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ORIGINAL ARTICLE

Net interest margin in dual banking systems of the MENA region: Balancing profitability and social responsibility

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Abstract

Net interest margin (NIM) represents the tradeoff between banking profitability and the social cost of intermediation. Through the lens of the dealership model and decoupling hypothesis, this study investigates determinants of NIM among 275 banks from 20 Middle Eastern and North African (MENA) countries for 2006–2021 using OLS, System-GMM, and subsamples. The results reveal that Islamic banks consistently report lower NIMs than their conventional peers, reflecting their pro-social, *Shari'ah* compliant mandate, and institutional pressure to balance profit margin with financial ethics and inclusion. NIM is positively associated with capital strength and loan specialization, but negatively associated with credit risk, regulatory quality, and economic shocks such as Covid-19. Larger banks, especially in upper-income countries, tend to maintain lower margins. In line with the notions of decoupling hypothesis, Islamic banks exhibit distinct dynamics: They benefit more from liquidity buffers and size advantage, but suffer greater margin compression under rising credit risk, particularly in lower-income economies, when compared against the conventional banks. This calls for tailored regulatory strategies to preserve competition and financial stability in dual banking systems, recommending expanded *Shari'ah*-compliant liquidity tools and FinTech adoption to enhance efficiency and margin resilience in Islamic banks.

KEYWORDS

dual banking systems, Islamic bank, MENA region, net interest margin

JEL CLASSIFICATION

G210, G320

1 | INTRODUCTION

Banks earn net interest margin (NIM) from the differences that they pay on the deposits and earn from the loans they disburse (Endri et al., 2020). Based on the dealership theory, banks act as credit market dealers balancing demand and supply of loans and deposits using short-term money market positions by paying fees and interest margin (Ho & Saunders, 1981). Due to its balancing role between cost of deposit and profit from loans, interest margin acts as a strong indicator of banks' efficiency, competition, social contribution, and risks (Fungáčová & Poghosyan, 2011; Poghosyan, 2013).

The determinants of NIM differ significantly across contexts, influenced by economic conditions, banking characteristics, and management practices (Bernardelli & Carrasco-Gutierrez, 2024; Obeid, 2024; Rahman et al., 2023). A growing list of studies reports both bank- and country-specific determinants of NIM. For instance, NIM changes when there is a change in banks' risk appetite, expenses, credit specialization, and transaction size (Addai et al., 2023; Alnabulsi et al., 2023; Bernardelli & Carrasco-Gutierrez, 2024). Numerous market-wide and macroeconomic factors are also investigated. These include market structure and interest rate volatility (Addai et al., 2023); GDP and inflation rate (Bernardelli & Carrasco-Gutierrez, 2024); bank market competition (Khattak et al., 2023), non-performing loans and global financial crisis (Alnabulsi et al., 2023).

Due to their unique attributes, dual banking economies attract significant academic and policy debates surrounding the regulatory and operational challenges facing banks serving competitive customer groups. Existing studies explain the separation of the operational procedures followed by the Islamic banks from their conventional peers using the decoupling hypothesis. Based on this hypothesis, Islamic banks are not simply mirror images of conventional institutions but function according to distinct financial and regulatory norms (Khan et al., 2024). However, the depth of studies and robustness of the results covering determinants of NIM from dual banking economies raise questions on the possibility of a pure decoupling of the two systems, while they are sharing similar macroeconomic parameters and institutional pressure.

This study investigates these limitations on NIM in dual banking economies, examining banks in the Middle East and North African (MENA) region. We primarily look at the theoretical lens of the dealership model and the decoupling hypothesis to examine the determinants of NIM in dual banking economies of the MENA region, focusing on how Islamic and conventional banks respond differently to bank-level, macroeconomic, and institutional factors.

We contribute to three growing areas of the relevant NIM literature:

Firstly, Islamic finance operates under principles that prohibit usury, emphasize financing real assets, and require ethical business practices and risk-sharing (Saeed et al., 2023). Islamic banks differ from conventional banks in their funding methods, operational principles, activities, and regulatory structures (Hassan et al., 2019). However, they face complex dynamics of operational and institutional challenges. The treatment of the NIM is also different in Islamic and conventional banks due to the duality of interest (*riba*) and profit in the two systems (Bougatef & Korbi, 2018). Hence, given the theoretical premise of the study, the question of the uniqueness of Islamic banks maintaining their social role remains valid.

Secondly, NIM has a growing presence in studies targeting dual-banking and conventional settings (Bougatef & Korbi, 2018; Lee & Isa, 2017; Shawtari et al., 2019; Sun et al., 2017). Discrepancies in dual banking studies arise from various grounds, such as size differences in Malaysia (Lee & Isa, 2017), crisis management capacity (Malim & Masron, 2018), compliance, governance, and equity reliance in several jurisdictions (Bougatef & Korbi, 2018; Lee & Isa, 2017; Malim et al., 2017), and differences in risk (Ibrahim & Law, 2020). MENA banks have limited coverage of these differences, while the question of the robustness of the findings remains strong.

Thirdly, due to capital market deficiencies, developing countries often exhibit higher NIMs, which is problematic because banks are the primary funding sources. While a lower margin indicates market competition, lower intermediation costs, and regulatory enforcement, a higher NIM may hinder financial intermediation by discouraging savings due to lower deposit rates and reducing investment opportunities through higher lending rates (Fungáčová & Poghosyan, 2011). Recent evidence reveals significant deviations in the determinants of NIM arising from regional differences, for instance, in MENA regions by Alnabulsi et al. (2023) and among African banks by Addai et al. (2023). Regional differences in institutional norms, social expectations, and regulatory practices influence banks in dual banking economies differently.

The MENA region is particularly intriguing. Despite the massive impact of the Arab Spring, MENA banks grew primarily because of the massive demand for banking in the absence of a strong capital market (Bougatef & Korbi, 2018). However, studies that have considered individual countries from MENA (Shawtari et al., 2019) or MENA as a group (Abdelaziz et al., 2022; Al-Muharrami & Murthy, 2017; Bougatef & Korbi, 2018) have given limited explanations of the decoupling of Islamic banks from their counterparts. The current study aims to combine a host of bank, economy, and institutional factors to have a clear picture of NIM among MENA banks.

There are far-reaching implications of the findings for a banking business model in dual-banking economies. *Firstly*, a lower margin in Islamic banks indicates competition and efficiency. More importantly, since Islamic banks serve

non-Muslim customers in a dual-banking economy, banks must not "trail" the market rates to allure a "group of profit-oriented" customers, which will violate the principles of Islamic finance (Saeed et al., 2023).

Secondly, Islamic banking is generally considered a conservative system amplified by its values-driven approach to financing (Abdelsalam et al., 2016). This line of conservative management may eventually push for a lower NIM from a risk and social management standpoint. Islamic banks want to save more from their income in the form of risk reserves to bypass the geopolitical, financial, and operational crises in regions like MENA. If a lower NIM means a low profit made on loans and paying a higher rate to investment account holders of Islamic finance, this might be a strategy to survive displaced commercial risk (Ibrahim & Law, 2020). Therefore, Islamic banks, especially in dual-banking economies, anticipate higher financing costs. Without true profit and loss sharing contracts, they should rely on Financial Technologies (FinTech) to lower costs and enhance efficiency (Abdeljawad et al., 2022; Banna et al., 2021; Yaya et al., 2021).

The remaining part of the study includes relevant literature, theory, and hypotheses in Section 2, methodology in Section 3, results and discussions in Section 4, and conclusion in Section 5.

