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Full-Fledged Islamic Banks vs Islamic Windows: A Multi-Country Performance Analysis

Anum Fatima[1] and Muhammad Akram[2]

Abstract

Performance of Full-Fledged Islamic Banks (FFIBs) and Islamic Windows (IWs) within the conventional banks is influenced by bank-specific variables, macro and socioeconomic factors, and ownership structure is explored in this study. Although there is extensive Islamic banking literature, yet no study has analyzed FFIBs vs IWs performance across multiple countries. That's where this research steps in and fills this significant gap by analyzing the difference between FFIBs and IWs with respect to Return on Assets (ROA). It examines Islamic banks of Pakistan, Oman, Bahrain, Bangladesh, Malaysia, UAE, and Saudi Arabia. We have covered data over 2009 to 2022. We have performed comparative analysis of two Islamic banking models using a two-step system GMM approach. This study unfolds in three-tier framework, first it explores the influence of bank-specific variables, then it adds macroeconomic variables, and finally includes ownership structures factors. The empirical investigation showed that performance (ROA) is influenced by bank-specific factors, macroeconomic and ownership dynamics significantly. Interestingly, IWs outperform FFIBs, leveraging the support and resources of conventional banks to improve resilience and operational agility, whereas FFIBs face challenges in growth and efficiency that could hinder their competitiveness.

Keywords: Full-Fledged Islamic Banks; Islamic Windows; bank performance; System GMM estimation

JEL classification numbers: G20; G21; G29; G32; C33; O16

1. Introduction

The banking sector impacts financial and economic development globally (Chowdhury & Haron, 2022; Karim & Chowdhury, 2021). Islamic Banking, the new face of banking sector, is now growing at a rapid pace and has outstripped all other forms of banking. Islamic Banking is a preferred banking system. Even during the financial crisis, depositors preferred Islamic banks because of the Shariah compliant system of banking that is built on the socio-economic development of the society (Arthur, 2009; Choudhury & Harahap, 2008).

The modern Islamic banking was initiated in 1963 and formalized in 1975 (Shibu and Chachi, 2021). Now it has become one of the fastest-growing sectors in global finance. Two primary structures od islamic banking that dominate are: Full-Fledged Islamic Banks (FFIBs) which are the standalone institutions purely based on Shariah principles, while the Islamic Windows (IWs) which are the shariah-compliant units within the conventional banks (Sole, 2007). The growth of islamic banking system into non-Muslim countries like USA, Tanzania, and Kenya demonstrate its universal appeal. In

[1] Ph. D Scholar at International Islamic University, Islamabad. Email (Corresponding Author): anumfatima2005@yahoo.com
[2] Assistant Professor at International Islamic University, Islamabad. Email: muhammad.akram@iiu.edu.pk

case of Pakistan, the Federal Shariat Court of Pakistan has ordered in 2022 for mandatory elimination of Riba by 2027. It marks a historical moment, accelerating the need for comprehensive understanding of Islamic banking structures.

The performance of financial institutions is influenced by its efficiency and risk management. According to Kamande (2017), the efficiency-structure theory demonstrates how organizational excellence drives the market dominance and profitability. He also pointed out the critical interaction between internal abilities and external conditions. Theoretically, Islamic banks outperform conventional counterparts in efficiency metrics (Yusuf et al., 2021). Stages of Growth Development theory by Rostow's (1960), suggested that the growth and development in one sector will instigate a series of development in another sector as well. This is also validated in banking sector. In addition, the growth of a bank is also dependent on its management which increases is performance.

Despite of the extensive research including Bernardelli & Carrasco-Gutierrez (2024) explored the profitability of the Brazilian banking sector; Dongol & Shrestha (2024) explored performance of Nepalese bank; Impact of internal and macroeconomic factors on the profitability of the banking sector in the Western Balkan countries is analysed by Hoxha et al., (2025); Handriani & Anggara (2025) examined the key determinants of bank profitability in Indonesia; Almeida & Sousa (2025) identified the determinants of banking profitability in Portugal; Kusnaedy et al., (2025) studied the impact of bank-specific factors on islamic banks in Indonesia; and Mohoua (2025) studied impact bank specific factor on profitability a Bangladeshi banks, the comparison of Islamic versus conventional banks remained as a critical gap. No study has conducted comparative analysis distinguishing FFIBs from IWs. Although both follow Shariah principles; their operational dynamics, performance patterns, and responses to internal management, macroeconomic shocks, and ownership structures remain unexplored across multi-country contexts.

This research study examines a comparative analysis of FFIBs and IWs, focusing on how performance (ROA) of these two banks is affected by bank-specific variables, macroeconomic conditions, and ownership structures. To our knowledge, there has been no study that has investigated the comparative analysis between FFIBs and IWs. This research aims to provide evidence-based guidance for regulators, policymakers, and practitioners seeking to enhance organizational structures, improve financial stability, and increase operational efficiency. It encourages the establishment of a robust Shariah-compliant banking sector that aligns with broader economic goals. The study is divided into four sections: Section 2 reviews the literature, Section 3 about the data and methodology, Section 4 presents the empirical analysis of FFIBs and IWs, and finally, Section 5 offers conclusions drawn from the study.

