



Islamic Finance and Economic Performance: A Panel Analysis in Selected Countries

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Abstract

Financial crises and stock markets over the years have amply shown how investors' sentiment affect asset prices and the effectiveness of stock markets. Such a crisis brought down financial institutions, sent stock markets tumbling, and left consumers scrambling due to subprime mortgages. With this, Islamic finance adoption has driven demand for Islamic financial products being free from interest. Hence, this study aimed to determine how Islamic finance can influence the economy of 19 selected countries adopting Islamic finance. These countries have marginal to significant scores in Islamic Finance across the years. This study utilized panel data from 2013 to 2021, which was gathered from the Global Islamic Finance Report, Global Innovation Report, and World Bank. A few diagnostic tests and analyses were performed to reach a result that addressed the objectives and problem statement. The Panel Corrected Standard Errors analysis was used as the final model to treat heteroscedasticity, cross-sectional dependence, and autocorrelation. Based on the regression results, Islamic finance has a positive and statistically significant effect on the economy. The regression results indicate a positive and statistically significant impact of Islamic finance on the economies of the studied countries. This finding underscores the potential of Islamic finance to stimulate economic growth, enhance financial stability, and foster inclusivity in financial markets. Consequently, the findings highlight the pivotal role of macroeconomic variables and the adoption of Islamic finance principles in shaping economic outcomes.

Keywords: Economic Performance, Islamic Finance, Real GDP, Foreign Direct Investment

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I. Introduction

The unparalleled decline in the world's financial and economic markets has been brought on by the coronavirus (COVID-19) pandemic, as it quickly developed into an economic catastrophe relative to the 2008 Global Financial Crisis (GFC). This crisis brought down financial institutions, sent stock markets tumbling, and left consumers scrambling. It was the biggest financial disaster in the previous 90 years (Hasan et al., 2022). This resulted in a rise in demand for Islamic financial investments and products, such as Islamic bonds, shares on the Islamic stock market, exchange-traded Islamic mutual funds, and Islamic insurance (takaful). These are compliant with Sharia law, which forbids engaging in economic activity deemed haram (sinful or banned) and prohibits the payment or receipt of interest (usury or riba). Rather, Islamic finance depends on risk-sharing protocols, asset-backed funding, and profit-sharing agreements. Hence, they have demonstrated a near-perfect ability to function in times of crisis (Akhtar & Jahromi, 2015).

According to Hammoudeh et al., (2014), the global Islamic finance sector has grown quickly during the past 20 years. The Islamic banking industry has seen significant expansion in recent years, especially in the Middle East and Southeast Asian countries that emerged after the 2008-2009 global financial crisis (GFC). The estimated value of sharia financial assets under management was USD 1.6 trillion in 2012, USD 1.8 trillion in 2013, and reached USD 2.1 trillion in 2014. It is projected to reach US \$6.5 trillion by the year 2020. Islamic assets are deemed safer, more stable, and less volatile than their counterparts due to their distinct characteristics and fiscal conservatism (Hasan et al., 2022). Shariah-compliant Islamic financial assets and/or stock markets have routinely outperformed their conventional equivalents in terms of risk-adjusted returns, lower volatility and beta, hedging and diversification benefits, and among others, particularly following the GFC (Shahzad et al., 2017).

In addition, Islamic finance is seeing significant growth inside the global financial system. Since 2009, it has had a calculated compound annual growth rate of around 17%. By 2015, the sector had accumulated worldwide assets of at least USD 1.9 trillion. The significant growth of Islamic finance in several Asian nations, including Brunei, Bangladesh, and Malaysia, has resulted in its establishment as a crucial component of their financial systems. Islamic finance has attained a minimum market share of 15% in the domestic banking sector of these countries. Even nations without a largely Muslim population such as Luxembourg, Hong Kong, China, the United Kingdom, and South Africa are increasingly beginning to adopt Islamic financing. The strong global demand for Shariah-compliant finance signifies its growing prominence in the financial landscape (Guido, 2023).

With the rise of Islamic banking in recent years, there has been a growing interest in researching this field. However, the existing body of academic literature on Islamic finance remains relatively limited, as highlighted by Beck et al., (2013). It is worth noting that the majority of related studies on Islamic finance and its influence on economic performance have primarily concentrated on Islamic countries, neglecting the fact that there are also non-Islamic countries that have embraced Islamic finance practices. For instance, the study of Gani and Bahari (2019) focuses their study on how Islamic finance is associated with economic growth in Malaysian economy

considering a quarterly data from 1998 to 2017. Likewise, Saleem et al., (2021) and Muhammad et al., (2022) examines the effect of Islamic finance on economic growth and development of Pakistan. Meanwhile, Sakinah et al., (2022) and Trianto and Sabiu (2021) conducted a comprehensive investigation into the interconnection between Islamic finance and the economic growth of Indonesia. In addition, Ledhem and Mekidiche (2020) examined the relationship between Islamic finance and economic development in Turkey, using the endogenous growth model. These studies consistently show a favorable and significant effect on the economic performance of a certain country.