2 | LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Ho and Saunders (1981) proposed the dealership model based on bid-ask prices for security market dealers in which banks acted as risk-averse dealers in the credit market, managing loans and deposits. In this model, banks set loan and deposit prices with the goal of maximizing the expected utility of wealth. The dealership model assumes that loans and deposits have different maturities, exposing banks to reinvestment and refinancing risks if portfolios are unmatched and interest rates change. Islamic banks also face similar maturity mismatch challenges that lead to uncertainty in profitability and performance. Entrop et al. (2015) accounted for interest rate risk and expected returns from maturity transformation, pricing interest risk on loan and deposit rates separately. Islam and Nishiyama (2016) added the relative size variable, while Cruz-García and Fernández de Guevara (2020) included deposit insurance premiums and capital requirements explicitly in the dealership model.

The fact that Islamic finance differs from conventional finance is based not only on principles but also on practices. These differences are theoretically captured in the decoupling hypothesis with a motive to understand the factors driving the two competing systems (Khan et al., 2024). Therefore, by this theory, this study expects to see some degree of differences between the Islamic and conventional banks. It is, however, rationally impossible to ensure a pure decoupling of the Islamic system since there is not a single 100% Islamic economy. In fact, allowing dual banking systems to run side-by-side is a theoretical violation of the decoupling hypothesis. There is greater institutional pressure that makes the two competing systems—Islamic and conventional—uniquely separate and necessarily complementary.

In line with the theoretical settings of the study, empirical evidence suggests several determinants of NIM that include bank-specific factors, regulatory and institutional environments, and macroeconomic variables (Bernardelli & Carrasco-Gutierrez, 2024; Obeid, 2024; Rahman et al., 2023). Key variables include the size of the bank, risk aversion, credit risk, liquidity risk, specialization in lending, inflation, GDP growth, and regulatory quality.

2.1 | Size of the bank

Large banks often benefit from economies of scale, better resource access, and technological capabilities, which help reduce operational costs and manage risk, potentially enabling them to maintain higher net interest margins (NIM). These margins can serve as buffers against credit and operational risk (Poghosyan, 2010). Empirical studies have found a positive relationship between size and NIM in various contexts, including the MENA region (Alnabulsi et al., 2023), Malaysia (Ibrahim & Law, 2020), and Palestine (Abdeljawad & Bahlaq, 2023). Obeid (2024) highlights that large banks in Arab markets gain from diversification and cost advantages, while Alarfaj and Al-Salem (2024) emphasize that the size–NIM relationship differs between oil-exporting and oil-importing MENA countries, reflecting structural disparities.

However, in some contexts, size may be associated with narrower margins. Greater efficiency and cost control may allow large banks to remain profitable even with lower spreads (Fungáčová & Poghosyan, 2011; Lee & Isa, 2017). For instance, Poghosyan (2013) reports a negative size–NIM relationship in low-income countries, and Endri et al. (2020)

find no significant effect in Indonesian banks. Several other studies echo this lack of significance (Angori et al., 2019; Cruz-García & Fernández de Guevara, 2020; Islam & Nishiyama, 2016; Rahman et al., 2023).

Islamic banks are relatively smaller in size compared to the conventional banks. They also mostly operate in low-income countries. Hence, the size effect is an effect attributed to the conventional system, not to the Islamic ones (Lee & Isa, 2017). Based on this mixed but meaningful evidence, the study proposes the following hypotheses:

Hypothesis 1. *There is a negative association between bank size and NIM.*

Hypothesis 2. *The relationship between bank size and NIM is weaker for Islamic banks.*

2.2 | Risk aversion

Risk aversion, typically proxied by the capital ratio, reflects a bank's ability to absorb losses and its overall financial resilience. Banks with higher capital ratios are generally viewed as more risk-averse, preferring strong equity buffers over aggressive leverage (Bougatef & Korbi, 2018; Lee & Isa, 2017), which may indicate wider NIM (Ibrahim & Law, 2020; Rahman et al., 2023), especially during financial uncertainty (Angori et al., 2019).

In Islamic banking, capital strength is commonly tied to a preference for less risky, asset-backed contracts like *Murabaha*, rather than profit-and-loss sharing modes such as *Mudarabah* or *Musharakah* (Malim et al., 2017). This reinforces a conservative lending approach and typically leads to higher NIMs (Abdeljawad & Bahlaq, 2023; Malim et al., 2017). Al-Muharrami & Murthy (2017) add that in the Gulf region, well-capitalized banks tend to reduce deposit rates while absorbing more credit risk, thus improving their profitability. Alnabulsi et al. (2023) observe similar positive effects in MENA.

Not all studies find a consistent relationship. Poghosyan (2013) argues that in low-income countries, excessive risk aversion may limit income by discouraging higher yield but riskier lending. Likewise, Cruz-García and Fernández de Guevara (2020) find only weak or insignificant effects in other markets, suggesting institutional effects and some extent of decoupling.

Given the overall empirical support but acknowledging some decoupling, this study hypothesizes:

Hypothesis 3. *There is a positive association between capital ratio and NIM.*

Hypothesis 4. *The relationship between capital ratio and NIM is stronger for Islamic banks.*

2.3 | Credit risk

Credit risk, often measured by the ratio of non-performing loans (NPLs), reflects the likelihood that borrowers will default, potentially leading to partial or full loss of loaned funds (Khan & Jalil, 2020; Lee & Isa, 2017). In line with the dealership model, banks exposed to greater credit risk tend to increase their lending margins to compensate for both expected and unexpected losses (Malim & Masron, 2018; Rahman et al., 2023), even in low-income countries (Poghosyan, 2013). However, deteriorating asset quality raises provisioning needs and recovery costs, thus compressing margins. Depositors demand higher returns from riskier banks, raising funding costs and squeezing margins (Endri et al., 2020).

In Islamic banking, the impact of credit risk may be more severe due to *Shari'ah*-compliant financing contracts. These contracts often limit recourse and require higher monitoring, amplifying sensitivity to credit deterioration (Lee & Isa, 2017). However, Ibrahim and Law (2020) found no significant effect of credit risk on NIM in OIC Islamic banks, once again suggesting the influence of regional uniqueness, institutional differences, and the absence of pure decoupling. Given these competing arguments, the following hypotheses are proposed:

Hypothesis 5. *There is a negative association between credit risk and NIM.*

Hypothesis 6. *The relationship between credit risk and NIM is stronger for Islamic banks.*

2.4 | Liquidity risk

Liquidity risk refers to the possibility that a bank may be unable to meet short-term obligations—such as depositor withdrawals or new loan disbursements—without incurring excessive costs. Banks that adopt conservative liquidity strategies often miss out on more profitable lending and investment opportunities, leading to narrower margins (Fungáčová & Poghosyan, 2011). Excess liquidity entails opportunity costs, prompting banks to widen spreads to compensate for forgone returns. Trinugroho et al. (2014) and Shawtari et al. (2019) find that banks may respond to liquidity surpluses or stress by increasing lending rates. Abdelaziz et al. (2022) note that banks facing liquidity shortfalls may turn to costly emergency funding, contributing to higher margins. Youssef et al. (2025) identify liquidity as a significant determinant of NIM, though institutional differences and market structure can alter the strength of this relationship.