2. Literature Review

This section is based on previous literature based on analysis of convention and islamic banks. it very important to understanding how various factors have influenced the financial health and operational efficiency of the banking sector. These empirical studies frequently utilize different performance indicators, such as ROA and ROE, to assess the impact of internal and external factors. By analysing these indicators, researchers can uncover patterns and relationships that clarify the complex dynamics of banking operations. Evaluating bank performance is essential as it plays a significant role in the economy by providing significant financial services, such as lending, savings, and investments. The performance of banks directly influences economic stability and growth. Furthermore, this information is beneficial for stakeholders including policymakers, investors, and bank management enabling them to make more informed decisions aimed at improving efficiency and profitability. While they may be better capitalized and less risky, their profitability could be lower (Majeed & Zainab, 2021). These are

used to control and terminate or limit institutional fraud (Ali et al., (2011) Jafferi & Manarvy (2011); Usman & Khan (2012)). While existing literature examines these factors in conventional and Islamic banks separately, comparative analysis between Full-Fledged Islamic Banks (FFIBs) and Islamic Windows (IWs) remains a critical research gap. Table 1 presents a comprehensive review of related literature related to this study.

Table 1: Review of related literature

Author(s)	Year	Country/Region	Key Findings
INTERNAL FACTORS			
Daly & Frikha	2015	Bahraini Islamic Banks	Bank Size exhibits positive influence on performance
Islam & Nishiyama	2016	South Asian Countries	Asset Management and Liquidity show exceptions to positive relationships
Rashid & Jabeen	2016	Pakistani Banks	Operational Efficiency shows negative impact on performance
Ashraf et al.	2017	Asian Banks	Capital Adequacy Ratio positively influences bank performance
Chowdhury & Rasid	2017	GCC Countries	Capital Adequacy Ratio has positive impact on bank performance
Al-Homaidi et al.	2019	Indian Commercial Banks	Deposits show negative effects on performance
Almaqtari et al.	2019	Indian Commercial Banks	Operational Efficiency shows positive relationship rformance
Al-Homaidi et al.	2020	Indian Commercial Banks	Asset Management and Liquidity show positive relationships with profitability
Abou Elseoud et al.	2020	Bahraini Islamic Retail Banks	Operational Efficiency has negative relationship with performance
Margono et al.	2020	Indonesian Banking Companies	Asset Management and Liquidity demonstrate positive effects
Muzammil & Siddiqui	2020	Pakistani Banks	Bank Size has negative impact on bank performance
Bouhider	2021	Malaysian Islamic Banks	Deposits have positive effects on performance
Sudarsono et al.	2021	Indonesian Islamic Rural Banks	Deposits have negative impact on performance
Yahya et al.	2021	Sub-Saharan African Banks	Bank Size demonstrates negative effects on performance
Yahya et al.	2021	Sub-Saharan African Countries	Deposits demonstrate positive impact on bank performance
Siddique et al.	2022	South Asian Commercial Banks	Capital Adequacy Ratio demonstrates positive relationship with performance
Harkati et al.	2023	Malaysian Islamic Banking	Capital Adequacy Ratio shows negative relationship with performance
Gazi et al.	2024	Bangladeshi Shariah-based Banks	Capital Adequacy Ratio has negative impact on performance
Gazi et al.	2024	Bangladeshi Shariah-based Banks	Operational Efficiency demonstrates negative impact
Nurullah et al.	2024	Indonesian Banking Corporations	Bank Size shows positive effects on bank performance
MACROECONOMIC FACTORS			
Petria et al.	2015	EU27 Banks	GDP exhibits positive relationship with bank performance
Zarrouk et al.	2016	Middle Eastern Islamic Banks	GDP shows positive effects on performance
Yahya et al.	2017	Yemeni Islamic Banks	Interest Rate has positive relationship with performance
Kohlscheen et al.	2018	Emerging Market Economies	GDP has negative effects on bank performance
Supiyadi et al.	2019	Indonesian Islamic Banks	Inflation has positive impact on performance

Alfadli & Rjoub	2020	GCC Commercial Banks	Interest Rate demonstrates negative impact
Al-Homaidi et al.	2020	Indian Commercial Banks	Inflation has negative relationship with performance
De Leon	2020	ASEAN Banks	GDP shows negative impact on performance
Siddique et al.	2020	Asian Developing Countries	Inflation shows negative effects on performance
Bayiley	2021	Ethiopian Banks	GDP demonstrates negative effects on bank performance
Bouhider	2021	Malaysian Islamic Banks	Exchange Rate shows negative effects on performance
Yahya et al.	2021	Sub-Saharan African Banks	Inflation shows positive effects on bank performance
Ajaz et al.	2022	Pakistani Commercial Banks	Exchange Rate has positive impact on performance
Bayiley	2022	Ethiopian Banks	Interest Rate shows positive effects
Al Sharif	2023	Jordanian Islamic Banks	GDP demonstrates positive relationship with performance
Gazi et al.	2024	Bangladeshi Shariah-based Banks	Inflation demonstrates positive relationship
GOVERNANCE FACTORS			
Bebeji et al.	2015	Nigerian Banks	Board Size has negative impact on performance
Farag et al.	2018	Islamic Banks	Board Size demonstrates positive relationship with performance
Habtoor	2021	Saudi Listed Banks	Board Size demonstrates negative effects
Kevser & Doğan	2021	Turkish Banks	Board Size shows positive effects on bank performance
Berhe	2023	Ethiopian Commercial Banks	Board Size shows negative impact on performance

The above-mentioned literature identified the dire need of analysis of comparing Full-Fledged Islamic Banks (FFIBs) and Islamic Windows (IWs), even though there exists extensive research comparing Islamic and conventional banking system. However, there is need to identify the need for targeted research comparing performance of FFIBs and IWs for better system understanding and informed policy development.