Despite the substantial evidence supporting the beneficial effects of Islamic finance on economic growth in Islamic nations, there is a notable gap in the literature regarding how Islamic finance, as measured by Islamic Finance country index (IFCI), affect the economic performance of countries that have been adopting Islamic finance, whether marginal, moderate, significant, or exceptional levels over the years. Thus, this study mainly aims to analyze how Islamic finance as measured by IFCI can influence the economic performance of selected countries that adopted Islamic finance using a panel data analysis covering the years from 2013-2021. This study only includes countries that have IFCI scores that are greater than 10. According to the Global Finance Report (2021), countries with an IFCI score of less than or equal to 10 falls into the "Insignificant" category, while those scoring between 10 and 20 are termed "Marginal." "Moderate" encompasses countries with scores ranging from 20 to 30, whereas those scoring between 30 and 40 are considered "Significant." Countries with an IFCI score exceeding 40 falls into the "Exceptional" category. With this, those countries that have insignificant IFCI scores were not included in the panel data analysis.

Moreover, this study is significant to the existing body of knowledge as this provides insights regarding the effect of Islamic finance on economic performance of selected countries that adopting Islamic financing, utilizing a panel data analysis. The novelty of this paper lies in its departure from the common focus of existing research, which typically centers on single-country time series analysis or case studies. In addition, most of the existing studies only focuses on Islamic countries. However, on this present study, it uses a different approach by leveraging panel data analysis. Hence, this research offers a broader, more comprehensive view, allowing for cross-country comparisons. The contribution on the method improves the understanding about the influence of Islamic finance on the economies adopting this financial system, and thus, contributing a valuable new dimension to the academic discussion on the field of Islamic economics and finance.

II. Literature Review

Bagehot's Theory: Finance and Growth Nexus

This study employed the Bagehot's Theory that emphasizes the finance and growth nexus. The idea of the relationship between finance and economic growth has its roots in the work of Bagehot in the 1870s (Bagehot, 1873). This theory posits a connection between the financial

sector and the nation's economic growth (Nyankomo & Stephen, 2015; Stolbov, 2012). In addition, Bagehot's theory emphasizes the function of financial institutions in aggregating resources and allocating them to the most successful firms, and thus, stimulating economic expansion. This could be attributed from Schumpeter's perspective, which financial institutions, including banks, play a crucial role as intermediaries between inventors and capital owners, by providing loans to on implement "innovative ideas." This process drives economic growth and benefits society as a whole. With this, the Bagehot's theory inferred that the financial system has an important role in promoting economic growth (Nyankomo & Stephen, 2015). In addition, the link between finance and economic growth can be established via a variety of transmission channels. A basic growth model reveals three essential links between financial conditions and economic activity. Finance development has the potential to (1) minimize the costs associated with capital allocation, (2) increase the amount of savings, and (3) improve capital efficiency (Thiel, 2001).

Moreover, the Bagehot's theory can be applied to explain how Islamic finance could significantly stimulate economic performance. As mentioned by Nyankmo and Stephen (2015), the financial system could stimulate economic growth by centralizing resources and allocating them effectively to high-performing firms that venture advanced innovative ideas, thus fostering economic expansion. In connection to Islamic finance, by its nature, it encourages the allocation of capital to productive, innovative enterprises through risk-sharing mechanisms and ethical investment criteria conforming to the Shariah law. This strategy not only benefits successful companies but also fosters overall economic progress by ensuring that investments are directed towards initiatives that contribute to economic growth and are in line with ethical and social principles of Shariah. Applying these ideas within an Islamic framework suggests that adopting Islamic financial instruments, which provide more effectiveness in distributing risk, might potentially improve economic efficiency and stability. This approach diverges from conventional finance, which often prioritizes debt with pre-established returns, leading to the accumulation of risk rather than its dispersion (Al-Jarhi, 2017).

Previous Research

Several empirical studies conducted to examine how Islamic finance is associated with economic performance. Previous study of Gani and Bahari (2019) emphasized that Islamic finance, particularly, the Islamic banking system in Malaysia is both effective and efficient in stimulating economic development by facilitating high-quality and substantial investments. Likewise, Saleem et al. (2021), employed autoregressive distributive lag regression (ARDL), error correction model (ECM), and Granger causality analysis in their study, which demonstrated Islamic finance drives economic growth. The study also indicated that the presence of a greater proportion of Islamic financial assets in the economy seems to contribute to short-term economic growth. Similarly, Trianto and Sabiu (2021) found using an Autoregressive distributed lag (ARDL) framework that Islamic finance positively and significantly influences Indonesia's economic growth. This result was supported by the study of Sakinah et al., (2022) which indicates that Islamic finance substantially drives the economic performance of Indonesia. It was also found that in the short term, sukuk emerges as a significant contributor to the GDP, whereas, in the long run, both Islamic

banks and Islamic mutual funds have a substantial impact on the GDP. The data suggest a favorable association between Islamic financing and Indonesia's GDP in the short and long term. In fact, Islamic banks with high-quality financing activities can produce greater financial returns by minimizing their exposure to poor financing (Fakhrunnas & Anto, 2024). This could potentially lead towards economic expansion.

