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Islamic Financial Products: A Risk and Return Perspective

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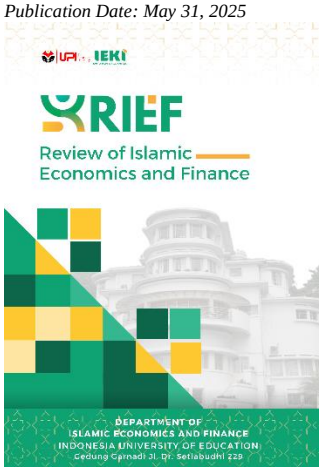

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Abstract

Purpose *– This study investigates the risk-return relationship in Islamic banks using a pooled regression model applied to panel data from 27 institutions across key Islamic finance hubs, including Saudi Arabia, Bahrain, Qatar, the UAE, Sudan, Malaysia, Indonesia, Pakistan, Jordan, and Bangladesh, over the period 2005-2016.*

Methodology *- The analysis is based on a dynamic panel approach with the Generalized Method of Moments (GMM system).*

Findings *- Findings indicate a misalignment between deposit returns and the PLS principle, attributed to agency problems manifested through risk-shifting behaviors and inadequate governance mechanisms that limit investor protection and decision-making rights. These results underscore the importance of strengthening governance frameworks to ensure adherence to PLS principles, and improve transparency and investor confidence.*

Keywords: *Islamic bank governance; profit and loss sharing (PLS); investment account holders; moral hazard; GMM estimation*

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1. INTRODUCTION

This study investigates the risk, return profile faced by Investment Account Holders (IAH) under the Profit and Loss Sharing (PLS) principle, focusing on the impact of banking risk, governance mechanisms, and competitive market conditions on the returns of investment deposits in Islamic banks. The analysis focuses on Islamic commercial banks, excluding Islamic investment banks, and employs a dynamic panel model estimated through the Generalized Method of Moments (GMM) methodology. The sample comprises 27 banks from key Islamic finance centers, such as Saudi Arabia, Bahrain, Qatar, the UAE, Sudan, Malaysia, Indonesia, Pakistan, Jordan, and Bangladesh, over the period 2005–2016. Financial data are sourced from annual reports, while macroeconomic variables (GDP growth rate and inflation) are obtained from the IMF (International Monetary Fund) 2015 World Economic Outlook.

Islamic finance operates within an ethical framework that distinguishes it from conventional banking (Muhammad et al., 2024; Fielnanda, Amalia, & Hidayah, 2024). While contracts like Murabaha, Ijara, and Istisna offer fixed returns and may not fully align with Islamic law, Musharaka and Mudaraba contracts exemplify the PLS approach, where profits and losses are shared based on contributions. This model mandates that transactions between banks and IAH must be backed by real assets, excluding variable interest rates, to refect justice and transparency. However, the absorption of losses by IAH can encourage banks to engage in risk-shifting behaviors.

Previous studies (e.g., Daher, Masih, and Ibrahim, 2015; Cevik and Charap, 2011; Van Greuning and Iqbal, 2008; Visser, 2009; Weil, 2013) have highlighted agency problems and information asymmetry between Islamic banks and IAH, which may compromise transparency and risk management. However, limited research has addressed the role of governance mechanisms in mitigating these challenges. This study distinguishes itself by offering a novel interpretation of the PLS principle, examining the real, world alignment between theoretical PLS principles and actual returns to IAH, with particular attention to governance mechanisms. It highlights how insufficient transparency and limited control over investment decisions can motivate Islamic banks to engage in excessive risk-taking, a phenomenon often overlooked in previous studies that focused solely on financial outcomes.

Additionally, the study emphasizes the critical role of governance in the effective implementation of PLS, demonstrating that failures in governance can distort the alignment between the intended risk, sharing nature of PLS and the actual returns provided to IAH. By linking governance quality with the equitable application of the PLS framework, this research contributes a novel perspective to the broader discourse on Islamic finance.

This study distinguishes itself from previous research by offering an innovative interpretation of the Profit and Loss Sharing (PLS) principle. While existing literature has explored various aspects of Islamic finance, including governance challenges, performance of PLS models, and deposit return behaviors, there remains a gap in understanding how PLS principles are applied in practice and their implications for stakeholders. By critically analyzing these dimensions, this study aims to provide deeper insights into the operationalization of PLS in Islamic banking.

Accordingly, this study seeks to answer the following central research question: To what extent do the returns on investment deposits (RIAH) in Islamic banks align with the Profit and Loss Sharing (PLS) principles? By examining the interplay between risk, governance, and market conditions, this research aims to contribute to a broader understanding of how Islamic banks can better align their investment deposit practices with the ethical and financial principles of Islamic finance.

