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Islamic Finance-Growth Nexus: Evidence from Malaysia

Hasan Kazak[1]*, **Osman Okka**[2]
[1]Necmettin Erbakan University, Turkey
[2]KTO Karatay University, Turkey

Abstract

For many years, a plethora of theoretical and empirical studies have illustrated the relationship between financial activities and economic growth. The impact of the Islamic financial system and its instruments on economic growth has begun to emerge in recent years, parallel with its development. This study is designed to contribute to the development of Islamic finance as well as contribute to the literature by revealing the causal relationship between the development of Islamic finance and economic growth. To serve this purpose, an examination in the context of Malaysia, which has progressed more than other countries in terms of Islamic financial development, has been carried out. In exploring the causal relationship between the development of Islamic finance and economic growth in Malaysia, four variables representing Islamic banking, Sukuk market, and Islamic stock market on the gross domestic product (GDP) are discussed through data from the first quarter of 2006 to the first quarter of 2020. To analyze the relationship of the variables within the framework of the VAR model, the Johansen cointegration test, impulse-response functions, and variance decomposition was used. This study corroborates the literature on the effect of the financial sector development on economic growth by taking Islamic finance into account.

Keywords: Islamic Finance; Islamic Economy; Economic Development; Economic Growth

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*Corresponding Author. Email: hsnkazak@gmail.com

Introduction

Developing countries are incredibly attentive to the development and deepening of the financial sector while accelerating poverty reduction and pursuing economic growth. Countries aim to develop the financial sector by mobilizing savings, facilitating payments, facilitating trade in goods and services, and promoting efficient allocation of resources. The goal of the countries is to achieve economic growth by creating financial resources, with the ultimate goal of eradicating poverty by providing widespread direct access to finance, based on the notion that the financial sector plays a critical role in facilitating economic growth.

In terms of conventional economy and finance, unless it is opposed to Islamic rules, any topic related to growth and development is Islamically acceptable and applicable under the "ibâha rule"[1]. With this basic rule, the specific institutional structure and Islamic financial institutions bestow different contributions to economic growth and development. The Islamic economic system includes the factors addressing the flaws in the classical economic and financial system. In Islam, life is viewed as a continuous process that encompasses both this world and the afterlife. The Islamic economic system seeks to promote people's and society's material progress and wellbeing. On the other hand, it aims to "reach the eternal happiness in the hereafter" as well as the peace, security, and happiness in worldly life. In Islam, the concept of development is divided into three interconnected dimensions, and Islamic economic development should take these dimensions into account. The first is the individual development of the person, the second is physical and material development, and the third is social development (Mirakhor & Askari, 2010). All of these are built on the foundation of justice and social peace.

Islamic economics and finance include much more human-related elements than those of economic growth. Each of these elements is the subject of a separate study, and in this study, the effect of Islamic finance on economic growth is discussed based on various variables.

Economic growth and development are among the most important goals of all societies. There has been a profusion of studies asserting that the financial sector also plays an important role in economic growth and development. The notion that

[1] Ibâha is a rule of Islamic law, and it is "religiously freeing a person to do a job or not. In other words, it is left to the person's choice whether to do the act or not" (DİB 2009). The principle of "the main thing in things is ibâha" (ez-Zerkâ, 2007: 481) has been adopted by almost all jurists.

the development of the financial sector is crucial to economic growth was first put forward by Schumpeter (1911). Afterward, many studies tried to reveal the relationship between them. Despite the dimensions and direction of the relationship leading to different results in different studies, the role of the financial sector in economic growth and development is undeniable evident today.

The process of economic growth and development is also critical for Islamic countries. As the financial sector developed, financial instruments based on the concept of halal in Islamic countries also developed. Because the Islamic financial sector has more "righteous" and "fair" characteristics than the regular finance sector, the development of this field is of greater importance since the field of Islamic finance is based on the principle of profit and risk sharing (Zarrouk et al., 2017). Islamic finance has the same goals as the development of the traditional financial sector, which is to promote the country's economic growth, besides providing halal alternatives in financial products (Zarrouk et al., 2017). Witnessing the considerable rise of the relationship of Islamic financial activity and economic growth, the effect of Islamic finance on economic development and growth is critical to be examined.