Islamic banks cannot use conventional interest-bearing instruments to manage liquidity, making short-term funding more challenging. Malim and Normalini (2018) suggest that these structural constraints lead Islamic banks to maintain higher spreads. However, Lee and Isa (2017) report an insignificant impact of liquidity on NIM in both Islamic and conventional Malaysian banks, while Shawtari et al. (2019) observe similar results in Yemen. Given these contrasting findings and the unique liquidity management challenges facing Islamic banks, this study posits the following:

Hypothesis 7. *There is a positive association between liquidity risk and NIM.*

Hypothesis 8. *The relationship between liquidity risk and NIM is stronger for Islamic banks.*

2.5 | Loan specialization

Loan specialization, commonly measured by the loan-to-asset ratio, reflects the degree to which banks concentrate their assets in lending activities. Greater specialization is often linked to higher NIM, particularly in regions with limited or less attractive investment alternatives, such as the Gulf Cooperation Council (GCC) countries (Al-Muharrami & Murthy, 2017). Bougatef and Korbi (2018) suggest that banks with stronger credit assessment capabilities and risk management practices can more effectively price loans, thereby increasing intermediation margins. Addai et al. (2023) find that African banks emphasizing core lending activities have a more substantial impact on performance.

In dual-banking systems, this relationship is complex. Bougatef and Korbi (2018) found that loan specialization negatively affects NIM in conventional banks, while the effect is insignificant in Islamic banks. Yet Islamic banks may stand to benefit more from loan-focused strategies due to their reliance on asset-backed financing modes such as *Murabaha* and *Ijarah*, which are inherently structured and require closer monitoring. These features, combined with the emphasis on real transactions and risk-sharing, may allow Islamic banks to extract greater value from loan specialization (Sun et al., 2017). Given these mixed findings and the structural differences between banking models, this study proposes the following hypotheses:

Hypothesis 9. *There is a positive association between loan specialization and NIM.*

Hypothesis 10. *The relationship between loan specialization and NIM is stronger for Islamic banks.*

2.6 | Bank type

Based on the decoupling hypothesis, the study assumes that Islamic banks distinguish themselves from their conventional counterparts through their adherence to *Shari'ah* principles. Islamic finance emphasizes equity participation and real economic transactions (Hashem & Abdeljawad, 2018). Islamic contracts involve higher risk exposure. In *Murabaha* or *Musharakah*, for example, the bank assumes ownership of the underlying asset until the principal and agreed-upon profits are fully repaid, making the institution directly vulnerable to the risk of non-performance. This contrasts with conventional banks, which transfer risk to the borrower through fixed interest contracts.

Islamic banks' structural emphasis on real asset backing and risk sharing comes with operational challenges. Shawtari et al. (2019) found that in Yemen, Islamic banks reported lower NIMs due to their reliance on *Murabaha* financing, strong client relationships, and cultural preference for Islamic products. Nevertheless, the gross evidence is mixed.

Susamto et al. (2021) found no consistent difference in NIM between Islamic and conventional banks, noting that results are highly sensitive to model specification, controls, and sample selection. In contrast, Khan et al. (2024) provided empirical support for the "decoupling hypothesis," showing that Islamic banks tend to exhibit lower NIMs as their financial stability improves. However, Ibrahim and Law (2020) argued that unique supervisory boards and risk-aligned contracts in the Islamic banking system may also lead to higher margins, suggesting a nuanced and context-specific relationship between the banking model and profitability.

For the MENA, being a dual banking region, we argue that Islamic banks, despite structural and regulatory differences, tend to exhibit lower NIMs—signaling more efficient intermediation. Hence, we forward the following hypothesis:

Hypothesis 11. *NIM for Islamic banks is lower than that of the conventional banks.*

2.7 | Control variables

Inflation, the sustained increase in the general price level, affects how banks manage their interest spreads. Higher predictability of the inflation rate passes the risk to borrowers, leading to higher NIM (Cruz-García & Fernández de Guevara, 2020; Demirgüç-Kunt & Huizinga, 1999; Khan et al., 2024). Particularly, the conventional banks respond to inflation by widening their margins as a compensation against risk (Malim et al., 2017; Poghosyan, 2010). However, in high or volatile inflation settings, higher inflation may erode real interest income, leading to narrower margins (Alnabulsi et al., 2023; Angori et al., 2019; Khan & Jalil, 2020). Alarfaj and Al-Salem (2024) further show that the impact of inflation varies between oil-importing and oil-exporting MENA economies, reinforcing the role of contextual heterogeneity. Based on most of the results, we expect inflation to positively influence NIM.

Growth of Gross Domestic Products (GDP), as a measure of a country's productive capacity, reflects improvements in real economic activity and credit conditions (Addai et al., 2023). Bougatef and Korbi (2018) observed that Islamic banks, due to their strong ties to the real economy, may benefit more during periods of economic growth. However, a summary of the studies using GDP growth finds a negative connection with NIM. During booms, intensified competition often leads banks to lower lending rates and relax credit standards, which compress NIM (Entrop et al., 2015; Islam & Nishiyama, 2016). As economies recover, spreads tend to decline, particularly in emerging markets (Agoraki & Kouretas, 2019; Alarfaj & Al-Salem, 2024; Poghosyan, 2013; Shawtari et al., 2019). We expect the positivity of the productive capacity of a country will bring positive changes to NIM, thus leading to a positive connection between GDP growth and NIM.

Regulatory Quality captures the effectiveness of a country's institutional framework in enforcing financial discipline and promoting sound banking practices. As a result, banks face lower uncertainty and less pricing power, which limits their ability to maintain high spreads (Addai et al., 2023; Khan et al., 2024; Obeid, 2024). Gama et al. (2025) suggest that higher levels of societal trust, often correlated with regulatory strength, can reduce information asymmetry and compress margins. For Islamic banks, the dual requirement of adhering to both national regulations and *Shari'ah* governance structures may increase their sensitivity to regulatory quality (Malim et al., 2017). We expect the NIM to go down in a quality regulatory environment, indicating a negative connection.

Covid-19 pandemic disrupted the global financial systems. However, empirical evidence on its impact on NIM remains limited. Insights from earlier crises suggest that banks often widen margins to offset rising credit and liquidity risks during uncertainty (Angori et al., 2019; Fungáčová & Poghosyan, 2011; Rahman et al., 2023). Islamic banks, however, may respond differently due to their ethical and risk-sharing principles. Malim and Masron (2018) found that Islamic banks offered more favorable financing terms post-crisis. Nonetheless, based on a weaker loan demand, higher provisioning, and economic slowdown, we expect a negative connection between Covid-19 and NIM.

3 | METHODOLOGY

3.1 | Data, variables, and measurements

We utilized BankScope to extract financial data from balance sheets and income statements. The World Bank's World Development Indicators and Worldwide Governance Indicators databases were used for the macro-variables. We

collected the type of bank from each bank's website. The dataset encompasses an unbalanced panel sample of 275 banks across 20 countries in the MENA region, spanning the period from 2006 to 2021, with a total of 2488 observations. The duration and scope of the study reflect a comprehensive examination of net interest margins over multiple years and diverse economic conditions. Table 1 presents the measure of the variables used in this paper and references the empirical studies that used a similar measure.

