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Examining the Status and Relationship between Market Competition, Foreign Bank Entry, and Profitability in Pakistan's Banking Sector

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Abstract
This research study investigates competitive conditions, effect of foreign banks penetration on competition and the impact of competition on profitability within banking sector of Pakistan. A sample of 29 commercial banks was analyzed over the period from 2010 to 2024. Competition was assessed using structural and non-structural measures. The banking sector is characterized by the monopolistic competition. The entrance of foreign banks is associated with a decline in competition within the banking sector. However, the analysis also indicates that heightened competition positively impacts bank profitability, supporting the Efficiency Structure Hypothesis. The study highlights the need for policies to foster competition, particularly in Islamic banking, to promote innovation, reduce financial costs, and enhance economic growth. The findings suggest that while both types of banks benefit from competition, the high concentration in Islamic banks poses potential risks to financial stability, calling for a more competitive and diversified market.

Key Words: Competition, Foreign Bank Entry, Profitability, Pakistan's Banking Sector, Structural And Non-Structural Measures Of Competition Examining The Status And Relationship Between Market Competition, Foreign Bank Entry, And Profitability In Banking Sector Of Pakistan

Volume 5 Issue No 1 (2026)
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Introduction

The economic advancement of Pakistan, parallel to other developing nations, relies on the provision of credit by banks. The competitive conditions (CC) within the banking system may affect this fund supply, given its anticipated influence on the efficiency and effectiveness of banks' operations (see e.g., Tadesse, 2002; Levine, 2002; Khan & Senhadji, 2003; Fase & Abma, 2003; Andersen & Tarp, 2003; Shah & Shah, 2011). CC encompass the factors or parameters within a market that ascertain the degree of competition present in that market i.e., size, market share, resources (funds, incomes, reserves etc.), abilities, array of products and value, entry conditions, marketing tactics, opportunities, objectives and other similar variables. These factors are crucial, as they impact the stability, profitability, and development of the entire economy.

The competitive landscape of banking has long been a focus in financial literature, with recent studies exploring its impact on economic development due to the link between banking and growth (Khan & Senhadji, 2003; Fase & Abma, 2003; Andersen & Tarp, 2003). The relationship between competition, stability, and fragility in banking has sparked significant debate. Boyd and Nicolo (2005) suggest that increased competition promotes stability by reducing market power and high interest rates, which otherwise push borrowers into risky projects, raising default risk (Stiglitz & Weiss, 1981). Conversely, Miera and Repullo (2010) argue that more competition weakens stability by reducing bank profits, driving riskier behavior (Keeley, 1990; Marcus, 1984; Matutes & Vives, 2000). Numerous studies have explored the positive relationship between competition and stability in banking (e.g., Schaeck & Cihak, 2018; Cobbinah et al., 2020; Azzam & Tayem, 2022; Hassan et al., 2021; Yuan et al., 2022). They highlight that competition is vital for economic stability and growth. Particularly, foreign banks (FBs) play a key role in enhancing stability by increasing competition, improving credit access, and boosting efficiency in recipient countries, as highlighted by Khan et al. (2015).

The influence of infiltration of FBs varies in its consequences on competition, profitability, and stability within the host nation. Two viewpoints exist regarding the participation of FBs in the host nation. One view argue FBs increase credit supply volatility through "cherry-picking" high-quality borrowers, pressuring domestic banks (DBs) to lend to riskier borrowers, which can destabilize the local banking system (Stiglitz, 2004; Olivero et al., 2011). In contrast the second perspective, proposes that entry of FBs improve financial intermediation, efficiency, competition, and technology adoption, with more stable funding and consistent lending, especially in times of need, enhancing competition and affecting DBs profitability (Claessens et al., 2001; Lensink & Hermes, 2004).