Literature Review

The financial sector is regarded to play a significant role in the economic growth and development process. Many research in the literature has demonstrated this viewpoint. Schumpeter (1911) was the first to put forward that the development of the financial sector plays a significant role in economic growth. Schumpeter emphasized how important finance is for the growth and development of capitalism. Schumpeter's analysis is mainly based on the entrepreneurial perspective. The credit needed by the entrepreneur is necessary for growth and prosperity. With this frame of reference, the entrepreneur will change the normal flow of the economy by introducing innovations that lead to growth, with the capital power he will obtain through credit. Schumpeter (1911) states "Credit is essentially the creation of purchasing power to transfer purchasing power to the entrepreneur, but not merely the transfer of existing purchasing power. The purchasing power, in principle, characterizes how development is carried out in a system of private ownership and division of labor." Bagehot (1873), who brought up the relationship between finance and economy before Schumpeter, occupies an important place in the literature as an important researcher emphasizing the connections between the real sector and financial sector.

Schumpeter's analysis provided an essential point of view. In the literature of the early neoclassical growth theory, financial services only played a passive role in channelling household savings to investors. During this time, however, some researchers presented opposing viewpoints such as Revell & Goldsmith (1970) and Thornton & Poudyal (1990) who suggested a greater role for financial services in promoting growth. At the same time, Knight (1951) stated that productive capacity is essential "capital" and that all kinds of accumulation constitute the main basis of the motivation for progress. He further revealed the relationship between economic development and finance. Although the capital has effects such as accumulation in the hands of social classes and income inequality, this does not ignore the nature of financial power.

Starting with Schumpeter and reinforced by some other authors, this innovative mindset was also supported by Bencivenga & Smith (1991), who underlined that the financial sector development is a strategic factor that can promote long-term economic growth. The work of Bencivenga and Smith propped up Schumpeter but with a different focus as they examined the impact of financial intermediaries on economic growth. Referring to a study conducted by Bencivenga and Smith, the literature of the "endogenous growth" put forward by authors such as Romer (1986) and Boyd & Prescott (1986) assert that "saving behavior will generally affect equilibrium growth rates". Growth rates are reduced to the extent that intermediaries stimulate capital investment, but they also demonstrate that they tend to rise. Based on the assumption that financial intermediaries may naturally change the composition of savings to suit capital accumulation, Bencivenga and Smith found that if the composition of savings affects real growth rates, financial intermediaries will stimulate growth. The effect of financial intermediaries on economic growth was examined by Morrison (1967) in the context of Belgium. The findings disclosed the importance of properly organized financial markets. Morrison demonstrated the contributions of financial intermediaries to economic development through the example of "Societe Generale" and "Banque de Belgique". According to Morrison, when income level and technological development reach a certain stage, financial bottlenecks can develop, and this is exactly when financial intermediaries can become vital in the development process. However, it is worth emphasizing that the sustainable growth theory is predicated on the capital markets being constructed and organized in an efficient and faultless manner.

Patrick (1966), on the other hand, revealed in his study that there may be a two-way relationship between financial development and economic growth. The first relationship is from economic growth to financial development (demand-following), and the second relationship is from financial development to economic growth (supply-leading) as the engine of growth in the financial sector. In supply-side economics, the evolutionary development of the financial system is an ongoing result of the pervasive and comprehensive process of economic development. The resulting financial system is shaped by changes in both objective opportunities (economic environment, institutional framework) and subjective responses (individual motivations, attitudes, tastes, preferences). As the real growth process occurs, the supply-side economics becomes less important, and the financial response that follows the demand becomes dominant. This sequential process is also likely to occur within and between particular industries or sectors. One industry may initially be financially incentivized on a supply-leading basis, and as it evolves, it shifts to demand-following, while another industry remains practicing supply-leading economics. This will be relevant to the timing of the sequential development of industries, particularly where timing is determined by government policy rather than by private demand. Financial intermediaries also play an essential role in providing a market mechanism for transferring claims on real resources from savers to the most efficient investors. The more perfect the financial markets, the closer to the optimum distribution of investment is achieved. In this way, the financial system adapts to economic growth. In addition, financial institutions provide efficiency and productivity in transferring savings to investments by creating economies of scale. According to Patrick (1966), the first relationship is seen in underdeveloped or developing countries while the second relationship is seen in developed economies. Referring to this, countries engage both-way relations over time throughout their development stages.

