Journal of Islamic Monetary Economics and Finance, Vol. 9, No. 1 (2023), pp. 39 - 56
p-ISSN: 2460-6146, e-ISSN: 2460-6618

ISLAMIC FINANCE, GROWTH, AND VOLATILITY: A FRESH EVIDENCE FROM 82 COUNTRIES

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ABSTRACT

Islamic finance has gained significant attention during the past decades. Many countries are striving to become Islamic financial hubs. The asset-backed nature of Islamic financial instruments and products adds more reliability to financial transactions. Yet, the impact of Islamic finance penetration on economic growth is unclear. While the existing studies have focused mainly on Islamic banking penetration, which is mostly centered around Muslim economies, we study the relationship considering a global sample of 82 countries, including Muslim and non-Muslim countries, from 2012-2020. We employ the System Generalized Method of Moments estimator for potential issues of endogeneity, heterogeneity, and serial correlation. Employing the novel Islamic finance development indicator by Thomson routers, we find that Islamic finance stimulates the overall economy and lessens volatility. Digging deep into the study, we find that this impact is more prominent in Muslim majority countries. These findings are robust to different econometric estimators and sample specifications. Since integrating Islamic financial principles into the country's overall financial system brings extra growth and lower economic volatility, it is recommended that the Islamic banking sector, Islamic insurance sector, Islamic money, and capital market instruments be expanded to boost overall economic growth and control volatility.

Keywords: Islamic financial development, Growth, Volatility, GMM.
JEL classification: G15; G21; G29; O43.

Article history:
Received : August 1, 2022
Revised : October 27, 2022
Accepted : February 28, 2023
Available online : March 29, 2023

https://doi.org/10.21098/jimf.v9i1.1625

I. INTRODUCTION

Islamic finance is one of the fastest-growing fields of finance and captured the attention of policymakers and practitioners due to its distinctive features. The emergence of Islamic finance can be traced back to the 1960s in Egypt. Since then, the Islamic financial system has grown exponentially. The Islamic financial assets of various segments are estimated at $ 2.18 trillion. Driven by this fast growth, this study examines the impact of Islamic financial development on economic growth and economic volatility. The academic literature is scarce on Islamic financial development and its impact on economic volatility. Arguably, the financial system plays a crucial role in efficiently channeling funds from deficit to surplus units, leading to economic growth (Beck et al., 2013; Kunt & Levine, 2008; Levine & Zervos, 1996, 1998). However, if effective policies are not adopted, this channelization is weak, so it can hurt growth and increase economic volatility. In this study, along this line of argument, we explore whether Islamic financial development leads to economic growth and if increased Islamic financial development leads to economic stability or volatility in our sample of 82 countries from 2012 to 2020. We also divide the sample into OIC member countries and non-OIC countries and test how the impact of Islamic financial development impacts the economic growth and volatility in these two groups of countries.

The study brings novelty to the existing literature in various ways. First, it studies a somewhat neglected area of Islamic financial development in the context of its impact on the macroeconomy, making this perhaps the first study to look into its impact on economic volatility. Second, while previous studies have used mainly one of the components of islamic finance, for instance, islamic banking or islamic capital market, this research employs the novel Islamic Financial Development Indicator developed by Thomson Reuters-Refinitiv that measures the overall development and health of the Islamic finance sector in a country. Furthermore, we study a global sample of 82 countries. And lastly, since Islamic finance has higher penetration among Islamic countries, the study also explores if the impact of Islamic financial development is different for Islamic countries and non-Islamic countries.

The remainder of the paper is structured as follows: the next section reports a brief overview of the past literature. This is followed by data, variable specification, model and methodology. The next section represents the results and discussion of the regression analysis. This is followed by the robustness checks. And finally, the paper is concluded with important policy implications.