The paper is structured as follows: after the introduction, Section 2 provides a comprehensive literature review to clarify theories related to investment deposit returns (RIAH) and the PLS principle. Section 3 describes the variables, data, and methodology. Section 4 presents and analyzes the empirical results, and Section 5 concludes the study.

2. LITERATURE REVIEW

The recent global financial crises have adversely affected the microfinance industry, leading to increased adoption of Islamic finance, particularly among Muslims practitioners. Islamic finance aims to provide alternative solutions that address the challenges faced by the microfinance sector, distinguishing itself from conventional finance while adhering to Islamic principles. A significant research focus is on the Islamic banking system, particularly the Profit and Loss Sharing (PLS) principle, which is central to Islamic finance. In their portfolio analysis, Masum, Chowdhury, and Azad (2013) indicated that a portfolio integrating three financial sectors (Islamic banking, insurance, and financial institutions) can effectively reduce risk. The typical financial contract of Islamic banks is the profit and loss sharing (PLS) contract, a form of equity investment with a fixed duration (Archer, Abdel Karim, and Al, Deehani, 1998). Investment account holders IAH are encouraged to monitor and discipline the Islamic bank to prevent them from potential excessive risk- taking and moral hazard (Aysan, Disli, Ozturk, and Turhan, 2015).

Effective governance is crucial in Islamic banking to balance the interests of shareholders and Investment Account Holders (IAH). However, studies indicate that current governance mechanisms may be inadequate. For instance, Magalhães and Al-Saad (2013) argue that existing structures do not sufficiently protect IAH interests. Similarly, Kammer and al. (2015) recommend including specific directors on boards to ensure IAH rights are addressed. Hamza (2016) finds that neither the board of directors nor the Shariah board significantly influences returns for IAH, suggesting the need for enhanced governance frameworks. The profit and loss sharing (PLS) principle is recognized as a fundamental component of Islamic banking, and has been explicitly endorsed by Islamic scholars such as Hassan and Zaher (2001) and Khan (2010). According to Iqbal and Molyneux (2005), applying the PLS principle enhances the efficiency of Islamic banks and strengthens the stability of the banking system as a whole.

Among the measures implemented by Islamic banks to provide a degree of assurance to Investment Account Holders IAH is the establishment of the Islamic Financial Services Board (IFSB) in 2002 in Kuala Lumpur, Malaysia. This international organization exclusively focuses on Islamic financial services and aims to set specific standards and principles across the banking, insurance, and capital markets sectors to enhance the stability of these financial services. The IFSB promotes the concept of income smoothing, whereby certain members utilize their profit equalization reserves to stabilize the profit payments made to IAH. However, some scholars argue that guaranteeing profits even when losses occur, by channeling funds from the special reserves of Islamic banks, violates the core principle of profit and loss sharing (PLS), which stipulates that returns and risks should be intrinsically linked. As a result, it is argued that neither capital nor returns should be guaranteed by Islamic banks. The PLS financing framework includes two principal contracts: Musharaka (joint venture) and Mudaraba (profit, sharing).

The PLS model, characterized by equity-based contracts like Mudaraba and Musharaka, aims to promote risk, sharing and financial inclusion. Studies such as Sumarti Fitriyani, and Damayanti (2013) demonstrate that PLS contracts can provide flexibility and profitability for low, income borrowers. However, challenges persist. Chong and Liu (2009) observe that Islamic deposits are closely correlated with conventional deposits, indicating limited adherence to the PLS model. Risfandy and al. (2017) note that while PLS-based loans attract new clients, they may require higher margins, which may undermine competitiveness. Trinugroho, Risfandy, and Ariefianto (2018) explore this phenomenon by analyzing the determinants of banking margins within a sample of Indonesian rural Islamic banks. The authors noted that regional disparities significantly influence banking margins.

Sumarti, Fitriyani, and Damayanti (2013) propose a mathematical model for a microcredit scheme that ensures equity for both lenders and borrowers, utilizing the Profit and Loss Sharing PLS contract. Their research is based on a sample of real data obtained from low-income Indonesian merchants who engage in borrowing with conditions that impose penalties for late repayments and involve significantly high, interest rates. Alandejani and Asutay (2017) explore the potential of Islamic finance as a mechanism to mitigate non, performing loans NPL within commercial banking systems. Their study evaluates the effects of sectoral growth in financing and the expansion of Islamic finance structures on NPL in the Gulf Cooperation Council (GCC) countries from 2005 to 2011, employing the Generalized Method of Moments (GMM) for analysis. The authors contend that fixed, rate debt contracts in conventional banks are more likely to lead to NPL compared to the profit and loss, sharing contracts characteristic of Islamic banking. Bitar and Tarazi (2019) found that while stronger creditor rights lead to higher capital in conventional banks, Islamic banks are less influenced due to the PLS principle, except in less competitive, non-Muslim majority markets, where they behave similarly.