The financial sector development will also activate many environmental factors. That is to say, as the financial sector develops and progresses, it will be able to assist economic growth through a variety of channels such as providing information on investment opportunities for fund efficiency, supervising the company and conducting corporate governance, diversifying risks, creating resources, facilitating the exchange of goods and services, and managing and transferring technology (Garcia & Liu, 1999; Levine, 2005; Zhang et al., 2012).

Since Schumpeter, a large body of theoretical and empirical work analyzing the role of finance in economic growth and development has emerged. Table 1 presents a few of them.

Table 1. Studies Analyzing the Role of Finance in Economic Growth and Development

Author (year)	Summary of the Study
Morrison (1967)	Using Belgium as an example, the author has demonstrated the benefits that financial intermediaries can contribute to economic development. This study proffers that when income level and technological development reach a certain stage, financial bottlenecks can develop, and this is exactly when financial intermediaries can become crucial to the development process. The use of Belgium as the country studied indicates that the finance theory that ensures sustainable growth is only applicable when the assumption of perfect capital markets or a reasonable approach to it is fulfilled.
Salah (1979)	In his doctoral thesis, using Jordan as an example, Salah (1979) proved that the financial system is important for the economic development of the country. Due to this importance, it was suggested that the Central Bank of Jordan should be more concerned with providing an adequate environment to financial development to maximize the benefits of the interaction between finance and real growth. In addition, it was underlined that central banking interventionist policies should always be flexible and effective to strongly influence domestic financial intermediaries as well as adjust their activities according to the chosen development strategies.
Lin (1981)	This study supports the supply-leading theory in the literature. The empirical results of this study, despite not being conclusive, showed that financial deepening leads to a higher rate of capital accumulation and a higher per capita income. The lack of comparable data on non-bank financial institutions for different countries explains the inconsistency of the author's evidence supporting the financial theory of economic development.
Fritz (1984)	The concept of bidirectional causality between finance and economic growth is discussed by the author. The study tested the effects of financial intermediation variables (financial depth and growth of real money balances) in economic growth equations.

Jung (1986)	In this study, not only did the author expose the link between finance and economic development, but he also looked at the quantitative relationship between financial and real development in terms of causality. Examining not only the existence and characterization of causality, this study also investigates its temporal behaviour in annual data on 56 countries, 19 of which were industrialized countries. In this study, Patrick's emphasis on the usefulness and importance of financial development in less developed countries has been empirically verified, and there is some evidence showing that it has a more frequent supply-side causality model than a demand-following model.
Crichton & De Silva (1989)	This article examines the progress of financial intermediation as a result of economic growth from 1973 to 1987. Evaluated by various indicators in the study, it has been revealed that the level of financial intermediation has increased since 1973. The total financial assets of the system have increased both in absolute and relative terms. The data revealed a definite positive correlation between economic growth and financial development, at least between 1973 and 1982. While changes in the real sector affect the financial system, it is unclear to what extent financial intermediaries can aid the growth process by their ability to efficiently allocate savings to the most productive parts of the economy.
King & Levine (1993)	Processing data from 80 countries from 1960 to 1989, the authors provide cross-country evidence that is consistent with Schumpeter's view that the financial system can support economic growth. Various measures of the level of financial development, per capita real GDP growth, the rate of physical capital accumulation, and the efficiency of economies in using physical capital are strongly correlated with the developments in the study. In addition, the predetermined component of financial development is strongly associated with future economic growth rates, physical capital accumulation, and economic productivity improvements.
Other Studies:	
(Ahmad & Malik, 2009; Alexiou et al., 2018; Asteriou & Price, 2000; Banerjee et al., 2020; Basseer, 1984; Berthélemy & Varoudakis, 2013; Datar, 1990; Greenwood et al., 2013; Ibrahim, 2007; Majid et al., 2019; Moore & Shaw, 1975; Ndlovu, 2013; Nnanna, 2004; Paun et al., 2019; Puatwoe & Piabuo, 2017; Ranis, 1975; Rinosha & Mustafa, 2021; Spears, 1992; Tennant, 2004)	

After Schumpeter, numerous studies have been conducted investigating the effect of conventional finance on economic growth. Yet, studies dealing with the effects of Islamic finance and financial instruments on economic growth have been overlooked. The scarcity of studies on this subject occurs because Islamic finance is

a newly developing field. In terms of the suitability of Islamic financial instruments and the data to be acquired, many Islamic countries have yet to achieve a volume adequate for the study. Some of the studies dealing with the impact of Islamic finance on economic growth are presented in Table 2.