II. RELEVANT STUDIES

This section presents the empirical evidence on Islamic finance - economic growth relations. Although a wide range of discussions is available on the nexus of Islamic finance and growth, the existing studies offer mixed results, and the findings are inconclusive. Alaabed & Masih (2016)and Hassan et al.(2020) find that the risk-sharing mechanism of Islamic finance enhances the growth in an economy, whereas an increase in debt financing negatively affects economic development. A strand of literature revolves around improving social and economic well-being in an economy through the Islamic financial system (Abedifar et al., 2016; Al Fathan

& Arundina, 2019; Boukhatem & Ben Moussa, 2018; Echchabi et al., 2016; Gheeraert & Weill, 2015; Hassan et al., 2020; Naz & Gulzar, 2022; Ng et al., 2015). The growth of Islamic finance has not only attracted practitioners but also academics (Imam & Kpodar, 2016). The Islamic financial system contributes to the development of the conventional financial system. Therefore, Islamic financial institutions are expected to extend social justice and capital allocation to promote economic and social well-being (Gheeraert & Weill, 2015; Hassan et al., 2020). Although Sassi & Goaied (2011) report a negative impact of the Islamic financial system on economic growth in the Middle East and North African (MENA) region, other studies disagree with these findings where the Islamic financial system creates a great potential for economic development in Southeast Asia because of the higher Muslim population in this region (Lebdaoui & Wild, 2016).

Among the initial studies on this nexus is the study by Furqani & Mulyany (2009). The study argues that fixed investments cause Islamic banks to grow in the short run, and a bi-directional relationship is found in the long run that promotes growth. Another study by Hassan et al. (2011) reports a significant positive impact with a causal effect from Islamic financial development to economic growth using a sample of 51 OIC member countries. Manap et al. (2012), using a bootstrap Granger non-causality test, find that Islamic financial development causes economic growth in Malaysia, but not the other way round. Abduh et al. (2012) suggest a positive long-run empirical association between the deepening of the Islamic financial system and economic development, and in the short-run, the same nexus is bidirectional in Bahrain. The same is found in the case of Indonesia, where the causal relation between the development of Islamic financial system and economic growth is bidirectional. After analyzing 117 countries, Imam & Kpodar (2013) show that Islamic financing is expanding with an increase in the Muslim population, income per capita, and economic integration. The same result is found by Gheeraert & Weill (2015) in a panel of 52 countries; Islamic banks have positively impacted economic growth through regulatory and infrastructural development. Another study on Southeast Asian economies by Lebdaoui & Wild (2016) suggests a significant direct impact of Islamic finance on economic development. Abedifar et al. (2016) assert the same for 22 low-income Muslim majority countries. The results show that Islamic banks influence the channelization of funds and depth in these economies' overall financial system, thereby improving the society's well-being through *maqasid.* By contrast, Zarrouk et al. (2017) report on the reverse causality in the United Arab Emirates and argue that economic growth leads to Islamic financial development. Recent literature also support the positive impact of Islamic financial development on economic efficiency of countries, (Hassan et al., 2020; Juhro et al., 2020; Ledhem & Mekidiche, 2021; Naz & Gulzar, 2022; Баторшина, А. et al., 2021).

Contrary to the argument where many researchers support the positive impact of Islamic financial development on the economic growth through *maqasid, the* Muslim majority population, and asset-backed operations, another strand of literature supports the negative impact of Islamic financial development on economic growth. Alandejani & Asutay (2017) argue that Islamic financing adversely impacts nonperforming loans and suggests increasing credit risk exposures. Srairi (2019) examines the corporate transparency on banks' risk-taking

in 29 banks of the Gulf countries and finds that lack of transparency in the Islamic banks leads to the financial instability that can harm the economy.

Provided the above arguments, the existing studies lack indepth focus on the effect of islamic finacne on the macroeconomy in particular on economic volatility. Also many past studies have focused on one of the componetnts of islamic finance and ignore the overall picture of islamic finance in the country. Furthermore, past studies have mainly explored the small cross-country sample. Also, the literature has also ignored the comparative analysis of muslim majority countries and non-muslim majority countries. This study attempts to fill the mentioned gaps by exploring the impact of islamic finace on growth and volatility in 82 countrries taking the novel aggregated indicator of islamic finance.

III. DATA, VARIABLES AND METHODOLOGY

3.1. Data

To study the dynamic relationship between Islamic financial system development and economic growth and volatility, we conduct a panel data analysis using a panel data from 2012 to 2020. We collect the data on Islamic financial development from Thomson Reuters-Refinitiv, the Islamic finance database (Paltrinieri et al., 2020). The final dataset consists of 82 countries, including 58 non-OIC countries.