3. Data and Methodology

The current section discusses the empirical model adopted to establish our hypothesis. It also gives a brief about the data used and their sources. Finally, it provides details about the estimation method adopted for the analysis.

3.1 Empirical Models

We explore how ownership structure, macroeconomic variables, and bank-specific factors are impacting performance of FFIBs and IWs. First, we will investigate how different bank-specific variables affect the performance of both FFIBs and IWs. This would assist us in determining the internal variables that drive performance of the banks. In the second phase, we will include external macro and socio-economic variables to check the impact on the performance of these banks.

This enables us to determine how overall economic conditions affect banking activities and financial performance. Finally, we included ownership variables in our analysis to determine their effects on bank performance. This will enable us to see how ownership forms and board of directors' count affect the performance of FFIBs and IWs. To explore the performance of both systems, we considered ROA as performance indicator. To achieve the identified objectives, we have used model used by Anbar and Alper (2011), Abdullah et al. (2014), Ben Selma Mokni & Rachdi (2014) and Rashid & Khalid (2017). Ben Selma Mokni & Rachdi (2014) also used same phase wise analysis. We used their base model and modified according to our data The base model is:

$$bank\ performance_{ijt} = \alpha_0 + \alpha_1\ CAR_{ijt} + \alpha_2\ Bank\ Size_{ijt} + \alpha_3\ Liquidity_{ijt} + \alpha_4\ Deposit_{ijt} + \alpha_5\ Asset\ management_{ijt} + \alpha_6 overhead\ ratio_{ijt} + \alpha_7\ Efficiency\ Ratio_{ijt} + \alpha_8 asset\ growth\ rate_{ijt} + \alpha_9\ burden_{ijt} + \varepsilon_{ijt} \quad (1)$$

Where, Bank performance= ROA and *i* = bank, j= country, *t* = time

In the second phase of our analysis, we will include macroeconomic and socio-economic variables in our model with bank-specific variables to determine their combined impact on bank performance. Through this analysis, we have a wide view of how overall economic conditions merging with intrinsic bank attributes will ultimately inform the financial soundness and operational effectiveness of banking institutions.

$$bank\ performance_{ijt} = \alpha_0 + \alpha_1\ CAR_{ijt} + \alpha_2\ Bank\ Size_{ijt} + \alpha_3\ Liquidity_{ijt} + \alpha_4\ Deposit_{ijt} + \alpha_5\ Asset\ management_{ijt} + \alpha_6 overhead\ ratio_{ijt} + \alpha_7\ Efficiency\ Ratio_{ijt} + \alpha_8 asset\ growth\ rate_{ijt} + \alpha_9\ burden_{ijt} + \alpha_9\ GDP_{ijt} + \alpha_{10} INF_{ijt} + \alpha_{11}\ INTR_{ijt} + \alpha_{12} EXCH_{ijt} + \alpha_{13} political\ stability\ \&\ Terrorism\ Index_{ijt} + \alpha_{14} Regulatory\ Quality\ index_{ijt} + \varepsilon_{ijt} \quad (2)$$

INTR =Interest rate, INF= Annual inflation rate, EXCH= Exchange rate

Lastly, we will examine the combined effect of bank structure variables by including these variables in our model alongside bank-specific and macro & socio-economic factors. This estimation will provide insights into how ownership structure affects bank operations and overall performance.

$$bank\ performance_{ijt} = \alpha_0 + \alpha_1\ CAR_{ijt} + \alpha_2\ Bank\ Size_{ijt} + \alpha_3\ Liquidity_{ijt} + \alpha_4\ Deposit_{ijt} + \alpha_5\ Asset\ management_{ijt} + \alpha_6 overhead\ ratio_{ijt} + \alpha_7\ Efficiency\ Ratio_{ijt} + \alpha_8 asset\ growth\ rate_{ijt} + \alpha_9\ burden_{ijt} + \alpha_9\ GDP_{ijt} + \alpha_{10} INF_{ijt} + \alpha_{11}\ INTR_{ijt} + \alpha_{12} EXCH_{ijt} + \alpha_{13} political\ stability\ \&\ Terrorism\ Index_{ijt} + \alpha_{14} Regulatory\ Quality\ index_{ijt} + \alpha_{15} Bank\ structure_{ijt} + \alpha_{16} Board\ Size_{ijt} + \varepsilon_{ijt} \quad (3)$$

3.2 Data and Data sources

This study explores performance determinants of Islamic banks across seven countries (Pakistan, Oman, Bahrain, Bangladesh, Malaysia, UAE, Saudi Arabia) where both FFIB and IW operate. The study covers 14 years (2009-2022). Data is collected from bank annual reports, Bank Scopus, and WDI. Table 2 shows detailed description of variables definition and formula.