Profitability is imperative for banks to survive and grow and is expected to be affected by the competitive landscape within the banking region (Tan, 2020). The interconnection between competition and profitability is explicated through two key hypotheses: the Structure-Conduct-Performance (SCP) hypothesis and the Efficient-Structure (ES) hypothesis. The SCP theory suggests that lower competition allows dominant banks to set higher prices and increase profits. On the flip side, the ES hypothesis, argues that profitability is driven by efficiency rather than market

Volume 5 Issue No 1 (2026)
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dominance, with efficient firms gaining market share and profits. While some studies, like Yuanita (2019), support the ES hypothesis, others, such as Shair et al. (2019), endorse the SCP hypothesis, depending on whether structural or non-structural measures of competition are used. As a result, extensive research has scrutinized the competitive landscape, exploring the effects of FBs entering and influencing competition in host nations, and the subsequent repercussions on profitability. While this aspect has been thoroughly examined in numerous developed and also in emerging economies across the globe, there has been a notable lack of focus on investigating these dynamics in developing economies, exemplified by the case of Pakistan.

Pakistan's banking segment stands as a pivotal financial cornerstone for the real economy that has demonstrated resilience during the global financial crisis of 2008-09. Pakistan's banking sector has evolved from a state-dominated system into a diversified and resilient industry through regulatory reforms, privatization, and liberalization. The growth of private, foreign, Islamic, and digital banking has strengthened competition and economic contribution, making the sector an important area for further study. In line with this evolutionary progress, the sector continued to exhibit strong performance in 2025, achieving an 8.2% increase in profitability despite notable reductions in policy rates and shifting macroeconomic conditions (KPMG, 2025).

Despite the State Bank of Pakistan ongoing efforts to foster competition and to expand financial inclusion, the combined effects of intensifying market rivalry and uneven operational efficiency continue to pose challenges to the sector's long-term financial stability (MDPI, 2025). Moreover, notwithstanding various reform initiatives, Pakistan's banking sector has not fully exploited market opportunities. These reforms and opportunities suggest that Pakistan's economic development depends on a competitive banking system. Numerous studies are conducted worldwide; some of these studies are across country level and others are country specific. However, in the case of Pakistan, this is one neglected area and there is a need to investigate to provide latest insights. Only a few studies have examined competition in Pakistan's banking sector; while using either structural measures (e.g., Sarwar, Muhammad & Azhar, 2020) or non-structural measures (e.g., Khan, 2009; Tahir, Shah & Afridi, 2016; Mirza, Bergland & Khatoon, 2016; Aleemi, Uddin & Kashif, 2019; Rafay & Farid, 2019; Aleemi, Uddin & Kashif, 2022; Hassan, Ijaz & Khan, 2021). No existing study has used both the measures simultaneously, leaving competition dynamics insufficiently understood. In addition, they have ignored variables such as asset riskiness and branch networks, which may affect competition. Nevertheless, to the best of our knowledge, there hasn't been any investigation into the impact of FBs on competition in emerging economies like Pakistan using both PR H-statistics and the Lerner index (LI), leaving a significant research gap. Whereas in the recent past, Yin (2021) examined 148 countries (1987–2015) and found that FBs entry increases competition.

Likewise, Shair et al. (2019) analyzed how competition affects bank profitability in Pakistan using the Lerner and Boone indices. The Boone indicator, a novel non-structural measure linking costs and profits (Boone, 2008), remains underexplored and limited as it overlooks other competition factors (Leon, 2015). These shortcomings highlight the need to examine the impact of competition on profitability through

Volume 5 Issue No 1 (2026)
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established metrics like the PRM and LI. Therefore to address these gaps, this study investigates CC in Pakistan's banking segment using both structural and non-structural measures, while incorporating novel variables such as assets riskiness and number of branches. It also examines the impact of FBs penetration on competition and bank profitability, employing PRM H-statistics and the LI.