We take Gross domestic product per capita grwoth as economic growth proxy. For volatility, we take three years rolling standard deviation of GDP per capita growth. These are widely used proxies in the literatue. The macro-level variables are also included in the model to control for the cross-country heterogeneity.[1] These variables include financial development, unemployment, gross capital formation, Tax burden, and inflation rate, extracted from the World Development Indicators. Financial development is the ratio of loans offered to the private sector as a percentage of GDP; this proxy refers to the efficiency of the conventional banking system of an economy. If banks offer loans to potential businesses, exports will increase and thereby economic growth (Caporale et al., 2014; Emara & El, 2021; Kunt & Levine, 2008; Levine & Zervos, 1998). Government size refers to the government expenditures that may impact both ways on the growth rate of an economy. If the government is spending the revenues in potential areas, it impacts positively on growth and vice versa (T. T. Chu et al., 2018). Trade openness refers the trade volume as a percentage of the country's GDP. Trade liberalization may improve or deteriorate economic growth. If it positively affects economic growth, it enhances access to goods and services, resource allocation, and total factor productivity. On the other hand, if a country's export basket is limited, adverse effects of trade liberalization are also expected (Huchet-bourdon & Mou, 2017; Barro & Sala-i-martin, 1997; Hausmann et al., 2007; Keho, 2017; Rivera-batiz & Romer, 1991). The effect of gross capital formation is also controlled as it has a direct relationship with the growth of an economy. More savings are linked with more investments that contribute to enhanced growth rates (Bal et al., 2016; Chen, 2006). Institutional quality is an essential determinant of economic growth, and it portrays the importance of governance for the economic

1 Makdisi, S., Fattah, Z., & Limam, I., (2006) and Tan et al., (2021).

development of an economy. To control the effect of corruption, the rule of law, voice and accountability, political stability, government effectiveness and absence of violence, an overall variable of Institutional quality, we measure them using the aggregated average score for Institutional Quality (*IQ*) using the above mentioned six variables taken from the world bank governance indicators (Doumpos et al., 2017; Khattak, 2020; Matemilola et al., 2019). Tax burden, the government revenue generated from the tax collection, is important to determine the growth of a country. Effective tax collection would help generate more revenues and reduce a country's fiscal deficit, helping to grow an economy (Gemmell et al., 2011; Helms, 1985). Inflation has a short-term and long-term effect on growth. In the short term, inflation positively impacts growth because it produces an easy source of funding for the government; however, it negatively impacts growth in the long term.

3.2. Model Development and Methodology

We develop different linear regression models to address the objectives of this study. First, we address the question if islamic finance penetration adds value to economic growth and second, if islamic finance influences economic volatility. Below are the dynamic models developed to address the objectives of our research:

$$E\_Growth_{jt} = \beta_0 + \beta_1 E\_Growth_{jt-1} + \beta_2 IFD_{jt} + \beta_3 FD_{jt} + \beta_4 UNEMP_{jt} + \beta_5 GS_{jt} + \beta_6 Trade_{jt} + \beta_7 GCF_{jt} + \beta_8 IQ_{jt} + \beta_9 Tax_{jt} + \beta_{10} INF_{jt} + \varepsilon_{jt} \quad (1)$$

$$E\_VOL_{jt} = \beta_0 + \beta_1 E\_VOL_{jt-1} + \beta_2 IFD_{jt} + \beta_3 FD_{jt} + \beta_4 UNEMP_{jt} + \beta_5 GS_{jt} + \beta_6 Trade_{jt} + \beta_7 GCF_{jt} + \beta_8 IQ_{jt} + \beta_9 Tax_{jt} + \beta_{10} INF_{jt} + \varepsilon_{jt} \quad (2)$$

In the above models, E_Growth and E_VOL represent the country's economic growth and volatility respectively. E_Growth_{jt-1} and E_VOL_{jt-1} represents the lagged dependent variable to control the dynamicity in economic growth and volatility, respectively. IFD denotes the Islamic finance development in the country. FD shows the financial development, an important determinant of economic growth. Unemployment, government size and Trade openness are denoted by UNEMP, GS and Trade, respectively. GCF is the Gross capital formation. IQ denotes the overall governance in the country. Tax is the country's tax collection, and INF shows the inflation rate in the country.