In addition, Ledhem and Mekidiche (2020) revealed using an endogenous growth model that the adoption of Islamic finance in Turkey facilitates economic growth as it expands the proportion of Islamic finance in the local banking industry and the global marketplace. Similarly, Muhammad et al., (2022) also found that the Islamic finance positively contributes to the economic development of Pakistan. Most of the studies noted the positive and significant effect of Islamic finance on a country's economic performance. According to Ahmadi et al., (2022), Islamic finance is in line with the fundamental components of the Islamic economic system that allow for the avoidance of interest-based contracts. This approach can foster economic growth and development while reducing the likelihood of financial crises. The Islamic finance also regarded as a reliable financial system that has the ability to foster development and possesses significant prospects for advancing inclusive growth, financing infrastructure, and ensuring economic progress, provided that appropriate measures acknowledge its distinctive features. It eliminates the concept of interest, speculation, hoarding, contractual uncertainty, and the secondary debt market in favor of productive endeavors and the actual economy (Boukhatem & Moussa, 2017). In addition, the Islamic finance has an important role to improve business performance of enterprises, which could substantially contribute on generating employment, and thus, this could help expand the economy (Azam & Abdullah, 2024). Thus, this present study hypothesized that Islamic finance substantially boost economic performance.

H₁: Islamic Finance is hypothesized to have a positive effect on economic performance.

Foreign Direct Investment and Economic Performance

According to the World Trade Organization (1996) and as cited by Islam and Beloucif (2023), the foreign direct investment (FDI) has been defined as an investment created by an individual or company to get a long-term stake in businesses that operate in a foreign economy, apart from the investor's domestic economy. The FDI inflow is commonly seen as a crucial factor that stimulates economic growth as it introduces and facilitates technology, knowledge, money, and employment opportunities (Cambazoglu & Simay, 2014). All of these are expected to have a beneficial effect on the host economy. Previous studies supported the claim on how FDI is significant in boosting economic performance. For instance, the study of Islami et al., (2016) found that the FDI inflows boosts economic performance of Kosovo, and hence, effective strategies to attract FDI are necessary to promote economic growth. Likewise, the study of Mwitwa (2022) revealed that FDI inflows have significant positive effect on the real GDP of Tanzania. The positive result of FDI on the economic performance is supported by the study of Hayat and Cahlik (2020), which indicated that FDI inflows has a substantial and beneficial impact on the economic development of the host nation. The FDI contributes not only financial resources but also sophisticated technology and managerial knowledge, which improves the productivity and efficiency of the industries in a certain country that receive it. This can result in a rise in total

production capacity, promoting the creation of jobs and enhancing economic performance (Cambazoglu & Simay, 2014; Islam & Beloucif, 2023). Therefore, this study hypothesized that the FDI inflows positively and significantly affects economic performance of countries that adopt Islamic finance.

H₂: FDI is hypothesized to have a positive effect on economic performance.

Unemployment and Economic Performance

Existing studies mostly noted that unemployment negatively affects economic performance. For instance, the study of Lal et al., (2010) revealed that unemployment had a detrimental influence on economic growth of several countries in Asia. This indicates that an increase in unemployment tends to be linked with lower economic performance. Similarly, Ahmed et al., (2014) indicated that unemployment could hamper economic growth in Nigeria. This is supported by Ademola and Badiru (2016) which found a negative association between unemployment and economic development. The negative effect of unemployment on economic growth could be attributed with lower consumption within an economy, thereby reducing aggregate demand and hindering production of goods and services leading to economic contraction (Ademola & Badiru, 2016). Thus, this study hypothesized that unemployment rate negatively affects economic performance of countries.

H₃: Unemployment rate is hypothesized to have a negative effect on economic performance.

Global Innovation and Economic Performance

Innovation is one of the important factors that could drive economic performance. Previous study of Dempere et al., (2023) indicated a positive effect of innovation on the economy through the facilitation of domestic institutional framework, local infrastructure, local knowledge and technology, and creative outputs. All of these are important in enhancing economic expansion of a certain country. Likewise, Xu (2023) found that a nation's innovation capacity substantially boosts its economic growth due to the beneficial impact of scientific and technological progress, which these could boost productivity and expand the performance of the economy. The global innovation as measured by institutions, human capital and research, infrastructure, market and business sophistication, were associated with the mechanisms responsible for generating increasing returns in the economy (Volchik et al., 2023). Hence, this study hypothesized that global innovation positively and significantly influences economic performance.

H₄: Global Innovation is hypothesized to have a positive effect on economic performance.

Conceptual Framework

The conceptual framework of this study is shown in Figure 1. The framework shows the direct effect of Islamic finance, which is the independent variable, together with the controlled variables on the economic performance as measured by the real gross domestic product (RGDP). This study hypothesized that IFCI can directly affect the economic performance. In accordance with the study conducted by Ahmadi et al., (2022), Gani and Bahari (2019), Ledhem and Mekidiche

(2020), Muhammad et al., (2022), Sakinah et al., (2022), Saleem et al., (2021), and Trianto and Sabiu (2021), Islamic finance significantly influences economic growth.

