





Al-Marjān *Research Journal* ISSN(E): 3006-0370

ISSN(E): 3006-0370 ISSN(P): 3006-0362 al-marjan.com.pk

Impact of Endogenous Variables of Islamic Banking Performance and other Economic Variables on Economic Growth of Pakistan; An Evidence from ARDL

أثر المتغيرات الداخلية لأداء البنوك الإسلامية والمتغيرات الاقتصادية الأخرى على النمو الاقتصادي في

باكستان: دراسة تحليلية باستخدام نموذج الانحدار الذاتي للإبطاء الموزع (ARDL)

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Citation	Submission Timeline
Ali, Nasir and Dr. Muhammad Yaseen and Zain	Received: Dec 03, 2024
ul Abidin " Impact of Endogenous Variables of	Revised: Dec 17, 2024
Islamic Banking Performance and other	Accepted: Dec 27, 2024
Economic Variables on Economic Growth of	Published Online:
Pakistan; An Evidence from ARDL."Al-Marjān	Jan 05, 2025
Research Journal, 3, no.1, Jan-Mar (2025): 24– 34.	

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Al-Marjān Research Center, Lahore, Pakistan.

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Impact of Endogenous Variables of Islamic Banking Performance and other Economic Variables on Economic Growth of Pakistan; An Evidence from ARDL أثر المتغيرات الداخلية لأداء البنوك الإسلامية والمتغيرات الاقتصادية الأخرى على النمو الاقتصادي في باكستان: دراسة تحليلية باستخدام نموذج الانحدار (ARDL)

* Nasir Ali * Dr. Muhammad Yaseen * Zain ul Abidin Abstract

This study explores the relationship between Islamic banking and economic growth in Pakistan, considering Islamic bank financing and deposits as well as key economic variables such as financial development, trade openness, and inflation. The empirical test has been conducted by using quarterly data. Data is collected from the second quarter of 2006 to fourth quarter of 2021. To examine the short and long run relationship ARDL Bound and general ARDL testing is used. The research identifies a significant and positive association between Islamic banking total finance (TF), Islamic banking total deposits (TD) with economic growth (GDP) in the short term. This indicates that economic development can be boosted by financing provided by Islamic institutions. Inflation and economic growth do not correlate. The study also highlights the impact of other economic variables, such as financial development (FD) and trade openness (TO), on economic growth at various significance levels. Given these findings, the paper advocates for proactive efforts to expand Pakistan's Islamic banking and financial sector, with a focus on diversification, governmental support, and the development of a more equitable and sustainable economy.

Keywords: Islamic Banking Finance, Islamic Banking Deposits, GDP, Financial Development, Trade Openness, ARDL

Introduction

Over past decade, one of the fast-rising industries in financing sector are the Islamic banks (Reuters, 2020). This positive degree of lofty growth in Islamic banks assets attract the attention of all the stakeholders and the financial academic community year after year, especially in realm of their impact on economic growth. Lately, during past few years, this is whether the funding provided by Islamic banks contributes to economic growth or not is one of the primary issues of contention among many financial experts and the policymakers regarding the link between Islamic banks and economic growth. (Ledhem & Mekidiche, 2020).

Rabaa and Younes (2016) opined that financial institutions that run efficiently contribute significantly to economic growth. Furthermore, the banking sector's performances and

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profitability drive the economy's expansion and enable it to withstand negative shocks. Bikker & Hu, (2002); Demirgüç-Kunt & Huizinga, (1999) and have argued that there is a strong positive correlation between economic growth (GDP) and bank performance. Furthermore, Islamic banks have reportedly had a big impact on the development of the GDP and investments of Middle Eastern nations (Tabash & Anagreh, 2017).

Islamic banking has rapidly expanded throughout the world, but especially in Islamic nations, raising concerns about its economic impact. Whether it accelerates a nation's economic progress or not. This paper will examine whether deposits and financing provided by Islamic banks have benefited Pakistan's economic growth.

There are several research papers have been written on this topic, and there are a lot of debates regarding Islamic banking and Islamic finance contribution towards economic growth. Numerous scholars note the enormously significantly positive effects of Islamic banking and finance on economic development and growth (Abduh & Omar, 2012; Aminuzzaman et al., 2016; Anwar et al., 2020; Boukhatem & Moussa, 2018; Butt et al., 2023; Caporale & Helmi, 2018; Chazi et al., 2020; Gani & Bahari, 2021; Hassan et al., 2022; Jedidia & Guerbouj, 2020; Kismawadi, 2023; Ledhem & Mekidiche, 2020; Majid & Kassim, 2015; Mensi et al., 2020; Mimoun, 2019; Naz & Gulzar, 2023; Supriani et al., 2021; Tabash & Anagreh, 2017). But there are some scholars who found no or negative relationship between Islamic banking finance with economic growth (Abedifar, Hasan, & Tarazi, 2016; Al Fathan & Arundina, 2019; Muharam, Anwar, & Robiyanto, 2019).