We further explore if the relationship is any different in OIC and non-OIC countries. For this, we add a dummy interaction term to the main models above. The significance of the interaction term would tell the difference in the impact on a country's economic growth and volatility. The dummy variable takes the value of one (1) for OIC member countries and zero (0) otherwise.

$$E\_Growth_{jt} = \beta_0 + \beta_1 E\_Growth_{jt-1} + \beta_2 IFD_{jt} + \beta_3 FD_{jt} + \beta_4 UNEMP_{jt} + \beta_5 GS_{jt} + \beta_6 Trade_{jt} + \beta_7 GCF_{jt} + \beta_8 IQ_{jt} + \beta_9 Tax_{jt} + \beta_{10} INF_{jt} + \beta_{11} OIC_{jt} + \beta_{12} OIC * IFD_{jt} + \varepsilon_{jt} \quad (3)$$

$$E\_VOL_{jt} = \beta_0 + \beta_1 E\_VOL_{jt-1} + \beta_2 IFD_{jt} + \beta_3 FD_{jt} + \beta_4 UNEMP_{jt} + \beta_5 GS_{jt} + \beta_6 Trade_{jt} + \beta_7 GCF_{jt} + \beta_8 IQ_{jt} + \beta_9 Tax_{jt} + \beta_{10} INF_{jt} + \beta_{11} OIC_{jt} + \beta_{12} OIC * IFD_{jt} + \varepsilon_{jt} \quad (4)$$

Considering the nature of our objectives, models, and dataset, using traditional panel estimators might not be the best choice for our study. The dynamic nature of the dependent variables, the unobserved endogeneity, and serial autocorrelation issues urge us to go for advanced panel estimators such as instrumental variables regressions or dynamic panel estimators like a generalized method of moments. Looking for instrumental variables which are highly correlated with explanatory variables and not correlated with the error term is almost difficult. Therefore, to avoid these issues, we opt for the system generalized method of moments proposed by Arellano & Bover (1995) and Blundell & Bond (1998), which uses the first difference of the variable values and lagged values as instruments. This also works best where the cross-sections are greater than the time series and in unbalanced datasets.

3.3. Descriptive Statistics and Correlation Analysis

Table 1 shows the summary statistics of all the variables employed in this study. Panels A, B, and C respectively report the descriptive statistics of the entire sample, OIC member counties, and non-OIC member countries. These include the basic statistics involving the number of observations, mean value, standard deviation (Std. Dev), maximum (Max), and minimum values (Min).

Table. 1
Summary Statistics

Variable	Obs	Mean	SD	Min	Max
Panel A: Full Sample					
GDP_PCG	583	1.31	3.79	-21.12	24.00
IFD Score	583	9.15	19.54	0.00	152.73
Financial development	583	70.74	49.69	7.90	255.31
Unemployment	583	71.36	7.45	51.26	81.90
Government Size	564	16.35	5.32	4.81	35.35
Trade Openness	565	91.92	64.03	0.78	380.10
Gross Capital Formation	558	23.82	6.04	5.62	53.59
Institutional Quality	583	0.24	0.91	-1.66	1.86
Tax Burden	583	17.07	6.43	0.04	36.50
Inflation rate	499	3.95	9.51	-3.75	150.32

Table. 1
Summary Statistics (Continued)

Variable	Obs	Mean	SD	Min	Max
Panel B : OIC					
GDP_PCG	181	1.28	3.47	-21.12	12.01
IFD Score	181	21.21	30.88	0.00	152.73
Financial development	181	44.33	31.76	7.90	134.00
Unemployment	181	67.26	7.27	51.26	77.29
Government Size	178	14.68	4.95	5.04	30.00
Trade Openness	178	68.68	32.29	0.78	176.75
Gross Capital Formation	178	24.79	5.83	5.62	40.61
Institutional Quality	181	-0.52	0.48	-1.66	0.65
Tax Burden	181	13.39	4.95	0.04	26.90
Inflation rate	155	6.11	15.80	-3.75	150.32
Panel C: Non-OIC					
GDP_PCG	402	1.32	3.93	-14.90	24.00
IFD Score	402	3.72	5.54	0.00	30.45
Financial development	402	82.63	51.72	10.47	255.31
Unemployment	402	73.21	6.77	56.74	81.90
Government Size	386	17.12	5.32	4.81	35.35
Trade Openness	387	102.61	71.76	23.44	380.10
Gross Capital Formation	380	23.36	6.09	10.58	53.59
Institutional Quality	402	0.58	0.85	-1.15	1.86
Tax Burden	402	18.72	6.34	2.98	36.50
Inflation rate	344	2.98	4.01	-2.10	30.70

