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Banking Efficiency and Financial Growth Nexus: A Case of Islamic Banking in Pakistan

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ABSTRACT

Measuring the banking efficiency and its impact on financial growth is a burning issue in the modern era of financial management. Due to an increase in policy rates in Pakistan, the banking sector has developed financial innovations that has enhanced the competition in the banking industry. The research aims to observe the nexus between banking efficiency and financial growth, further the present study identifies the determinants of banking efficiency in Pakistan. The present study used secondary data of twelve Islamic banks from 2011 to 2022. The study shows that lagged credit risk and trade have a positive impact on cost-to-asset ratio, while lagged interest rate has a negative impact. The lagged total assets of Islamic banking share have significant negative impact on bank deposits and private credit. Further the study concludes that Islamic banking system has positive impact on growth but negative impact on the poverty gap. However, the lagged Islamic banking share of gross loans negatively impacts the poverty gap and headcount. Islamic banking can help to promote economic growth by increasing bank deposits and private credit.

Keywords: Banking Efficiency, Financial Development, Economic Indicators, Interest Rate, Bank Deposits, Private Credit, Cost to Asset Ratio, Cost to Income Ratio.

Introduction

Efficiency in the banking sector has been the most dynamic competitive feature in Pakistan's financial development during the previous decade. Deposits for term deposits, savings accounts, and current accounts are all accepted by traditional banks on the basis of obligation.

The Islamic Banking Industry (IBI) experienced a record increase in assets, with an additional Rs

836 billion added from April to June 2022, bringing the total to Rs 6,781 billion by the end of June 2022. During the same quarter, net investments and financing grew by 470 billion and 269 billion rupees, respectively. To achieve Rupees 4856 billion at the end of June 2022, IBI deposits experienced a remarkable gain of Rupees 610 billion. IBI has increased its assets and deposits by 41.4% (Rs 1984 billion) and 27.1% (Rs 1034 billion), respectively, by the end of June 2022. Islamic banking assets and deposits made up 19.5% and 20.5% of all banking industry assets and deposits, respectively, as of June 2022. In addition, IBI's market in the banking industry advances grew from 24 per cent to 27.2 per cent at the end of June 2022 (State Bank of Pakistan, 2022).

Islamic law forbids interest-based banking. Islam has provided guidelines for the organization and operation of banks. Although interest is prohibited, the fundamental rule of the financial system is founded on Islamic teachings and employs the trade and profit strategy (Yazdan & Hossein, 2012). As Islamic banking continues to advance, it has established itself as a viable alternative to the traditional financial system and is already outpacing it. The growing financial system has been quickly developing in both Muslim and non-Muslim nations for last two decades. It has operated in more than 60 nations worldwide and has rapidly expanded in size and population. According to bankers and industry professionals, By the middle of the next century, 50% of deposits in Islamic countries will be held by Islamic banks (Mohammed et al., 2012).

To the best of our knowledge, there is no study that empirically estimates the relationship between banking efficiency and financial growth nexus for Islamic banking in Pakistan. In order to fill the gap in the literature, the present study focuses on the connection between Pakistan's financial sector expansion and Islamic banks' effectiveness in banking. The study aims to determine whether influential Islamic banks may aid in Pakistan's financial sector's expansion and, in turn, foster economic progress. The findings of the present study are crucial for policymakers, regulators, and practitioners in the banking industry, as they provide insights into the contribution of Islamic banking to Pakistan's financial development. The research can also help investors and researchers to understand the Islamic banking system and its effect on economic growth. The study's overall findings have important implications for Pakistan's financial industry and the growth of Islamic banking.

Literature Review

Saeed et al. (2020) used the panel ARDL technique to analyze the connection between five pure Islamic banks in Pakistan and economic expansion from 2006 to 2016. The research demonstrated a beneficial and long-lasting connection between Islamic banks and economic expansion. The results of the study showed, that there is a positive correlation between banks and economic expansion. The study further showed that pure Islamic banks had a positive impact on Pakistan's economic growth.

Abrar et al. (2021) examined the rank of microfinance institutes (MFIs) in both macro and micro contexts. The study evaluated the influence of several issues, including financial development, economic growth, income inequality, poverty, and the effectiveness of conventional commercial banks. According to the study, MFIs were essential in boosting the economy's overall allocation of savings and credit, fostering greater access to financial services for individuals and businesses. Additionally, their participation improved the economic welfare by lowering poverty and income inequality levels. Additionally, the presence of MFIs increased competition in the banking industry, which forced conventional commercial banks to increase their levels of efficiency.