Various factors influence the development of returns on investment deposits in Islamic banks. Cevik and Charap (2011) found a long, term correlation between returns on Islamic investment accounts and conventional bank deposit rates. This suggests that Islamic banks may adjust returns to remain competitive. This practice raises concerns about the authenticity of PLS principles. In the same monitoring context, Diamond (1984) demonstrated that regular oversight of debt contracts, along with portfolio diversification, are crucial for mitigating information asymmetry, reducing the threat of inefficient liquidation, and optimizing returns. Furthermore, income smoothing techniques, as discussed by Merton (1977) and Kareken and Wallace (1978), are employed by Islamic banks to stabilize returns, potentially transferring risk from IAH to shareholders. By employing income smoothing techniques, Islamic banks ensure that IAH receives a return on their investment deposits, as a portion of the risk is transferred from IAH to shareholders (Shrieves and Dahl, 1992). Furthermore, Daher, Masih, and Ibrahim (2015) emphasize that Islamic banks need to balance the interests of shareholders and IAH, to minimize the impact of displaced commercial risk.

Investment deposits can give rise to moral hazard risks (Farook, Hassan, and Clinch, 2012). This phenomenon arises because Islamic banks may tend to adopt risky investment strategies, as it is assumed that Investment Account Holders (IAH) will absorb some losses. In contrast, several scholars, including Visser (2009), Hamza and Saadaoui (2013), and Weil (2013), argue in favor of engaging in higher, risk investment opportunities.

Imama and Kpodar (2016) investigated the link between economic growth and the Islamic banking system. Their analysis shows that the small size of Islamic banking does not prevent its positive link with economic growth. Boukhatem and Ben Moussa (2017) reached the same conclusion but highlighted that weak institutional frameworks can limit this impact. In Muslim-majority countries, Islamic banking may offer greater benefits for growth, especially where many workers are in low- to middle-income sectors (Kumru and Sarntisart, 2016, Boukhatem and Ben Moussa, 2017)

Karim, Abubakr Naeem, and Abaji (2022) examined the impact of the Islamic fintech in the Islamic banking sector, favouring a stakeholder approach following the COVID, 19 pandemic. The results indicate that respondents revealed a strong interest in Islamic banking and Islamic fintech, especially during and after the pandemic and believed that Islamic banks should not be viewed as profit-making organizations.

Rahman, Latif, Mud, and Abdullah (2014) conducted a theoretical assessment of the weaknesses and failures of the Profit and Loss Sharing PLS principle in Islamic banks. They recommended that Islamic banks in Malaysia, when acting as entrepreneurs, should emphasize PLS contracts over merely functioning as financial intermediaries. Conversely, Chong and Liu (2009) founded that only a marginal proportion of Islamic banking finance adheres to the PLS model. Their findings also indicated that Islamic deposits are not entirely free of interest but are closely correlated with conventional deposits. These results suggest that the rapid expansion of Islamic banking is largely driven by the global resurgence of Islamic financial practices rather than the inherent benefits of the PLS model. Sorwar, Pappas, Pereira, and Nurullah (2016) investigate the market risk profiles of Islamic and conventional banks. Their univariate analysis indicated no significant differences between Islamic and conventional banks.

In summary, the literature indicates that Islamic finance encompasses a wide array of studies with the existing research focusing on three primary themes: governance, PLS model performance, and deposit return behaviour. While these themes form the core of our analysis, it is important to vary findings across regions and methodologies. To achieve a structured analysis, this study categorizes note that other pertinent areas, such as Islamic microfinance, fintech integration, financial stability, and consumer behaviour, also contribute valuable insights to the broader discourse on Islamic finance. This structure enables a deeper understanding of Islamic banks' adherence to Shariah principles. While governance often appears insufficient to fully protect IAH, PLS contracts demonstrate both the potential for fair financial participation and challenges like moral hazard. Moreover, investment deposit returns reveal a complex relationship between Islamic principles and conventional benchmarks. Thus, this study aims to empirically assess how closely investment deposit returns in Islamic banks align with true profit and loss sharing principles.

3. METHODOLOGY

This empirical methodology utilizes panel data analysis. In fact, this model was estimated by examining the correlation between the investment deposit return as the dependent variable and the principal independent variables.

3.1 Variables description

In order to assess whether the returns on investment deposits in Islamic banks are consistent with the profit and loss sharing contract, an empirical study is conducted showing integrates risk, governance, financial and macroeconomic variables.