In the full sample, GDP per capita reports a mean value of 1.31 and a standard deviation of 3.79, with maximum and minimum values of 24 and -21.12, respectively. In comparison, the mean value in OIC countries is 1.28 and has a standard deviation of 3.47 with a 12.01 maximum and -21.21 as a minimum value. Moreover, the non-OIC member countries show a mean value of 1.32 with a standard deviation of 3.93 having 24 as maximum and -14.90 as a minimum value. By comparing the mean and standard deviation of the OIC and Non-OIC countries, we find that the mean and variation both are higher in non-OIC countries, which shows that if the average value of GDP per capita growth is higher in these economies, so the volatility is also higher. Whereas, if the mean value of GDP per capita growth rate is low in OIC countries compared to non-OIC member countries, the growth rates are less volatile in these economies.

IFD is the Islamic financial development that reports a mean value of 9.15 with a 19.54 standard deviation in the full sample and maximum and minimum values of 152.73 and zero, respectively. In OIC member countries, IFD shows a mean value of 21.21 and a standard deviation of 30.88, with 152.73 maximum and zero as a minimum value. In non-OIC member countries, the mean value is 3.72 with a standard deviation of 5.54, the maximum value is 30.45, and the minimum is zero. Comparing the average and standard deviation in IFD in both groups of countries, we find that the average OIC score of IFD is very high compared to the non-OIC countries with very high volatility as well.

Table. 2
Correlation Analysis

	GDP_PCG	IFD Score	Financial Development	Unemployment	Government Size	Trade Openness	Gross Capital Formation	Institutional Quality	Tax burden	Inflation rate
GDP_PCG	1									
IFD Score	-0.0115	1								
Financial Development	-0.111*	0.0395	1							
Unemployment	-0.0851	0.0286	0.655***	1						
Government Size	-0.245***	-0.124**	0.216***	0.263***	1					
Trade Openness	0.0387	0.00940	0.186***	0.410***	0.0611	1				
Gross Capital Formation	0.277***	0.0734	-0.167***	-0.141**	-0.149**	-0.132**	1			
Institutional Quality	-0.0565	-0.115*	0.628***	0.771***	0.377***	0.479***	-0.224***	1		
Tax burden	-0.0909*	-0.319***	0.355***	0.359***	0.507***	0.289***	-0.277***	0.528***	1	
Inflation rate	-0.166***	0.0651	-0.234***	-0.243***	-0.0195	-0.219***	0.161***	-0.331***	-0.215***	1

Table 2 presents the pairwise correlation coefficients for all the variables employed in this study, including the growth and Islamic financial development. The significant statistics are in bold and reveal a weak relationship between the variables; thus, the issue of the presence of multicollinearity is rejected.

IV. RESULTS AND DISCUSSION

4.1. Analysis

Table 3 presents the results of equations (1-2), where equation (1) presents the impact of Islamic financial development on growth, and equation (2) shows the results of the impact of Islamic financial development on economic volatility. The lagged dependent variables in the two model are highly significant, validating the dynamic nature of the growth rate and growth volatility and, therefore, supporting our choice of dynamic panel estimator. The number of instruments is less than the number of countries and therefore there is no problem of instrument proliferation (Roodman, 2009). The insignificant value for AR (2) reveals that second-order serial autocorrelation does not exist. We also employ the Hansen test to examine the correlation between the error terms and instruments. Since the Hansen test reports insignificant probabilities, our estimated instruments are valid and do not correlate with the error terms. In the results, we also control for the cross-country heterogeneity by including some relevant determinants that might impact economic growth and economic volatility.