Review of Literature

Banking Competition is commonly analyzed using two approaches: structural, grounded in the SCP hypothesis, and the non-structural, rooted in the ES hypothesis. The SCP paradigm associates higher market concentration with weaker competition and greater market power. Accordingly, competition is assessed through indicators like concentration ratios, and the HHI. In contrast, the ES Hypothesis links higher concentration and profits to bank efficiency (Hamza & Kachtouli, 2014). The non-structural approach utilizes a range of alternative methods; the most frequently employed measures include Panzar-Rosse model (PRM) and the LI, among others.

Studies across different countries, employing both structural and non-structural measures of bank competition suggest that the banking market tends to function under monopolistic competition. Murjan and Ruza (2002) and Matthews et al. (2007) found monopolistic competition in MENA and British banking industry using the PRM, with H-statistics between 0 and 1. Likewise, Al-Muharrami (2009) found declining concentration in Saudi banks using structural measures, while the PR H-statistic (0.23) confirmed monopolistic competition. Khan (2009) using the HHI and PRM, found monopolistic competition in Pakistan's banking sector.

In another study, Ariss (2010) examined Islamic and conventional banks in 12 MENA countries, finding perfect competition in Bahrain and Turkey, but monopolistic competition in North Africa and others. Similarly, Jeon et al. (2011) used the PR model for 17 Asian and Latin American countries, finding Latin America more competitive than Asia, though both showed monopolistic competition (Olivero et al., 2011; Hamza & Kachtouli, 2014). Tahir et al. (2016) employed the Rosse-Panzar methodology for banking sector of Pakistan, finding monopolistic competition, as evidenced by an H-statistic of 0.728 (Rafay & Farid, 2019). Likewise, Gautam (2021), using structural and non-structural measures for 21 Nepali banks, found stronger competition in lending than deposits, while the PR H-statistic (0.9011) indicated monopolistic competition. Aleemi, Uddin, and Kashif (2022) found that the lending sector is characterized by a significant monopolistic environment with LI values (0.624 in 2006 to 0.630 in 2017), while the deposit market was highly competitive.

Additionally, Sohail, Idrees, & Majeed (2024) found that evidence based on the Panzar–Rosse H-statistic suggests that Pakistan's industrial and financial sectors largely operate under competitive pricing mechanisms; however, periodic deviations from competitive behavior arise, primarily driven by institutional weaknesses and the prevalence of undocumented economic activity. Gebremichael & Gessesse (2025) find that Ethiopia's banking sector became more efficient between 2011 and 2022, especially private banks after the removal of the 27% credit rule, while state-owned banks performed less well. Their results show that the sector operates under monopolistic competition in a highly

Volume 5 Issue No 1 (2026)
Online ISSN: 3006-2047
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concentrated market, and although reforms improved efficiency, they have not yet increased competition or bank revenues.

Overall, majority of the studies consistently suggest that the banking sectors across different regions and countries in the world including the US, Europe, MENA, and Asia, generally function under conditions of monopolistic competition. The findings are robust across various methodologies, including both structural (e.g., concentration ratios and HHI) and non-structural indicators (e.g., PRM).

H_1 = The banking sector of Pakistan does not exhibit a state of monopoly.

Foreign Banks (FBs) Penetration and Competition

The impact of FBs penetration on the resident countries competition, financial stability and profitability has been studied from different standpoints. Several studies have investigated how banks functioning is affected by the FBs entry (e.g., financial performance, efficiency, net interest margin) etc.

In 1999, Demirgüç-Kunt and Huizinga analyzed data from 80 nations, showed that foreign bank entry boosts competition and efficiency but may pose regulatory and stability risks. Claessens et al. (2001) also examined Foreign bank presence and found FBs more profitable than local banks in developing countries but less so in developed countries (Lensink & Hermes, 2004). Recent empirical research reveals that foreign banks in Pakistan consistently outperform state-owned and domestic private banks in terms of profitability, a pattern largely attributable to their more effective deployment of resources and advanced risk management capabilities (Shaheen, Awan, & Ghaffar, 2024). Furthermore, Claessens and Van Horen (2014) found that FBs enhance competition by bringing new products, technology, and global practices. However, this influx of foreign competition may not always lead to positive outcomes, as highlighted by Clarke et al. (2001), who noted that impacts vary with the host country's regulations, as FBs entry benefits large firms more than SMEs, potentially limiting SME credit.