Table 2. Studies of the impact of Islamic finance on economic growth

Author (year)	Summary of the Study
Anwar & Haque (1991)	The authors discovered that Islamic financial institutions help Muslims' socioeconomic development in a variety of ways, both materially and spiritually. Things to enable this development are to provide a wider choice in financing and financial contracts; increase the growth of GDP by improving finance for businesses and other economic activities; motivate Muslims to increase savings and reduce hoarding and thereby increasing their participation in the development process; contribute to the process of savings mobilization and capital accumulation; provide employment opportunities; improve the living standards of its customers by expanding financing for the purchase of consumer durables; pioneer a greater socio-economic union by financing poor segments of the population in agriculture and small businesses; help managers, employees and clients develop Islamic sensibilities as they can transact based on Islamic finance contracts; provide ways to avoid interest-bearing contracts; enable more systematic collection and use of zakat to eradicate poverty and socio-economic equality.
Abedifar et al. (2016)	The relative importance of Islamic banks and their traditional counterparts in terms of banking and financial development as well as economic prosperity was explored in this study. Using a sample of 22 Muslim countries with dual banking systems over the period of 1999-2011, this study reported some significant positive relationships between the market share of Islamic banks and the development of financial intermediation, financial deepening, and economic prosperity (especially in low-income or predominantly Muslim countries and countries with a higher uncertainty avoidance index).
Alaabed & Masih (2016)	The impact of two interest-based and interest-free financial systems on the Malaysian economy was investigated in this study. A threshold regression model was applied. From the study, it was determined that the relationship between growth and financial development was not linear. A threshold is estimated when credit expansion negatively affects GDP growth. The post-threshold negative relationship is statistically significant, while the predicted positive relationship at lower levels of financial development is insignificant. The study

	suggests that continued debt accumulation in the Malaysian household, business, and government sectors threatens the economy and structural employment. The findings also yield consistent results with the empirical evidence on the non-monotonic relationship between finance and economic growth (Arcand, Berkes, & Panizza, 2015; Beck, Georgiadis, & Straub, 2014; Deidda & Fattouh, 2002). In line with these results, the authors state that the development of financial instruments, which have been put forward on the risk-sharing in the Qur'an and the Sunnah of the Prophet Muhammad, will protect the financial system from such damages.
Zarrouk et al. (2017)	The authors used a bivariate vector autoregressive model to document the causal link between financial development Islamic finance growth and predict growth under various scenarios, using time series data from 1990 to 2012. This study presents the direction of causality extending from financial development to economic growth, and reverse causality does not direct this relationship. However, real GDP leads to Islamic financial development without adverse effects.
Al Fathan & Arundina (2019)	This study examined the causality relationship between the development of Islamic finance and economic growth in Indonesia, such as the development of Islamic banking, Sukuk market, and Islamic stock market. In the study, the data from the third quarter of 2002 to the fourth quarter of 2017 were examined. This study depicts that Islamic banking development and Islamic stock market development supported the neutrality hypotheses, while the Sukuk market development supported the supply-leading hypotheses. This study also revealed that there is unidirectional causality of the development of the Sukuk market on the development of Islamic banking and the development of the Sukuk market on the development of the Islamic stock market.
Saleem et al. (2021)	Studying quarterly data from 2005 to 2019, this study seeks to analyze the dynamic interaction of Islamic financial depth, Islamic financial intermediation, and asset quality with economic growth in a bilateral banking system in Pakistan. It was observed that there was a long-term relationship from finance to growth in both Islamic and traditional finance. The findings suggest that strong financial intermediation plays an imperative role in driving economic growth in both financial sectors. The authors argue that a higher degree of Islamic financial assets in the economy will contribute to economic growth in the short run. The results suggest that asset quality likely plays an important intervening role in the overall finance-growth correlation.