Table 3.
Impact of Islamic Finance on Economic Growth and Volatility

	(1)	(2)
	Growth	**Volatility**
	Equation 1	**Equation 2**
L.GDP_PCG	0.1216***	
	(0.002)	
L.Volatility		0.6296***
		(0.000)
IFD Score	-0.0025	-0.0020***
	(0.303)	(0.000)
Financial Development	-0.0087***	0.0004
	(0.000)	(0.479)
Unemployment	-0.0546***	0.0218***
	(0.000)	(0.000)
Government Size	-0.1857***	0.0298***
	(0.000)	(0.000)
Trade Openness	0.0018**	0.0009***
	(0.021)	(0.006)
GCF	0.1423***	-0.0386***
	(0.000)	(0.000)
Institutional Quality	0.6622***	-0.2286***
	(0.000)	(0.000)
Tax burden	0.0342*	0.0037
	(0.065)	(0.356)

Table 3.
Impact of Islamic Finance on Economic Growth and Volatility (Continued)

	(1)	(2)
	Growth	Volatility
	Equation 1	Equation 2
Inflation Rate	-0.0666***	0.0116***
	(0.000)	(0.000)
Constant	4.5269***	-0.3735
	(0.000)	(0.279)
Observations	470	402
Instruments	71.0000	72.0000
Groups	76.0000	74.0000
Arellano-Bond:AR(1)	0.2313	0.0135
Arellano-Bond: AR(2)	0.2737	0.7343
Hansen-PV	0.1773	0.1897

P-Values in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

The findings of our study suggest that Islamic financial development has an insignificant impact on economic growth and has a negatively significant impact on volatility showing that more Islamic financial development leads to less economic volatility. The Islamic financial system does not have any balance sheet mismatches, and it appears to perform better than the conventional finance in global financial crises due to the higher liquidity reserves and better capitalization. Furthermore, the Islamic financial system uses the asset-backed mechanism and does not offer financial instruments like derivatives and nontransparent financial instruments. It offers profit and loss sharing as a buffer in financial crises. Therefore, it offers more financial stability and reduces economic volatility (Ali & Azmi, 2017; Čihák & Hesse, 2010). This implies that Islamic finance could be a tool to arrest economic volatility of an economy and countries should mix the Islamic finance principles in their operations to overcome the overall economic instability. The impact of conventional financial development on growth is included in the study with the efficiency measure of the banking sector, and the impact is negative and significant on growth. Unemployment appears to have a significant negative impact on growth and a positive impact on economic volatility; reporting a decline in unemployment would lead to an enhanced growth rate, whereas an increase in unemployment will increase the growth (Bean & Pissarides, 1993).

Government size reports a significant negative impact on economic growth and a positive sign on economic volatility. If the government spends the revenues on prospective areas, this would lead to economic development and vice versa. If the government spending is dedicated toward non-development areas, this increases economic volatility (L. K. Chu, 2020). Trade openness shows a significant positive impact on economic growth and volatility as well. Trade openness is trade liberalization, and the findings suggest that trade liberalization enhances the overall growth and brings extra volatility. Gross capital formation is found to be positively impacting economic growth and negatively impacting volatility. This suggests that countrys' investments bring increased growth and lowered volatility.

Furthermore, enhanced governance and institutional quality increase growth and decrease the overall volatility in the economy. This suggests that countries should have a strong governance structure and enhanced institutional quality, which can also benefit the overall economy. Tax collection is found to support the growth of countries in our sample. Sugegsting that if tax collected from the residents of the country is used effectively, it should bring enhanced growth. The inflation rate is found to be negatively and positively related with economic grwoth and volatility, respectivelys. Lower inflation rates encourage spending and production, leading to economic growth and increased inflation rates lead to an overall volatile economy.

Table 4 reports the results on the difference in the impact of Islamic finance on economic growth and volatility in OIC and non-OIC countries. The diagnostics are once again validating the results of our estimations. The model (1 & 2) is estimated with equation (3 & 4) respectively. The model reports the significance of the dummy interaction term, suggesting a possible difference in the relationship between Islamic financial development and economic growth and volatility. The findings suggest that Islamic finance enhances growth and lowers the volatility in OIC member countries. This might be due to the religious orientation of population in these countries. The control variables are mostly in line with earlier findings in table 3.