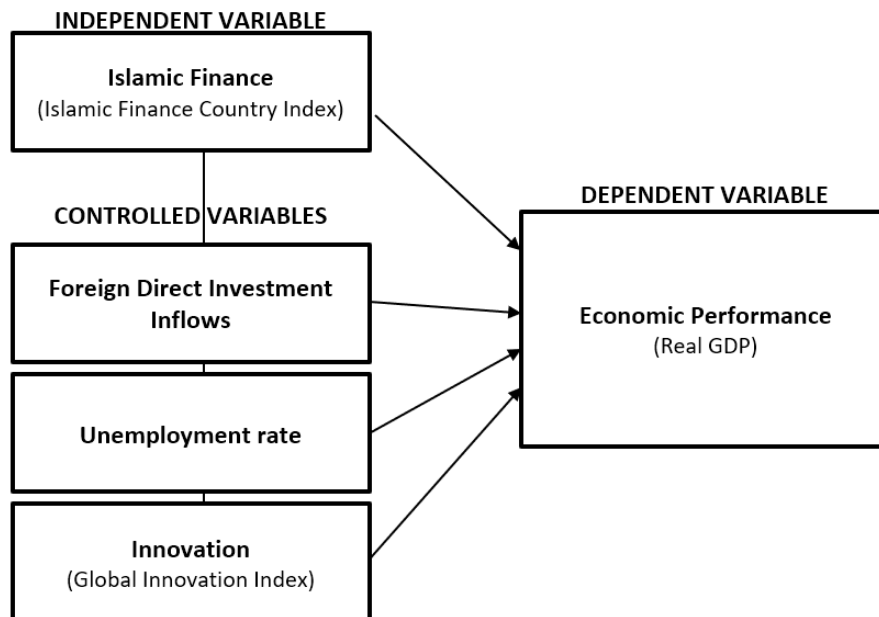


Figure 1. Conceptual Framework

In addition, the controlled variables such as the FDI inflows, unemployment, and the global innovation (which embodies institution, human capital, research, infrastructure, market and business sophistication) are depicted to have direct and significant effect on economic performance. These controlled variables were selected based on the existing literature. A number of studies found that the FDI inflows (Islami, et al., 2016; Hayat & Cahlik, 2020), Unemployment Rate (Ahmed et al., 2014; Ademola & Badiru, 2016; Lal et al., 2010), and global innovation (Xu, 2023; Volchik et al., 2023; Pio, 2020) are significantly associated with economic performance.

III. Methodology

Data

This study utilized panel data which covers the period from 2013 to 2021 and nineteen (19) countries that have marginal to exceptional levels of Islamic finance, on average, based on the Global Islamic Finance Report. These countries include Bahrain, Bangladesh, Brunei, Egypt, Indonesia, Iran, Jordan, Kazakhstan, Kuwait, Malaysia, Nigeria, Oman, Pakistan, Qatar, Saudi Arabia, Sudan, United Arab Emirates, and United Kingdom.

Additionally, the dependent variable of this study is the economic performance, which is measured by the real GDP gathered from the database of the World Bank. Meanwhile, the Islamic finance, as measured by the IFCI gathered from the database of Global Islamic Finance Report, is the independent variable. In addition, the controlled variables such as FDI inflows and

unemployment rate were collected from the database of World Bank, and the global innovation index was gathered from the Global Innovation Report. Moreover, as shown in Table 1 is the definition of data variables and their respective data sources.

Table 1. Definition of Data Variables

Data Variable	Code	Definition	Source
Real GDP (Constant 2015 USD)	RGDP	GDP at purchaser's prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in constant 2015 prices, expressed in USD. GDP dollar figures are converted from domestic currencies using 2015 official exchange rates.	World Bank
Islamic Finance Country Index	IFCI	This is an index ranking in different countries with respect to the state of Islamic banking and finance and their leadership role on a national level and benchmarked to an international level that captures the growth and assesses IBF in each country.	Global Islamic Finance Report
FDI Inflows (In current USD)	FDI	This refers to direct investment equity flows in the reporting economy. It is the sum of equity capital, reinvestment of earnings, and other capital. The data is in current USD.	World Bank
Global Innovation Index	Innov	Ranking the worlds, countries and economies through innovational measures, environments, and outputs. The Index comprises around 80 indicators, including measures on each economy's political environment, infrastructure, education, and knowledge creation.	Global Innovation Report
Unemployment (%)	Unemp	Unemployment refers to the share of the labor force that is without work but available for and seeking employment.	World Bank

Model Development

This study utilized a panel regression model. Equation (1) shows the empirical model, which includes controlled variables such as FDI inflows, unemployment rate, and global innovation, as well as the main independent variable, Islamic finance as measured by the IFCI. These factors were hypothesized to affect the real GDP, which measures economic performance.

