correlation and reverse causality (Derouez & Ifa, 2024).

To reduce omitted variable bias, key macroeconomic indicators known to influence economic growth—such as investment, trade openness, inflation, and Islamic finance proxies—are included, in line with the methodology of past studies (Tabash & Dhankar, 2014; Sakinah et al., 2022).

Model Specification

VECM is used to estimate both short-run dynamics and long-run equilibrium relationships between co-integrated variables. The model requires all variables to be integrated of the same order and to exhibit at least one cointegration vector, which is established through the Johansen cointegration test (Widyaratna et al., 2024). General VECM Equations is as follows:

$$\Delta Y_t = \alpha + \sum_{i=1}^{p} \beta_i \, \Delta Y_{t-i} + IIY_{t-1} + \varepsilon_t \quad (1)$$

Where:

- ΔY_t is the differenced vector of endogenous variables
- IIY_{t-1} captures the long-run relationships
- β_i are short-run parameters
- *t* is the study period (January 2011 – December 2023)
- *i* is the length of lag
- ε_t is the error term

In this study, the VECM system includes seven endogenous variables, including GDP_t, $GFCF$, TO_t, INF_t, $IBFinancing_t$, SMF_t, and SK_t.

Data Analysis Procedures

The following econometric procedures were conducted sequentially:

a. Unit Root Test. To determine stationarity, the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests were applied. Variables

must be non-stationary at level but stationary at the first difference for VECM eligibility.

b. Lag Length Selection. Lag selection was based on the Akaike Information Criterion (AIC), Schwarz Information Criterion (SIC), and Hannan-Quinn Criterion (HQ). The AIC was prioritized due to its higher efficiency in small samples.
c. Stability Test. Stability was verified through root modulus analysis. A model is stable if all roots lie within the unit circle.
d. Granger Causality Test. The Granger causality test identifies directional causality among variables, particularly whether one variable significantly predicts another within the VECM structure (Tanjung & Devi, 2013).
e. Johansen Cointegration Test. To detect the presence of a long-run equilibrium relationship, the Trace Statistic and Maximum Eigenvalue Statistic were used. A cointegration relationship justifies the use of VECM.
f. VECM Estimation. Once cointegration is confirmed, the VECM is estimated to determine both short-term (via lagged first differences) and long-term (via error correction terms) relationships among variables.

RESULTS AND DISCUSSION

Results

Unit Root Test

The first step in the VECM estimation process is to assess the stationarity of the data series. Stationarity indicates that the statistical properties of the variables, such as mean and variance, remain constant over time. Non-stationary data may result in spurious regression outcomes. Therefore, two standard unit root tests—the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests—were applied to each variable at both the level and first-difference forms.

Table 2 presents the results of the ADF test, revealing that all variables are non-stationary at their levels, except for Gross Fixed Capital Formation (GFCF), which shows marginal significance at the 10% level. However, after taking the first difference, all variables—including GDP, GFCF, Trade Openness (TO), Inflation (INF), Islamic Bank Financing (IBFinancing), Sharia Mutual Funds

(SMF), and Sukuk (SK)—become stationary at the 1%, 5%, or 10% significance levels.

Table 2. ADF Unit Root Test Results

Variable	Level		First Difference	
	T-stat	Prob	T-stat	Prob
GDP	0.027105	0.9588	-5.124567*	0.0000
GFCF	-2.734398***	0.0706	-10.67801*	0.0000
TO	-2.235219	0.1949	-14.16875*	0.0000
INF	-1.630271	0.4645	-5.125430*	0.0000
IBFinancing	1.783619	0.9997	-3.863880*	0.0029
SMF	-1.191239	0.6776	-11.22333*	0.0000
SK	0.600576	0.9894	-13.31616*	0.0000

*Notes: *, **, *** significant at 1%, 5% and 10%.*

(Source: Processed Data, 2024)

Similarly, the Phillips-Perron results in Table 3 confirm that all variables become stationary after first differencing, indicating they are integrated of order one, *I*(1). This fulfills the prerequisite for cointegration analysis and justifies the application of the VECM model.