3.3 Estimation Method

This study explores FFIB and IW performance in different countries using an advanced panel data framework. To treat the issues of multicollinearity, controlling for unobservable country-specific heterogeneity, and increasing estimation efficiency over cross-sectional approaches panel data methodology is useful. (Baltagi, 2005). Moreover, to eliminate econometric issues like endogeneity, heteroscedasticity, and autocorrelation we applied the two-step System Generalized Method of Moments (System GMM) estimator, which was created by Arellano and Bover (1995) and improved by Blundell and Bond (1999). According to Perera and Lee (2013) this method successfully addresses unobserved heterogeneity, eliminating endogeneity from omitted variables while retaining consistency and efficiency under heteroscedastic conditions as this method is strategically using lagged values of dependent and independent variables as internal instruments.

The two-step method works by first estimating the model, then using those initial results to create better weights for a second round of estimation. This produces more accurate parameter estimates and reduces bias, something that's particularly important when your instruments aren't very strong. This approach works best with datasets that have lots of observations across different units (like companies or countries) but only cover a short time period. Several diagnostic checks are applied to make sure the results are reliable. The Hansen and Sargan tests check whether the instruments are valid, while the AR(1) and AR(2) tests look for patterns in the errors that could signal problems. The final step involves a detailed comparison of how FFIB and IW performed.

Table 2. Variables Definition and Formula

Variable Type	Variable Name	Definition	Formula	Authors/Studies
Bank-Specific Determinants	Capital Adequacy Ratio (CAR)	Measure of financial strength indicating bank's ability to absorb losses	$Total\ equity_{it}/total\ asset_{\ it}$	Chowdhury & Rasid (2017); Rashid & Khalid (2017); Alfadli & Rjoub (2020); Siddique et al. (2020); Sobol et al. (2023)
	Bank Size (BS)	Measure of bank's scale and resources influencing operating and strategic decisions	$\log of\ total\ Assets_{it}$	Ashraf (2013); Zeitoun (2012); Chowdhury & Rasid (2017)
	Liquidity (LIQ)	Bank's ability to meet short-term obligations and avoid financial distress	$Liquid\ asset_{it}\ /\ total\ Assets_{it}$	-
	Deposits (DPST)	Proportion of deposits to total assets, indicating funding structure	$Deposits_{it}/Total\ Assets_{it}$	Anbar & Alper (2011); Acaravci & Çalim (2013); Menicucci & Paolucci (2016); Zampara et al. (2017)
	Asset Management (AM)	Efficiency in generating income from assets	$OperatingIncome_{it}/Total\ Assets_{it}$	Masood et al. (2012)
	Overhead (OVHD)	Operational efficiency metric measuring cost management	$operating\ cost_{it}/Total\ assets_{it}$	Hassan & Bashir (2003); Rashid & Jabeen (2016); Serwadda (2018)
	Efficiency Ratio (EFR)	Measure of operational inefficiency (higher ratio indicates greater inefficiency)	$Operating\ Expense\ / total\ income$	Dietrich & Wanzenried (2011); Trujillo-Ponce (2013); Yao et al. (2018); Zarrouk et al. (2016)
	Asset Growth (AG)	Rate of asset expansion indicating financial health	$[ln(total\ asset_t) - \ln(total\ asset_{t-1})]x100$	Abedifar et al. (2013); Solanki & Aggarwal (2022)
	BURDEN Ratio (BURD)	Non-interest expense coverage ratio	*(Noninterest expense- Noninterest income)/Total asset*	Rashid & Khalid (2017)
Macroeconomic Indicators	GDP Growth	Overall economic performance supporting banking sector	$lnGDP_t - lnGDP_{t-1}$	Pasiouras & Kosmidou (2007); Masood & Ashraf (2012); Marijana et al. (2012); Francis (2013); Ongore & Kusa (2013); Petria et al. (2015); Saona (2016); Singh & Sharma (2016); Kaleem et al. (2016); Rani & Zergaw

				(2017)
	Inflation Rate	Price stability metric affecting bank operations and profitability	$lnCPI_t - lnCPI_{t-1}$	Anbar & Alper (2011); Masood & Ashraf (2012); Jara-Bertin et al. (2014); Chowdhury & Rasid (2017)
	Interest Rate	Monetary policy impact on bank lending and profitability (mixed evidence in literature)	Not specified in document	Rashid & Jabeen (2016) - negative effect; Yahya et al. (2017) - positive effect
	Exchange Rate Volatility	International exposure indicator affecting bank performance	Not specified in document	Rashid & Jabeen (2016) - negative effect; Yahya et al. (2017) - positive effect
	Political Stability and Absence of Violence/Terrorism Index	Measures possibility of government interruption by unauthorized or violent means, including terrorism. Ensures predictable and secure environment for financial transactions	Scale: -2.5 to +2.5 (adjusted by subtracting from 0, higher value = higher stability)	Kaufmann et al. (2010) - WGI project; Chen et al. (2015); Mushtaq et al. (2022); Chen & Hsu (2022)
	Regulatory Quality Index	Measures government's ability to provide stable and transparent regulatory environment for financial stability		Kaufmann et al. (2010) - WGI project; Chen & Hsu (2022)
Ownership Structure	Board Size	Number of directors hired to make decisions on behalf of company and shareholders. Larger boards provide varied skills but may cause indecisiveness	Board of Directors = ln(Total Number of Board Directors)	Gitau et al. (2017); Batir et al. (2017); Aziz & Knutsen (2019)
	Ownership Type/Bank Structure	Nationality of bank categorized as domestic or foreign ownership	Dummy variable: 0 = Domestic ownership; 1 = Foreign ownership	-

4. Empirical Result

We are exploring how different FFIBs are from IWs in response to the changes in banks specific factors, macro-economic factors, and ownership structure. Later, we compare both systems with respect to the above factors is conducted. After the initial exploration of data, we identified using the White test, Wooldridge test and Hausman test that in all situations, our data and model are facing the issue of heteroskedasticity and endogeneity. This issue is handled by using two stage system GMM.

