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Does Islamic Bank Financing Spur Economic Growth in Bangladesh? An Application of VEC Model

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Abstract

In tandem with global rapid expansion of Islamic finance, Bangladesh has experienced phenomenal growth in Islamic banking in the backdrop of strong public demand and support for the system. The Islamic banks play key role in promoting economic growth in Bangladesh by mobilizing deposits, collecting foreign remittances and financing major economic sectors such as agriculture, industries and trade. The current paper seeks to find out the magnitude of contribution of Islamic bank financing on economic growth in Bangladesh during 1991-2020. To this end, the paper would apply Vector Error Correction Model (VECM) based on secondary time series data. It is found that Islamic finance including conventional bank finance, FDI and government expenditure affect GDP positively in the long run. However, GDP is negatively related to the growth of Islamic bank financing in the short run.

Keywords: GDP Growth, Islamic Bank Financing, Conventional bank financing, FDI, Bangladesh

JEL Classification: E01, E21, E22, E23, G21, O4

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1. Introduction

Islamic banking has emerged as a potent, popular and potential alternative sub-sector in the modern financial landscape of the world. After its humble beginning in 1960s, the world witnessed a record growth of Islamic finance in Muslim majority countries as well as in non-Muslim countries during the last four decades. Sustained growth of Islamic finance overtime across the world in terms of number of financial institutions, deposits, investment and innovations is a vivid testimony of solid performance of Islamic financial services industry (IFSI). Total assets of Islamic financial services industry (IFSI) grew to an estimated USD 3,058.7 billion by the end of 2021 in which Islamic banking remains the dominant sector with approximately 69% of the total Islamic financial assets (IFSB, 2022). The miracle success of Islamic finance within a short span of time lies in its basic principle that financial transaction must be accompanied by an underlying, legitimate, productive economic activity. Based on this spirit, the Islamic finance industry demonstrated its resilience during the global financial crisis stemmed from sub-prime mortgage problem in the USA in 2008. The Islamic financial industry has been able to prove itself as a sound and less risky alternative viable sub-sector of modern finance industry of the globe. In tandem with global rapid expansion of Islamic finance, Bangladesh, a developing Muslim majority country of South Asia has also experienced phenomenal growth in Islamic banking in the backdrop of strong public demand and support for the system.

Commercial banks are the backbone of a modern economy; no economy can go even a day without bank. Banks play crucial roles in the economy of both developed and developing countries by channeling resources from savers to investors for deployment in different sectors, smoothing payment system, managing risks, promoting domestic and international trade and working as conduit for conducting monetary policy effectively (Bhattacharya and Thakor 1993; Allen and Santomero 1997; Mishkin, F. S. 2015). As capital market is underdeveloped in Bangladesh like most developing countries, banking sector comprising both Islamic and conventional banks work as the pivotal part of financial system by playing dominating role as financial intermediary in keeping the wheel of the economy moving forward.

Bangladesh Islamic banking industry started its operation in 1983 and recorded robust growth during the last 40 years. Like conventional banking system, Islamic banks offer different types of financial services such deposit services, credit/investment facilities and trade finance. Bangladesh's Islamic banking sector belongs to 10 full-fledged Islamic banks with 1671 branches at the end of December 2021. In addition, 41 Islamic banking branches of 9 conventional commercial banks and 368 Islamic banking windows of 13 conventional commercial banks also provide Islamic financial services in Bangladesh at the end of December 2021(Bangladesh Bank, 2021). List of full-fledged Islamic Banks and Islamic banking branches and windows of conventional banks are shown in Appendix I.