$$\ln RGDP_{it} = \alpha_0 + \beta_1 \ln FDI_{it} + \beta_2 Unemp_{it} + \beta_3 Innov_{it} + \beta_4 IFCI_{it} + \varepsilon_{it} \quad (1)$$

Where, $\ln RGDP_{it}$ refers to the natural logarithm of economic performance as measured by the real GDP, and the $IFCI_{it}$ refers to the Islamic Finance. The $\ln FDI_{it}$ indicates natural logarithm of FDI inflows. The variables RGDP and FDI were transformed into logarithmic form to address the normality issue of these variables. In addition, the $Unemp_{it}$ in the equation (1) refers to

unemployment rate, $Innov_{it}$ is defined as the global innovation, and ε_{it} is the error term. Meanwhile, α_0 indicates constant parameter, β_n is the slope associated on each controlled and independent variable, i indicates country, and t refers to the time variable.

Method

This study utilized panel regression analysis to empirically analyze the effect of Islamic Finance on economic performance across countries that adopt Islamic finance. This study analyzed the data using a statistical software. Before deriving the final model, several diagnostic tests were conducted to ensure that the model satisfy the assumptions of the panel regression analysis. First, descriptive statistics was run to describe the mean and the standard deviation of each variable. It was followed by the skewness test to determine which variables in the model has normality issues. After which, the Hausman test was conducted to assess the specification of the model. The test was performed subsequent to deriving both the fixed-effects and random-effects models. Fixed-effects regression model was utilized as the empirical model of the study as suggested by the result of the Hausman test.

In addition, Wald test for fixed-effect regression was then performed to test if the model suffers from heteroskedasticity issue. The Wald test revealed that the model has heteroskedasticity issue with a Prob>chi2 of 0.0000. A Pesaran's test was also conducted to determine if there is a cross-sectional dependence in the model. It was found that there was a presence of cross-sectional dependence among variables. Meanwhile, the Variance Inflation Factor (VIF) test was conducted to assess multicollinearity in the model. This diagnostic test revealed that the mean VIF for models 1 and 2 is less than 10, indicating that there are no serious multicollinearity issues in both models. On the other hand, the Wooldridge test was conducted to assess the presence of serial correlation in the model. It was found that the model has issue of serial correlation. Furthermore, to address the issues of heteroskedasticity, cross-sectional dependence, and serial correlation on the empirical models, this study employed Panel Corrected Standard Errors (PCSE) regression on the final model. According to Reed and Webb (2010), the PCSE regression will free the model from the issues of heteroskedasticity, autocorrelation, and cross-sectional dependence.

IV. Results and Discussions

Descriptive Statistics

As shown in Table 2 is the result of the descriptive statistics of each variable used in this study. The dataset has 171 observations, examining many economic and social metrics, including Real Gross Domestic Product (RGDP), Foreign Direct Investment (FDI), Unemployment Rate (Unemp), Global Innovation (Innov), and Islamic Finance Country Index (IFCI).

Table 2. Descriptive Statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
RGDP	171	461.5 billion USD	6.563e+11	1.261e+10	3.174e+12
FDI	171	9.25 billion USD	2.912e+10	-2.506e+10	3.248e+11
UNEMP	171	6.365	4.875	.1	19.292

Variable	Obs.	Mean	Std. Dev.	Min	Max
Innov	171	32.382	10.578	-.967	62.4
IFCI	171	28.662	24.794	1.07	83.55

Based on the Table 2, the RGDP exhibits a substantial mean value of roughly 461.5 billion USD, accompanied by a notable standard deviation. This suggests a considerable variation in economic size between nations, spanning from 12.61 billion to well over a trillion USD. Meanwhile, the FDI exhibits an average of around 9.25 billion USD. It also displays a significant standard variation and encompasses negative values, indicating that some nations had a net outflow of investment. On the other hand, the average unemployment rate as shown in Table 2 is 6.365%, with a wide variation from 0.1% to over 11%, indicating varying circumstances in the labor market. The Global Innovation, which measures how innovative the country is, has an average value of 32.382. Interestingly, the index has a minimum value that goes below zero, suggesting that some countries need to improve their global innovation capacity. Moreover, the IFCI has an average score of 28.662, indicating significant variation in Islamic financial development levels among different countries. The dataset used in this study demonstrates substantial variation in economic factors, indicating distinct phases of growth and obstacles across the examined nations. On the other hand, as presented in Table 3 is the result of the skewness of each variable.

Table 3. Skewness Test

Variable	Level Form	Log-form	Square Form
RGDP	2.98	-0.30	3.94
FDI	8.38	0.06	12.10
UNEMP	1.10	-1.51	1.95
Innov	0.35	-3.21	1.93
IFCI	0.90	-0.66	1.57

According to the findings, the log-form of RGDP, FDI, and IFCI exhibit values that are considerable close to zero. This suggests that these variables should be transformed into natural logarithmic form. Thus, the final model considers RGDP and FDI to be transformed into logarithmic form addressing the normality issue present on these variables. However, the IFCI stays in level-form since this variable is considered as index and if transforming it would result in missing data or negative values. Moreover, other variables such as unemployment rate (Unemp) and global innovation (Innov) have no normality issues as the skewness value of their level-form is closer to zero than when these variables are transformed into either log-form or square-form.