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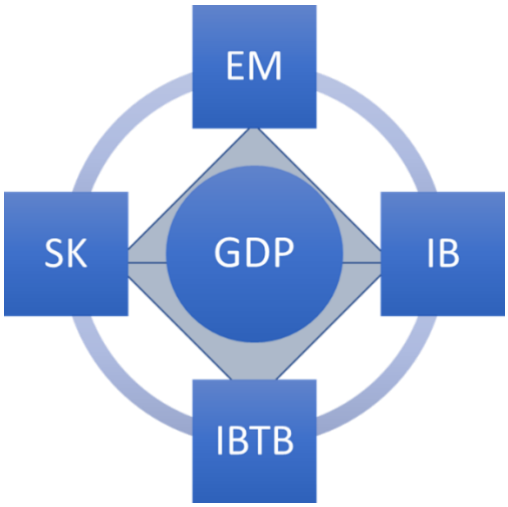
Result and Discussion

Econometric Model

This study examined empirical evidence of the relationship between economic growth and Islamic finance in Malaysia through data from the first quarter of 2006 to the fourth quarter of 2020. Malaysia is a key example of being a role model for many Islamic countries in terms of economic development. Its financial institutions have built a substantial infrastructure through time. To analyze the relationship among the variables within the framework of the VAR model, the Johansen cointegration test, impulse-response functions, and variance decomposition were used.

Although each Islamic finance sub-sector can affect each other, in this study, the effect of variables on GDP is discussed. These variables in the model are illustrated in Figure 1.

Figure 1. Variables Available in the Model



EM is the ratio of Stocks Market Volume of Malaysia Emas Shariah Index to GDP, IB is the Malaysia Islamic Banking Volume to GDP ratio, IBTB is the ratio of Malaysia Islamic Banking Volume to Total Commercial Banking Volume, SK is the ratio of Malaysia Sukuk (Unpaid) Volume to GDP, and GDP is the growth in Gross Domestic Product. Data sources of the variables are presented in Table 3.

Table 3. Variable Definitions

Variables	Definition	Source
EM	Malaysia EMAS Shariah Index Stocks Market Volume / GDP	Refinitiv Eikon and the World Bank Database (https://databank.worldbank.org)
IB	Malaysia Islamic Banking Volume/ GDP	Bank Negara Malaysia (Central Bank Of Malaysia)
IBTB	Malaysia Islamic Banking Volume/Total Commercial Banking Volume	Bank Negara Malaysia (Central Bank Of Malaysia)
SK	Malaysia Sukuk (Unpaid) Volume / GDP	Refinitiv Eikon and the World Bank Database (https://databank.worldbank.org)
GDP	Gross Domestic Product Growth Rate	Asia Regional Integration Center

The natural logarithm of the independent variables was used in the analyses.

Empirical Evidence

Descriptive Statistics

Table 3 presents the descriptive statistics for the variables used in the analysis. The table includes the mean, median, maximum, minimum, and standard deviation for each variable. This information helps summarize the central tendency, dispersion, and overall distribution characteristics of the data.

Table 3. Descriptive Statistics of Variables

	Mean	Median	Maximum	Minimum	Std. Dev.
EM	1.81375	1.94970	3.33410	0.09000	0.86518
GDP	4.20522	5.04450	10.28600	- 17.11000	3.97827
IB	3.60883	3.66060	4.19420	3.07010	0.31267
IBTB	2.98512	3.02190	3.40400	2.47050	0.27627
SK	3.75374	3.79800	4.30250	3.21300	0.33702

These statistics provide insight into the distribution and variability of each variable, which is crucial for understanding their characteristics and the overall data

set used in the analysis. The range between the maximum and minimum values indicates the spread of the data, while the standard deviation measures the average distance of each data point from the mean, indicating the level of variability or consistency within each variable

To avoid a spurious regression problem among the variables, the stationarity of the series was tested with the help of the ADF Unit Root Test. The results of the GDP series are presented in Table 4.