3.2 | Models

The models employed were built upon the foundational framework established by Ho and Saunders (1981), which has been subsequently extended to integrate both bank-specific variables and country-specific factors, to account for the diverse cross-country contexts that influence banking operations (Poghosyan, 2013). In structuring the model, the explanatory variables are categorized into bank-specific variables and macro-variables. Drawing from the frameworks proposed by Poghosyan (2013) and Khan et al. (2024), the model to be estimated in the paper is designed to comprehensively capture the variations in net interest margins across the MENA region banking sector. We have estimated seven specifications of the following two models. Model 1 includes the main variables without the interaction's terms between bank specific characteristics and bank type.

$$NIM_{it} = \beta_0 + \beta_1 X_{it} + \beta_2 Islamic_{it} + \beta_3 \text{Macro}_{\text{it}} + \beta_4 \text{ panel dummies}_{\text{it}} + \epsilon_{it} \ \ldots \quad (1)$$

Model 2 incorporates the moderating variable of bank type as follows:

$$NIM_{it} = \beta_0 + \beta_1 X_{it} + \beta_2 Islamic_{it} + \beta_3 \text{Macro}_{\text{it}} + \beta_4 \text{ panel dummies}_{\text{it}} + \beta_5 (X_{it} \times Islamic_{it}) + \epsilon_{it} \ \ldots \quad (2)$$

here, NIM_{it} represents the net interest margin for bank i in period t, and X_{it} denotes the various bank-specific variables. The variable $\text{Islamic}_{\text{it}}$ is a dummy variable that takes the value of "1" if the bank is Islamic and "0" otherwise.

TABLE 1 Variable measurements and empirical references.

Variables	Measure	Empirical reference
Net interest margin[a]	[(Interest income−interest expenses)/Total assets] × 100	Angori et al. (2019), Fungáčová and Poghosyan (2011), Lee and Isa (2017), Khan et al. (2024)
Size of bank	Natural log of the total assets	Angori et al. (2019)
Risk aversion	Total equity/Total assets	Abdeljawad and Bahlaq (2023), Angori et al. (2019), Poghosyan (2013)
Credit risk	Non-performing loans to total loans	Fungáčová and Poghosyan (2011), Rahman et al. (2023)
Liquidity risk	Total loan to total deposit ratio	Abdeljawad et al. (2024); Trinugroho et al. (2014)
Loan specialization	Total loan to total assets	Valverde and Fernández (2007)
Islamic banks	Dummy variable: "0" = Conventional "1" = Islamic	Ibrahim and Law (2020), Shawtari et al. (2019)
Inflation	The annual inflation using GDP deflator	Khan et al. (2024); Demirgüç-Kunt and Huizinga (1999)
GDP growth	Real GDP growth rate	Entrop et al. (2015), Poghosyan (2010, 2013)
Regulatory quality	Complied by Kaufmann et al. (2011) that ranges between −2.5 and +2.5	Khan et al. (2024), Malim et al. (2017), Poghosyan (2013)
Covid-19	Dummy variable: "1" = Years 2020 and 2021 "0" = Remaining years	

[a]Equivalent terms and items were used for Islamic banks, as they use profit margins on the differences between rates paid to the depositors and received from the investments.

The variable Macro_{it} indicates the macro-variables and the panel dummies_{it} incorporates the banks and years dummy variables. Model 2 estimates the impact of the interaction terms $X_{it} \times \text{Islamic}_{it}$ on the net interest margin, allowing for a nuanced examination of how the relationship between the independent variables and the dependent variable is moderated by the presence of Islamic banking institutions within the MENA region. This approach enables a focused analysis of the unique characteristics and effects of Islamic banks on net interest margins within the broader banking landscape.

3.3 | Estimation methods

Using a panel data setting, we have controlled for the fixed effects using bank and year dummies (Gujarati & Porter, 2009). To address issues such as heteroskedasticity and autocorrelation, robust standard errors are employed, providing more reliable estimates. The study leverages a large volume of observations, mitigating concerns about the normality of data distribution. All firm-level data has been winsorized at the top and bottom 1% to handle outliers. Additionally, given the panel data's short time-series relative to the number of units ($N > T$), concerns about unit root effects on estimation are minimized.

Given the dynamic nature in NIM, we complement our static models with the System-GMM estimator (Arellano & Bover, 1995; Blundell & Bond, 1998). This method is particularly suited for our panel, where the number of banks exceeds the number of years ($N > T$). System-GMM captures dynamic effects through lagged dependent variables and addresses endogeneity by using internal instruments. It also accounts for unobserved heterogeneity and measurement error. We use the two-step estimator with a finite-sample correction to improve the robustness of standard errors in smaller samples. Instrument validity is tested using the Hansen J-test, while the Arellano–Bond test ensures no second-order serial correlation. To avoid instrument proliferation, we limit the number of instruments to remain below the number of groups.

4 | RESULTS AND DISCUSSIONS

4.1 | Descriptive and correlation statistics

Table 2 presents the descriptive indicators for all variables used in the study, covering the full sample and subsamples of Islamic and conventional banks.

The average NIM across the full sample is approximately 2.6%, with a standard deviation of 1.309%. This average is slightly lower than the 3.5% reported by Shawtari et al. (2019) for Yemeni banks, but comparable to the 2.8% reported by Abdeljawad and Bahlaq (2023) for Palestinian banks. Islamic banks exhibit a marginally lower mean NIM of 2.51%, compared to 2.63% for conventional banks, supporting preliminary evidence of their more conservative intermediation profile.

The capital ratio—used to proxy risk aversion—averages 15.5%, with Islamic banks showing slightly higher capitalization (16.3%) than their conventional peers (15.3%). The average non-performing loans (NPL) ratio across all banks is 9.9%, lower than the 21% reported by Shawtari et al. (2019), indicating relatively lower credit risk in this MENA-based sample.

Liquidity levels vary widely, with an overall mean of 56.6%, ranging from 2.2% to as high as 948.7%. Islamic banks display lower average liquidity (39%) than conventional banks (61.3%), reflecting structural constraints in liquidity management.

The average loan-to-assets ratio, a proxy for loan specialization, is 53.3%, with similar levels across Islamic and conventional banks. Inflation and GDP growth averages are 6.2% and 2.6%, respectively. Regulatory quality averages just above zero (0.003), suggesting mild institutional strength, though weaker than levels reported in earlier studies by Poghosyan (2013) and Malim et al. (2017). Islamic banks account for 21.5% of the observations, while the Covid-19 dummy variable is active in 10.7% of the sample, covering the post-2019 period.

Table 3 presents the correlation coefficients among the key explanatory variables. Most correlations are modest, suggesting limited multicollinearity. Liquidity is positively associated with the loan-to-asset ratio ($\rho = .410$) and negatively correlated with bank size ($\rho = -.140$), indicating a potential tradeoff between scale and liquidity holdings. Regulatory quality is moderately and negatively correlated with NPLs ($\rho = -.448$), reflecting the role of stronger institutional environments in promoting better credit performance. To formally assess multicollinearity, a variance

TABLE 2 Descriptive statistics.