Table 3. Phillips-Perron Unit Root Test Results

Variable	Level		First Difference	
	T-stat	Prob	T-stat	Prob
GDP	-0.035568	0.9531	-8.874560*	0.0000
GFCF	-1.665435	0.4468	-8.861746*	0.0000
TO	-2.529247	0.1105	-21.63484*	0.0000
INF	-2.607947***	0.0935	-12.31815*	0.0000
IBFinancing	2.462101	1.0000	-12.58507*	0.0000
SMF	-1.251784	0.6510	-11.19185*	0.0000
SK	0.290851	0.9772	-24.99502*	0.0000

*Notes: *, **, *** significant at 1%, 5% and 10%.*

(Source: Processed Data, 2024)

Optimal Lag Length Selection

The optimal lag length was determined using several information criteria, including the Akaike Information Criterion (AIC), Schwarz Criterion (SC), and Hannan-Quinn Criterion (HQ). Based on AIC—the most widely adopted criterion in time series models—the optimal lag was found to be lag 4, as presented in Table 4.

Table 4. Optimal Lag Test Results (AIC Criterion)

Lag	LogL	LR	FPEA	AIC	SC	HQ
0	-7029.933	NA	8.96e+32	95.74059	95.88299*	95.79845
1	-6923.138	201.9670	4.08e+32	94.95426	96.09347	95.41713
2	-6833.546	160.9003	2.36e+32	94.40198	96.53800	95.26987*
3	-6790.313	73.52562	2.58e+32	94.48044	97.61328	95.75335
4	-6702.722	140.6216	1.56e+32*	**93.95540***	98.08505	95.63332
5	-6667.406	53.33376	1.94e+32	94.14158	99.26804	96.22452
6	-6630.779	51.82654	2.42e+32	94.30992	100.4332	96.79787
7	-6577.433	70.40149*	2.46e+32	94.25080	101.3709	97.14376
8	-6539.120	46.91450	3.15e+32	94.39619	102.5131	97.69417

(Source: Processed Data, 2024)

Model Stability Test

Model stability was assessed by examining the modulus of the roots of the characteristic polynomial. A model is deemed stable if all roots lie within the unit circle. As shown in Table 5, all roots have moduli less than 1, indicating that the VECM model satisfies the stability condition.

Table 5. Stability Test Result Summary

Root	Modulus
0.881455 + 0.077543i	0.884859
0.881455 - 0.077543i	0.884859
0.858234	0.858234
-0.352363 + 0.690588i	0.775288
-0.352363 - 0.690588i	0.775288
0.320436 + 0.668592i	0.741414
0.320436 - 0.668592i	0.741414
-0.476101 - 0.555379i	0.731518
-0.476101 + 0.555379i	0.731518
0.496746 + 0.505021i	0.708381
0.496746 - 0.505021i	0.708381
0.003059 + 0.692974i	0.692981
0.003059 - 0.692974i	0.692981
-0.256494 - 0.618981i	0.670020
-0.256494 + 0.618981i	0.670020
-0.605925 + 0.277817i	0.666579
-0.605925 - 0.277817i	0.666579
-0.635039	0.635039
0.075596 - 0.595330i	0.600111
0.075596 + 0.595330i	0.600111
-0.507015	0.507015
-0.409478 + 0.136354i	0.431584
-0.409478 - 0.136354i	0.431584
0.235378 - 0.262823i	0.352816
0.235378 + 0.262823i	0.352816
-0.059503 + 0.315175i	0.320742
-0.059503 - 0.315175i	0.320742
-0.010129	0.010129

(Source: Processed Data, 2024)

Granger Causality Test

The Granger causality test was performed to determine the direction of causality between variables. Table 6 summarizes significant causal relationships:

Table 6. Granger Causality Test Results

Null Hypothesis	Obs	F-stat	Prob
GDP does not Granger Cause GFCF	152	3.81858	0.0056*
TO does not Granger Cause INF	152	2.03592	0.0925***
INF does not Granger Cause GDP	152	5.78910	0.0002*
GDP does not Granger Cause SMF	152	2.15742	0.0768***
GFCF does not Granger Cause SK	152	5.77146	0.0002*
GFCF does not Granger Cause SMF	152	2.32357	0.0594***
INF does not Granger Cause SK	152	5.35890	0.0005*
IBFinancing does not Granger Cause INF	152	3.31249	0.0125**
IBFinancing does not Granger Cause SK	152	2.72863	0.0316**

*Notes: *, **, *** significant at 1%, 5% and 10%.*

(Source: Processed Data, 2024)

Key findings include unidirectional causality from GDP to GFCF and SMF, and from GFCF to SK and SMF. Inflation (INF) Granger-causes both GDP and SK, and IBFinancing Granger-causes both INF and SK.

Johansen Cointegration Test

The Johansen cointegration test was conducted using both the Trace Statistic and Maximum Eigenvalue Statistic to identify long-run relationships among the variables.

Table 7. Trace Statistic Results

Unrestricted Cointegration Rank Test (Trace)				
Hypothesized No. of CE(s)	**Eigenvalue**	**Trace Statistic**	**0.05 Critical Value**	**Prob**
None*	0.426173	218.2885	125.6154	0.0000
At most 1*	0.306171	134.9745	95.75366	0.0000
At most 2*	0.230631	80.14506	69.81889	0.0060
At most 3	0.115269	40.81740	47.85613	0.1946
At most 4	0.082357	22.44673	29.79707	0.2743
At most 5	0.033138	9.554781	15.49471	0.3165
At most 6*	0.029553	4.499824	3.841466	0.0339

(Source: Processed Data, 2024)

As shown in Tables 7 and 8, both tests confirm the existence of four cointegrating equations, indicating a stable long-term equilibrium relationship among the variables.

Table 8. Max-Eigen Statistic Results

Unrestricted Cointegration Rank Test (Trace)				
Hypothesized No. of CE(s)	**Eigenvalue**	**Max-Eigen Statistic**	**0.05 Critical Value**	**Prob**
None*	0.426173	83.31400	46.23142	0.0000
At most 1*	0.306171	54.82946	40.07757	0.0006
At most 2*	0.230631	39.32766	33.87687	0.0101
At most 3	0.115269	18.37067	27.58434	0.4646
At most 4	0.082357	12.89195	21.13162	0.4622
At most 5	0.033138	5.054957	14.26460	0.7349
At most 6*	0.029553	4.499824	3.841466	0.0339

(Source: Processed Data, 2024)

VECM Estimation

a. Short-Term Effects

The short-run dynamics of the model are presented in Table 9. Among all explanatory variables, Inflation (INF) is the only variable that significantly influences GDP in the short run, with a negative coefficient on the first lag (−729.935). The t-statistic (3.29097) exceeds the critical value (1.97591), indicating strong statistical significance.

Table 9. VECM Short-Term Estimation

Variables	**Coefficient**	**T-statistic**	**T-table**
CointEq1	-0.018664	[-0.59111]	
D(GDP(-1))	-0.565271	[-5.61272]	
D(GDP(-2))	-0.408617	[-2.82012]	
D(GDP(-3))	-0.159754	[-1.08982]	
D(GDP(-4))	0.001643	[0.01256]	
D(GFCF(-1))	-0.027233	[-0.10353]	
D(GFCF(-2))	0.004625	[0.01542]	
D(GFCF(-3))	0.073895	[0.24852]	
D(GFCF(-4))	0.094955	[0.33940]	1.97591
D(TO(-1))	-642.1064	[-0.40552]	
D(TO(-2))	230.4991	[-0.17788]	
D(TO(-3))	311.1592	[0.31651]	
D(TO(-4))	480.5411	[0.85043]	
D(INF(-1))	-729.9350	[-3.29097]*	
D(INF(-2))	262.6771	[1.06921]	
D(INF(-3))	-83.24689	[-0.33332]	
D(INF(-4))	88.17484	[0.38730]	