Sekmen (2021) compared the impact of Islamic banking and traditional banking's on economic growth. The study applied Autoregressive Distributed Lag Model (ARDL) on quarterly data from 2005 Q4 to 2018 Q4. The study showed that conventional banking had a more significant influence on economic growth (0.106%) compared to Islamic banking (0.016%). The authors recommended that there was a need to develop more Islamic financial instruments to enhance the connection between Islamic finance and economic growth.

Sakinah et al. (2022) explored short and long-term relationships between Islamic financing and the Indonesian economy. The study applied monthly data from 2011 to 2020 and estimated Vector Error Correction Model (VECM). The study concluded that there was a positive connection between Islamic finance and Indonesia's GDP.

Azwar et al. (2022) investigated the connection between income inequality and the growth of Indonesia's Islamic financial system from 2000 to 2020. They used Error Correction Mechanism (ECM) and Auto Regressive Distributed Lag (ARDL) methods to examine short- and long-term relationships and employed variance decomposition (VDC) to identify causal links. The results revealed a long-term relationship between income inequality, inflation, and Indonesian economic evolution. However, Islamic financial development did not significantly impact income inequality

over the entire period. Nevertheless, short-term fluctuations in income inequality showed a positive and statistically significant response (10%) to Islamic financial development.

Shawtari et al. (2023) analyzed the connection between economic growth in the non-hydrocarbon and hydrocarbon areas. They evaluated Islamic banking's function in this regard as well. The study applied autoregressive distributed lag cointegration techniques on quarterly data from 2007 to 2019. The study showed a compelling indication of long-lasting connection between total financial growth and economic growth. Additionally, a significant long-term relationship between financial development and the nonhydrocarbon sector suggested that a robust financial industry positively impacted nonhydrocarbon economic activity.

Data and Methodology

The data set for this research consists of financial firms operating in Pakistan from 2011 to 2022. The data were gathered from five full-fledged Islamic banks and 7 Islamic banking branches of conventional banks. The data were collected from audited statements of the State Bank of Pakistan, annual reports of banks, and other relevant publications. Panel regression data analysis was employed to examine the impact of Islamic banking variables on financial development, banking efficiency, and economic indicators.

Finance-growth nexus

The study estimated the following model

$$\text{Finance\_Growth\_Nexus}_{j,t} = \alpha_0 + \beta_1 IB\_Share_{j,t-1} + \beta_2 Inflation_{j,t-1} + \beta_3 Interest\_rate_{j,t-1} + \beta_4 Trade_{j,t-1} + \beta_5 EFI_{j,t-1} + \varepsilon_{j,t} \quad \ldots\ldots (1)$$

The subscript j indicates individual countries, and the subscript t indicates the time in years. The primary variable of interest is the proportion of Islamic banks in a nation (IB_Share). It can be computed in two different ways: as a percentage of the total assets (gross loans) of Islamic banks in a nation or as a percentage of Islamic banks' assets (gross loans) (gross loans) of Islamic banks. The table 1 showed the definition of the variables used in the analysis.

Table 1: Variables Definition

Variable	Definition
Share of Islamic Banking	

IB_Share_TA (%)	The total assets of an Islamic bank for a specific year are divided by the bank's total assets over multiple years
IB_Share_GL (%)	The gross loans of an Islamic bank for a specific year are divided by the bank's gross loans over multiple years
Finance-Growth Nexus	
Bank Deposits (%)	The GDP percentage of deposits held by Islamic banks
Private Credit (%)	GDP percentage of private credit
Growth (%)	GDP per capita growth rate annually
Gini (%)	The measurement of income inequality is done using the Gini coefficient
Income Highest (%)	Income distribution as a percentage to population groupings, shown by the top decile (10%)
Income Lowest (%)	Income distribution as a percentage to demographic segments represented by the lowest decile (10%)
Poverty Gap (%)	The intensity of poverty at the global poverty line
Poverty Headcount (%)	Percentage of people living in rural areas that are below the poverty line
Country-Level Factors	
Inflation (%)	The GDP deflator calculates the annual inflation rate
Interest Rate (%)	Rate at which banks pay interest on savings deposits
Trade (%)	The total imports and exports of a nation expressed as a percentage of GDP
Economic Freedom Index	The index calculates how much freedom is there in a nation
Bank-Level Factors	
Cost to Assets Ratio (%)	Cost of overhead as a percentage of total assets
Cost to Income Ratio (%)	Cost of overhead as a percentage of total revenues
Size	Natural logarithm of the total assets
Capital (%)	The ratio of equity capital to total assets
Credit risk (%)	The ratio of total advances to total assets
Concentration	A Hirschman-Herfindahl index is determined by adding together each bank's squared market share