The findings of this research suggest that Islamic finance spurs economic growth and lowers economic instability. This is even more prominent for Muslim majority countries. Islamic finance in its essense is free from interst and thus is free from issues and toxic products that give rise to economic bubbles which might lead to crisis. The main principles of shariah complaince make it less risky and more atttractive for consumers. The asset backed nature of islamic financial products seem to be playing very important role. Therefore, economies need to expedite the transition towards Islamic finance and need to increase the share of islamic finance industry in the country. One important thing to note here is that econimic growth and instability can be seen simultaneously considerng the findings on different macroeconomic indicators such as unemployment, government size, capital formation, tax burden, institutional quality and inflation rate.

Table 4.
Impact of Islamic Finance on Economic Growth and Volatility (OIC vs Non-OIC)

	(1)	(2)
	Growth	**Volatility**
	Equation 3	**Equation 4**
L.GDP_PCG	0.2248***	
	(0.000)	
IFD Score	-0.0728***	0.0165***
	(0.000)	(0.000)
OIC	-0.5673**	-0.4987***
	(0.016)	(0.000)
IFDI Score # OIC	0.0770***	-0.0133**
	(0.000)	(0.012)

Table 4.
Impact of Islamic Finance on Economic Growth and Volatility (OIC vs Non-OIC) (Continued)

	(1)	(2)
	Growth	Volatility
	Equation 3	Equation 4
Financial Development	-0.0053***	-0.0006
	(0.001)	(0.213)
Unemployment	-0.0539***	0.0296***
	(0.000)	(0.000)
Government Size	-0.1781***	0.0423***
	(0.000)	(0.000)
Trade Openness	0.0006	0.0002
	(0.199)	(0.700)
GCF	0.1288***	-0.0415***
	(0.000)	(0.000)
Institutional Quality	0.5147***	-0.3775***
	(0.000)	(0.000)
Tax burden	0.0338***	0.0002
	(0.004)	(0.940)
Inflation Rate	-0.0581***	0.0120***
	(0.000)	(0.000)
L.Volatility		0.6778***
		(0.000)
Constant	4.7088***	-0.7886***
	(0.000)	(0.003)
Observations	470	402
Instruments	72.0000	66.0000
Groups	76.0000	74.0000
Arellano-Bond: AR(1)	0.2185	0.0181
Arellano-Bond: AR(2)	0.2022	0.8330
Hansen-PV	0.1806	0.1028

P-Values in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

4.2. Robustness Checks

To add further credence to our findings, we consider using different econometric estimators and split samples. Employing difference GMM, Table 5 presents the robustness results of table 3. The findings of our main variable, the IFD, is found to have no impact on economic growth and a negative impact on economic volatility suggesting that Islamic finance might be used as a tool to manage volatility. These results are consistent with the earlier findings in table 3.

Table 5.
Robustness: Impact of Islamic Finance on Economic Growth and Volatility

	(1)	(2)
	Growth	**Volatility**
L.GDP_PCG	-0.4522*	
	(0.066)	
IFD Score	-0.0298	-0.0016***
	(0.261)	(0.000)
Financial Development	-0.0454**	-0.0007
	(0.045)	(0.161)
Unemployment	-1.0257**	0.0286***
	(0.012)	(0.000)
Government Size	-0.9873***	0.0294***
	(0.000)	(0.000)
Trade Openness	0.0697**	0.0011***
	(0.016)	(0.000)
GCF	0.0405	-0.0389***
	(0.820)	(0.000)
Institutional Quality	7.3761**	-0.2139***
	(0.022)	(0.000)
Tax burden	-0.0030	0.0042
	(0.985)	(0.285)
Inflation Rate	-0.0592	0.0149***
	(0.430)	(0.000)
L.Volatility		0.5854***
		(0.000)
Constant		-0.7608**
		(0.039)
Observations	394	402
Instruments	61.0000	80.0000
Groups	74.0000	74.0000
Arellano-Bond:AR(1)	0.7282	0.0116
Arellano-Bond: AR(2)	0.2521	0.6880
Hansen-PV	0.0784	0.4008