Variables	Obs.	Mean	SD	Min	Max
Panel A: Entire sample					
NIM	2439	2.603	1.309	−0.548	7.456
Bank size	2488	21.246	2.908	12.67	25.43
Liquidity	2468	0.566	1.166	0.022	9.487
Capital ratio	2488	0.155	0.117	0.039	.729
Loan to assets	2488	0.533	0.22	0.048	1.052
NPL	2488	0.099	0.145	0.001	0.865
Islamic	2488	0.215	0.411	0	1
GDP growth	2478	0.026	0.052	−0.28	0.262
Inflation	2478	0.062	0.127	−0.302	1.5
Regulatory quality	2488	0.003	0.768	−2.249	1.334
Covid-19	2488	0.107	0.309	0	1
Panel B: Islamic banks					
NIM	504	2.509	1.444	−0.548	7.456
Bank size	535	21.191	2.743	12.67	25.301
Liquidity	522	0.39	0.229	0.022	1.851
Capital ratio	535	0.163	0.126	0.039	0.729
Loan to assets	535	0.541	0.205	0.048	0.919
NPL	535	0.089	0.122	0.001	0.865
GDP growth	532	0.026	0.052	−0.28	0.262
Inflation	532	0.06	0.127	−0.302	0.563
Regulatory quality	535	0.014	0.765	−1.892	1.097
Covid-19	535	0.114	0.318	0	1
Panel C: Conventional banks					
NIM	1935	2.627	1.271	−0.548	7.456
Bank size	1953	21.261	2.952	12.67	25.43
Liquidity	1946	0.613	1.303	0.022	9.487
Capital ratio	1953	0.153	0.114	0.039	0.729
Loan to assets	1953	0.531	0.224	0.048	1.052
NPL	1953	0.102	0.15	0.001	.865
GDP growth	1946	0.026	0.052	−0.28	0.262
Inflation	1946	0.062	0.127	−0.302	1.5
Regulatory quality	1953	−0.001	0.768	−2.249	1.334
Covid-19	1953	0.104	0.306	0	1

Note: NIM stands for net interest margin, whereas NPL is used for non-performing loans. Loan to assets ratio proxies the loan specialization of banks. Capital ratio measures the risk aversion ability.

inflation factor (VIF) analysis was conducted, and all values were well below the conventional threshold of 5, confirming that multicollinearity is not a concern.

4.2 | Main results and discussions

Table 4 presents the key determinants of NIM across seven models. Model (1) serves as the baseline estimates, excluding interaction terms, while Models (2) to (7) introduce interaction terms between Islamic banks and specific bank-level characteristics.

TABLE 3 Correlation matrix.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) NIM	1.000								
(2) Bank size	−0.085	1.000							
(3) Liquidity	0.290	−0.140	1.000						
(4) Capital ratio	0.068	−0.279	0.244	1.000					
(5) Loan to assets	0.344	0.120	0.410	−0.155	1.000				
(6) NPL	−0.146	−0.274	−0.056	0.263	−0.403	1.000			
(7) GDP growth	0.102	0.181	0.026	−0.018	0.190	−0.351	1.000		
(8) Inflation	−0.024	−0.206	−0.116	−0.033	−0.258	0.284	−0.292	1.000	
(9) Regulatory quality	0.024	0.284	0.109	−0.086	0.430	−0.448	0.403	−0.435	1.000

4.2.1 | Risk aversion

Table 4 reveals that better-capitalized banks tend to earn higher NIM, supporting the notion that capital strength allows banks to absorb potential losses and price loans more confidently. These findings align with Entrop et al. (2015), Poghosyan (2010), and Ibrahim and Law (2020), who argue that capital strength is a critical driver of bank profitability. Interestingly, the interaction term between Islamic banks and capital ratio is statistically insignificant (Model 4), indicating that the effect of risk aversion on NIM does not differ meaningfully between Islamic and conventional banks in the MENA region, which is consistent with Malim et al. (2017) and Bougatef and Korbi (2018). Meanwhile, Lee and Isa (2017) propose that risk aversion may have a stronger influence on NIM in conventional banks, due to differing regulatory expectations and financial structures. Overall, the evidence supports a uniform role of capital in shaping margins, regardless of banking model.

4.2.2 | Credit risk

The regression results in Table 4 confirm a significant negative association between non-performing loans (NPLs) and NIM, which is consistent with Fungáčová and Poghosyan (2011). Poor loan quality raises provisioning costs and weakens income, especially in volatile or under-regulated markets. However, the lack of robust results from extant literature suggests that the NPL-NIM nexus depends on institutional factors, regulatory enforcement, and strategic responses to risk (Cruz-García & Fernández de Guevara, 2020; Ibrahim & Law, 2020; Rahman et al., 2023; Tarus et al., 2012; Trinugroho et al., 2014).

The negative interaction term between Islamic banks and NPLs likely stems from the unique nature of Islamic finance, where income is tied to profit-and-loss sharing contracts such as *Mudarabah* and *Musharakah*. Defaults in these arrangements directly reduce expected returns, unlike in conventional lending where interest continues to accrue on performing loans. These findings highlight that credit risk management is particularly critical for Islamic banks, as rising NPLs can erode profitability more substantially than in their conventional counterparts.

4.2.3 | Loan specialization

Banks with a higher loan specialization tend to enjoy significantly higher NIM. The literature offers two contrasting interpretations of this relationship. Banks with strong credit risk assessment capabilities can use specialization to boost margins by charging higher lending rates or taking on riskier but more profitable loans (Al-Muharrami & Murthy, 2017; Bougatef & Korbi, 2018).

Results also show that Islamic banks benefit more from loan specialization than their conventional counterparts. Unique Islamic asset-backed and risk-sharing contracts like *Murabaha* and *Ijarah* allow these banks to derive higher returns from lending activities. This may be due to their specialized expertise in structuring *Shari'ah*-compliant products, intimate borrower relationships, and stronger cost discipline in managing financing portfolios, leading to higher NIM.

TABLE 4 Determinants of net interest margin (NIM) and unique characteristics of Islamic Banks.

	(1)	(2)	(3)	(4)	(5)	(6)
Variables	**NIM**	**NIM**	**NIM**	**NIM**	**NIM**	**NIM**
Bank size	−0.135*	−0.136*	−0.137*	−0.139*	−0.141*	−0.133*
	(0.0763)	(0.0778)	(0.0768)	(0.0763)	(0.0765)	(0.0757)
Liquidity	−0.0372	−0.0392	−0.0530	−0.0379	−0.0353	−0.0395
	(0.0471)	(0.0468)	(0.0469)	(0.0470)	(0.0472)	(0.0472)
Capital ratio	2.430***	2.361***	2.058***	2.729***	2.465***	2.382***
	(0.630)	(0.635)	(0.652)	(0.752)	(0.631)	(0.629)
Loan to assets	2.178***	2.219***	1.964***	2.167***	1.918***	2.147***
	(0.251)	(0.256)	(0.261)	(0.254)	(0.271)	(0.247)
NPL	−1.379***	−1.407***	−1.311***	−1.391***	−1.381***	−1.075***
	(0.387)	(0.393)	(0.386)	(0.386)	(0.386)	(0.370)
Islamic	−2.371***	−3.239***	−2.678***	−2.277***	−2.706***	−2.255***
	(0.554)	(0.767)	(0.559)	(0.568)	(0.572)	(0.552)
GDP growth	0.890**	0.892**	0.857**	0.875**	0.827**	0.823**
	(0.357)	(0.357)	(0.360)	(0.357)	(0.362)	(0.359)
Inflation	0.709**	0.735**	0.690**	0.698**	0.687**	0.700**
	(0.295)	(0.292)	(0.293)	(0.298)	(0.296)	(0.295)
Regulatory quality	−0.506***	−0.488***	−0.515***	−0.501***	−0.503***	−0.494***
	(0.0949)	(0.0974)	(0.0940)	(0.0950)	(0.0948)	(0.0946)
Covid-19	−1.058**	−1.010**	−1.058**	−1.093**	−1.098**	−1.054**
	(0.482)	(0.483)	(0.484)	(0.482)	(0.483)	(0.478)
Islamic × size		0.0429*				
		(0.0244)				
Islamic × liquidity			1.615**			
			(0.647)			
Islamic × capital				−0.819		
				(1.212)		
Islamic × loan to asset					0.941	
					(0.588)	
Islamic × NPL						−2.021**
						(0.828)
Constant	4.299**	4.287**	4.558**	4.381**	4.616**	4.269**
	(1.880)	(1.911)	(1.903)	(1.883)	(1.893)	(1.865)
Firm dummy	Yes	Yes	Yes	Yes	Yes	Yes
Year dummy	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2387	2387	2387	2387	2387	2387
R-squared	0.815	0.815	0.817	0.815	0.815	0.816

Note: Robust standard errors in parentheses, ***significant at 1%, **significant at 5%, and *significant at 10%.