Efficiency of Islamic banks

The following regression model is used to test the impact of Islamic banking on the efficiency of banks.

$$Efficiency_{i,t} = \alpha_i + \beta_1 IB\_Share_{j,t-1} + \beta_2 \sum Bank\_level\_Control_{j,t-1} + \beta_3 \sum Macroeconomics\_Factors_{j,t-1} + \varepsilon_{i,t} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

where bank I at time t is indicated by the subscripts i and t, respectively. Two other measurements are used to determine the efficiency of Islamic banks.

Descriptive Statistics

The mean and standard deviation for Islamic banking's share of total assets is 8.33 ± 6.74 respectively that indicates a considerable variation. Similarly, the statistics for Islamic banking's share of gross loans show a mean standard deviation of 8.33 ± 6.97. The descriptive statistics indicates that a substantial share of Islamic banking exists in total assets as well as share of gross loans, which indicates that the Islamic banking is contributing significantly in the financial development of the economy.

Table 2: Descriptive Statistics.

	Mean	Median	Max	Min	Std. Dev.	Skewness	Kurtosis	Observations
Share of Islamic Banks								
IB_SHARE_TA (%)	8.33	6.96	40.42	0.11	6.74	1.40	5.92	144
IB_SHARE_GL (%)	8.33	6.71	40.76	0.07	6.97	1.34	5.97	144
Finance-Growth Nexus								
Bank deposits (%)	32.87	32.88	36.91	28.79	2.00	-0.03	3.02	144
Private Credit (%)	15.91	15.55	18.00	14.60	0.96	0.71	2.59	144
Growth (%)	2.68	3.15	6.00	-3.00	2.29	-1.01	3.77	144
Gini (%)	29.80	29.55	31.30	29.30	0.61	1.15	3.34	144
Income_highest (%)	25.82	25.53	27.00	25.30	0.48	1.19	3.50	144
Income_lowest (%)	3.94	4.20	4.30	1.15	0.85	-3.00	10.03	144
Poverty gap (%)	5.32	5.00	9.60	2.40	2.18	0.49	2.31	144
Poverty headcount (%)	25.47	23.10	36.30	21.90	4.73	1.19	3.02	144
Country-Level Factors								
Inflation (%)	8.92	8.20	19.60	3.80	4.47	0.90	3.28	144
Trade (%)	29.01	28.28	33.33	24.70	2.85	0.20	1.73	144
Economic Freedom Index (%)	54.17	55.00	56.00	49.00	1.91	-1.61	4.80	144
Bank-Level Factors								
Cost to asset ratio (%)	2.49	2.42	5.54	0.38	0.94	0.35	3.91	144
Cost to income ratio (%)	35.59	35.63	74.60	7.05	14.09	0.22	2.89	144
Size	8.01	8.06	9.41	6.48	0.63	0.02	2.60	144
Capital (%)	6.71	6.49	15.29	1.76	2.32	0.57	3.75	144
Credit risk (%)	45.34	44.60	82.14	4.23	16.24	-0.22	2.57	144
Concentration (%)	2212.58	2152.69	2718.05	1881.18	261.71	0.50	2.04	144

Correlation Matrix

Islamic banking share to total asset has significant positive correlation with bank deposits, growth, interest rate, and negatively associated with Gini, highest income, poverty gap, poverty headcount, trade, economic freedom index, cost to asset ratio, cost to income ratio. Islamic banking share to general loans has significant positive correlation with bank deposits, growth, and interest rate, however, it has significant negative correlation with Gini, highest income, poverty gap, poverty headcount, trade, economic freedom index, cost to asset ratio, cost to income ratio at $p<0.01$ (as shown in table 3).

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Table 3: Correlation Matrix.