Deposits and investments (financing) in Islamic banking industry reached at BDT 3931.11 billion and BDT 3534.48 billion at the end of December 2021. The market shares of deposits and investments of Islamic banks stood at 27.89% and 27.88% respectively at the end of December 2021. Islamic banks mobilize foreign remittances of BDT 759.33 billion in 2021 which accounts for 40.44% of total foreign remittances in Bangladesh. Deposits, financing and remittances of Bangladesh Islamic banks contribute greatly to promote savings, finance industrial project towards higher GDP, generate employments and reduce poverty and inequality. The number of branches is 2080 while account holders are 25.18 million in number

Given the strong relationship between the well-being of the banking sector and the development of the national economy, investigation of nexus between economic growth and Islamic bank financing would provide key insights to all stakeholders- regulators, managers, investors and customersin formulating and implementing policies to improve the role of Islamic commercial banks in promoting GDP Bangladesh. There are growing studies on relation between Islamic bank financing and economic growth in other Muslim majority countries and regions such as KSA (Jouini, 2016), Indonesia (Anwar et al., 2020), Malaysia (Kassim, 2016), Southeast Asia (Lebdaoui& Wild, 2016) and 22 Muslim countries (Abedifar et al., 2016). However, there are only few studies conducted on the link between Islamic bank financing and economic growth in Bangladesh using sophisticated modern methods with adequate sample and time span (Abduh, M., & Chowdhury, N. T., 2012; Chowdhury et al., 2018). Given this, the present study would examine the association between Islamic bank financing and economic growth in Bangladesh in order to accelerate saving-investment process for promoting higher inclusive GDP growth and generating greater employment opportunities toward poverty reduction. The current paper seeks to find out the magnitude of contribution of Islamic bank financing on economic growth in Bangladesh during 1991-2020.

2. Literature Review

There is plethora of studies on nexus between conventional finance and GDP growth in both developed and developing countries. Following this tradition, Islamic economists started to conduct research to find out the correlation between Islamic finance and GDP growth in Muslim majority countries.

Abduh, M., & Chowdhury, N. T. (2012) aims to examine the long run and dynamic relationship between Islamic banking development and economic growth in Bangladesh using the quarterly time-series data of economic growth, total financing and total deposit of Islamic banking from Q1:2004 to Q2:201. The study applies cointegration and Granger's causality method and finds that Islamic bank financing has a positive and significant relationship with economic growth both in the long and short run. The authors suggest that the government should adopt policies to develop Islamic banking for promotion of national income.

Hachicha, N., & Ben Amar, A. (2015) investigates empirically the impact of the Islamic Bank Financing on Malaysia's economic growth over the period 2000Q1-2011Q4 using co-integration and error correction model. The findings show that Malaysian GDP is not sensitive to the Islamic financing in the long run but the elasticity of the Malaysian output with respect to the different Islamic financing indicators in the short run is positive with coefficient of 0.35. The result can be analyzed that Malaysian Islamic banks offer less financing in profit-and-loss sharing (PLS)-based activities and financing more in non-participatory activities whose impact is generally, short run in nature.

Zirek, D., Boz, F. C., & Hassan, M. K. (2016) analyzes the impact of Islamic banking variables on economic growth in 14 OIC countries during 1999-2011. The author examines both short run and long run effects by employing the Panel VAR method. They find a positive and significant relationship of Islamic finance with GDP which is robust with regard to several macroeconomic control variables such as capital stock, unemployment, inflation, and government expenditure.

Zarrouk, H., El Ghak, T., & Abu Al Haija, E. (2017) aims to examine the causality between financial development in general, Islamic finance in particular and real economic growth in the United Arab Emirates (UAE) during 1990-2012. The authors employ a bivariate vector autoregressive model to document the financial development-Islamic finance-growth causal nexus and forecast growth. The paper finds the direction of causality from financial development to economic growth without reverse causality. It also reveals that the real gross domestic product (GDP) causes Islamic financial development with no reverse effect. In addition, the forecasting results indicate that the past relation has been a proxy for the future where financial development leads to better progress in real economic activity and it will likely continue to stimulate the development of Islamic finance.

Chowdhury, M. A. F., et al., (2018) attempt to investigate the association between Islamic financing principles and economic growth (EG) in Bangladesh during 1984-2014 by taking into consideration two Islamic financing principles, risk sharing and non-risk sharing separately. The study uses an Autoregressive Distributive Lags (ARDL) approach and it also employs a continuous wavelet transform approach to check robustness. The study finds that the risk sharing instruments are positively related to the EG of the country while non-risk sharing instruments are negatively related to the EG of the country.