Similarly, another body of research examines how FBs penetration influences competition worldwide, with many scholars asserting that this is a key channel through which FBs impact the performance of DBs. Moguillansky et al. (2004) suggested that FBs entry may not foster competition, as these banks often employ rent-seeking plans when entering the Mexican market via mergers and acquisitions. Likewise, Jeon et al. (2011) and Bashir et al. (2014) showed that foreign bank penetration enhances competition and improves efficiency, service quality, stability, and supervision in emerging economies, including Pakistan. Yin (2021) found that FBs typically linked to greater competition, improving stability and profitability of the host countries' banking systems. This effect of FBs varies across countries. In developed countries, FBs increase competition, whereas in developing countries, they decrease it. In this context, Pade et al. (2026) show that while an increase in the number of foreign banks supports financial stability, greater foreign asset penetration can weaken short-term stability, with Islamic banks remaining more resilient than conventional banks under foreign bank presence.

FBs penetration has mixed effects on competition, stability, and profitability, varying by country. FBs often bring technology, best practices, and efficiency but may cause

Volume 5 Issue No 1 (2026)
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regulatory challenges or reduce SME credit. In developing countries, they are usually more profitable and boost competition (Bashir et al., 2014; Jeon et al., 2011), though sometimes pursue rent-seeking (Clarke et al., 2001; Moguillansky et al., 2004). In developed economies, FBs enhance efficiency and stability but are less profitable than local banks. Overall, the impact of foreign bank entry on competition and efficiency depends on host-country regulations, institutions, and market conditions.

H_2 = The FBs penetration effects competitive condition of banking sector.

Competition and Profitability

Several studies are conducted throughout the globe to determine the impact of competition on the profitability of the banking segment. Berger (1995) found a positive link between competition and profitability in US banking, supporting the ES hypothesis. Ariss (2010) compared conventional and Islamic banks, reporting that Islamic banks are less competitive and profitable since profitability rises with market power. Tan et al. (2017) employed the LI and found that greater competition reduces profitability, supporting the SCP hypothesis in Chinese banking. Yuanita (2019) found that structural analysis links higher concentration to lower prices and profitability via merger-driven scale efficiencies, while non-structural results show that lower competition increases profitability. Shair et al. (2019) reported that higher competition, measured through the LI and Boone indicator, weakens the performance of Pakistani banks, aligning with the SCP hypothesis. Moudud-Ul-Huq et al. (2020) also demonstrate that less competition boosts MENA banks' profitability, supporting the SCP hypothesis. Likewise, Pham et al. (2020) evidenced that multimarket competition enhances bank profitability in Ukraine, especially in more competitive environments, thereby supporting the ES hypothesis. **Shair and Sami (2025)** find that moderate competition improves profitability and stability in Pakistani banks, supporting the SCP hypothesis, while excessive credit and liquidity risks reduce performance. Similarly, Pamikatsih & Purwanto (2025) find that market power, measured by the Lerner index, significantly boosts profitability in Sharia Rural Banks (SRBs) in Indonesia, supporting the SCP hypothesis for small banks, while large SRBs rely on internal efficiency, consistent with the ES hypothesis. Financing risk (NPF) and capital adequacy (CAR) affect all banks, highlighting that SCP–ES dynamics vary by bank size and require tailored regulatory policies.

Based on the above studies, the connection between competition and financial performance in the banking industry is complex and influenced by various factors, including regional characteristics, market structure, and risk management practices. Some studies support the SCP hypothesis (competition lowers profitability), while other support the ES hypothesis (competition enhances profitability).

H_3 = Competition effects profitability of banking sector.