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
IB_SHARE_TA (1)	1															
IB_SHARE_GL (2)	0.95**	1														
Bank deposits (3)	0.44**	0.47**	1													
Private credit (4)	-0.10	-0.09	-0.60**	1												
Growth (5)	0.23**	0.24**	-0.22**	0.07	1											
Gini (6)	-0.44**	-0.45**	-0.26**	-0.35**	0.18*	1										
Income_highest (7)	-0.33**	-0.33**	-0.19*	-0.36**	0.17*	0.97**	1									
Income_lowest (8)	0.04	0.00	-0.17*	0.23**	-0.08	-0.28**	-0.31**	1								
Poverty gap (9)	-0.80**	-0.80**	-0.68**	0.52**	-0.26**	0.19*	0.07	0.07	1							
Poverty headcount (10)	-0.63**	-0.65**	-0.79**	0.64**	-0.25**	0.05	-0.06	0.19*	0.94**	1						
Inflation (11)	0.15	0.10	-0.28**	0.39**	-0.15	-0.28**	-0.21*	0.36**	0.15	0.35**	1					
Interest rate (12)	0.41**	0.37**	-0.06	0.52**	0.00	-0.42**	-0.41**	0.38**	-0.12	0.10	0.42**	1				
Trade (13)	-0.35**	-0.37**	-0.65**	0.72**	-0.12	-0.23**	-0.38**	0.40**	0.67**	0.80**	0.21*	0.51**	1			
Economic freedom index (14)	-0.75**	-0.74**	-0.10	-0.28**	-0.50**	0.43**	0.36**	0.17*	0.54**	0.34**	-0.14	-0.53**	0.04	1		
Cost to asset ratio (15)	-0.41**	-0.37**	-0.28**	0.20*	-0.06	0.13	0.08	0.02	0.39**	0.36**	0.00	-0.03	0.29**	0.22**	1	
Cost to income ratio (16)	-0.33**	-0.27**	-0.04	-0.23**	0.14	0.36**	0.33**	-0.25**	0.13	-0.01	-0.26**	-0.46**	-0.20*	0.25**	0.76**	1

****. Correlation is significant at the 0.01 level (2-tailed), *. Correlation is significant at the 0.05 level (2-tailed).**

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Results and Discussions

Impact of Islamic banking on financial development

Table 4: Impact of Islamic banking on financial development

	Ordinary Least Square Regressions				Fixed Effects Regressions			
	(1) Bank Deposits	(2) Private Credit	(3) Bank Deposits	(4) Private Credit	(5) Bank Deposits	(6) Private Credit	(7) Bank Deposits	(8) Private Credit
IB_SHARE_TA (-1)	0.07*** (-0.07)	0.00* (-0.04)			0.07*** (-0.07)	0.00* (-0.04)		
IB_SHARE_GL (-1)			0.72 (-0.01)	0.00* (-0.04)			0.73 (-0.01)	0.00* (-0.04)
Inflation (-1)	0.00* (-0.13)	0.00* (0.09)	0.00* (-0.13)	0.00* (0.09)	0.00* (-0.13)	0.00* (0.09)	0.00* (-0.13)	0.00* (0.09)
Interest Rate (-1)	0.00* (0.83)	0.00* (-0.13)	0.00* (0.70)	0.00* (-0.13)	0.00* (0.83)	0.00* (-0.13)	0.00* (0.71)	0.00* (-0.13)
Trade (-1)	0.00* (-0.59)	0.00* (0.06)	0.00* (-0.51)	0.00* (0.06)	0.00* (-0.60)	0.00* (0.06)	0.00* (-0.51)	0.00* (0.05)
Economic Freedom Index (-1)	0.05** (-0.26)	0.00* (-0.62)	0.40 (-0.12)	0.00* (-0.62)	0.06*** (-0.27)	0.00* (-0.62)	0.42 (-0.12)	0.00* (-0.63)
Constant	0.00* (60.76)	0.00* (48.23)	0.00* (50.86)	0.00* (48.41)	0.00* (61.38)	0.00* (48.59)	0.00* (51.02)	0.00* (48.88)
R^2	0.53	0.91	0.51	0.91	0.53	0.91	0.51	0.91
Adj. R^2	0.51	0.91	0.49	0.90	0.51	0.91	0.49	0.90
Prob. (F-statistic)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

* Sig Level (p<0.01), ** Sig Level (p<0.05), *** Sig Level (p<0.10). The robust t statistics are reported in the parenthesis

The table 4 demonstrates the impact of Islamic banking on financial development using regression model. In both cases, Islamic banking's share of assets, inflation, trade, and economic freedom negatively affect bank deposits, while interest rates have a positive impact. Islamic banking's share of gross loans, inflation, trade, and economic freedom negatively affect bank deposits while, interest rates has positive impact. The similar relationship was found for private credit.