Three key risk indicators are used to evaluate the impact of banking risk on investment deposit returns (RIAH). The Capital ratio (CAP) reflects the bank’s solvency and is valued by investment account holders (IAH) seeking stable returns; a higher CAP enhances bank performance and market share. The Asset structure ratio (ASTR) indicates the use of PLS mechanisms, which can increase both potential returns and risk exposure. Investment deposit growth (IDG) may signal market power and profitability, but can also reflect excessive risk-taking, particularly in the presence of asymmetric information.

Regarding governance, four key variables are considered. Board size (BDS) and the Percentage of independent directors (BDI) influence control and risk oversight. A larger board may be beneficial in Islamic banks due to their relative inexperience, while independent directors may lack knowledge of Shariah-compliant finance. The Shariah board size (SBS), if large and diverse, enhances credibility and compliance with Islamic principles, positively influencing RIAH. The presence of a Central Shariah Board (CSB) is also included as an external governance mechanism.

Several financial and macroeconomic factors are also examined. The dual monetary system (DUAM) dummy captures the degree of autonomy Islamic banks have in pricing. Islamic deposit insurance (INSD) may create moral hazard by encouraging excessive risk-taking, as it reduces the consequences of default. Return on assets (ROA) serves as a measure of profitability, influencing RIAH. Bank size (SIZE) and bank age (AGE) reflect the effects of scale and experience on investor confidence and returns.

At the macroeconomic level, two key variables are included. GDP growth (GDP) can positively affect RIAH by increasing investment opportunities and profitability, though it may also lead to risk underestimation during economic booms. Inflation (INF) erodes real returns, making it a critical determinant for IAH outcomes.

Table 1. Dependent and independent variable

Variable	Definition	Measures
Dependent Variable:		
RIAH	Return on Investment Account Holders	IAH income / Total unrestricted investment deposits
Independent Variables:		
BDS	Board size	Number of board directors
BDI	Percentage of independent directors	Number of independent directors / Total number of board directors
SBS	Shariah board size	Number of directors on the Shariah board
CAP	Capital ratio	Equity / Total assets
ASTR	Asset structure	PLS assets / Debt assets
IDG	Investment deposit growth	IDG growth rate
ROA	Return on assets	Net income / Total assets
Size	Bank size	Log of total assets
AGE	Bank age	Number of years the bank has existed, used as a proxy for bank maturity
DUMA	Dual monetary system	Dummy variable: 1: if the monetary system is dual, 0: otherwise
INSD	Islamic deposit insurance	Dummy variable: 1: if there is Islamic deposit insurance, 0: otherwise
CSB	Central shariah board	Dummy variable: 1: if there is a central Shariah board, 0: otherwise
GDP	GDP growth rate	GDP growth rate
INF	Inflation rate	Average annual inflation rate

3.2 Data and sample

The data used in this study largely rely on the annual reports of commercial Islamic banks for which financial information is available, excluding conventional banks with Islamic windows as well as Islamic investment banks. The used sample, based on dynamic panel data covering the period 2005–2016, includes 27 Islamic banks operating in the GCC countries, excluding Kuwait (Saudi Arabia, Bahrain, Qatar, UAE), as well as in Malaysia, Indonesia, Pakistan, Jordan, Bangladesh, and Sudan. This sample is considered sufficiently representative as it encompasses the main centers of Islamic finance.

Additionally, we use data from World Bank indicators provided by the International Monetary Fund (IMF), to obtain information on the annual real GDP growth and inflation rates for each selected country.

Table 2. Islamic Banks Included in the Sample

Country	Number of IBs	Names of Islamic Banks
United Arab Emirates	4	ADIB, Sharjah IB, Emirates IB, Dubai IB
Saudi Arabia	2	Rajhi IB, Al Bilad IB
Bahrain	3	Bahrain IB, Albaraka Group, Gulf Finance House
Qatar	2	Qatar International Ib, Qatar Ib
Indonesia	2	Bank Syariah Mandiri, Bank Muamalat
Malaysia	8	Affin IB Berhad, Asian Finance Bank Berhad, Bank Islam Malysia Berhad, Alliance IB, Standard Chartered Saadiq Bhd, Hong Leong IB Berhad, Maybank Islamic, Public Islamic Bank
Sudan	1	Faisal IB
Bangladesh	2	Social Islami Bank LTD, Al Arafah Islamic Bank
Jordan	1	Jordon Islamic Bank
Pakistan	2	Bank Islami Pakistan, Al Meezan Bank Limited

3.3 Analysis techniques

The used estimation method is the system Generalized Method of Moments (GMM), as developed by Arellano and Bover (1995) and further refined by Blundell and Bond (1998). The estimation model relied on this study is done through a pooled regression model using the dynamic panel GMM method. This fundamental model is as follows:

Equation 1: RIAH Regression

$$RIAHit = \alpha + \varphi 1\ RIAHit,\ 1 + \varphi 2\ Rit + \varphi 3\ Git + \varphi 4\ Fit + \varphi 5\ Mit + \varepsilon it \quad (1)$$

In this equation, the dependent variable is the RIAHit of the bank i (i=1,…,27) in year t (t=2005,…,2016). $RIAH_{it-1}$ reveals the lagged value of the dependent variable. $RIAH_{it-1}$ captures the dynamic effect of returns, which is relevant since past performance often influences the future investment decisions of IAH. φ 1 is the parameter estimated for the lagged dependent variable, while φ2, φ3, φ 4 correspond to the parameters estimated for independent variables grouped under the four thematic domains. Thus, Rit, (Risk variables) Git (Governance variables), Fit (Financial variables), and Mit (Macroeconomic variables). ε_{it} is the error term.

Each explanatory variable is selected based on existing theoretical and empirical literature related to Islamic banking and profit, and, loss sharing (PLS). It is expected that risk indicators have a positive or negative effect depending on whether they align with sound risk management

or excessive risk-taking. Macroeconomic variables may affect returns based on the broader economic environment.

The System GMM estimation method is used which tend to outperform OLS and 3SLS in addressing endogeneity, particularly in dynamic panel models. By employing internal instruments, System GMM enhances estimation precision and robustness. Endogeneity, arising from simultaneity bias, omitted variables, or lagged dependent variables, is corrected by combining equations in first differences and levels, using appropriate instruments. The presented model is estimated through the GMM system in both system and first-stage forms to strengthen the validity of instruments and improve accuracy. To test robustness and control for heterogeneity, we introduce banking and financial environment dummies and control for bank- and country-level variables such as size, capital adequacy, and macroeconomic factors. Model validity is assessed through the Sargan test for over-identifying restrictions, Arellano-Bond serial correlation tests, and the Variance Inflation Factor (VIF) analysis.

4. RESULTS AND DISCUSSION

The econometric analyses presented in this article, as well as the statistical data analysis, were conducted using STTA version 13 statistical software.

4.1 Descriptive statistics

As an initial component of the analysis, Table 3 presents a descriptive statistical overview of a sample comprising 27 Islamic banks. The descriptive statistics provided in Table 3 indicate that the average value of the dependent variable RIAH is 8.1% for the entire period and across all regions.This RIAH level suggests that Islamic banks provide competitive returns to investment depositors relative to the deposit rates offered by conventional banks. Additionally, the non-negative minimum value of the return on investment deposits implies the absence of losses or the utilization of income smoothing techniques. The inclusion of independent members on the board of directors is critical for improving the governance of banking institutions.

In certain Islamic banks, the absence of independent members on the board of directors contradicts best practices in banking governance (with a minimum BDI of 0). All banks maintain an adequate number of Shariah board members as recommended by IFSB, 3 (ranging from 3 to 7 scholars) except in Indonesia and Bangladesh where the number of scholars reaches 23. The average of the CAP is 13.1% indicating a high level of solvency among Islamic banks. ASTR means is 13.7% signifying that PLS assets constitute 13.7% of total debt assets. In fact, Islamic banks tend to rely more on debt financing in their operations which is considered less risky compared to PLS assets.

The ROA mean is 1.7% reflecting a decline from approximately 1.98% prior to the subprime crisis. Notably, the ROA for Asian Islamic banks, particularly in Indonesia and Malaysia, has remained relatively stable before and after the crisis, albeit at levels substantially lower than those observed in GCC countries. In this sample, the average ROA for Indonesia and Malaysia is 0.008, suggesting that the deterioration in Islamic bank performance primarily affects GCC countries.

The IDG is an indicator of excessive risk-taking behavior. Visser (2009) suggested that a significant volume of investment deposits could motivate banks to undertake riskier activities and operate with lower capital. However, this trend is not evident in this sample as the growth of IDG remains relatively modest with an average of 21.1% over the entire period. Furthermore, the average AGE of Islamic banks in the sample under study is 13.38 years, indicating that the Islamic banking market is primarily comprised of relatively young institutions.

Table 3. Descriptive statistics

	Number of Observations	Mean	Standard Deviation	Min	Max
RIAH	277	0.078	0.159	0.001	0.875
BDS	301	9.153	2.421	5	17
BDI	301	0.364	0.187	0	0.875
SBS	301	4.555	1.873	0	10
CAP	292	0.131	0.101	0.009	0.835
ASTR	288	0.137	0.967	0	16.322
IDG	252	0.211	0.496	, 0.999	4.549
ROA	275	0.017	0.031	, 0.284	0.1844
TA	294	15.511	1.660	11.101	21.655
AGE	299	20.421	13.379	1	59
PIB	298	0.052	0.037	, 0.52	0.262
INF	284	0.051	0.052	, 0.49	0.374

4.2 Evolution of return on investment account holders (RIAH)

Table 4 illustrates RIAH trends across a sample of 10 countries covering the period 2005 to 2016. The RIAH exhibits considerable variability during this period, reflecting the different performances of the Islamic banking sector.