Boukhatem, J., & Moussa, F. B. (2018) seeks to build a consistent theoretical framework for the relation of Islamic finance with economic growth and assess empirically the impact of Islamic finance on economic growth in 13 MENA countries during 2000-2014. The authors find strong relation of Islamic finance with economic growth in MENA countries. However, the positive nexus is hindered by underdeveloped institutional frameworks. The findings prescribe implementing active economic and institutional policies for promotion of Islamic finance.

Ben Mimoun, M. (2019) assesses empirically the nature of dynamic interactions between IBs' financing and the real performances in the non-oil private sector (investment and GDP) in the context of a dual banking system of Saudi Arabia. The study employs the Bounds test in the context of reparametrized autoregression distribution lags (ARDL) models to analyse both long-run and short-run dynamics governing Islamic and conventional banks' (CBs) financings on one hand and real investment and GDP in the private sector on the other hand over the 2007q1-2016q4 period. The key findings reveal a stable and significant long-run relationship between IBs' financing and real performances in the private sector. It is also found that steady-state real GDP is dissociated from conventional bank's financing in the long-run.

M. Anwar, S. et al., (2020) examines short run and long run contribution of Islamic bank to economic growth in Indonesia over the periods 2009: Q1 – 2019: Q4. The study uses cointegration analysis, autoregressive distributed lag (ARDL), vector error correction model (VECM), variance decompositions (VDCs) and impulse response functions (IRFs) to investigate the link between Islamic bank and economic growth nexus. The empirical result shows a significant relationship in the short-run and long-run between Islamic bank deposits and economic growth. The study also finds evidence of a bidirectional relationship between the Islamic bank and economic growth.

3. Data and Methodology

This sub-section focuses on methodological issues to examine the Islamic bank finance-growth nexus in Bangladesh.

3.1 Data and its Sources

We collect data on relevant variables over the period of 1991 to 2020 from World Development Indicators published by World Bank, Annual Reports of Islamic and conventional banks, and Bangladesh Bureau of Statistics. We use data since 1991 as Islamic banking starts its operation in 1983 and its business gets momentum since 1991 following adoption of market based financial reforms.

3.2 Model Specification

We specify the following regression model for determining relationships between GDP growth and Islamic bank financing (ibf), conventional bank financing (cbf), government expenditure as percent of GDP (gexgdp), foreign direct investment (fdi) and remittances (remit) during1991-2020.

gdp=f(ibf, cbf, gexgdp, fdi, remit)------------------------------(1)

By taking natural logarithm (ln) both sides we get

lngdp= $\beta_0+\beta_1$lnibf+β_2 lncbf +$\beta_3$lngexgdp+ + $\beta_4$lnfdi+ $\beta_5$lnremit+έ--------------(2)

As the model is in logarithm form, the coefficient will express the elasticity of the variables. So, we focus on the values of β.

We incorporate Islamic bank financing to private sector in our model as Bangladesh Islamic banking sector is a key part of banking sector and it contributes to GDP greatly. Few other studies also consider this variable to estimate the link between Islamic finance-GDP nexus (Abduh, M., & Chowdhury, N. T., 2012; Chowdhury et al., 2018).

We include conventional bank financing to private sector in the model as Bangladesh hinges significantly on it due to underdeveloped capital market and low level of foreign capital inflow following other studies (King, R. & Levine, R. 1993; Levine, R. 2005; Jedidia et al., 2014; Durusu-Ciftci et al., 2017).

As Bangladesh spends significant amount of funds in the Government sector, we incorporate Government expenditure in our model to capture its effects on GDP as suggested by other studies (Cooray, A., 2009; Dao, M. Q., 2012; Churchill, S. A., et al., 2015).

Bangladesh has allowed FDI to promote GDP. Rahman, A. (2015) mentioned that FDI plays a role in reducing the domestic savings gap, foreign exchange gap, BOP deficit, unemployment rate, inflation rate, and level of poverty and diversifying exports. We include FDI in the model to find out its impacts on GDP inspired by other studies(Fry, 1999;Romer, 1993;Borensztien et al., 1998;Makki and Somwaru, 2004;Kabir, 2007;Rahman, A., 2015)

Bangladesh is one of top remittance recipient countries of the world and receives about USD 20 billion annually. Remittances are used for both consumption and investment purposes which further encourages the demand for goods and services, and contributes to the gross domestic product (GDP) (Barai, 2012;Azam, M., 2015). Considering the role of remittances in affecting GDP, we incorporate remittances in the model.