Impact of Islamic Banking on Economic Welfare

Table 5 presents the influence of Islamic banking on economic welfare using regression model. The results indicate that Islamic banking's share of total assets and trade positively affects GDP growth, while the interest rate has a negative impact. Trade and economic freedom positively impact income inequality and high-income levels, but the interest rate has a negative effect. Inflation and economic freedom negatively affect low-income levels, while the interest rate and trade have a positive impact. Inflation and trade positively influence poverty measures, while Islamic banking's total asset share and the interest rate negatively affect them. Similar results are observed when considering Islamic banking's share of gross loans, which also negatively impacts poverty measures. Table 6 demonstrates results of fixed effects regression model.

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Table 5: Impact of Islamic Banks on Economic Welfare using OLS

Ordinary Least Squares Regressions												
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**	**(11)**	**(12)**
	GDP growth	**GINI index**	**Income highest**	**Income lowest**	**Poverty gap**	**Poverty headcount**	**GDP growth**	**GINI index**	**Income highest**	**Income lowest**	**Poverty gap**	**Poverty headcount**
IB_SHARE_TA (-1)	0.01* (0.17)	0.56 (0.01)	0.49 (0.01)	0.56 (-0.01)	0.00* (-0.21)	0.00* (-0.19)						
IB_SHARE_GL (-1)							0.72 (0.02)	0.51 (-0.01)	0.73 (0.00)	0.75 (0.00)	0.00* (-0.19)	0.00* (-0.17)
Inflation (-1)	0.16 (0.05)	0.63 (-0.01)	0.61 (0.00)	0.00* (-0.09)	0.00* (0.12)	0.00* .(0.36)	0.15 (0.06)	0.60 (-0.01)	0.60 (0.00)	0.00* (-0.09)	0.00* (0.11)	0.00* (0.35)
Interest Rate (-1)	0.00* (-1.48)	0.00* (-0.27)	0.00* (-0.19)	0.00* (0.37)	0.00* (-0.32)	0.00* (-0.53)	0.00* (-1.17)	0.00* (-0.22)	0.00* (-0.16)	0.00* (0.36)	0.00* (-0.37)	0.00* (-0.56)
Trade (-1)	0.00* (0.46)	0.00* (0.13)	0.02** (0.06)	0.04** (0.06)	0.00* (0.30)	0.00* (0.88)	0.05** (0.24)	0.00* (0.10)	0.11 (0.04)	0.03** (0.07)	0.00* (0.33)	0.00* (0.89)
Economic Freedom Index (-1)	0.52 (0.14)	0.00* (0.34)	0.00* (0.26)	0.00* (-0.45)	0.64 (-0.04)	0.43 (-0.11)	0.28 (-0.24)	0.00* (0.29)	0.00* (0.22)	0.00* (-0.44)	0.98 (0.00)	0.51 (-0.09)
Constant	0.47 (-9.57)	0.01* (9.15)	0.00* (11.00)	0.00* (25.14)	0.87 (0.85)	0.43 (6.82)	0.24 (16.48)	0.00* (12.75)	0.00* (13.56)	0.00* (24.40)	0.75 (-1.82)	0.52 (5.82)
R-squared	0.39	0.43	0.32	0.70	0.85	0.89	0.35	0.43	0.32	0.70	0.83	0.89
Adjusted R-squared	0.37	0.41	0.29	0.69	0.85	0.89	0.33	0.41	0.29	0.69	0.83	0.89
Prob(F-statistic)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

* Sig Level (p<0.01), ** Sig Level (p<0.05), *** Sig Level (p<0.10). The robust t statistics are reported in the parenthesis

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Table 6: Impact of Islamic Banks on Economic Welfare using Fixed Effect Regression