In the early years, the RIAH started at 3.54% in 2005 but declined to its lowest point of 3.21% in 2006. This dip suggests a period of weaker returns for Investment Account Holders IAH during the initial phase of the study. However, from 2007 to 2009, the RIAH showed a marked improvement, rising to 4.36% in 2007 and peaking at 8.71% in 2009. This significant growth coincides with the global financial crisis, when Islamic banks can have been perceived as more stable or ethically aligned, attracting risk-averse investors.

Between 2010 and 2016, the RIAH remained consistently strong, with values ranging from 6.60% to 10.36%. The highest RIAH during this period was recorded in 2013 at 10.36%, demonstrating a peak in returns. Although there are slight fluctuations, the trend reflects overall stability and solid performance.

Throughout the period, the average RIAH stands at 7.4%, signifying a robust return for IAH over time. The only notable decline occurred in 2006, when it reached a low of 3.21%, while most of the remaining years demonstrated strong and improving returns. This consistency, particularly in the later years, suggests that Islamic banks have enhanced their risk management and investment strategies, ensuring sustained benefits for their investors. Overall, the average RIAH across this period is 7.4%, demonstrating a generally strong return for IAH. This average serves as a valuable

benchmark for assessing the long-term performance of Islamic banks. The minimum value of RIAH is 3.21% recorded in 2006. The consistency observed in the following years reflects better stability in the investment portfolios and governance of Islamic banks. To conclude, these data can provide valuable insights into the competitiveness of Islamic banks. High returns can enhance the appeal of Islamic finance for investors concerned with ethical principles.

Table 4: Yearly Trends of RIAH in Islamic Banks

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	MOY	MIN
RIAH	3,54	3,21	4,36	7,88	8,71	6,6	7,86	9,45	10,36	9,23	8,74	8,82	7,4	3.21

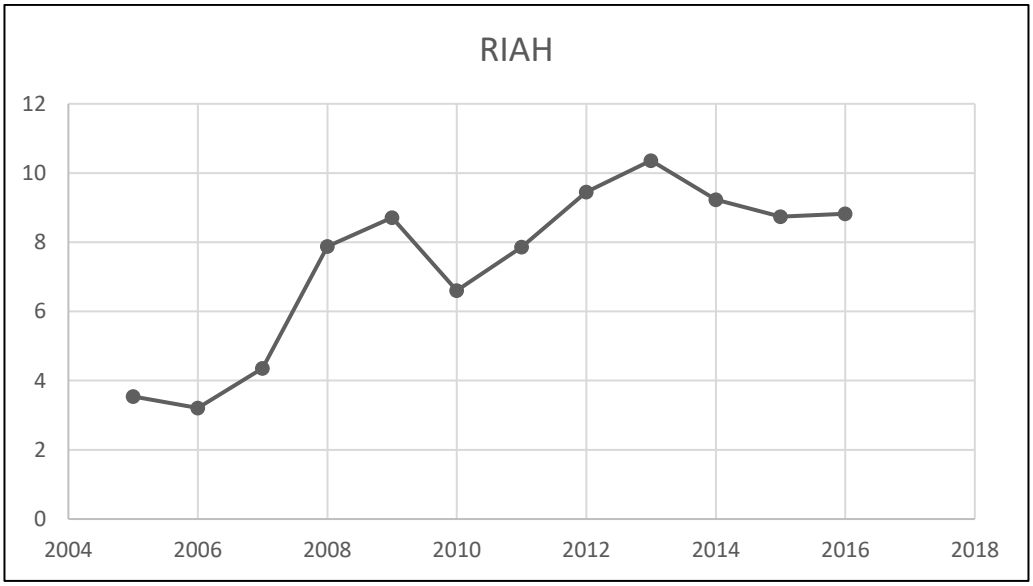

Figure 1: Yearly Trends of RIAH in Islamic Banks (2005 to 2016)

4.3 Correlation test

Table 5 presents the correlation matrix for the selected variables. The evaluation of the potential presence of multicollinearity among the exogenous variables, can lead to biased results. The threshold most commonly referenced in the literature for assessing multicollinearity is a correlation coefficient exceeding 0.5 for any pair of variables. However, Kennedy (1992) noted that a significant multicollinearity issue arises when the correlation coefficient exceeds 80% for any given pair of variables. As shown in the table there is no multicollinearity problem. According to Hamilton (2004), the correlation matrix cannot detect all multicollinearity problems. The assessment of multicollinearity is further conducted by regressing each variable against all other explanatory variables.