Variables	Coefficient	T-statistic	T-table
D(IBFinancing(-1))	0.011042	[0.20186]	
D(IBFinancing (-2))	-0.062423	[-0.83295]	
D(IBFinancing(-3))	-0.048576	[-0.63042]	
D(IBFinancing (-4))	0.002626	[0.04498]	
D(SMF(-1))	0.087256	[1.14193]	
D(SMF(-2))	0.108980	[1.54705]	
D(SMF(-3))	0.044018	[0.70411]	
D(SMF(-4))	0.008647	[0.17007]	
D(SK(-1))	-0.107324	[-0.72576]	
D(SK(-2))	-0.068165	[-0.46737]	
D(SK(-3))	0.050125	[0.38594]	
D(SK(-4))	0.047531	[0.60299]	

(Source: Processed Data, 2024)

b. Long-Term Effects

Table 10 reports the long-run relationships from the VECM estimation. The results reveal that GFCF, Trade Openness, Islamic Bank Financing, Sharia Mutual Funds, and Sukuk have statistically significant and positive long-run effects on GDP. Inflation, however, is not significant in the long run.

Table 10. VECM Long-Term Estimation

Variable	Coefficient	T-statistic	T-table
D(GFCF(-1))	5.918847	[6.88583]*	1.97591
D(TO(-1))	59351.77	[6.85295]*	
D(INF(-1))	2843.738	[1.41027]	
D(IBFinancing(-1))	0.612398	[2.43330]*	
D(SMF(-1))	3.378973	[7.33329]*	
D(SK(-1))	4.926799	[3.76980]*	

(Source: Processed Data, 2024)

All variables are integrated of order one, justifying the use of the VECM. Granger causality results confirm several unidirectional relationships, particularly from GDP, GFCF, and inflation to Islamic finance instruments. Cointegration tests validate the existence of long-run equilibrium among the variables. In the short run, inflation negatively affects GDP. Conversely, in the long run, gross fixed capital formation, trade openness, and all Islamic finance proxies (Islamic bank financing, Sharia mutual funds, and sukuk) significantly and positively influence economic growth.

Discussion

Causality Relationships and Macroeconomic Dynamics

The Granger causality test reveals several unidirectional relationships among the variables studied. Notably, GDP (economic growth) leads gross fixed capital formation (GFCF) and Sharia mutual funds (SMF), suggesting that improvements in economic performance foster greater investment and expansion in the Islamic financial sector. This aligns with the notion that a growing economy generates increased demand for infrastructure, production, and financial services, particularly those grounded in ethical investment principles (Lestari et al., 2021; Fatah et al., 2023).

Likewise, a one-way causality is observed from GFCF to sukuk and SMF, reinforcing that investments in fixed assets can stimulate Islamic capital market development. This occurs as infrastructure projects or corporate expansion often require long-term financing—demand fulfilled through instruments such as sukuk. The flow of funds from investors to productive sectors via Islamic finance can further deepen the financial system (Pradiutama et al., 2024). Additionally, trade openness shows a unidirectional effect on inflation, a finding consistent with Indonesia's reliance on imported raw materials. When import prices rise, domestic production costs increase, fueling inflationary pressures (Rangkuti et al., 2024). However, if trade openness facilitates technology transfer or improves export competitiveness, it may have positive long-term effects (Fitriani et al., 2021).

The causality from inflation to GDP and sukuk suggests that inflationary pressures influence economic growth and Islamic bond dynamics. Persistent inflation reduces purchasing power and savings, which in turn affects both consumption and investment behavior. Similarly, the causality from Islamic bank financing to inflation and sukuk reflects that Islamic financial flows can influence broader monetary conditions and financing instruments, as these banks direct capital toward productive sectors while avoiding speculative practices.