3.3 Estimation Techniques

Many studies have used the Co-integration Technique and Vector Error Correction Model (VECM) to examine the finance-growth nexus (Udeaja, E. A., & Onyebuchi, O. K. ,2015;Biswas, B. P., &Masuduzzaman, M., 2016). Following other studies, we have used the Co-integration Technique and Vector Error Correction Model (VECM) to estimate the relationship between Bangladesh's GDP growth and Islamic finance including other variables during 1991-2020.

We choose the Johansen-Juselius co-integration technique as it is robust in case of dealing with variables of the same order of integration. The number of cointegrating vectors is detected through the two likelihood ratio test statistics (trace test and maximum eigen value test). Although co-integration test considers long run dynamics, it does not consider short-run disequilibrium. The Vector Error Correction Model (VECM) is applied to address short-run disequilibrium in the long-run. In the VEC Model, long run is expressed as the error correction term where the sign must be negative and significant for ensuring long-run equilibrium. The negative sign indicates that any disequilibrium occurred in the short run will converge to long-run equilibrium.

At first step of the estimation, we perform the unit root test to all variable in order to check whether related variables are stationary or not. It is essential to maintain stationary feature of time series in order to avoid spurious result. For testing the nature of time series, we also examine the order of integration to determine the subsequent long-run relationships among the variables. In our study, we have employed Augmented Dickey Fuller (ADF) test developed by Dickey and Fuller (1979) and Phillips and Perron (PP) test promoted by Phillips and Perron (PP) (1988) to check unit root of the variables.

In the next step, we proceed to run test for cointegration among the variables under study. The cointegration is applied to testing for the presence of cointegration among variables of the same order of integration through framing cointegrating equation. This helps us to find out a long-run relationship among variables. In our model, we follow Johansen (1988) and Johansen &Juselius (1990) approach to run cointegration test.

After testing for cointegration, we proceed to specify a Vector Error Correction Model (VECM) which explains the short-run relationships among the variables. With a view to maintaining the stability of equilibrium relationship, we need to have at least one of the Error Correction Terms to be significant as they indicate the coefficients for the speed of adjustment in case of any shock.

4. Empirical Results and Analysis

We use statistical software package E-views 11 to estimate parameters and conduct relevant tests in our study.

4.1 Unit Root Test Results

With a view to testing for the presence of unit root in the data using both trend and intercept and determining the integrating level of variables, we conduct ADF and PP techniques. The results of ADF and PP test are presented in Table-1 which reveals the behavior of the variables in level and first difference. The results show that all variables are non-stationary in their levels and they are stationary in first difference meaning that they are integrated of order one i.e., I(1).

Table 1: Results of Stationary Test of Variables

	Augmented Dickey-Fuller Test					Phillips-Perron test statistic					
Variables	Levels		First Diff					First Diff			Order
Name	Intercept	Trend and intercept	Intercept	Trend and intercept	Critical value at 5%	Levels	Trend and intercept	Intercept	Trend and intercept	Critical value at 5%	
lGDP	2.082156 (0.9998)	-2.112543 (0.5184)	-3.669585* (0.0100)	-4.078133* (0.0165)	-2.933158	1.898004 (0.9997)	-2.125019 (0.5118)	-3.725113* (0.0088)	-3.907298* (0.0242)	-3.520787	I(1)
lCBF	1.139977 (0.9969)	-2.286248 (0.4282)	-4.447890* (0.0014)	- 4.590953* (0.0050)	-2.933158	1.064924 (0.9962)	-2.307576 (0.4174)	-4.483510* (0.0013)	-4.590953* (0.0050)	-3.520787	I(1)
lGEX GDP	-1.001892 (0.7396)	-2.551109 (0.3034)	-4.580975* (0.0010)	-4.481194* (0.0065)	-2.933158	-0.8963 (0.7003)	-2.083881 (0.5335)	-4.520199* (0.0012)	-4.395347* (0.0079)	-3.520787	I(1)
lIBF	-0.564922 (0.8641)	-1.360583 (0.8520)	-3.656905* (0.0103)	-3.622914* (0.0446)	-2.933158	-0.523503 (0.8730)	-1.301503 (0.8581)	-3.656905* (0.0103)	-3.622914* (0.0446)	-3.520787	I(1)
lFDI	-1.746847 (0.3985)	-283108 (0.9975)	-5.214725* (0.0002)	-6.575660* (0.0000)	-2.933158	-2.480674 (0.1300)	-1.670219 (0.7394)	-8.286022** (0.0000)	-13.24690* (0.0000)	-3.520787	I(1)
lREMI T	-1.110836 (0.6983)	-1.418637 (0.8345)	-3.722484* (0.0088)	-3.764855* (0.0330)	-2.933158	-0.977697 (0.7482)	-1.122760 (0.9081)	-3.680893* (0.0097)	-3.708235* (0.0373)	-3.520787	I(1)