Table 4. ADF Unit Root Test Results (GDP)

GDP		**Level**	**1st difference**
		t-Statistic	**t-Statistic**
Augmented Dickey-Fuller Test Statistic		-3.422847	-9.225531
Critical Test Values	1%	-3.546099	-3.548208
	5%	-2.911730	-2.912631
	10%	-2.593551	-2.594027

The results of the Unit root test for the GDP series show that the non-stationary series at the 1% significance level becomes stationary at the first difference. Next, the unit root test of the EM series used is given in Table 5.

Table 5. ADF Unit Root Test Results (EM)

EM		**Level**	**1st difference**
		t-Statistic	**t-Statistic**
Augmented Dickey-Fuller Test Statistic		-1.742784	-6.709241
Critical Test Values	1%	-3.550396	-3.557472
	5%	-2.913549	-2.916566
	10%	-2.594521	-2.596116

The unit root test results of the EM series show that the non-stationary series at the level becomes stationary at the first difference. Table 6 shows the unit root test findings of the IB series in the analysis.

Table 6. ADF Unit Root Test Results (IB)

IB		Level	1st difference
		t-Statistic	t-Statistic
Augmented Dickey-Fuller Test Statistic		-0.496281	-7.692593
Critical Test Values	1%	-3.546099	-3.548208
	5%	-2.911730	-2.912631
	10%	-2.593551	-2.594027

Unit root test results of the IB series show that the series, which is not stationary at the level, becomes stationary at the first difference. Further, the findings of the unit root test of the IBTB series analysis are given in Table 7.

Table 7. ADF Unit Root Test Results (IBTB)

IBTB		Level	1st difference
		t-Statistic	t-Statistic
Augmented Dickey-Fuller Test Statistic		-0.673743	-5.339180
Critical Test Values	1%	-3.548208	-3.552666
	5%	-2.912631	-2.914517
	10%	-2.594027	-2.595033

The IBTB series' unit root test results show that the series, which is not stationary at the level, becomes stationary at the first difference. Next, Table 8 shows the findings of the SK series used in the analysis.

Table 8. ADF Unit Root Test Results (SK)

SK		Level	1st difference
		t-Statistic	t-Statistic
Augmented Dickey-Fuller Test Statistic		0.224656	-5.938763
Critical Test Values	1%	-3.546099	-3.552666
	5%	-2.911730	-2.914517
	10%	-2.593551	-2.595033

Unit root test results of the IBTB series show that the series, which is not stationary at the level, becomes stationary at the first difference. From the findings of the ADF unit root test, all series contain unit roots at the level, but the series become stationary I (1) at their first difference. Although the fact that the series is stationary and in the same order suggests that there is a long-term relationship between the variables, the cointegration test was used to confirm this.

Variables integrated to the same degree do not always mean that they act together (cointegrated) in the long run. Whether they act together, in the long run, is determined by cointegration tests. Hence, at this stage, cointegration with cointegration analysis will be evaluated.

Cointegration Analysis

To test the long-term relationship of the variables, the appropriate lag length was determined. The VAR model was estimated.

Determination of lag length

The first step in estimating the VAR model is to determine the appropriate lag length. The criteria such as LR (LR Test Statistic), FPE (Final Prediction Error), AIC (Akaike Information Criteria), SC (Schwarz Information Criteria), and HQ (Hannan-Quin Information Criteria) were used. According to the information criteria, the results of lag length are given in Table 9.

Table 9. Optimal Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-49.30333	NA	4.96e-06	1.974667	2.157152	2.045235
1	155.9262	365.6817	7.09e-09	-4.579134	-3.484225*	-4.155723
2	191.4885	56.89968*	4.94e-09*	-4.963217*	-2.955884	-4.186965*
3	214.8850	33.18054	5.56e-09	-4.904909	-1.985152	-3.775816
4	238.5391	29.24503	6.56e-09	-4.855966	-1.023785	-3.374031
5	262.6827	25.46053	8.31e-09	-4.824825	-0.080219	-2.990048

* Indicates lag order selected by the criterion
LR: LR test statistic
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

By considering the information criteria of LR, FPE, AIC, and HQ, the VAR model was estimated based on 2 lag lengths.