Fixed Effects Regressions												
	(1) **GDP growth**	**(2)** **GINI index**	**(3)** **Income highest**	**(4)** **Income lowest**	**(5)** **Poverty gap**	**(6)** **Poverty headcount**	**(7)** **GDP growth**	**(8)** **GINI index**	**(9)** **Income highest**	**(10)** **Income lowest**	**(11)** **Poverty gap**	**(12)** **Poverty headcount**
IB_SHARE_TA (-1)	0.01* (0.18)	0.57 (0.01)	0.50 (0.01)	0.57 (-0.01)	0.00* (-0.22)	0.00* (-0.20)						
IB_SHARE_GL (-1)							0.72 (0.02)	0.52 (-0.01)	0.73 (0.00)	0.76 (-0.01)	0.00* (-0.20)	0.00* (-0.18)
Inflation (-1)	0.176 (0.05)	0.64 (-0.01)	0.62 (0.00)	0.00* (-0.09)	0.00* (0.12)	0.00* (0.36)	0.17 (0.06)	0.62 (-0.01)	0.61 (0.00)	0.00* (-0.09)	0.00* (0.11)	0.00* (0.35)
Interest Rate (-1)	0.00* (-1.50)	0.00* (-0.27)	0.00* (-0.19)	0.00* (0.37)	0.00* (-0.30)	0.00* (-0.51)	0.00* (-1.17)	0.00* (-0.22)	0.00* (-0.16)	0.00* (0.36)	0.00* (-0.35)	0.00* (-0.54)
Trade (-1)	0.00* (0.47)	0.00* (0.13)	0.02** (0.07)	0.06*** (0.06)	0.00* (0.29)	0.00* (0.87)	0.07*** (0.24)	0.01* (0.10)	0.14 (0.04)	0.04** (0.07)	0.00* (0.31)	0.00* (0.87)
Economic Freedom Index (-1)	0.48 (0.16)	0.00* (0.34)	0.00* (0.26)	0.00* (-0.45)	0.44 (-0.07)	0.36 (-0.14)	0.31 (-0.24)	0.00* (0.29)	0.00* (0.22)	0.00* (-0.44)	0.74 (-0.03)	0.41 (-0.12)
Constant	0.43 (-11.08)	0.02** (9.06)	0.00* (10.91)	0.00* (25.22)	0.61 (2.78)	0.35 (8.52)	0.28 (16.21)	0.00* (12.87)	0.00* (13.61)	0.00* (24.46)	0.94 (0.46)	0.41 (7.91)
R-squared	0.39	0.43	0.32	0.70	0.86	0.89	0.35	0.43	0.32	0.70	0.84	0.89
Adjusted R-squared	0.31	0.35	0.23	0.66	0.84	0.88	0.26	0.35	0.23	0.66	0.82	0.88
Prob(F-statistic)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

* Sig Level (p<0.01), ** Sig Level (p<0.05), *** Sig Level (p<0.10). The robust t statistics are reported in the parenthesis

Impact of Islamic Banking on Banking Efficiency

Table 7: Impact of Islamic Banking on Banking Efficiency

Cost-to-Asset Ratio Analysis (DV)								
	Ordinary Least Square Regression				**Fixed Effect Model**			
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**
IB_SHARE_TA (-1)	0.28 (-0.03)	0.00* (-0.06)	0.03** (-0.06)	0.00* (-0.06)	0.63 (-0.02)	0.71 (-0.01)	0.00* (-0.07)	0.00* (-0.07)
Size (-1)	0.98 (0.00)	0.91 (-0.02)			0.12 (-0.49)	0.01* (-0.79)		
Capital (-1)	0.67 (0.02)	0.38 (0.03)			0.56 (-0.02)	0.95 (0.00)		
Credit Risk (-1)	0.00* (0.02)	0.00* (0.02)			0.01* (0.01)	0.04** (0.01)		
Concentration (-1)	0.96 (0.00)	0.07*** (0.00)			0.75 (0.00)	0.73 (0.00)		
Inflation (-1)	0.05** (0.03)		0.17 (0.02)		0.05** (0.02)		0.04** (0.02)	
Interest Rate (-1)	0.07*** (-0.16)		0.37 (-0.09)		0.08*** (-0.11)		0.31 (-0.06)	
Trade (-1)	0.05** (0.12)		0.26 (0.06)		0.08*** (0.08)		0.21 (0.04)	
Economic Freedom Index (-1)	0.88 (0.01)		0.43 (-0.08)		0.71 (-0.02)		0.11 (-0.10)	
Constant	0.75 (-1.94)	0.01 (3.05)	0.35 (5.68)	0.00 (2.89)	0.24 (5.41)	0.00 (8.54)	0.06 (7.52)	0.00 (2.91)
R^2	0.35	0.31	0.17	0.14	0.72	0.69	0.68	0.64
Adj. R^2	0.31	0.28	0.14	0.13	0.67	0.65	0.63	0.60
Prob. (F-statistic)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