*Indicates 1% level of significance ** indicates 5% level of significance
Source: Computed by the authors based on statistical software package E-views 11.

4.2 Empirical Results based on Cointegration Test

After deriving the order of integration of variables i.e. I(1), we conduct cointegration test among the series. As the results of Johansen Cointegration Test are lag sensitive, we used both the AIC and SBC to determine the optimal lag length subject to the condition that residuals follow White Noise Process. Results of Johansen Cointegration test are reported in Table 2.

Table 2: Results of Johansen Cointegration Test

Cointegration Rank Test						Cointegration Max-Eigen test					
Eigenvalue	H_0	H_1	Trace statistics	0.05 Critical Value	Prob.**	Eigen value	H_0	H_1	Max - Eigen statistics	0.05 Critical Value	Prob.**
$\lambda 0$ 0.83486	$r=0$*	$r\geq 1$	143.6493	94.15	0.0000	0.83486	$r=0$*	$r>1$	54.02914	39.37	0.0007
$\lambda 1$ 0.78762	$r\leq 1$*	$r>2$	89.62018	68.52	0.0006	0.78762	$r\leq 1$*	$r>2$	46.48075	33.46	0.0010
$\lambda 2$ 0.46592	$r\leq 2$	$r>2$	43.13943	47.21	0.1292	0.46595	$r\leq 2$	$r>2$	18.81810	27.07	0.4287
$\lambda 3$ 0.33022	$r\leq 3$	$r>3$	24.32133	29.68	0.1872	0.33022	$r\leq 3$	$r>3$	12.02434	20.97	0.5453
A4 0.23361	$r\leq 3$	$r>3$	12.29699	15.41	0.1432	0.23361	$r\leq 3$	$r>3$	7.98175	14.07	0.3806

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level.
Max-eigenvalue indicates 1 cointegrating eqn(s) at the 0.05 level.
*Denotes rejection of the hypothesis at the 0.05 level.
**MacKinnon-Haug-Michelis (1999) p-values.

Results from Table 2 suggest that the null hypothesis of no cointegration among the variables is rejected at 5% level for both Trace statistics and Maximum Eigen statistics. Both trace statistics and maximum eigen value provide one cointegrating equation at 5% level of significance.

4.3 Vector Error Correction Model (VECM)

The presence of long-run relationships among the variables can be shown with the aid of Vector Error Correction Model (VECM). The long-run estimates of co-integrating vectors are shown in Table 3.

Table-3 Long-run estimation

	C	LFDI	LCBF	LGEXGDP	LIBF	LREMIT
Coefficient	-11.6561	-0.04239	-0.56597	-8.23575	-0.30164	0.280469
Std. Dev	----	-0.00592	-0.04135	-2.19183	-0.03525	-0.0398
t-statistics	----	-7.15650	-13.6878	-3.75747	-8.55631	7.04634

Note * indicates 5% levels of significant.