Short-Term Dynamics

The short-run results of the VECM estimation confirm that inflation negatively affects economic growth. This relationship is intuitive: rising inflation erodes the real value of money, disincentivizes saving, and increases the cost of

borrowing. Such dynamics suppress investment, which is essential for sustaining economic momentum (Judijanto & Kusnadi, 2024; Adaramola & Dada, 2020).

Empirical support for this finding is evident in real-world data. For instance, food price inflation in Indonesia surged in 2023—rice prices rose by over 20%, while other staples such as chillies and garlic experienced increases exceeding 30% (CNBC Indonesia, 2023). These shocks disproportionately affected low-income households, demonstrating how inflation not only hampers growth but also reduces societal welfare.

In such situations, tight monetary policy—such as raising interest rates—may be employed to curb inflation. However, these policies can simultaneously dampen short-term economic activity, highlighting the delicate balance required between controlling inflation and sustaining growth (Adzimatinur & Manalu, 2021; Rizkiana, 2022).

Long-Term Dynamics

a. Gross Fixed Capital Formation (GFCF)

In the long term, GFCF exerts a significant and positive influence on economic growth. Investment in infrastructure, machinery, and capital goods drives productivity, employment, and innovation—key engines of sustained economic advancement (Muharromy & Auwalin, 2021; Sakinah et al., 2022). This finding supports Hypothesis 1.

b. Trade Openness

Trade openness also contributes positively to GDP. Through broader access to global markets, Indonesian producers can expand operations, benefit from technology transfer, and enhance competitiveness (Banday & Aneja, 2023; Ozturk & Radouai, 2020). Moreover, integration with international supply chains enables greater access to raw materials and capital, bolstering long-run growth. These findings affirm Hypothesis 2.

c. Islamic Bank Financing

Islamic bank financing exhibits a strong long-term impact on economic growth, supporting Hypothesis 4. Grounded in profit-and-loss sharing principles,

Islamic banks tend to allocate resources more efficiently to the real sector, mitigating the risks associated with speculative lending (Furqani & Mulyany, 2009; Hanif & Hanafi, 2023). As noted by Harahap et al. (2022), the growing share of Islamic banking assets enhances the system's capacity to support national development goals. However, excessive reliance on banking assets underscores the need for diversification through complementary instruments, such as sukuk and takaful, to ensure long-term financial stability and resilience.

d. Sharia Mutual Funds

Sharia mutual funds are found to positively affect economic growth, both directly and indirectly. Their adherence to ethical investment principles fosters stability, while their accessibility attracts retail investors, enhancing financial inclusion (Fajar et al., 2022; Auliyatusaa'dah et al., 2021). By channeling funds into productive sectors, SMFs help support micro and small enterprises (MSMEs) and reduce market volatility. Hence, Hypothesis 5 is supported.

e. Sukuk (Islamic Bonds)

The significant positive role of sukuk in supporting long-run growth further strengthens the case for Islamic capital market development. Sukuk serve as a vital financing tool for large-scale infrastructure and public works, increasing productivity and employment (Fathurrahman & Al-Islami, 2023; Ashfahany et al., 2022). They are also increasingly used to finance MSMEs, thus broadening their impact. These findings confirm Hypothesis 6.

Islamic Finance and Sustainable Growth

The findings underscore the growing importance of Islamic finance as a catalyst for sustainable economic growth in Indonesia. Islamic financial instruments—rooted in risk-sharing, ethical principles, and real sector linkage—demonstrate resilience and inclusivity. By avoiding speculation and riba, they contribute to greater financial stability and long-term productivity (Boukhatem & Moussa, 2018).