The study's significance lies in examining the impact of Islamic banks on economic growth, a topic of growing importance in the finance sector. The fast growing of Islamic banks over the past decade has drawn the attention of stakeholders and academics, sparking debates about their economic influence. This study intends to contribute to this debate by investigating the relationship between Islamic banks and Pakistan's economic growth. The extensive list of scholars who have explored this topic shows its broad relevance, while the existence of mixed findings in the literature highlights the need for further research in this area. Overall, the study tackles a timely and significant issue within the financial and economic environment.

Literature Review

Understanding the dynamics of Islamic banking's impact on economic growth is crucial, especially in regions where Islamic finance has gained importance. As Islamic banking continues to expand globally, it offers both opportunities and challenges for economic development. The following literature review provide a thorough overview of the existing research landscape, synthesizing the diverse findings and shedding light on the factors that influence the relationship between Islamic banking and economic growth.

Imam and Kpodar (2016) use data from a sample that consists of 52 countries between 1990 to 2010. They empirically explore that how Islamic banking affects economic growth. Economic growth has been linked to Islamic banking. Furthermore, they also found that even though the Islamic banking is increasing more rapidly but there share of representation in the economy is small.

Anwar et al. (2020) use quarterly time-series data from 2009-2019. They check the Islamic bank deposits and financing relationship with economic growth by using ARDL, VECM, IRF and VDC models. The study found a long-run relationship of Islamic bank (TD, TF, IBO) with GDP.

Majid and Kassim (2015) Use data starting from the third quarter of 1997 to the second quarter of 2009. They examine how financial institutions and Islamic banking are related to economic expansion. The results of the autoregressive distributed model show a long-term





association among IBFIs and economic growth. Economic growth and the development of Islamic finance are proven to be unidirectionally correlated.

Abduh and Omar (2012) use the quarterly data from 2003Q1-2010Q2 to empirically investigate relationship of Islamic banking development with Indonesian growth. Results from bound tests indicate that Islamic finance and Indonesia's economic growth have a long-term association. The results of the ECM test also demonstrate the beneficial effects of Islamic finance development on economic growth.

Caporale and Helmi (2018) compare two groups of countries, one without Islamic baking and second having both conventional and Islamic and the causal impact of Islamic banking on credit and GDP. Found a stable and long-run relationship, without Islamic banks and nations having Islamic banks, respectively.

Mimoun (2019) empirically investigate the interaction of Islamic bank financing as well as conventional bank financing with real performances (Investment and GDP) of the Saudi nonoil private sector. The long-term association among Islamic bank financing and both investment and GDP was found significantly positive.

Elmawazini, et al., (2020) Use 2001 to 2017 for endogenous growth model to empirically explore the effect of Islamic and conventional banks on economic growth. According to the results of the Granger causality test, both conventional and Islamic banks have an influence on economic growth, but following the financial crisis, the effect of Islamic banks is also more substantial.

Ledhem and Mekidiche (2021) analyse the six banks' quarterly data to explore the connection between Islamic banking and Turkey's economic growth. The quantile regression revealed that economic growth is influenced favourably by Islamic financing.

Ullah et al., (2021) use data from 2007Q1 to 2017Q4 to analyse how Islamic banking and economic growth interact asymmetrically. Long-run NARDL results confirm the asymmetric relationship of Islamic bank deposits and finance with economic growth in Pakistan. Co-integration shows both Islamic bank deposits and Islamic bank finance boosts Pakistan's economic growth.

Supriani et al., (2021) use quarterly data from 2011Q1 to 2019Q3 to examine the connection between economic growth and finance provided by Islamic banks. The ARDL test results found significantly positive relationship of Islamic bank financing with economic growth. But in the short run, Islamic bank' financing does not appear to have any relationship.

Gani and Bahari (2021) take data from 1998 to 2017 and investigate Islamic banking and finance contributions to economic growth of Malaysia. The cointegration bound test results found a long-run relationships between variables. This shows that Islamic banking impact economic growth in the long run.