4.1 Performance of Full-Fledged Islamic Banks

To begin with, we estimated the empirical relationship of ROA with the bank specific variables for FFIB as model 1 in table 3. Later, the set of regressors are enhanced for the possible effect of macroeconomic variables, socio economic variables and ownership variables. Table 3 shows the results of the estimations. Our model 1 shows the impact of bank-specific factors on the performance of FFIB. The variable CAR has a significant positive impact on ROA (+0.0275% per 1% CAR increase). Well-capitalized banks demonstrate enhanced ability to meet obligations and maintain profitability. It shows it can absorb shocks more effectively and maintain performance.

Our results are similar with Chowdhury & Rasid (2017), Ashraf et al., (2017), Alfadli & Rjoub (2020), Siddique et al., (2020), Sobol et al., (2023) and Razali et al., (2025) their consistent results across different regions and banking sectors. It emphasizes the requirement for banks to uphold robust CAR levels to achieve extraordinary financial performance. Our second variable is the BS has positive relationship with ROA (performance) of FFIB, indicating larger banks benefit from economies of scale and broader customer base. The positive impact of bank size on the ROA also reflects the ability of larger banks to attract a broader customer base. Our results consistent with the findings of previous research including Homaidi et al., (2018) Sobol et al., (2023), Jarbou et al, (2024) and Aydemir et al., (2025).

Table 3 : Performance of Full-fledged Islamic banks (All sample countries)

(dependent variable: ROA)			
VARIABLES	**Model 1**	**Model 2**	**Model 3**
L.ROA	0.538*** (0.0226)	0.812*** (0.0857)	0.712*** (0.0831)
Capital Adequacy Ratio (CAR)	0.0275** (0.0119)	-0.105*** (0.0346)	-0.107*** (0.0325)
Bank size (BS)	0.00010*** (0.0002)	-0.0048*** (0.0016)	-0.0046*** (0.0014)
Liquidity (LIQ)	-0.0149** (0.0058)	0.0738* (0.0390)	0.0926** (0.0401)
Deposits (DPST)	-0.0190*** (0.0023)	-0.0108** (0.0050)	-0.0105* (0.0055)
Asset Management (AM)	0.146*** (0.0439)	-0.0652 (0.126)	-0.00792 (0.136)
Overhead Ratio (OVHD)	-0.185** (0.0884)	-0.773** (0.353)	-0.623 (0.405)
Efficiency Ratio (EFR)	-0.0079** (0.00314)	-0.0270*** (0.0096)	-0.0320*** (0.0114)
Asset Growth	-0.0010*** (0.000160)	-0.00348*** (0.0007)	-0.0036*** (0.0006)
BURDEN	-0.273*** (0.0702)	-1.207*** (0.379)	-0.871** (0.380)
GDP		-0.0156***	-0.0115*

		(0.0061)	(0.0064)
Inflation		0.0016*** (0.0003)	0.00121*** (0.0003)
Exchange Rate		0.0003*** (0.0001)	0.0003*** (0.0001)
Interest Rate		0.0003*** (0.0001)	0.0002*** (0.0001)
Political Stability		0.0053** (0.0022)	0.00518** (0.00264)
Regulatory Quality		0.0093*** (0.0027)	0.0153*** (0.00310)
Bank Structure			-0.0054** (0.0023)
Number of Board of Director			0.0014* (0.0008)
Constant	-0.00360 (0.00469)	0.0956*** (0.0359)	0.0854*** (0.0311)
Diagnostic Test			
Observations	275	275	275
Number of banks	34	34	34
Number of instruments	29	32	33
AR(1)- *P-value*	0.003	0.009	0.015
AR(2)- *P-value*	0.880	0.351	0.370
Hansen test of overid- *P-value*	0.427	0.619	0.509
Hansen tests of exogeneity *P-value*	0.660	0.336	0.498
Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1	**Hansen test of overid** H_0: Overidentification restrictions are valid Do not reject P>0.05	**Hansen tests of exogeneity** H_0 = exogenous Do not reject P>0.05	

The variable LIQ Negative relationship with ROA, suggesting excessive liquidity may reduce profitable investment opportunities. While liquidity is essential for short-term obligations and operational performance, it also implies that a significant portion of the bank's assets are not earning substantial returns. It also indicates a lack of profitable investment opportunities. This may be due to the reason that FFIB follow shariah investment rules so they may have limited investment opportunities in economy. Or may be due to other factors, such as unfavourable economic conditions, tough regulatory requirements. The findings of are consistent with those of Islam & Nishiyama (2016) and Jamshid & Rashid (2022). The variable DPST has a negative impact on ROA, maybe due to increase cost of liquidity management. Higher profit rate (interest rate) is generally required to pay depositors to remain competitive or to attract them. this would increase their expenses. Additionally, the strict investment opportunities may to a situation where banks are unable to handle influx of deposits. The negative impact of deposits on ROA can also be attributed to the potential for liquidity management challenges. Our results align with Rashid and Jabeen (2016), Bouhider (2021) and Dilrangi et al., (2018).