Additionally, Table 4 presents the summary of the diagnostic test which includes Hausman Test, Pesaran's test for cross-sectional dependence, Wald-test for heteroskedasticity in fixed-effect model and Breusch-Pagan LM Test in random effects, Wooldridge test to detect serial correlation, and the Variance Inflation factor (VIF) to test multicollinearity issue.

Table 4. Summary of Diagnostic Test Results of Model 1 and Model 2 Considering the Transformed Variables

Diagnostic Tests	Model 1 (Without IFCI)	Model 2 (With IFCI)
Hausman Test	0.0000*	0.0000*

Diagnostic Tests	Model 1 (Without IFCI)	Model 2 (With IFCI)
Pesaran's Test for Cross-Sectional Dependence	0.0000*	0.0000*
Wald Test for heteroskedasticity in fixed effects	0.0000*	0.0000*
Breusch-Pagan LM Test for heteroskedasticity in random effects	0.0000*	0.0000*
Wooldridge Test for Serial Correlation	0.0000*	0.0000*
Mean Variance Inflation Factor (VIF) for multicollinearity	1.39 (Less than 10)	1.29 (Less than 10)

Note: * $p < 0.05$ – significant

First, the Hausman test results for both models show a significant p-value (Prob > chi2 = 0.000), indicating that the appropriate panel regression model to use is the fixed effects model. This result suggests that there is a systematic difference between the coefficients estimated by the fixed effects and random effects models, which implies that the assumptions underlying the random effects model are violated. On the other hand, the p-value of Pesaran's test for both models are statistically significant, indicating the presence of cross-sectional dependence among the variables. This result indicates that the residuals of the regression models are correlated across different cross-sectional units.

In addition, the results of the Wald test and the Breusch-Pagan LM test presented in Table 4 show a significant p-value, indicating that both models suffer from heteroskedasticity. This finding suggests a violation of the assumption of homoscedasticity, which implies that the variance of the errors is not constant across observations. The Wooldridge Test for Serial Correlation reveals that both models have autocorrelation issues. Given these findings, it is advisable to use panel-corrected standard errors (PCSE) in the final regression model to address both heteroskedasticity and autocorrelation, ensuring more reliable and robust estimates. Moreover, the mean VIF results for Model 1 and Model 2, which are 1.39 and 1.29 respectively, indicate that multicollinearity issues in the models are not significant. This suggests that the independent variables in both models do not exhibit high levels of correlation, ensuring the reliability of the regression coefficients.

However, Table 5 presents the panel regression analysis results comparing the fixed-effects and random-effects estimators. The baseline model is represented by Model 1, while Model 2 includes the IFCI.

Table 5. Fixed-effect and Random-effect Panel Regression Analysis

Variable	Model 1 (without IFCI)		Model 2 (with IFCI)	
	Fixed-effects	Random-effects	Fixed-effects	Random-effects
FDI (in log form)	-0.0058 (0.587)	-0.0012 (0.922)	-0.0069 (0.435)	-0.0039 (0.692)
Unemployment Rate	0.0014 (0.811)	0.0013 (0.845)	-0.0039 (0.434)	-0.004 (0.463)
Global Innovation	-0.0088*** (0.001)	-0.0078*** (0.006)	0.0008 (0.731)	0.0017 (0.522)

Variable	Model 1 (without IFCI)		Model 2 (with IFCI)	
	Fixed-effects	Random-effects	Fixed-effects	Random-effects
Islamic Finance Country Index	-	-	0.0037*** (0.000)	0.0038*** (0.000)
α_0 (constant parameter)	26.5656*** (0.000)	26.4046***	26.2077*** (0.000)	26.0788*** (0.000)
R ² (overall)	0.1825	0.1539	0.0206	0.0442
Prob>F	0.0031	0.0351	0.0000	0.0000
Number of observations:	160	160	160	160
Number of groups:	19	19	19	19

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$

Based on the results in Table 5, the variables FDI and unemployment rate consistently appeared to be statistically insignificant in both models. This shows that these variables do not have a significant impact on economic performance in the absence of the IFCI. In contrast, the global innovation appears a different result. In Model 1, global innovation is statistically significant under both the fixed-effects ($p = 0.001$) and random-effects ($p = 0.006$) models, but it negatively affects economic performance. This indicates that, without considering IFCI, higher levels of global innovation are associated with lower economic performance, which may imply that innovation alone, without the support of a financial framework, might not yield positive economic performance.

However, in Model 2, after the inclusion of IFCI, the effect of global innovation on economic performance becomes positive, but it is no longer statistically significant. This indicates that when IFCI is considered, the negative impact of global innovation is addressed, although it does not significantly enhance economic performance. Additionally, the IFCI itself has a positive and significant effect on economic performance in both fixed-effects and random-effects estimators. This shows that the Islamic Finance of a country plays an important role in positively influencing economic performance.