Moreover, the co-existence of Islamic banking and capital markets with macroeconomic levers such as investment and trade openness creates a holistic framework for inclusive growth. As such, Islamic finance is not merely an alternative but a complementary system capable of strengthening national economic resilience.

Summary of Key Findings

Based on the results and discussion above, Table 11 summarizes the main findings of the study. It provides a comprehensive overview of the key aspects, highlighting significant relationships and their supporting references.

Table 11. Summary of Key Findings

Variable/Aspect	Key Findings	Supporting References
Causality Relationships	Unidirectional causality from GDP to GFCF and SMF; GFCF to sukuk and SMF; IBFinancing to inflation and sukuk	Lestari et al. (2021); Fatah et al. (2023); Pradiutama et al. (2024)
Gross Fixed Capital Formation	Positive long-run effect on GDP; investments enhance productivity and income	Sakinah et al. (2022); Muharromy & Auwalin (2021)
Inflation	Negative effect on GDP in the short term; reduces savings and purchasing power	Rizkiana (2022); Adzimatinur & Manalu (2021); Judijanto & Kusnadi (2024)
Trade Openness	Positive impact through market access, competition, and technology transfer	Banday & Aneja (2023); Fitriani et al. (2021); Ozturk & Radouai (2020)
Islamic Bank Financing	Significant positive effect on GDP; supports productive sectors and infrastructure development	Furqani & Mulyany (2009); Hanif & Hanafi (2023); Harahap et al. (2022)
Sharia Mutual Funds (SMF)	Enhance financial inclusion and reduce volatility; support MSMEs and productive investment	Fajar et al. (2022); Putri & Yudiantoro (2023); Auliyatusaa'dah et al. (2021)
Sukuk	Contribute to infrastructure funding, MSME support, and long-term GDP growth	Fathurrahman & Al-Islami (2023); Ashfahany et al. (2022); Sakinah et al. (2022)
Monetary Policy Implications	Inflation control is critical; price shocks undermine consumption and growth; balanced policy needed	Adaramola & Dada (2020); Judijanto & Kusnadi (2024)
Long-Term VECM Estimation	All Islamic finance proxies show significant positive effects on GDP in the long run (except inflation)	Boukhatem & Moussa (2018); Akinci (2018)

Implications of the Study

The findings carry significant implications for theory, practice, and policymaking within the context of Islamic finance and macroeconomic development in Indonesia. Theoretically, the study enriches the existing body of knowledge by demonstrating the long-term and statistically significant relationship between Islamic financial instruments—namely Islamic bank financing, Sharia mutual funds, and sukuk—and economic growth. By employing a Vector Error Correction Model (VECM) to examine both short-

and long-run dynamics, this study provides a nuanced understanding of the role Islamic finance plays in shaping macroeconomic performance. Additionally, the discovery of unidirectional causality between macroeconomic and Islamic finance variables adds to the empirical literature, validating the argument that Islamic finance operates not merely as a religious or ethical alternative but as a viable mechanism for real economic advancement.

From a practical standpoint, the results offer valuable insights for Islamic financial institutions, investors, and market practitioners. Islamic banks are encouraged to intensify their financing activities in productive and infrastructure-related sectors, as these contribute positively to gross domestic product (GDP) over the long term. Likewise, the demonstrated impact of Sharia mutual funds on economic growth implies the importance of strengthening their outreach and adoption, particularly among retail investors. Investment managers and asset management firms should capitalize on this by enhancing product accessibility, financial literacy, and ethical investment appeal. The significant role of sukuk issuance in funding infrastructure and supporting MSMEs further highlights the need for diversified Islamic capital market instruments that can address both development and investment objectives.