4.2.4 | Size of the bank

Results exhibit a negative and statistically significant association between bank size and NIM, suggesting that larger banks benefit from economies of scale that align with prior evidence from South Asia (Islam & Nishiyama, 2016) and low-income countries (Poghosyan, 2013). Notably, due to regulatory and operational limitations, these economies of scale are broadly enjoyed by the conventional banks, as indicated by the interaction term. Islamic banks are smaller and less diversified than their conventional peers.

4.2.5 | Liquidity risk

The results indicate that liquidity risk does not have a statistically significant effect on NIM in the full sample, which is analogous to findings by Shawtari et al. (2019) on a sample of Yemeni banks. However, the significant positive interaction between Islamic banks and liquidity suggests that liquidity management has a more pronounced effect on the NIM of Islamic banks than it does for conventional ones, supporting the insights of Malim and Normalini (2018). This decoupling can be attributed to the structural differences in liquidity management, as Islamic banks are clearly constrained by the prohibition of interest-based instruments. In contrast, conventional banks can rely on a wider range of investment and funding options, making them less sensitive to fluctuations in liquidity. This result underscores the importance of developing more robust, *Shari'ah*-compliant liquidity management frameworks to enhance the performance of Islamic banks.

4.2.6 | Macroeconomic control variables

A positive and significant relationship between inflation and NIM indicates that banks benefit from moderate inflation as lending rates adjust more quickly than deposit rates, increasing NIM, which is widely supported (Agoraki & Kouretas, 2019; Demirgüç-Kunt & Huizinga, 1999). The higher NIM-inflation nexus also explains upward pricing for the allied risk of investment and in the region (i.e., MENA) (Malim et al., 2017; Poghosyan, 2010).

GDP growth is also positively associated with NIM, which supports the idea that banks operate more efficiently during periods of economic optimism. Islamic banks should take this seriously because of their asset-backed nature of contracts, as lower GDP growth may end up cutting profit margins.

Regulatory quality consistently shows a significant negative association with NIM across all models, reinforcing previous findings by Malim et al. (2017), Khan et al. (2024), and Poghosyan (2013). Effective regulation enhances transparency and competitiveness, reduces perceived risk, and lowers both funding costs and the ability to extract higher spreads, irrespective of the type of banks.

Lastly, the Covid-19 exhibits a significantly negative coefficient, indicating a reduction of NIM during the pandemic period. This suggests that prolonged economic disruption and heightened uncertainty eroded profitability due to reduced lending activity and increased provisioning.

4.2.7 | Type of banks: Islamic versus conventional banks

Alongside the interaction effects, a separate dummy proxy for type of banks shows that the Islamic banks exhibit significantly lower NIM, a trend consistent with findings from Yemen (Shawtari et al., 2019). Islamic banks often align their operations with social and ethical mandates, intentionally adopting a lower NIM. In dual-banking environments, Islamic banks face competitive pressure from conventional banks, which compels Islamic banks to adopt conservative pricing to remain market-relevant, contributing to narrower spreads. Islamic banks operate under stricter ethical and regulatory constraints, encouraging more conservative risk-taking and financial management. The combined effect of these features, particularly the risk-sharing nature of Islamic contracts, contributes to lower margins compared to conventional banks. This result also supports the decoupling hypothesis.

4.3 | Robustness test: Dynamic modeling using system-GMM

To address endogeneity and the persistence of margin, we estimate a dynamic model of NIM using the System-GMM approach. Table 5 presents the results across seven models, with Model (1) showing the baseline estimates and subsequent models including interaction terms to explore Islamic banks' unique characteristics. Overall, the System-GMM results confirm the main findings from the static analysis, while highlighting the enduring nature of NIM and the importance of liquidity, size, and regulatory context—particularly within Islamic banking systems.

The lagged dependent variable (L.NIM) is consistently positive and highly significant, confirming that NIM exhibits strong persistence—banks with higher past margins tend to sustain them. The second lag is negative and marginally significant, indicating a mild mean-reverting behavior as margins eventually adjust to competitive or regulatory pressures.

TABLE 5 Determinants of net interest margin (NIM) and unique characteristics of Islamic Banks: Tests using system-GMM.

	(1)	(2)	(3)	(4)	(5)	(6)
Variables	**NIM**	**NIM**	**NIM**	**NIM**	**NIM**	**NIM**
L.NIM	0.668***	0.649***	0.675***	0.664***	0.667***	0.677***
	(0.101)	(0.105)	(0.104)	(0.099)	(0.101)	(0.094)
L2.NIM	−0.116*	−0.110*	−0.112*	−0.117*	−0.116*	−0.118**
	(0.060)	(0.057)	(0.060)	(0.060)	(0.060)	(0.059)
Bank size	−0.028**	−0.041***	−0.027**	−0.029**	−0.028*	−0.028**
	(0.014)	(0.012)	(0.013)	(0.014)	(0.014)	(0.013)
Liquidity	0.024**	0.024**	0.023**	0.024**	0.024**	0.024**
	(0.010)	(0.011)	(0.010)	(0.010)	(0.010)	(0.010)
Capital ratio	0.745	0.711	0.705	0.820	0.730	0.728
	(0.585)	(0.576)	(0.559)	(0.604)	(0.575)	(0.562)
Loan to assets	0.702**	0.720**	0.706**	0.702**	0.658**	0.698**
	(0.318)	(0.307)	(0.303)	(0.322)	(0.321)	(0.313)
NPL	−0.782*	−0.790*	−0.773*	−0.773*	−0.780*	−0.798*
	(0.429)	(0.443)	(0.420)	(0.421)	(0.423)	(0.428)
Islamic	−0.034	−1.566**	0.129	0.069	−0.151	−0.111
	(0.083)	(0.622)	(0.198)	(0.185)	(0.465)	(0.120)
GDP growth	1.078*	1.066*	1.044*	1.089*	1.050*	1.106*
	(0.590)	(0.564)	(0.606)	(0.597)	(0.599)	(0.621)
Inflation	0.350	0.335	0.340	0.349	0.360*	0.328
	(0.218)	(0.223)	(0.219)	(0.215)	(0.217)	(0.210)
Regulatory quality	−0.123**	−0.141**	−0.116*	−0.118*	−0.121**	−0.128**
	(0.062)	(0.063)	(0.061)	(0.062)	(0.061)	(0.061)
Covid-19	−0.231**	−0.233**	−0.216**	−0.236**	−0.230**	−0.217*
	(0.115)	(0.113)	(0.108)	(0.116)	(0.116)	(0.113)
Islamic × size		0.069**				
		(0.028)				
Islamic × liquidity			−0.433			
			(0.407)			
Islamic × capital				−0.811		
				(1.107)		
Islamic × loan to asset					0.191	
					(0.744)	
Islamic × NPL						1.191
						(1.701)
Constant	1.313***	1.629***	1.245***	1.326***	1.334***	1.285***
	(0.405)	(0.399)	(0.414)	(0.405)	(0.425)	(0.389)
Observations	1646	1646	1646	1646	1646	1646
Number of Bank	261	261	261	261	261	261
ar1 p	0.000136	0.000167	8.93e-05	0.000126	0.000135	7.13e-05
ar2 p	0.368	0.344	0.353	0.373	0.366	0.392
Hansen p	0.378	0.315	0.415	0.355	0.387	0.416

Note: Robust standard errors in parentheses. Significance level: ***$p < .01$, **$p < .05$, *$p < .1$.