Moreover, the R-squared value in Model 1 indicates that the fixed-effects model explains a slightly larger proportion of the variance in economic performance compared to the random-effects model. Specifically, the fixed-effects model has an R-squared value of 0.1825, while the random-effects model has an R-squared value of 0.1539. This suggests that the fixed-effects model captures more of the variability in economic performance than the random-effects model in Model 1. Similarly, in Model 2, the fixed-effects model has a slightly higher R-squared value compared to the random-effects model, with values of 0.0206 and 0.0442, respectively. This indicates that the fixed-effects model again explains a slightly larger proportion of the variance in economic performance. Overall, these R-squared values highlight the fixed-effects model is better to account for the variability in economic performance in both models.

Robustness Check

Table 6 presents the robustness check for the panel regression results of the two models, providing additional validation of the findings from the initial analyses. To address the issues of

cross-sectional dependence, heteroskedasticity, and serial correlation in both Model 1 and Model 2, this study utilized Panel Corrected Standard Errors (PCSE) as the final estimator. Compared to the results in Table 5, the findings in Table 6 are more logical and consistent with the hypothesized effects outlined in this study. Based on the result in Table 6, the model 1 shows that only FDI significantly affects the real GDP. This result is also consistent with model 2. In addition, on the second model incorporating the IFCI, it was found that the Islamic Finance has positive and significant effect on the real GDP. Meanwhile, other variables such as the unemployment rate and global innovation appeared to be statistically insignificant in both models.

Table 6. Robustness Check of model 1 and 2 using the Panel Corrected Standard Error (PCSE)

Variable	Model 1 (without IFCI)		Model 2 (with IFCI)	
	Coefficients (p-value)	Hypothesis (Remarks)	Coefficients (p-value)	Hypothesis (Remarks)
FDI (in log form)	0.6997*** (0.000)	H ₂ (Supported)	0.6940** (0.000)	H ₂ (Supported)
Unemployment Rate	-0.0119 (0.164)	H ₃ (Not Supported)	-0.0118 (0.162)	H ₃ (Not Supported)
Global Innovation	-0.0028 (0.612)	H ₄ (Not Supported)	-.0026 (0.681)	H ₄ (Not Supported)
Islamic Finance Country Index	-	-	.0068*** (0.000)	H ₁ (Supported)
α_0 (constant parameter)	10.9835*** (0.000)		10.9027*** (0.000)	
Prob>chi2	0.0000		0.0000	
R ²	0.5901		0.6081	
Wald chi2	562.60		1468.81	

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$

The significance and the positive effect of FDI on both models, as shown in Table 4, indicate that an increase of the growth rate of the FDI by 1% will cause the growth rate of real GDP to increase by 0.69% to 0.7%, assuming that other factors are constant. This shows that higher FDI inflows would boost economic performance of the countries adopting Islamic finance. On the other hand, the significance of IFCI as presented in Table 4 shows that an increase of IFCI by 1 index will tend to increase the growth rate of the real GDP by 0.68% (0.0068 x 100), considering that other factors are constant. This result is consistent with the previous studies of Gani and Bahari (2019), Saleem et al., (2021), Ledhem and Mekidiche (2020), Ahmadi et al., (2022), Sakinah et al., (2022), Muhammad et al., (2022), and Trianto and Sabiu (2021) showing the positive and substantial effect of Islamic finance on the economic performance of countries adopting the Islamic financial system.

Moreover, the R-squared values in Table 6, which incorporate Panel Corrected Standard Errors (PCSE) in the regression models, are higher than the R-squared values shown in Table 5 for both the fixed and random effects models without PCSE. This indicates that the models in Table 6 have a greater explanatory power, meaning they account for a larger proportion of the variance in economic performance. The use of PCSE as final estimator in model 1 and 2 addresses issues of cross-sectional dependence, heteroskedasticity, and serial correlation, resulting in more robust and reliable estimates.

Consequently, the higher R-squared values suggest that the regression models with PCSE provide a better fit to the data and are more aligned with the hypothesized relationships in this study. As shown in Table 6, the R-squared in model 1 displays that the variation of the economic performance as measured by the growth rate of real GDP is explained by the variations of the controlled variables at 59.01%. In addition, the R-squared in model 2 indicates that the variation of the economic performance is explained by the variations of the controlled variables and IFCI by 60.81%. Since the R-squared in model 2 increases, it shows that the IFCI helps to improve the explanatory power of the model, thereby improving the robustness of the model.

Discussions

The result regarding the significance of Islamic finance in boosting economic performance of countries that have marginal to exceptional Islamic financial system is consistent with the findings of the previous studies such as in Gani and Bahari (2019), Saleem et al. (2021), Ledhem and Mekidiche (2020), Ahmadi et al., (2022), Sakinah et al., (2022), Muhammad et al., (2022), and Trianto and Sabiu (2021). Islamic finance has emerged as an attractive alternative for those seeking a financial system that is more transparent and equitable. This is because Islamic finance places emphasis on principles such as asset-backed transactions, risk-sharing, and the prohibition of interest (riba). Additionally, the ability of Islamic financial institutions to withstand the global financial crisis demonstrated the sustainability and feasibility of the Islamic finance model, further increasing its appeal in the aftermath of the crisis (Banna et al., 2021).