Residual diagnostics

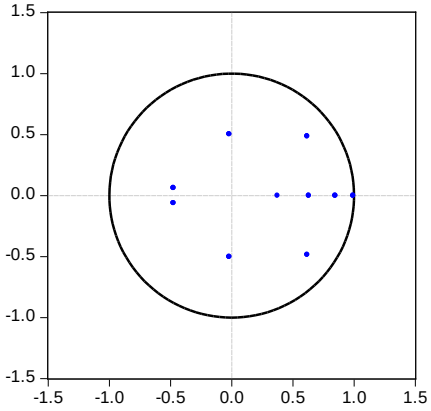
To apply a valid regression model, several assumptions must be satisfied for the data. Wonnacott & Wonnacott (1981) argued that if the linearity, normality, and independence assumptions are satisfied, additional assumptions such as constant values of X are not a problem. At this stage, stability conditions and heteroscedasticity tests were performed.

Stability Conditions

It is very important to provide the stability conditions for the application of the EKK method in VAR models.

For the application of the EKK method in VAR models, a stability conditions is necessary. The inverse roots must lie within the unit circle for the stability condition to be satisfied. As seen in Figure 2, the inverse roots of the AR characteristic polynomial are located within the unit circle and the assumed model satisfies the stationarity condition.

Figure 2. The Inverse Roots of the Characteristic Polynomial AR in the Unit Circle



Heteroscedasticity Test Results

The assumption of constant variance, which is one of the basic assumptions of regression analyzes using the least-squares method is important (Bajpai, 2011). As a general rule, if the statistical analysis is to be based on a solid basis, the variance of

the error term should not depend on the value of the independent variable x (Winston et al., 1998). In other words, the variance of the unit values of the dependent variable should remain constant while the unit values of the independent variables change (Gujarati, 2003). This assumption is called constant variance (homoscedasticity). If this assumption deviates, the heteroscedasticity problem arises. The heteroscedasticity is a major concern in regression analysis and analysis of variance as it invalidates statistical significance tests assuming that modeling errors all have the same variance (Johnston, 1972). When there is heteroscedasticity, there are solution methods to solve the problem.

In this study, variance analyses were performed and as can be seen in the table 10, no heteroscedasticity problem was found as observed from the Breusch-Pagan-Godfrey analysis.

Table 10. Heteroscedasticity Test Results (at 5% confidence interval).

Heteroskedasticity Test	Obs*R-squared	P Value	H_0 Absence hypothesis (Constant Variance Assumption Valid)	
Breusch-Pagan-Godfrey	6.797197	0,1470	Accepted	There Is No Heteroscedasticity Problem.

Cointegration Test

Johansen's cointegration test was used to determine whether there is a long-term correlation among the variables. The results of the cointegration test are presented in Table 11.

Table 11. Johansen Cointegration Test Results

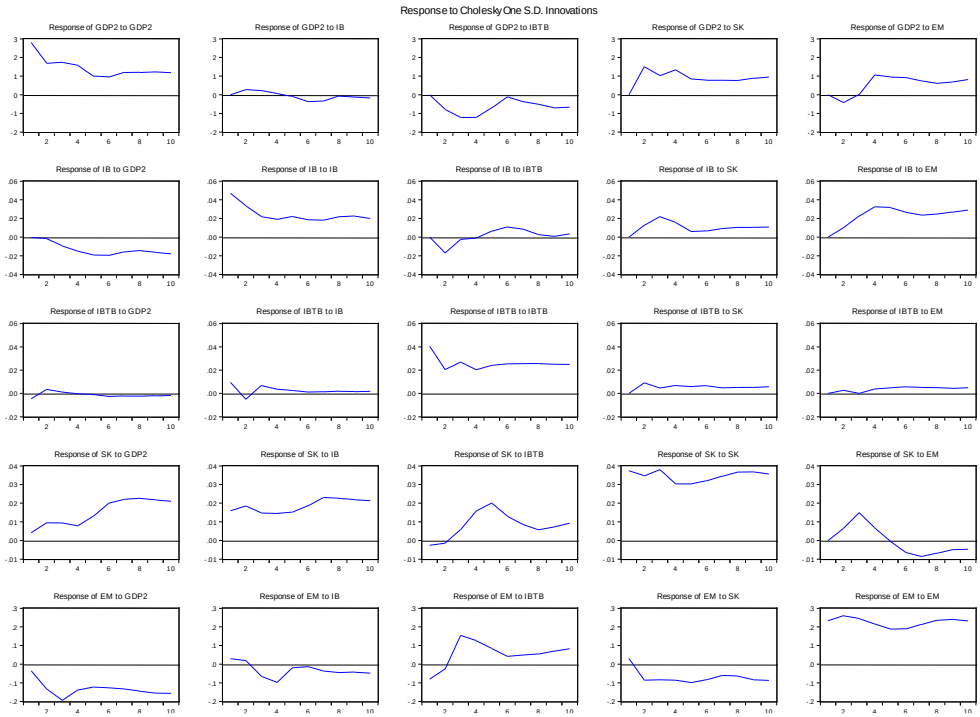
Hypotheses	Eigenvalue	Trace Statistics	0.05 Critical Value	Max-Eigen Statistics	0.05 Critical Value
Does not exist	0.524450	76.79270	69.81889	42.36719	33.87687
At least 1	0.241116	34.42551	47.85613	15.72664	27.58434
At least 2	0.211662	18.69888	29.79707	13.55620	21.13162
At least 3	0.085910	5.142679	15.49471	5.120085	14.26460
At least 4	0.000396	0.022593	3.841466	0.022593	3.841466