Khmous and Besim (2020) investigate how Islamic banking affects financial inclusion in Muslim-dominated MENA regions. For this purpose, a sample of 14,098 people from 14 different countries in MENA countries have been taken. Islamic banking share negatively impacts financial inclusion

Saleem et al. (2021) found a significant one-sided relationship from Islamic financial depth to economic growth/development. Both the IFD and CFD causes to grow the GDP in the long run Naz & Gulzar, (2020, 2022) discovered that the financing provided by Islamic banks and the impact of Islamic bonds (Sukuk) on real GDP domestic product were both highly positive. However, other authors demonstrate a conflict between Islamic banking/finance and economic growth. Or demonstrate that there is little correlation between Islamic banking and economic growth (Sassi & Goaied, 2011). Al Fathan and Arundina (2019) observe that Islamic stock market (ISMD) and Islamic bank development have no significant causal





association with economic growth. Muharam et al. (2019) found that Sukuk market has a negative relationship with Islamic stock market. And the Islamic stock market as well has significantly negative relation towards sukuk market in the short run in Malaysia. The share of large Islamic banks has a negative correlation with economic development (Abedifar et al., 2016).

Data and Methodology

The study investigate the short run and long run link or relationship between Islamic banking total finance and total deposits with economic growth. Pesaran et al. (2001), underlines the use of autoregressive distribute lag model to estimate the relationship, because once the relevant variable order identified, then the OLS estimate the relationship of the variables. Quarterly data have been taken from second quarter of 2006 to last quarter of 2001.

 $\ln \text{GDP}_{t} = \beta_0 + \beta_1 \ln TD_t + \beta_2 \ln TF_t + \beta_3 \ln FD_t + \beta_4 \ln TO_t + \beta_5 \ln INF_t + \mu_t$ (2)

Where lnGDP is the gross domestic product representing economic growth, lnTD is the total deposits of The Islamic banking, lnTF total finance of Islamic banking. lnFD is the financial development (total credit to private sector percentage of GDP). lnTO represent trade openness and lnINF is inflation rate of the country.

$$\begin{split} \Delta lnGDP_t &= \beta_0 + \beta_1 lnGDP_{t-1} + \beta_2 lnTD_{t-1} + \beta_3 lnTF_{t-1} + \beta_4 lnFD_{t-1} + \beta_5 lnTO_{t-1} + \\ \beta_6 lnINF_{t-1} + \sum_{i=i}^p \beta_i \Delta lnGDP_{t-i} + \sum_{j=0}^q \beta_j \Delta lnTD_{t-j} + \sum_{k=0}^r \beta_k \Delta lnTF_{t-k} + \sum_{l=0}^s \beta_l \Delta lnFD_{t-l} + \\ \sum_{m=0}^t \beta_m \Delta lnTO_{t-m} + \sum_{n=0}^u \beta_n \Delta lnINF_{t-n} + \mu_t \end{split}$$

$$(3)$$

In the equation, μt denotes the white noise or error term, and β_0 represents the constant. To determine the best lag order for each variable, the ARDL model calculates multiple regression estimates (p+1). The Akaike information criterion (AIC) is employed for selecting the optimal lag order. When conducting unit root tests, the criteria that satisfy most of the conditions are applied. In autoregressive distributed lag (ARDL) bound testing for co-integration, the null hypothesis assumes that there is no long-term link between the variables.

$$Ho = \beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = \beta_6 = 0$$

$$H1 = \beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4 \neq \beta_5 \neq \beta_6 \neq 0$$

In autoregressive distributed lag (ARDL) bound testing for co-integration, the null hypothesis assumes that there is no long-term link between the variables. Two asymptotic critical bounds are used to investigate co-integration: a lower bound and an upper bound. The lower bound corresponds to I(0) in the first scenario, whereas the higher bound corresponds to I(1) in the second. The presence of a long-term link, as well as the rejection of the null hypothesis of no co-integration, is dependent on whether the F-statistic value exceeds the upper bound. When the F-statistic value falls below the lower bound, support for the null hypothesis of no co-integration is suggested. When the F-statistic falls between the lower bound I(0) and the upper bound I(1), the model is said to be valid.

Results and Discussions

Unit root testing for stationarity must be done prior to entering ARDL. We employ Phillips Perron unit root testing and Augmented Dickey Fuller (ADF) tests. After conducting unit root test then we can decide whether we can go for ARDL or not.





Table 1

This table shows unit test results: Where LnGDP is Economic Growth, lnTD and lnTF represent total deposits and Total Financing of Islamic banks. lnFD represent financial development, lnTO trade openness and lnINF inflation.

Variables	A	ADF Test	PP Test		
v allables	At Level	1st Difference	At Level	1st Difference	
lnGDP	-1.657	-3.703***	-2.027	-3.518***	
lnTD	-2.180	-4.190***	-5.522***	-11.637***	
lnTF	-0.219	-2.688*	-0.914	-10.336***	
lnFD	-1.946	-3.051**	-1.404	-2.906*	
lnTO	0.981	-3.407**	1.770	-3.720***	
lnINF	-1.838	-3.557**	-1.391	-3.708**	

Note: The *** and ** represents the 1% and 5% significance level.