So long run equation is as follows

lgdp=-11.6561+0.04239lnfdi+0.56597lncbf+8.23575lngexgdp+0.30ln64libf-0.280469lre mit

It is evident from Table 3 that long-run coefficients of Islamic bank finance, conventional bank finance, FDI and government expenditure are positive and statistically significant. Clearly, Islamic finance, conventional bank finance, FDI and government expenditure affect GDP positively in the long run. However, remittances have negative impact on GDP in the long run.

The error correction term obtained from long-run equilibrium is mentioned in Table 4.

Table 4- Error Correction Term

Error correction term	Coefficient	Std. Error	t-Statistic
Ect_{t-1}	-0.268862	0.120712	-2.227292

The coefficient of error correction term that measures the speed of adjustment towards long run equilibrium is negative (-0.268862) at 1% level of significance (Table-4). This implies that the adjustment towards long run equilibrium requires 4 years when the equilibrium is disturbed due to any shock.

We require VCEM to estimate the short run dynamics among the variables. The results of the Error Correction Model are shown in Table 5. This Table reports the parsimonious regression results for nominal GDP growth and its determinants in Bangladesh in the short run during 1991-2020. It is assumed that co-integrating equations follow a linear trend and intercept.

Table 5: Error Correction Estimates

Dependent Variable Δlgdp				
	Coefficient	Std. Error	t-Statistic	Prob.
C	0.102213	0.029871	3.421818	0.0024
D(LGDP(-1))	0.418750	0.174351	2.401762	0.0252
D(LFDI(-1))	-0.018590	0.005129	-3.624433	0.0015
D(LCBF(-1))	0.035435	0.135217	0.262060	0.7957
D(LGEXGDP(-1))	-5.436649	3.591156	-1.513899	0.1443
D(LIBF(-1))	-0.140797	0.085820	-1.640616	0.1151
D(LREMIT(-1))	-0.038079	0.047145	-0.807696	0.4279
ECT(-1)	-0.268862	0.120712	-2.227292	0.0365
R^2=0.555221				
Adjusted R^2=0.413700				
F-statistic=3.923252				

The result reveals that GDP is positively associated to the growth of GDP in the past period. The relation is statistically significant.

The result shows that GDP is negatively related to the growth of FDI in the past period. The relation is statistically significant.

The empirical finding exhibits that GDP is positively related to the growth of conventional bank financing in the past period. However, it is insignificant.

It is found that GDP is negatively related to Government expenditure in the past period. However, the relation is not statistically significant.

The empirical finding exhibits that Islamic bank financing affects GDP growth negatively. However, it is significant at 10% level.

We find that the impact of remittances on GDP is negative. However, it is insignificant.

4.4. The Robustness Test

We conduct several diagnostic tests to check robustness of the Error Correction Model as shown in Table 6. These tests include Jarque-Bera test for normality, LM test for Serial Correlation and White Heteroscedasticity Test for Heteroscedasticity. The Jarque-Bera test is usually run for large data set and it matches the skewness and kurtosis of data to check whether it possesses a normal distribution. The Breusch-Godfrey (B-G) test also known as Lagrange Multiplier (LM) is used to conduct Serial Correlation test. White Heteroscedasticity Test is applied to check Heteroscedasticity in the residuals from a least square regression.

Table 6: Summary of Robustness Check/Diagnostic test

Test	GDP
Jarque-Bera Test	4.913754 (0.0857)
Breusch-Godfrey (B-G) Test (Serial correlation LM Test)	2.747336 (0.2532)
Heteroskedasticity Test (No cross term)	16.07274 (0.1879)

Probability values are given in the parenthesis.
Source: Computed by the authors applying E-Views 11.

It is evident from the results as shown in Table 6 that the VEC model has passed the diagnostic test or robustness successfully. The JB test for normality is satisfied implying that the residuals are normally distributed under null hypothesis. The result of Breusch-Godfrey (B-G) test showed no Serial Correlation. The white Heteroscedasticity Test confirms the absence of Heteroscedasticity. Thus, the results of all tests suggest that the model is well-specified and it provides consistent results.