Table 5: Correlation Matrix

MODEL	RIAH	BDS	BDI	SDG	CAP	ASTR	ROA	Age	INSD	CSB	DUMA	GDP	INF
RIAH	1												
BDS	00.287	1											
BDI	, 0.177	, 0.325	1										
SDG	, 0.059	, 0.024	, 0.066	1									
CAP	, 0.030	, 0.012	0.014	0.069	1								
ASTR	, 0.153	0.033	, 0.282	0.008	, 0.107	1							
ROA	, 0.011	0.097	, 0.064	0.078	0.187	0.005	1						
AGE	, 0.078	0.178	, 0.200	, 0.048	0.008	0.134	0.128	1					
IINSD	, 0.156	, 0.027	0.350	, 0.111	, 0.112	0.006	, 0.130	, 0.179	1				
CSB	, 0.498	, 0.433	0.145	, 0.051	, 0.134	0.066	0.017	, 0.106	, 0.254	1			
DUMA	0.034	, 0.001	0.124	, 0.139	, 0.011	, 0.034	, 0.115	, 0.158	, 0.067	, 0.057	1		
GDP	0.016	0.066	, 0.027	0.048	0.192	0.017	0.298	, 0.046	, 0.163	0.058	, 0.020	1	
IINF	.129	0.068	, 0.327	0.069	0.011	0.164	0.140	0.040	, 0.144	0.126	, 0.470	0.038	

Additionally, the Variance Inflation Factor (VIF) test is employed at this level and is considered as a more robust method for detecting multicollinearity. According to Bennouri, Chtioui, Nagati, and Nekhili (2018), multicollinearity is indicated when the VIF for any individual variable exceeds 10, and when the overall VIF for all variables surpasses 6.

Table 6 shows the highest and lowest VIF values alongside their respective tolerance levels. The other variables range between 2.99 and 1.09. The highest VIF value is related to the Size variable and it is below the threshold of 10. The average VIF is 1.09, which is less than 6. Therefore, we conclude that there is no multicollinearity problem.

Table 6: Variance inflation factor VIF

VARIABLE	VIF	1/VIF
TA	2.99	0.334
IDG	1.09	0.921
Moyenne VIF	1.65	

4.4 Estimation results

Results related to the empirical estimation are presented in Table 7. This study investigates the influence of independent variables on RIAH. To assess the robustness of our findings, it is essential to test their sensitivity by incorporating additional explanatory dummy variables (specifications 2,3,4 and 5). The results across all specifications stayed broadly consistent.
The p, values associated with the over, identifying restrictions test and serial correlation test are notably high, suggesting that the null hypotheses of correlation amidst instrumental variables and error terms (as indicated by the Sargan statistic) and second, order correlation (as measured by the Arellano and Bond statistic) are rejected. The lagged value of the RIAH coefficient is statistically significant to 1% with a positive sign in all specifications.

This indicates that the present value of the RIAH depends on its past value. The governance indicators BDS and BDI exhibit statistical significance and are negatively correlated with the return on investment deposits This suggests that certain internal governance characteristics may adversely affect deposit performance. This finding aligns with Mollah and al. (2017), who argue that ineffective governance structures in Islamic banks may fail to deliver benefits to IAH. The study reveals several significant findings. Shariah board size (SBS) is positively correlated with effective oversight of investment deposits, enhancing monitoring capacity and trust in financial operations. This supports Grassa (2013), who highlights the importance of a well-structured Shariah board in governance. The variable SIZE is negative and significant at 1% for the first specification and at 10% for the fourth specification, which indicates small Islamic banks, seem to offer better returns to their IAH than large banks. This may be attributed to the banks' objective of attracting more investment deposits to finance their activities. This interpretation is consistent with Beck and al. (2013), who highlight that smaller banks, being more client-oriented and flexible, may employ more aggressive tactics to grow market share and improve financial intermediation. Thus, the dummy variable CSB, reflecting the existence of a Central Shariah Board, is consistently negative and significant at 1% in the last four specifications. Rather than enhancing governance, this suggests that centralized Shariah oversight may be ineffective, possibly due to bureaucratic constraints or a lack of autonomy at the bank, level Shariah boards. This finding is aligned with Grassa (2013), who warns that while central Shariah boards are designed to ensure uniformity and compliance, their effectiveness depends heavily on their independence, transparency, and capacity to monitor banks without undermining their operational flexibility.

The capital ratio (CAP) is negatively impacted returns, indicating that banks with lower capital may struggle to generate higher returns. Therefore, the equity ratio is an indicator of insolvency risk, as substituting debt with equity lowers both the bankruptcy rate and the cost of borrowed funds (Rouissi, Sassi, Bouzgarrou, 2017). The IDG shows a significant negative correlation in all specifications. A large volume of investment deposits may encourage Islamic banks to take on greater risks and operate with less capital (Visser, 2009).