* Sig Level (p<0.01), ** Sig Level (p<0.05), *** Sig Level (p<0.10). The robust t statistics are reported in the parenthesis

Table 8: Impact of Islamic Banking on Banking Efficiency

Cost-to-Income Ratio Analysis (DV)								
	Ordinary Least Square Regression				**Fixed Effect Model**			
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**
IB_SHARE_TA (-1)	0.08*** (-0.83)	0.00* (-1.34)	0.01* (-1.08)	0.00* (-1.08)	0.66 (-0.24)	0.03** (-0.88)	0.00* (-1.23)	0.00* (-1.12)
Size (-1)	0.51 (1.52)	0.35 (2.16)			0.04** (-11.17)	0.27 (-5.48)		
Capital (-1)	0.81 (-0.13)	0.86 (-0.09)			0.23 (-0.75)	0.08*** (-1.12)		
Credit Risk (-1)	0.00* (0.31)	0.00* (0.29)			0.18 (0.11)	0.07*** (0.14)		
Concentration (-1)	0.94 (0.00)	0.09*** (0.01)			0.41 (0.00)	0.00** (0.01)		
Inflation (-1)	0.91 (0.03)		0.64 (-0.12)		0.44 (-0.16)		0.52 (-0.12)	
Interest Rate (-1)	0.12 (-2.18)		0.39 (-1.25)		0.21 (-1.31)		0.37 (-0.93)	
Trade (-1)	0.91 (0.11)		0.30 (-0.83)		0.38 (-0.66)		0.07*** (-1.05)	
Economic Freedom Index (-1)	0.01** (3.70)		0.08*** (2.58)		0.00* (3.18)		0.04** (2.19)	
Constant	0.07*** (-175.7)	0.94 (-1.36)	0.49 (-64.0)	0.00* (43.65)	0.72 (-28.03)	0.08*** (59.20)	0.57 (-37.64)	0.00* (43.93)
R^2	0.36	0.30	0.24	0.15	0.68	0.63	0.65	0.56
Adj. R^2	0.31	0.28	0.21	0.15	0.63	0.58	0.61	0.56
Prob. (F-statistic)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

* Sig Level (p<0.01), ** Sig Level (p<0.05), *** Sig Level (p<0.10). The robust t statistics are reported in the parenthesis

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Table 7 examines the influence of Islamic banking on banking efficiency as measured by the cost-to-asset ratio. This analysis involves the use of both OLS and Fixed Effects Regression. In OLS Regression, the results indicate that capital, inflation, and trade significantly positively impacted the cost-to-asset ratio. In contrast, the interest rate has a significant negative impact. Credit risk and concentration at both the bank and country levels positively affect the cost-to-asset ratio. However, the Islamic banking share of total assets hurts this ratio, particularly when considering bank-level factors. However, it negatively affects the cost-to-asset ratio when assessing the impact of Islamic banking share of total assets in conjunction with country-level factors or using only the Islamic banking share of total assets.

In Fixed Effects Regression, the Islamic banking share of total assets does not significantly impact the cost-to-asset ratio when considering bank-level factors. However, in this scenario, bank size has a negative impact, and concentration has no significant effect on the cost-to-asset ratio. Notably, inflation significantly impacts the cost-to-asset ratio in Fixed Effects Regression, with other results remaining consistent with OLS Regression.

Table 8 assesses how Islamic banking affects banking efficiency using the cost-to-income ratio. In OLS regression, credit risk and the economic freedom index increase this ratio. However, the Islamic banking share of total assets decreases, especially considering various factors like country-level and bank-level factors. Concentration increases the ratio, while the Islamic banking share of total assets decreases when combined with bank-level factors. The economic freedom index raises the ratio, and the Islamic banking share of total assets reduces it when considering country-level factors. Using only the Islamic banking share of total assets negatively impacts the ratio.

In Fixed Effects Regression, the Islamic banking share no longer significantly impacts the cost-to-income ratio. Instead, size has a negative influence when considering Islamic banking share with country-level and bank-level factors. Capital and trade also negatively affect the ratio in Fixed Effects Regression. Other results remain consistent with OLS regression.