TABLE 6 Islamic versus Conventional Banks using separate samples.

	Islamic	Conventional
Variables	**NIM**	**NIM**
Bank size	−0.298	−0.100
	(0.230)	(0.0701)
Liquidity	1.716**	−0.0659
	(0.709)	(0.0470)
Capital ratio	0.0585	3.004***
	(1.438)	(0.765)
Loan to assets	1.509*	1.972***
	(0.779)	(0.269)
NPL	−2.823**	−0.998***
	(1.201)	(0.385)
GDP growth	2.261*	0.522
	(1.288)	(0.363)
Inflation	0.910	0.577*
	(0.688)	(0.350)
Regulatory quality	−0.325	−0.556***
	(0.268)	(0.0958)
Covid-19	−2.001	−0.867**
	(1.472)	(0.439)
Constant	8.655	3.607**
	(5.380)	(1.744)
Firm Dummy	Yes	Yes
Year Dummy	Yes	Yes
Observations	481	1906
R-squared	.674	.868

Note: Robust standard errors in parentheses. Significance levels: ***$p < .01$, **$p < .05$, and *$p < .1$.

Bank size continues to show a negative and statistically significant relationship with NIM, supporting the argument that larger banks benefit from economies of scale and cost efficiency. The interaction with Islamic banks is positive and significant, suggesting that size offers stronger margin benefits for Islamic banks.

Liquidity, which was insignificant in the static models, turns significantly positive across all dynamic specifications. As Trinugroho et al. (2014) note, liquid banks may charge higher rates to offset the opportunity cost of holding reserves. The interaction term with Islamic banks is insignificant, implying no distinct liquidity advantage or disadvantage for Islamic banks under dynamic conditions. Loan specialization retains a positive and significant effect on NIM. Credit risk (NPL) also negatively affects NIM, consistent with the baseline estimates.

At the macro level, GDP growth shows a positive and statistically significant relationship with NIM. Regulatory quality maintains its negative and robust effect. The Covid-19 dummy is negative and significant across all models, contrasting with static results. This suggests that the pandemic's adverse effects on credit demand, asset quality, and operational efficiency were better captured through the dynamic specification, which accounts for lagged adjustments and persistent shocks.

4.4 | Robustness tests: Islamic versus conventional banks (Split samples)

Table 6 reports regression results using separate subsamples for Islamic and conventional banks. While Islamic banks show significant sensitivity to liquidity (positive) and credit risk (negative), conventional banks exhibit broader significance

across several variables. However, these differences should be interpreted cautiously due to the larger sample size of conventional banks (1906 vs 481).

For Islamic banks, liquidity has a positive and significant effect on NIM. In contrast, liquidity is insignificant for conventional banks, possibly reflecting greater flexibility in liquidity allocation. Non-performing loans (NPLs) exert a significantly stronger negative effect on NIM in Islamic banks compared to conventional ones. The sharper drop in NIM suggests that Islamic banks may bear higher loss burdens under default, especially when collateral recovery is more complex. Other bank-specific variables like bank size and capital ratio are not statistically significant for Islamic banks, implying that profitability is less influenced by scale or solvency buffers.

On the macroeconomic side, variables such as GDP growth, inflation, and regulatory quality are not significant for Islamic banks, suggesting their margins are less sensitive to external economic and institutional conditions. Interestingly, Covid-19 does not significantly affect Islamic banks' NIM either, further reinforcing evidence of their relative resilience during periods of economic disruption.

For conventional banks, the results show more traditional patterns. Capital ratio, loan specialization, and regulatory quality all significantly influence NIM, confirming that their margins are shaped by both internal performance metrics and broader market forces.

In summary, while conventional banks exhibit greater responsiveness to macroeconomic, regulatory, and capital structure variables, Islamic banks' profitability hinges more strongly on liquidity management and credit quality. These results underscore the operational and structural distinctions in how Islamic and conventional banks generate and sustain net interest margins within dual banking systems.

4.5 | Robustness test: Upper versus lower income countries

Table 7 presents a comparative analysis of NIM determinants across upper- and lower-income MENA countries. The results highlight structural differences in how financial and institutional variables shape bank profitability in distinct economic environments.

Bank size is consistently insignificant in both income groups. Liquidity is insignificant in upper-income economies but shows a weak positive effect in lower-income countries. Capital ratio is a strong and consistent predictor of NIM in both subsamples but has a more pronounced effect in lower-income countries, where capital buffers may be more essential for stability. Loan specialization is positive and highly significant in both income groups, though the effect is stronger in upper-income countries, suggesting that banks in more developed markets are better able to convert lending activity into higher returns. Credit risk (NPL) reduces NIM in both income groups.

The Islamic bank dummy is negative and significant in lower-income countries, confirming that Islamic banks in these markets face structural disadvantages. In lower-income economies, NPLs have significantly negative effects for Islamic banks. In contrast, Islamic banks in upper-income countries benefit significantly from loan specialization.

Macroeconomic factors show some divergences. GDP growth is positively associated with NIM in upper-income economies. This relationship is not significant in lower-income countries. Inflation, regulatory quality, and Covid-19 are insignificant in both groups, suggesting their effects are either short-lived or absorbed through other mechanisms.

In sum, the findings emphasize that Islamic banks in lower-income countries are more constrained by credit risk, whereas those in upper-income countries can leverage loan specialization for better margins. Addressing institutional weaknesses and improving risk infrastructure is vital to enhancing the intermediation efficiency of Islamic banks in less developed MENA economies.

5 | IMPLICATIONS

We discuss theoretical and practical implications related to three major areas. These key areas are bank size and economies of scale, regulatory quality and restructuring, and digital transformation.

In line with the dealership model, quite a contrast to the changes in interest rate, we find that bank size, liquidity buffer, and depth of capital result in stable growth of NIM. Large banks and Islamic banks from higher income economies achieve economies of scale. Islamic banks face liquidity constraints and are in a weaker position when compared to their conventional counterparts. This can be solved by gradually creating an internal pool of savings solely for the purpose of liquidity. This pool of funds could be saved among a shared network of Islamic banks, as

TABLE 7 Estimates for upper- and lower-income countries.