At the policy level, this research provides evidence-based support for the formulation and implementation of integrated Islamic finance strategies. Policymakers, particularly in institutions such as the Ministry of Finance, Bank Indonesia, and the Financial Services Authority (OJK), should recognize Islamic finance as a key enabler of inclusive and sustainable growth. Efforts should be made to develop a comprehensive national roadmap that aligns Islamic banking, capital markets, and non-bank financial institutions to national development goals. In addition, the short-run negative impact of inflation on economic growth underscores the importance of effective coordination between monetary and fiscal policies. Inflationary pressures must be mitigated to preserve purchasing power and investment incentives. Strategies such as food price stabilization, monetary tightening when appropriate, and targeted subsidies could help preserve economic stability while protecting vulnerable groups.

Furthermore, the study emphasizes the importance of trade openness in stimulating economic growth, especially through broader market access, technology transfer, and competition. However, the inflationary risks associated with import dependence call for balanced trade policies and

investment in domestic supply chains. Policymakers should design frameworks that maximize the benefits of international trade while ensuring price stability and domestic industrial resilience. The role of gross fixed capital formation (GFCF) as a major driver of growth also suggests the need for continued investment in physical infrastructure and productive capital, facilitated by Islamic financing mechanisms such as project-based sukuk and public-private partnerships.

Finally, the findings affirm the broader developmental role of Islamic finance in fostering sustainable and inclusive economic systems. The emphasis on ethical investment, risk-sharing, and real sector linkage makes Islamic finance particularly well-suited to addressing the challenges of inequality, financial exclusion, and systemic risk. As such, it holds substantial potential to support the achievement of the Sustainable Development Goals (SDGs), especially in promoting inclusive growth, reducing poverty, and building resilient financial institutions. A collaborative approach involving regulators, financial institutions, and civil society is essential to amplify the contribution of Islamic finance to Indonesia's long-term economic transformation.

CONCLUSION

This study examined the dynamic relationships between macroeconomic indicators and Islamic finance in influencing Indonesia's economic growth from 2011 to 2023 using the Vector Error Correction Model (VECM). The results of the Granger causality test confirmed several unidirectional causalities: from GDP to gross fixed capital formation (GFCF) and Sharia mutual funds, from GFCF to sukuk and mutual funds, and from trade openness to inflation. Inflation was found to negatively affect economic growth and sukuk issuance, while Islamic bank financing influenced both inflation and sukuk. In the short term, inflation had a significant negative impact on GDP, reflecting its role in reducing savings and long-term investment. In contrast, long-term estimations revealed that GFCF, trade openness, Islamic bank financing, Sharia mutual funds, and sukuk each had a significant and positive influence on Indonesia's economic growth. These findings underscore the importance of ethical and productivity-linked financial mechanisms in supporting macroeconomic development.

Theoretically, this research extends the existing literature by integrating macroeconomic and Islamic finance variables into a unified econometric

framework. It highlights the relevance of Islamic finance—particularly Islamic bank financing, sukuk, and mutual funds—as integral components in achieving long-term economic resilience and sustainability. Practically, the findings offer strategic insights for policymakers to enhance fiscal and monetary coordination, particularly in managing inflation and encouraging trade openness. The positive role of Islamic finance suggests the need for stronger policy support to expand its instruments and outreach, particularly through innovative, digital, and inclusive financial services. Islamic financial institutions are encouraged to capitalize on emerging technologies such as blockchain to improve transparency, reduce costs, and strengthen public trust. Meanwhile, public financial literacy and ethical investment awareness should be prioritized to boost active participation in the Islamic economic ecosystem.

Despite its robust empirical findings, this study is not without limitations. The model focused only on selected macroeconomic variables (GFCF, trade openness, inflation) and key Islamic financial instruments (Islamic bank financing, Sharia mutual funds, and sukuk), excluding other relevant indicators such as foreign direct investment (FDI), the Human Development Index (HDI), and other non-bank Islamic financial sectors (e.g., Islamic cooperatives or takaful). Future research should consider incorporating a broader set of macro-financial variables and conducting cross-country comparative studies to validate generalizability across different Islamic economic systems. Such research would provide a more comprehensive understanding of the multifaceted role of Islamic finance in promoting inclusive and sustainable development in both emerging and advanced economies.

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