FFIBs' could not only safeguard the bank's assets but built trust among stakeholders which boost the performance. It could easily achieve by maintaining strong liquidity levels without compromising on returns and can meet withdrawal demand. As shown by our results of variable AM having positive impact on ROA. Similar results are discussed by various scholars like Ali et al., (2011), Masood and Ashraf (2012), and Yahya et al., (2017).

Poor and inefficient bank's operations may be due to excessive staffing that may face higher salary and expense. These may be due outdated technology, unnecessary processes. A higher overhead ratio indicates that a major portion of the bank's income is being utilized by to operational costs. Our results

show the variable OVHD is causing a significant negative impact on performance with one unit change in OVHD cause -0.185 unit per unit change in ROA. Those FFIBs which control and manage their operational expense effectively could not only generate more income but improve their financial performance. Numerous studies have highlighted the detrimental effects of OVHD on bank performance like Rashid and Jabeen (2016), Serwadda (2018), Jarbou et al., (2023) and Jarbou et al, (2024).

The performance of FFIBs have negative effect of variable EFR. This shows primary issues within the bank's management and processes. Banks capital is eroded by continuous inefficiencies, making it more vulnerable to economic fluctuations and market downturn. Alfadli & Rjoub (2020) also discussed similar results. Organizational inefficiency causes great adverse impact on performance of FFIBs. It can be reduced by applying diversifying income revenues and decreasing dependency interest-based revenue. as shown in results that variable BURD has negative impact on ROA. Our result is similar with Alfadli & Rjoub (2020), Hossain and Ahamed (2021) and Rashid & Samia (2017) for Pakistani Islamic and conventional banks.

We include macroeconomic variables with the bank-specific variables in model 2. Our results show variable GDP has negative impact on ROA. It shows when there are worst economic situations, financial activities reduce demand for banking products, hence reduced revenues. This finding aligns with many prior researchers (Marijana et al., 2012; Petria et al., 2015; Salike & Ao, 2017; Ashraf et al., 2017; Aslam & Haron, 2020; Ali & Mahmood, 2020; Rehman et al., 2022; Jarbou et al., 2024). FFIBs adjust price of financial assets as its value increases during inflations, particularly real estate and loan collateral strengthening balance sheets and reducing default risks. Increase in inflation will cause higher profit rate which attracts customer to utilize those banking products, which ultimately boosts performance of banks. our results also reveal that variable Inflation has a positive impact on performance. These results mirror findings from diverse banking systems studied by Bashir (2003), Wasiuzzaman & Tarmizi (2010), Uralov (2020), Mashrur & Tabassum (2023), and Paukmongkol (2024).

A higher exchange rate indicates that the domestic currency holds a stronger position relative to foreign currencies. FFIBs, often operate within economies that are involved in global trade, exchange rates become an essential variable. This help banks to provide better investment opportunities by using different shariah products (Musharakah and Mudarabah) of buying foreign goods and services at a lower cost. This in turn, benefits the FFIB performance as indicated in our estimation i-e variable Exchange Rate showed a positive relationship with ROA. Previous studies like Topak & Talu (2017), Hasanov et al., (2018), Ali et al., (2018), Kusuma and Rahman (2018), Ghurtskaia (2018), Ali & Mahmood (2020) and Prasanto et al., (2020), Razali et al., (2025) identified similar results.

Increase in conventional interest rate will increase the demand of shariah complaint operations. This would clearly boost performance of FFIBs. Moreover, they also improve their profit rate to increase profits rate to fulfill demand for depositors, which will cause increase in huge deposits and benefits FFIBs. Moreover, the asset-back nature of FFIBs would boost increase trust of depositors as this increase will provide them with higher and secures returns. These findings align with Mangkuto (2004), Zeitun (2012), and Romli et al. (2022), confirming the counterintuitive yet economically rational positive relationship between conventional interest rates and Islamic bank performance.

Stable political environment is important foundation of financial institutions as they minimize uncertainties and boost FFIB performance. They also increase investor and depositor confidence, directly translating into increased deposits and investments rate or returns in Sharia-compliant products. This leads to influx deposits of bank assets and strengthens financial performance. Efficient

regulatory frameworks add reliability in secure financial transactions which helps in smooth FFIB operations. Significantly, superior regulatory quality facilitates FFIBs to boost performance (ROA). Our results also support it.

Model 3 extends our analysis by incorporating ownership structure variables, revealing critical performance determinants. Bank Structure has negative impact on performance. Domestic banks have better performance compared to foreign owned bank. This negative impact shows foreign owned banks struggle in adaptations of local market regulation which elevates their operational cost. These findings align with Shawtari (2018) and Özkan et al. (2022), verifying ownership structure as a important performance of FFIBs. Diversified expertise and strong board also help in improving banks' performance. Large board size has diverse proficiency, strengthened governance, and enhanced risk management as they have experts in all fields of management. This is also proved by our analysis that larger banks size impacted positively on ROA. Our results supported by Kevser and Doğan (2021) and Farag et al. (2018), who similarly documented board size as a significant positive performance factor.

This comprehensive analysis reveals that bank-specific, macroeconomic, socio-economic factors, and ownership structure collectively influence the performance of FFIBs, providing valuable insights for strategic decision-making and regulatory frameworks.