	(1)	(2)	(3)	(4)	(5)	(6)
Variables	**Upper**	**Lower**	**Upper**	**Lower**	**Upper**	**Lower**
Bank size	−0.0670	−0.0638	−0.0786	−0.0494	−0.0803	−0.0591
	(0.111)	(0.143)	(0.112)	(0.141)	(0.115)	(0.142)
Liquidity	0.000500	0.00514	0.000514	0.00553	−0.000205	0.00725
	(0.00582)	(0.0173)	(0.00579)	(0.0171)	(0.00615)	(0.0169)
Capital ratio	2.719**	4.255***	2.631**	4.221***	2.207*	3.696***
	(1.131)	(1.176)	(1.117)	(1.194)	(1.222)	(1.067)
Loan to assets	2.471***	0.836**	2.525***	0.856**	2.206***	0.597*
	(0.379)	(0.372)	(0.393)	(0.376)	(0.412)	(0.343)
NPL	−1.363**	−1.039*	−1.427**	−1.031*	−1.120*	−1.098**
	(0.671)	(0.558)	(0.710)	(0.562)	(0.680)	(0.556)
Islamic	0.153	−1.538**	−0.896	−2.236**	−0.482	−3.112**
	(0.238)	(0.656)	(0.810)	(1.031)	(0.398)	(1.236)
GDP growth	1.081*	0.931	1.055*	0.943	1.074*	0.843
	(0.572)	(0.655)	(0.576)	(0.657)	(0.599)	(0.656)
Inflation	0.322	0.792	0.382	0.784	0.307	0.810
	(0.235)	(0.521)	(0.237)	(0.522)	(0.234)	(0.511)
Regulatory quality	0.0969	−0.388	0.131	−0.399	0.0582	−0.364
	(0.120)	(0.510)	(0.128)	(0.512)	(0.118)	(0.505)
Covid-19	−0.932	−0.0817	−0.928	0.0339	−0.983	−0.0596
	(0.705)	(0.891)	(0.707)	(0.864)	(0.718)	(0.886)
Islamic × size			0.0471	0.0377		
			(0.0352)	(0.0446)		
Islamic × liquidity					1.635**	3.501*
					(0.780)	(2.085)
Constant	2.042	4.894	2.262	4.608	2.612	4.846
	(2.804)	(3.102)	(2.821)	(3.059)	(2.925)	(3.092)
Observations	1189	1198	1189	1198	1189	1198
R-squared	.885	.707	.885	.708	.888	.709
	(7)	**(8)**	**(9)**	**(10)**	**(11)**	**(12)**
Variables	**Upper**	**Lower**	**Upper**	**Lower**	**Upper**	**Lower**
Bank size	−0.0751	−0.0639	−0.0668	−0.0704	−0.0684	−0.0411
	(0.109)	(0.144)	(0.110)	(0.142)	(0.114)	(0.139)
Liquidity	−0.000368	0.00511	0.000510	0.00540	0.000480	0.00512
	(0.00603)	(0.0171)	(0.00585)	(0.0173)	(0.00580)	(0.0173)
Capital ratio	3.259**	4.264***	2.717**	4.128***	2.711**	4.273***
	(1.603)	(0.891)	(1.147)	(1.128)	(1.148)	(1.127)
Loan to assets	2.444***	0.836**	2.477***	0.476	2.469***	0.771**
	(0.374)	(0.371)	(0.434)	(0.316)	(0.382)	(0.379)
NPL	−1.377**	−1.039*	−1.363**	−1.165**	−1.333*	−0.728*
	(0.654)	(0.558)	(0.673)	(0.563)	(0.763)	(0.437)
Islamic	0.314	−1.530	0.168	−3.412***	0.154	−0.998
	(0.356)	(1.093)	(0.519)	(0.998)	(0.238)	(0.730)

TABLE 7 (Continued)

	(7)	(8)	(9)	(10)	(11)	(12)
Variables	**Upper**	**Lower**	**Upper**	**Lower**	**Upper**	**Lower**
GDP growth	1.030*	0.931	1.083*	0.734	1.080*	0.656
	(0.570)	(0.658)	(0.581)	(0.648)	(0.571)	(0.721)
Inflation	0.317	0.791	0.322	0.749	0.322	0.783
	(0.236)	(0.523)	(0.237)	(0.516)	(0.236)	(0.514)
Regulatory quality	0.117	−0.388	0.0968	−0.375	0.0973	−0.316
	(0.125)	(0.511)	(0.121)	(0.509)	(0.120)	(0.531)
Covid-19	−1.000	−0.0824	−0.931	−0.128	−0.940	0.0456
	(0.685)	(0.894)	(0.697)	(0.887)	(0.722)	(0.869)
Islamic × capital	−1.254	−0.0357				
	(1.804)	(3.672)				
Islamic × loan to asset			−0.0234	3.379***		
			(0.806)	(1.195)		
Islamic × NPL					−0.0882	−3.914*
					(0.986)	(2.267)
Constant	2.193	4.896	2.032	5.041	2.076	4.289
	(2.758)	(3.109)	(2.755)	(3.087)	(2.882)	(2.983)
Observations	1189	1198	1189	1198	1189	1198
R-squared	.885	.707	.885	.710	.885	.712

Note: Robust standard errors in parentheses. Significance level: ***$p < .01$, **$p < .05$, and *$p < .1$.

practiced in Malaysia. Strength of the capital reserve is also important for Islamic banks to increase NIM, especially in the context of the lower income countries. While these differences exhibit distinct sensitivities of the Islamic and conventional banks, the result of this study supports the decoupling hypothesis partially. This is because some attributes of the dual banking economy are shared between Islamic and conventional banks. Hence, a pure decoupling is not possible in a dual banking economy.

Islamic banks often face structural constraints for liquidity and reinvestment of their profits. These banks lack the same access to institutional support or low-cost funding enjoyed by their conventional counterparts. This reinforces the need for regulatory reforms that promote equitable institutional support and risk-sharing frameworks to avoid marginalizing Islamic banks in competitive dual systems. The differences between Islamic and conventional systems are grounded in asset-backed transactions and risk-sharing. Even in a dual banking economy, regulators and policy-makers are strongly recommended to move away from "one-size-fits-all" policies and instead develop tailored supervisory frameworks. Additionally, Islamic banks must resist mimicking conventional pricing models and instead enhance alignment with Shariah-compliant profit-generating strategies. Regulatory quality consistently reduces NIM across the board, suggesting that enhanced oversight fosters competition and narrows pricing spreads. This validates the importance of governance reforms and institutional upgrading as tools to enhance efficiency in the region's banking sector.

Digital transformation remains underutilized among Islamic banks in the MENA region. The adoption of FinTech solutions can help streamline operations, lower funding costs, and promote inclusion. Investment in Islamic digital platforms—such as P2P Islamic lending, blockchain-based smart contracts, or AI-driven *Shari'ah* audits—could transform the industry's competitiveness while remaining compliant with Islamic principles.

6 | CONCLUSION

This study comprehensively examines the determinants of net interest margin (NIM) in the MENA region, comparing Islamic and conventional banks across macroeconomic conditions, income levels, and crisis periods. Utilizing panel

fixed effects and dynamic system-GMM models, the analysis reveals evidence of structural divergence in NIM behavior between banking types—a finding that partially supports the decoupling hypothesis.

The results show that Islamic banks leverage economies of scale, liquidity, and loan specialization to bolster NIM, though they face high credit risk due to PLS structures. Macroeconomic variables such as GDP growth and inflation affect NIM positively but inconsistently, while strong regulatory quality suppresses excess NIM, promoting competition and reducing inefficiencies. Notably, unlike conventional banks, Islamic banks showed margin resilience during Covid-19.

The study reframes NIM as a function of bank type, macroeconomic context, and institutional scaffolding. Despite structural and institutional inefficiencies, Islamic banks in MENA exhibit unique strengths in credit specialization and financial resilience. A strategic uplift demands tailored regulatory support, investment in digital infrastructure, and deeper alignment with *Shari'ah* values.

Future research should investigate FinTech adoption, integration, and governance in moderating bank profitability and resilience, particularly in the face of crises. Microlevel data on product-specific margins and customer segmentation could offer further insights into the dynamics of financial intermediation in dual banking environments.

DATA AVAILABILITY STATEMENT

The data supporting the findings of this study are sourced from the Bankscope database. Access to these data is subject to restrictions and cannot be publicly shared. Researchers may obtain access through the Bankscope database, subject to its terms and conditions.

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