5. Conclusion and Policy Implications

The present study examines the causal relationship between Islamic bank financing, conventional bank financing, Government expenditure, FDI, remittances and the economic growth in Bangladesh during 1991-2020. The Augmented Dicky-Fuller (ADF) test and Philips-Perron (PP) test are employed to check the stationarity. All the unit test results show that the variables are non-stationary at level but stationary at first difference. The Johansen cointegration approach is applied as the variables are I(1). Both the trace test and maximum eigenvalue test statistics indicate one cointegrating equation.

It is evident from Vector Error Correction Model that Islamic bank financing has positive and statistically significant impact on GDP in the long run. In addition, conventional bank financing, government expenditure and FDI also affect GDP positively in the long run. However, remittances have negative impact in the long run.

Now we will focus on the short run relationships. GDP is positively and significantly associated to the growth of GDP in the past period. GDP is negatively and significantly related to the growth of FDI. GDP is also negatively and significantly related to the growth of Islamic bank financing. Remittances have no significant impacts on the present value of GDP.

The estimated model has passed all diagnostic tests. It is free from the issue of autocorrelation, heteroscedasticity. The residuals of the model are normal too.

It is found that the coefficient of adjusted R-square is 0.41 implying that all explanatory variables used in the study explained 41% variations in GDP growth. The omitted variables not considered in the study can explain the remaining 59% variation in GDP growth.

The following policy implications based on the findings of the study may be derived:

i. Bangladesh needs to further develop Islamic banking as it affects GDP positively and significantly.

ii. Despite achieving marked success in case of GDP growth and poverty reduction, one-fourth people still live below poverty line in Bangladesh. For further reduction of poverty, she requires to raise GDP growth over 8%. To this end, Bangladesh needs to increase private investment-GDP ratio to over 32% from the present level of 24 percent for which financial sector, banks in particular must be efficient and well-performing for augmenting saving-investment process toward higher GDP growth and poverty elimination.

iii. More issues of Islamic Shariah compliant sukuk may be made in financing projects, infrastructure projects in particular to reduce pressure on banking sector. Recently, Bangladesh has started to issue both sovereign and corporate sukuk

iv. Our model has been able to explain 41 percent of variation of GDP in the long run in Bangladesh. This implies that there are some omitted factors which can also affect GDP. The future research on GDP growth needs to include other variables in the model such as environmental and equity issue, labor productivity, technology and innovation, infrastructure and liberal economic policy. Special attention is required to conduct research to find out factors which can promote sustainable development based on economic, social and environmental issues.

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Appendix 1

List of Islamic Banks, Branches and Windows, 2021

Bank Name / Branches	Full-fledged Islamic Banks	Islamic Banking Branches in Conventional Banks	Islamic Banking Windows in Conventional Banks
1.	Islami Bank Bangladesh Limited (384)	The City Bank Limited (1)	Sonali Bank Limited (58)
2.	ICB Islamic Bank Limited (33)	AB Bank Limited (1)	Janata Bank Limited**
3.	Social Islami Bank Limited (172)	Dhaka Bank Limited (2)	Agrani Bank Limited (17)
4.	Al-ArafahIslami Bank Limited (201)	Premier Bank Limited (22)	Pubali Bank Limited (17)
5.	EXIM Bank Limited (140)	Prime Bank Limited (5)	Trust Bank Limited (15)
6	Shahjalal Islami Bank Limited (132)	Southeast Bank Limited (6)	Bank Asia Limited (5)
7.	First Security Islami Bank Limited(201)	Jamuna Bank Limited (2)	Standard Chartered Bank (1)
8.	Union Bank Limited (104)	Bank Alfalah Limited (1)	Mercantile Bank Limited (45)
9.	Standard Bank Limited (138)	NRB Bank Limited (1)	Midland Bank Limited (2)
10.	Global Islami Bank Limited (166)		NRBC Bank Limited (179)
11.			One Bank Limited (2)
12.			United Commercial Bank (11)
13.			Meghna Bank Limited (1)
14			Mutual Trust Bank Limited(15)

Sources: Bangladesh Bank (2021)

Note: Figure in parentheses shows branches and windows of Islamic banks. **Janata Bank Limited has obtained permission for starting Islamic Banking window from Bangladesh Bank, but not yet started operation.