4.2 Performance of Islamic Windows of conventional Banks (IW) Using ROA

To explore our objective, now we are discussing Islamic windows of conventional banks (IW). Firstly, we have identified the impact of bank specific variables on performance of IW. Later, the set of regressors are augmented for the possible effect of macroeconomic variables, socio economic variables and ownership variables in similar way as we have performed in our FFIB analysis. Table 4.4 shows the results of the estimations. The results reveal that bank-specific variables, macroeconomic factors, and ownership structures notably impact IW performance. The findings provide valuable insights for banking regulators, policymakers, and financial institutions seeking to optimize Islamic banking operations. Model 1 shows only bank-specific variables. The significant variable CAR indicates stronger capital positions enhance performance. As shown by results i-e 1% increase in the variable CAR causes a 0.00205% increase in ROA. These results, align with findings from Chowdhury & Rasid (2017), Ashraf et al., (2017), Alfadli & Rjoub (2020), Siddique et al., (2020), Sobol et al., (2023), and Razali et al., (2025) who have also studied the impact of CAR on conventional banks for a group of countries.

Larger banks can also enjoy economies of scale as shown by our results of variable BS. Higher liquidity enables IWs to meet short-term liabilities and capitalize on market opportunities without need of emergency asset liquidation. It is indicated in our results of variable LIQ. A one unit change in LIQ is causing 0.0105-unit change in ROA, exhibiting higher liquidity. Our results are consistent with Fatima (2021), Ashraf et al. (2017), and Khan et al. (2023).

A significant negative relationship is with the performance of IWs by DPST. It proposes that IWs by following Sharia-imposed limited investment options might face excess liquidity issues when having larger deposits. This aligns with findings from Kim and Kim (1997), Rashid and Jabeen (2016), and Bouhider (2021). The positive significant variable OVHD shows efficient cost management enhances performance. The results show that 1-unit increase in OVHD will cause 0.00248-unit increase in ROA. our results similar with results of Linawati & Aisjah (2023) and Poudel (2023).

Improved resource allocation and higher returns can be achieved by strong operational efficiency in expense management as indicated by positive significant variable EFR from our data. It is consistent with Yasmin & Islam (2020), Elgattani et al. (2018), and Ahmed et al., (2017). The variable AG shows

a positive and significant impact on ROA, where a unit increase in asset growth boosts profitability by 0.00003 units highlighting how asset expansion fosters revenue opportunities and portfolio diversification.

In contrast, BURD exhibits a significant negative effect, underscoring the need for efficient expense management and reliance on non-interest income, especially during downturns, consistent with the findings of Hossain & Ahamed (2021), Rashid & Khalid (2017), and Dietrich & Wanzenried (2011).

Table 4: Performance of Islamic Windows of Conventional Banks (All sample countries)

(Dependent variable: ROA)			
VARIABLES	**Model 1**	**Model 2**	**Model 3**
L.ROA	0.0045**	0.0814***	0.0428***
	(0.0022)	(0.0205)	(0.00822)
Capital Adequacy Ratio (CAR)	0.00205***	0.0089**	-0.0092***
	(0.0007)	(0.00401)	(0.0022)
Bank Size (BS)	0.0001*	0.0014***	0.001***
	(0.00001)	(0.0003)	(0.0002)
Liquidity (LIQ)	0.0105***	-0.0189***	0.0059
	(0.0021)	(0.0033)	(0.0054)
Deposits (DPST)	-0.0034***	-0.00161	-0.00422***
	(0.0003)	(0.0015)	(0.0014)
Asset Management (AM)	0.926***	0.928***	0.946***
	(0.0114)	(0.0120)	(0.0058)
Overhead Ratio (OVHD)	0.00248***	0.0099***	0.0184***
	(0.00031)	(0.0032)	(0.0032)
Efficiency Ratio (EFR)	0.00051***	-0.0013***	-0.0007***
	(0.0001)	(0.0005)	(0.00014)
Asset Growth (AG)	0.00003***	0.00004**	0.00005***
	(0.00001)	(0.00002)	(0.00001)
BURDEN	-0.0181***	0.104***	0.0484***
	(0.0062)	(0.0121)	(0.0130)
GDP		0.00530***	0.0026**
		(0.0019)	(0.0010)
Inflation		-0.0006***	-0.0005***
		(0.00005)	(0.0001)
Exchange Rate		-0.00008***	-0.0001***
		(0.00001)	(0.00001)
Interest Rate		-0.00006***	-0.0001***
		(0.00001)	(0.00002)
Political Stability		0.0020**	0.0008
		(0.00085)	(0.0008)
Regulatory Quality		0.0011	0.00313**
		(0.00164)	(0.0014)
Bank Structure			-0.0005***
			(0.0002)
Number of Board of Director			-0.00310
			(0.0026)
Constant	-0.00270	-0.0190***	-0.0045
	(0.00186)	(0.00562)	(0.0048)
Diagnostic Test			
Observations	367	367	367
Number of banks	49	49	49
Number of instruments	43	47	47
AR(1)- *P-value*	0.005	0.037	0.040
AR(2)- *P-value*	0.480	0.856	0.153
Hansen test of overid- *P-value*	0.591	0.371	0.270

Hansen tests of exogeneity *P-value*	0.665	0.345	0.217
Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1	• **Hansen test of overid** H_0: overidentification restrictions are valid. Do not reject P>0.05		• **Hansen tests of exogeneity** H_0 = exogenous Do not reject P>0.05

The analysis is enriched by adding macroeconomic factors in Model 2. Smooth economic growth can also enhance banking performance via increased business activity and investment as shown by our results, i-e GDP has positive influence on ROA. these results are consistent with Khan et al. (2014) and others. Higher Inflation negatively affects ROA. Increase in prices would decrease in real repayments and elevate default risks, aligning with Ashraf et al., (2017) and Cuandra & Wijaya (2023). Lastly,

IWs performance is decreased by Exchange Rate depreciation, reflecting reduced asset values and higher import costs, these resonates with finding of Homaidi et al. (2018) and Akther et al. (2023).