Table 1 shows that all the variables lnGDP, lnTD, lnTF, lnFD, lnTO and lnINF are not stationary at level and became stationary after first difference. lnGDP and lnTD are stationary after first difference at 1% level and lnTD, lnTO and lnINF at 5% level according to Dickey Fuller Test. lnTF is stationary after first difference at 10% and 1% level according to ADF and Phillips Perron tests.

The ARDL autoregressive distributed lag bound testing is used to empirically investigate the relationship of Islamic banking total deposits (InTD) and total finance (InTF) with Pakistan economic growth (InGDP). The model also contained some macro-economic variables like financial development (InFD), trade openness (InTO) and inflation (InINF). Pesaran et al. (2001), underlines the use of autoregressive distribute lag model to estimate the relationship, because once the relevant variable order identified, then the OLS estimate the relationship of the variables. One of the best merit of the use of ARDL is that, it encompasses variables at different levels, either the variables are stationary at leave I(0) or at first difference I(1) or mix of I(0) and I(1) but not I(2). For ARDL dependent variable must be at I(1). ARDL clearly distinguished the dependent variable from independent. The modification of the order of different lags variables to correct the serial correlation presence is also a plus point of autor regressive distribute lag model (ARDL) (Pesaran et al., 1999).

Table 2

This table shows the optimal lag length selection criteria.

Sample				No of				
:	2007Q3-	2021Q4				Obs		58
lag	LL	LR	df	р	FPE	AIC	HQIC	SBIC
0	272.166				4.20E-12	-9.17813	-9.0951	-8.96498
1	841.399	1138.5	3 6	0.000	4.30E-20	-27.5655	-26.9843	-26.0734
2	955.817	228.84	3 6	0.000	3.0e-21*	-30.2695*	- 29.1902*	- 27.4986*
3	980.034	48.435	3 6	0.081	5.00E-21	-29.8633	-28.2858	-25.8134
4	1024	87.941 *	3 6	0.000	4.70E-21	-30.1381	-28.0624	-24.8094

The Akaike information criterion (AIC) is considered for the optimal lag selection for the regression. lag 2 is the optimal lags according to Akaike information criteria (AIC) and also for FPE, HQIC and SBIC.





Table 3

This table shows ARDL bound test results: Where lnGDP is Economic Growth, lnTD and InTF represent total deposits and Total Financing of the Islamic banks. InFD represent $\frac{\text{financial development, InTO trade openness and InINF inflation.}}{\text{Model for Estimation}} \frac{F_{GDP}(lnDP_t/lnTD_t, lnTF_t, lnFD_t, lnTO_t, lnTF_t)}{F_{GDP}(lnDP_t/lnTD_t, lnTF_t, lnFD_t, lnTO_t, lnTF_t)}$

Model for Estimation

Lag Length	F-statistics	Lower-upper bound at 1% [I_0] [I_1] L_1 L_1	Lower-upper bound at 5% [I_0] [I_1] L_05 L_05	Lower-upper bound at 7.5% [I_0] [I_1] L_025 L_025
2	2.546	3.41 - 4.68	2.62 - 3.79	2.96 - 4.18

Table 3 shows the F statistic, which is used in the ARDL (Auto Regressive Distributed Lag Model) bound test for cointegration. This statistic is an important indicator of the link between the variables under consideration. If the F statistic value falls below the lower bound I(0), it signifies that the null hypothesis, suggesting the absence of cointegration, remains valid. In other words, there is no compelling evidence to suggest a long-term relationship between the variables. Conversely, when the F statistic value exceeds the upper bound I(1), it indicates the presence of a long-run relationship or cointegration among the variables.

Table 3 results shows that the F statistic value 2.546 is smaller than the lower bound I(0) 3.41, 2.62, and 2.96 at significant levels of 1%, 5%, and 7.5%, implying a lack of cointegration between the variables. Instead, there exists only a short-term association between them. As a result, the null hypothesis asserting the absence of cointegration cannot be rejected.