In other words, inadequate communication or asymmetric information about the increase in the proportion of investment deposits within the bank may encourage the board of directors to allocate a larger share of these deposits to high, risk assets, which negatively affects the RIAH. To mitigate this risk for both Islamic banks and IAH, it is essential to establish a well-structured strategy that ensures an optimal balance between deposits and equity investments. Thus, the variable that explains the asset structure (ASTR) does not significantly affect returns, as Islamic banks tend to avoid relying heavily on PLS assets like Musharakah and Mudharabah due to their higher risk. Dar and Presley (2000) argued that investment deposits earmarked for Musharakah and Mudharabah assets in Islamic banks are subject to a significant risk of loss.

Inflation negatively affects investment returns in Islamic banks by reducing asset profitability, echoing Iqbal and Mirakhor (2011) concerns about macroeconomic instability. Islamic deposit insurance (INSD) is associated with moral hazard and weaker market discipline, consistent with Demirgüç-Kunt and Kane (2002). However, in countries with dual monetary systems (DUAM), Islamic banks benefit from greater flexibility and innovation, positively influencing investment returns, as noted by El-Gamal (2006).

Table 7: GMM Estimation Results

Model Specifications

Independent variables	(1)	(2)	(3)	(4)	(5)
RIAH t, 1	0.756***	0.615***	0.665***	0.602***	0.572***
IDG	, 0.045***	, 0.054***	, 0.058***	, 0.058***	, 0.054***
BDS	, 0.019**	, 0.004	, 0.005	, 0.033***	, 0.036***
BDI	, 0.332***	, 0.252***	, 0.249***	, 0.286***	, 0.229***
SBS	0.028**			0.050***	0.055***
ROA	, 0.019	0.019	0.035	0.040	0.036
CAP	, 0.010	, 0.102*	, 0.115**	, 0.010	, 0.016
TA	, 0.026***	, 0.011	, 0.013	, 0.018*	, 0.012
Age	0.002	, 0.0002	0.0001	0.001	0.001
INF			, 0.134	, 0.145	, 0.176*
GDP	0.099	0.083	0.135	0.192	0.218
DUMA	, 0.007	0.055**			0.062**
INSD	, 0.073**	, 0.107***	, 0.062*	, 0.069**	, 0.109***
CSB		, 0.158***	, 0.130***	, 0.150***	, 0.171***
ASTR	, 0.072	0.006	, 0.035	, 0.035	, 0.022
Constant	0.612***	0.479***	0.537***	0.656***	0.562***

5. CONCLUSION

This study sets out to examine the determinants of investment deposit returns (RIAH) in Islamic banks, with a particular focus on governance, bank size, risk exposure, and macroeconomic conditions. One key finding is that the governance structure, both the Board of Directors (BDS/BDI) and the Shariah board size (SBS), exert a significant influence on returns, with internal governance mechanisms generally associated with negative impacts on RIAH. In contrast, a larger SBS appears to enhance oversight, supporting more effective deposit management.

Smaller Islamic banks were found to deliver higher returns to Investment Account Holders (IAH), likely due to competitive pressures and a greater need to attract deposits, confirming insights from Beck and al. (2013**)** on the client, centric nature of smaller institutions. Furthermore, we observed a misalignment between the PLS principle and actual RIAH outcomes. This disconnect stems from both bank behavior, such as excessive risk,

driven by moral hazard, and depositor behavior, especially when IAH focuses exclusively on the profitability and the implicitly demand interest rate, like returns. These findings align with Visser (2009**)** and El-Gamal (2006), who argued that Islamic banks often struggle to maintain PLS-based relationships under competitive market constraints.

Moreover, macroeconomic factors like INF and the presence of Islamic deposit insurance (INSD) were negatively correlated with returns, supporting the view that systemic features can undermine market discipline, a concern also raised by Demirgüç-Kunt and Kane (2002). Meanwhile, the presence of a dual monetary system (DUAM) had a positive effect, indicating that pricing autonomy can strengthen return strategies in Islamic banks.

This study suggests several recommendations to enhance investment deposit returns and strengthen the Islamic banking sector. For researchers, future studies should investigate the behavior of IAH, focusing on risk preferences and ethical motivations, as well as conducting comparative research on governance mechanisms. Policymakers should improve Shariah governance by clarifying regulations for Central Shariah Boards and establishing unified reporting standards. Islamic banks are encouraged to engage IAH more in governance, offer Shariah-aligned return benchmarks, and design investment products for different risk profiles. Strengthening internal risk controls will improve the alignment of deposit returns with performance and enhance ethical engagement.

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