Higher Interest Rate is causing significant negative effect on ROA. The increased i-rate would cause pressure on IWs to provide higher profit margins to attract customers. These are also indicted by Homaidi et al. (2018). Political Stability and Regulatory Quality positively influence performance of IW. Whereas regulatory quality may be neutralized by other broader factors or adopted by IWs.

The third tire is based on organizational structure in Model 3. The variable bank structure reveals that IWs having domestic ownership outperform foreign ones. This may be due to competent regulatory control and working structures of local market. It is aligned by Shawtari (2018) and Özkan et al. (2022). Larger board size cause decision-making inefficiencies and higher costs as shown by results.

4.3 Diagnostic Tests & Model Validity

Diagnostic tests are passed by both our models (FFIBs & IWs). It indicates that there is no second-order serial correlation, all instruments are valid, and no significant endogeneity is evident. Hence, it confirms that bank-specific factors, macroeconomic variables, and ownership structures significantly impact the performance of FFIBs and IWs.

4.4 Comparison of Performance Between FFIBs and IWs through ROA

We have performed a comprehensive evaluation of Fully-Fledged Islamic Banks and Islamic Windows in respect of performance (ROA). Our results from tables 4.1 and 4.2 reveals that IWs perform better in most aspects compared to FFIBs. It can be noted that CAR of FFIB shows inconsistent outcomes. Whereas, IWs reflect more consistent variable CAR, this shows they are utilizing resources more effectively. Variable BS also showed efficient results showing a strong relationship between bank size and performance of IWs. Although, FFIBs are facing economies of scale, with decreasing returns to scale as size grows. IWs are manage and utilize resources effectively as indicated by variable AM. Whereas, the variable AM showed insignificance results expect significance in one model, which shows FFIB needs improvement in these areas. IWs showed efficient management in operating costs as indicated by variable OVHD. However, FFIBs' results indicate that lower overhead cost management, with a constant negative effect on performance.

The variable EFR ratio showed interesting results, both FFIBs and IWs have negative effects. However, IW reveals that they have enhanced control over operational inefficiencies. Our estimated results exhibit that IWs excel in managing both the variables AG. FFIBs are suffering from substantial performance reductions due to these costs. Whereas IWs perform better by leveraging their parent bank's operational efficiencies and resource-sharing, as reflected in their lower BURD ratios.

The performance of FFIB is highly sensitive to macroeconomic shocks as they fail to be so accommodating. However, IWs are stronger and more responsive in accommodating to external shocks like GDP, inflation, and exchange rates. The better performance of IWs than FFIBs in almost all key areas and responsiveness to external and internal factors. This is due to their parent bank backing, which allows effective operational efficiency, risk diversification and sharing of resource. This makes IWs more swift, cost-effective, and sustainable model in Islamic banking's dynamic landscape.

5. Conclusion

Our analysis for seven countries over the period of thirteen years reveals that IWs outperform FFIBs across all performance indicators. This success of IWs is not a coincidence. They efficiently fuse the proficiency of conventional banking with strict adherence to shariah rulers simultaneously. This allows them to be cost-effective while still meeting the shariah requirements their customers expect. Islamic banking doesn't require choice between tradition and innovation. It represents that excellent returns and Shariah compliance aren't mutually exclusive. Hence, it allows the combination of the two at the same time, especially in case of IWs. This also provides value creation and sustainable growth for the global Islamic finance ecosystem. Conventional banks have a golden opportunity in form of Islamic Windows. Rather than establishing entirely new Islamic institutions, they may establish Islamic Windows. This provides not only a cost-effective pathway into the Shariah-compliant market but also improves their operational structure, maximizes efficiency and profitability.

Policy makers should create global standards. Regulators need integrated international frameworks for Shariah compliance and performance benchmark. The inconsistencies between countries create confusion and inefficiency which can be controlled by uniform regulations and strong economic policy for cross-border operations. It is required to align with broader economic goals. Moreover, it is suggested that fiscal and monetary authorities should make polices which must support Islamic banking institutions while maintaining shariah standards during inflation or political uncertainty periods. Furthermore, they should adopt innovative technological tool and strategies for both IWs and FFIBs like adopting AI and fintech solutions while maintaining unwavering commitment to Shariah compliance. Technology and values aren't in conflict, they're complementary. Also, there is needs for improvement in corporate governance reforms with better board structures and diverse ownership. They should develop innovative Shariah-compliant instruments to solve liquidity challenges and improve overall performance. As Islamic banking gains momentum worldwide, strategic implementation of these findings will deliver sustainable growth, enhanced stability, and broader financial inclusion, fulfil Islamic finance's core ethical principles while meet the needs of modern economies.

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