Both Trace and Max-Eigen statistics in the cointegration test show that the series are cointegrated, so they move together in the long run.

Impulse-Response Functions

Impulse-Response functions were used to see how economic growth responds to a standard error shock given to the variables. The results are shown in Figure 3.

Figure 3. Impulse-Response Functions



These results show that economic growth reacted positively to the increase in other variables, except for the IBTB and EM variables, and the reaction gradually weakened in the following periods. The reason for the negative response of the EM variable may be due to different factors. For instance, changes in the conventional stock market during this period may have been effective. While the IB variable has a positive effect, the negative reaction of the IBTB variable may be due to different factors in the total banking volume.

VAR Decomposition

VAR Decomposition was made to determine how much of the change in economic growth might be attributed to independent variables. The findings are presented in Table 12.

Table 22. VAR Decomposition Results

Period	S.H.	GDP	EM	IB	IBTB	SK
1	2.801951	100.0000	0.000000	0.000000	0.000000	0.000000
2	3.727495	77.21300	0.528013	4.389660	16.56969	1.299628
3	4.420135	70.53887	0.638551	10.67825	17.21852	0.925810
4	5.143121	61.61788	0.489099	13.51823	19.46345	4.911331
5	5.439878	58.46801	0.464327	13.74193	19.80390	7.521829
6	5.667392	56.72731	0.848825	12.69970	20.18149	9.542681
7	5.914899	56.23101	1.113430	12.04955	20.24218	10.36384
8	6.138096	56.10433	1.042938	11.88221	20.36277	10.60776
9	6.397582	55.30956	0.994745	12.11320	20.67574	10.90675
10	6.659755	54.18545	0.986672	12.18205	21.09262	11.55321

The results of the VAR Decomposition reflect that about 1% of the change in economic growth in the 10th period was explained through EM, in which IB by 12%, IBTB by 21%, and SK by 11.5%.

Conclusion

Reflecting upon a vast amount of previous studies, literature has shown that the developments in finance affect economic growth by activating other factors. In this study, the effect of Islamic finance on economic growth in the context of Malaysia, which has made significant progress in Islamic finance, was examined. It was found that the variables act together in the long run. The impulse-response functions showed that economic growth responded positively to other variables except for IBTB and EM. The reason for the negative response of the EM variable may be due to different factors such as an effective change in the conventional stock market during this period. While the IB variable has a positive effect, the negative reaction

of the IBTB variable may be due to different factors in the total banking volume. In the model discussed, the findings of the VAR decomposition revealed that a significant part of the changes in economic growth was explained by IBTB, IB, and SK, and the share of EM was relatively low.

This study, corroborating with the literature, revealed the effect of the development of the financial sector on economic growth. The most remarkable novelty of this study is that it deals with the subject in terms of Islamic financial instruments and markets as well as calling into question the relation among the four variables. This research serves as a valuable role model for many Islamic countries. It is expected that the advancement of Islamic financial management, Islamic banking, and Islamic markets will have a similar impact on other Islamic countries, resulting in positive economic growth and development.

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