Given the substantial positive influence of Islamic finance on economic performance, it becomes imperative to further refine and tailor Islamic financial products to bolster economic advancement. The result also suggests that Islamic finance can promote financial stability due to its unique characteristics like risk-sharing and asset-backed nature, potentially reducing the volatility and instability often associated with conventional finance. This stability can contribute to a stronger economic environment. In addition, a positive correlation suggests that Islamic finance instruments and principles attract investment, fostering capital inflow into various economic sectors. This increased investment can stimulate better economic performance and development. Additionally, a novel contribution of this study is that it demonstrates how Islamic finance positively and significantly affects economic performance, particularly through the use of panel methods in the analysis. This aspect of the research highlights how Islamic financial principles, which emphasize risk-sharing and prohibition against speculation, can contribute to economic stability and growth. This finding not only contributes to the academic discourse but also offers practical insights for policymakers and financial practitioners considering the integration of Islamic finance principles into mainstream economic strategies.

Moreover, among the controlled variables, this study found that only FDI appeared to be consistently significant and have positive effect on the real GDP. This result conforms to the findings of the previous studies of Hayat and Cahlik (2020), Islami et al. (2016) and Mwitta (2022). The positive and significance of FDI on economic performance could be attributed to the dissemination of technological knowledge, which was particularly evident in nations with strong institutional frameworks. Effective bureaucratic procedures and strong property rights protection characterize strong institutions. This premise finds further support in the studies of Herzer et al.

(2008) and Cambazoglu & Simay Karaalp (2014), wherein they underscore the significant potential of FDI inflow in bolstering the host country's economic growth by amplifying available capital for investment and facilitating the transfer of technology.

Furthermore, the insignificance of unemployment and global innovation suggests further investigation of these variables. Thus, the findings of this study did not significantly support the hypothesized effect of these variables on economic performance. The results suggest the necessity of reassessing the theoretical frameworks or considering new variables that may interact with or obscure the impacts of unemployment and innovation on economic performance of countries that significantly adopt Islamic finance.

V. Conclusion and Recommendation

This study mainly aims to analyze the effect of Islamic finance on economic performance in selected countries utilizing a panel data analysis. Based on the result, it was found that Islamic finance positively and significantly affects economic performance as measured by the real GDP. This implies that Islamic finance could facilitate economic performance through a reliable financial system that adheres to principles of Shariah, risk sharing and the prohibition of interest. This financial system has the capacity to facilitate economic development. The principles of Islamic finance encourage investments in real economic activities, which are less prone to financial crises compared to traditional finance's speculative and leveraged activities. Hence, this study concludes that Islamic finance positively and significantly influences economic performance, especially, to those nations with marginal to exceptional level of IFCI. The findings are particularly relevant for countries with varying levels of the Islamic Finance Competitiveness Index (IFCI), which measures the development of the Islamic finance industry. In these countries, the positive impacts of Islamic finance are more pronounced. Therefore, policymakers are encouraged to foster a strong Islamic finance sector to facilitate economic growth and development. This dual approach can harness the synergistic benefits of Islamic financial systems, leading to sustainable economic growth, long-term stability, and development.

Based on the findings of this research study, several recommendations are proposed to optimize the positive impact of Islamic finance on economic growth in countries that have adopted the Islamic financial system. Governments and regulatory bodies may work towards refining and strengthening the regulatory frameworks governing Islamic finance. This includes standardizing practices, ensuring compliance with Sharia principles, and fostering an environment that promotes innovation while maintaining financial stability and strategically leveraging Islamic finance instruments. Financial institutions may regularly assess the social impact of Islamic finance initiatives. This includes evaluating the extent to which it contributes to poverty alleviation, financial inclusion, and community development, and adjusting as needed to maximize positive social outcomes. Academic institutions and industry stakeholders should collaborate to support ongoing research and development on Islamic finance and invest in education and training programs to build skilled individuals equipped with the necessary expertise in Islamic finance as this would promote and broaden the knowledge of people

regarding Islamic finance awareness. This includes exploring new financial products, improving risk management tools, and addressing challenges unique to Islamic finance to ensure its continued evolution and adaptability. Future studies in this field may explore a wider scope and discover other measurements and indicators to utilize the available data. The future researchers may also consider other economic variables as well as other methods that is appropriate

Author Contributions

Conceptualization; Investigation; Methodology, R. M. C. L., M. R. A., N. F. N. B., K. S. L. C., J. G. P.; Analysis, J. G. P.; Visualization, Review and Editing, R. M. C. L., M. J. J. A., C. M. C., M. R. Y. T.; Supervision, R. M. C. L.

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Conflicts of Interest

The authors declare no conflict of interest.

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