This investigation aims to examine the connection between Pakistan's financial sector growth and the efficiency of Islamic banks as lenders. Macroeconomic and bank-level variables are independent in Islamic banking, whereas the dependent variables are economic welfare, financial development, and banking efficiency. Ratios like cost-to-income and cost-to-asset can be used to gauge the efficiency of banks. Private credit and bank deposits are the two metrics used to assess

financial development. The GDP growth, GINI index, highest and lowest incomes, poverty gap, and poverty headcount are all indicators of economic welfare. Islamic banking indicators are Islamic banking share of total assets and Islamic banking share of gross loans. Inflation, interest rates, trade, and the Economic Freedom Index are macroeconomic factors. Size, capital, credit risk, and concentration are bank-level indicators. Islamic banking has a significant negative impact on banking efficiency. Credit risk has a considerable positive impact on banking efficiency is in line with (Saleh & Abu Afifa, 2020). Concentration significantly impacts banking efficiency, which aligns with (Karim et al., 2010). Islamic banking negatively impacts bank deposits and private credit, while other researchers found that Islamic banking has a significantly positive impact on private credit (Lebdaoui & Wild, 2016b). Inflation significantly negatively impacts bank deposits in line with (Gheeraert, 2014; Lebdaoui & Wild, 2016b; Abduh et al., 2011). Inflation has a significantly positive impact on private credit, while other researchers found inflation has a significantly negative impact on private credit (Boyd et al., 2001). Islamic banking share has a significantly positive impact on growth. At the same time, other researchers found that Islamic banking hurts growth (Afandi & Amin, 2019), which is in line with (Rafay & Farid, 2017; Lebdaoui & Wild, 2016a; Purwanto & Lidasan, 2021). Islamic banking has a positive but insignificant impact on income equality, while other researchers found Islamic banking has a significantly negative impact on income equality (Abedifar et al., 2016). Inflation has a significantly negative impact on income, while other researchers found that inflation has a positive but insignificant influence on income (Abrar et al., 2021). Another researcher found that inflation has a negative but insignificant effect on income equality (Azwar et al., 2022). Inflation has a negative and insignificant impact on the Gini index. At the same time, other researchers found that inflation is positive but insignificant to the Gini index (Abedifar et al., 2016) and is in line with (Abrar et al., 2021). Inflation is positive but not significant with growth. At the same time, other researchers found inflation is negative but not significant with growth (Abedifar et al., 2016) and is in line with (Azwar et al., 2022). Trade has a significantly positive influence on growth. The interest rate has a significantly adverse effect on growth. Inflation positively impacts the poverty gap, while other researchers found inflation has a negative insignificant impact on the poverty gap (Abedfifar et al., 2016). Trade has a significant positive impact on the poverty gap and poverty headcount. The interest rate has a negative impact on the poverty gap and poverty headcount.

Inflation significantly impacts poverty headcount, which aligns with (Abedfifar et al., 2016). The economic freedom index has an insignificantly negative impact on poverty headcount in line with (Abrar et al., 2021).

Conclusion

The present study empirically estimates the effect of Islamic banking on Pakistan's financial growth, economic welfare and banking efficiency. The research findings provide a new economic horizon in the light of Sharia compliance banking during the last decade. The correlation results indicate that both dependent variables i.e. Islamic baking to total asset and Islamic banking to total general loans have same behavior with other variables i.e. positive correlation with bank deposits, growth, interest rate, and negatively associated with Gini, highest income, poverty gap, poverty headcount, trade, economic freedom index, cost to asset ratio, cost to income ratio. Islamic banking has significant impact on financial development i.e. lagged interest rate has positive while lagged total asset, inflation, trade, and economic freedom has negative impact on the bank deposits. The government should take different measures to control inflation. The sign of economic freedom index shows a negative impact on the bank deposit. In order to improve the economic freedom, the government should reduce the saving trend and boost the productivity of the economy results in improvement in the economic growth. The lagged inflation has negative impact on the lowest income however, it has positive impact on the poverty gap and poverty headcount. The lagged inflation results in an increase in the poverty. The government should control the inflation to improve the purchasing power. The economic freedom index has positive impact on the GDP growth, GINI index, and highest income while having negative impact on the lowest income, poverty gap, poverty headcount. It shows that economic freedom index will have positive impact on the welfare of the society. The government should take measures to promote the economic freedom in the society. The lagged interest has negative impact on cost to asset ratio of Islamic bank, which shows an increase in the efficiency of Islamic banks.

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