Table 4

This table shows ARDL test results with optimal lag (2) according to AIC criteria: Where InGDP is Economic Growth, InTD and InTF represent total deposits and Total Financing of the Islamic banks. lnFD represent financial development, lnTO trade openness and lnINF inflation

mination.					
Sample:		2007q1 - 2021q4		R2	0.999
No of obs	bs 60		Adjusted R2	0.998	
Long likeliho	bod	257.01879			
Dependent V	ariable =	lnGDP			
Varia	bles	Coefficient	Std.Err	t-statistics	p-value
	L1.	1.5224	0.1087	14.0000	0.0000
IIIGDP	L2.	-0.7113	0.0982	-7.2400	0.0000
		0.0413	0.0239	1.7300	0.0910
lnTD	L1.	0.0222	0.0172	1.2900	0.2030
	L2.	-0.0418	0.0219	-1.9100	0.0630
		0.0051	0.0119	0.4200	0.6740
lnTF	L1.	0.0299	0.0139	2.1500	0.0370
	L2.	0.0065	0.0137	0.4700	0.6410
		-0.6199	0.0688	-9.0100	0.0000
lnFD	L1.	0.8862	0.1250	7.0900	0.0000
	L2.	-0.3947	0.0857	-4.6000	0.0000
1		0.3700	0.0743	4.9800	0.0000
In 10	L1.	0.4974	0.1259	-3.9500	0.0000





2.5979 0.8682 2.9900 0.0050 cons In table 4 reveal that Islamic banks total financing (InTF) have a shor-run positive association with economic growth at 5% confidence level at lag 1. Signifying that Islamic bank total financing positively influence Pakistan economic growth (lnGDP) in short run. This favorable impact of Islamic banking finance aligns with the findings of previous studies by (Ledhem & Mekidiche, 2021; Majid & Kassim, 2015; Mimoun, 2019; Naz & Gulzar, 2020; Saleem et al., 2021; Supriani et al., 2021). Moreover, total Deposits (InTD) exhibit a noteworthy positive significant association with economic growth at lag 0 and 2 with a significant level of 10%. other economic variables like lnFD and lnTO also have significant relationship with economic growth at 1%, 5% and 10% significant level. Trade Openness (lnTO) have significantly positive relationship with economic growth (lnGDP). This positive relationship also report by many researchers like (Jedidia & Guerboui, 2020; Naz & Gulzar, 2020; Supriani et al., 2021). Inflation is the only variable which have insignificant relationship with GDP in all the three lags. This may be due to changes in inflation does not have an immediate impact on GDP due to a time lag involved. This means that when the inflation rate changes, it may take some time before the change has an impact on an economy's Gross Domestic Product (GDP).

Graph-2



Graph-2 shows that the values falls outside the critical bands at 5% level. This happens nearly 2013-14.





Table 6

Statistical output for sensitivity test

Durbin Watson	Breusch-Pagan	White's Test	Ramsey RESET test
1.9079	0.1161	0.4392	0.2204

The probability values given in the parenthesis.

The table 6 shows that the model is well specified. Durbin Watson test probability value 1.9079 which shows no autocorrelation. The p-value 0.1161 of Breusch-Pagan test also do not discard the null hypothesis of having no serial correlation. There is no heteroscedasticity found according to white's test and null of hypothesis of homoscedasticity sustained. The p-value of Ramsey reset test show that there are no omitted variables bias.

Conclusion

The research paper thoroughly examines the relationship between total deposits and total financing from Islamic banking and Pakistan's economic growth. This investigation encompasses a wide range of economic factors, including financial development, trade openness, and inflation. The study reveals a strong and notable connection between Islamic finance and economic growth. Specifically, Islamic bank total financing (TF) is observed to exhibit a short-term positive influence on economic growth, reaching statistical significance at the 10% confidence level with lag of 1. Furthermore, the study shows a positive link between Islamic banking's total deposits and economic growth. The findings highlight the substantial role played by Islamic banking in driving Pakistan's economic development. The principles of risk-sharing, ethical investments, interest-free finance, and a long-term perspective in Islamic finance contribute to a positive relationship with economic growth by fostering financial stability, and responsible allocation of capital. Additionally, several other economic factors, including trade openness (TO) and financial development (FD), show favourable relationship with economic growth at various degrees of statistical significance. Considering these findings, the research underscores the imperative for continued efforts aimed at promoting the expansion of the Islamic banking and finance industry in Pakistan.

Recommendations

Policymakers should actively endorse the expansion of Pakistan's Islamic banking and finance sector, driven by its substantial positive impact on economic growth. This expansion can be fostered further by diversifying Islamic financial products and services to cater to a wider population, thereby fuelling economic growth. Additionally, employing policies that promote trade openness and bolster the financial sector can complement the economic growth facilitated by Islamic banking. Furthermore, by capitalizing on Islamic finance's alignment with ethical and sustainable principles, Pakistan can work towards accomplishing broader economic, social, and environmental objectives, ultimately contributing to a more inclusive and sustainable economy.

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