P-Values in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 6 reports the results on the robustness of findings in table 5. Since the differenced GMM omits the dummy variables from the model, we split the sample into OIC and non-OIC countries and re-estimate the equation (1 & 2) with differenced GMM. Model (1 & 2) shows the results for OIC sample countries, whereas Model (3 & 4) reports on the non-OIC sample countries. The overall findings are once again found to be consistent with our earlier findings of dummy interaction terms. Results suggest that Islamic financial development enhances economic growth and lower economic volatility in OIC countries. Among non-OIC countries, however, the results suggest otherwise. The results suggest that Islamic finance brings a decline in overall economic growth and more volatility. This might be because non-OIC countries are less experienced in Islamic finance and thus are at loss from adopting Islamic finance.

Table 6.
Robustness: Impact of Islamic Finance on Economic Growth and Volatility (OIC vs Non-OIC)

	(1)	(2)	(3)	(4)
	Growth_OIC	Volatility_OIC	Growth_NOIC	Volatility_NOIC
L.GDP_PCG	-0.6229		0.0255	
	(0.179)		(0.624)	
IFD Score	0.1455***	-0.0775**	-0.7353***	0.8328**
	(0.008)	(0.024)	(0.000)	(0.039)
Financial Development	-0.1473	0.1140**	-0.0339***	0.0443***
	(0.150)	(0.011)	(0.000)	(0.002)
Unemployment	-2.6590***	0.7202	-1.6252***	1.3191
	(0.000)	(0.110)	(0.000)	(0.162)
Government Size	-0.0631	-0.0201	-1.9890***	0.8940***
	(0.782)	(0.882)	(0.000)	(0.000)
Trade Openness	0.0508	-0.0534***	0.0020	0.0272
	(0.132)	(0.003)	(0.913)	(0.461)
GCF	-0.2112*	0.0776	-0.2329***	-0.2690**
	(0.068)	(0.129)	(0.000)	(0.035)
Institutional Quality	2.7393	-0.5392	6.8475**	-7.8378
	(0.649)	(0.866)	(0.016)	(0.224)
Tax burden	0.1614	0.0005	-0.0169	0.2704**
	(0.285)	(0.995)	(0.852)	(0.031)
Inflation Rate	-0.0857	0.0225	-0.0581	-0.0735
	(0.192)	(0.278)	(0.533)	(0.604)
L.Volatility		0.6068		-0.3081
		(0.291)		(0.627)
Observations	125	109	269	219
Instruments	16.0000	16.0000	34.0000	16.0000
Groups	21.0000	21.0000	53.0000	53.0000
Arellano-Bond:AR(1)	0.4159	0.0746	0.1142	0.2130
Arellano-Bond: AR(2)	0.1523	0.5436	0.9330	0.3439
Hansen-PV	0.2522	0.3944	0.1817	0.7209

P-Values in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

V. CONCLUSION AND POLICY RECOMMENDATIONS

Islamic finance is growing rapidly around the globe, which has grabbed the attention of policy makers, practitioners, and researchers. Countries around the globe are adopting Islamic finance due to its distinct features. Yet the impact of Islamic finance on the overall economy is unclear. The existing literature is only limited to Muslim majority countries or is limited to one of the components of Islamic finance, for instance, Islamic banking in the country. we go an extra mile and explore a global sample of 82 countries to explore the impact of Islamic finance on overall economy, economic growth and volatility. Countries with higher Islamic finance development are found to have enhanced economic growth and lower economic volatility. Upon further investigation, it is found that the impact is more pronounced in Islamic countries as compared to non-Muslim countries.

Since Islamic finance's distinct features are the reason for attention among policy makers and practitioners, the results suggest that mixing Islamic financial principles with the overall financial system can greatly enhance the overall growth and tackle volatility. Therefore, policymakers and practitioners are encouraged to adopt Islamic finance as an alternative tool to achieve economic growth and less volatility. Our findings further suggest that countries with strong governance structures have overall more remarkable economic growth rates and less economic volatility, therefore, it is also recommended to have strong institutional quality. For OIC countries, it is recommended that the overall share of Islamic finance to benefit more from it and achieve enhanced economic growth.

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