Data & Methodology

This research study had included all banks operating under the sphere of the SBP as our population. It focused on a sample of twenty (20) commercial banks (comprising both private and public), five (5) Islamic banks, and four (4) FBs that have been operational in Pakistan since 2009. The study has collected data covering the timeframe from 2010

Volume 5 Issue No 1 (2026)
Online ISSN: 3006-2047
Print ISSN: 3006-2039

to 2024 and has employed a quantitative research design, relying on secondary data sources for data collection. The data was gathered from the yearly audited financial reports of the relevant banks, accessible on their official web portals, as well as from the Pakistan Stock Exchange (PSX) website, the SBP website, and the website of the Finance Ministry, Pakistan for specific, macroeconomic and industry-specific variables.

Measures for Assessing Competition, Foreign Bank penetration and Profitability

In this research study, three types of analyses are conducted. The first stage of this research study assesses competition using two primary methods: structural and the non-structural. The structural measure of bank competition comprises traditional concentration ratios, utilized for assessing competition within the banking sector. Conversely, the non-structural measure involves the utilization of the PRM and LI.

Traditional or Structural Measures of Concentration

This research study employs two conventional market share indicators, namely the n-bank concentration ratios (CRs) grounded on banks' share of assets, loans and deposits within the sector (e.g., Ariss, 2010; Hamza & Kachtouli, 2014). CRs indicate the percentage of market portion held by a particular firm, such as a bank, in relation to the total size of the market. We computed two n-bank concentration ratios: C3 (representing the CRs of the three leading banks) and C5 (representing the CRs of the five leading banks) to ensure the better representation of the sample banks respectively.

$$C_n = \sum_1^n Xi$$

$$C_n = S_1 + S_2 + \ldots + S_n$$

Xi represents the market share of Bank i, n denotes the number of banks; S_1 through S_n represents the market share of the individual banks, encompassing deposits, assets and loans. The concentration ratios range from 0 to 100 %, defining 4 distinct levels of concentrations, where no concentration (0%) denotes perfect competition on very low monopolistic competitive environment. The four distinct levels are; low concentration (0 – 50%) a state of from perfect competition to oligopoly, average concentration (50 – 70%) shows a situation prone to oligopoly, high concentration (70 – 100%) indicates a state of oligopoly to monopoly and, finally total concentration (100%) is an extremely concentrated oligopoly and presents a situation of monopoly.

The HHI was employed as a second classic metric of market concentration and competition, first presented by Hirschman (1945) and later by Herfindahl (1950). To incorporate the remaining banks, we utilized the HHI, calculated by summing the squares of market portions derived from the total assets, loans and deposits of the sampled banks within each category (Ariss, 2010).

$$HHI = S1^2 + S2^2 + S3^2 \ldots + Sn^2$$

$$HHI = \sum_{i=1}^{n} Si^2$$

S1 to Sn represents the first to nth bank market portion, Si^2 represents square of market share of Bank i, where n is the total number of banks. The U.S. Department of Justice and the Federal Trade Commission classify a market with a HHI below 1,000 points as non-concentrated (highly competitive), a market between 1,000 and 1,800 points as

Volume 5 Issue No 1 (2026)
Online ISSN: 3006-2047
Print ISSN: 3006-2039

partially concentrated, and one above 1,800 points as extremely concentrated or uncompetitive (Hamza & Kachtouli, 2014).

Non-Traditional Measures of Competition

Panzar-Rosse Model - (PRM)

The evaluation of the CC in the banking sector through this approach relied on a simplified revenue equation derived from assumptions of profit-maximizing equilibrium. This model is considered more reliable in case of firm-specific revenue and factor prices data, as it is utilized by numerous studies such as i.e., Matthews, Murinde & Zhao, 2007; Delis, 2010; Ariss, 2010; Hamza & Kachtouli, 2014; Tahir, Shah & Afridi, 2016. According to Shaffer (2004), in small samples the model is relatively more robust. Following reduced firm log-linear revenue model is used to test CC:

$$\ln REV_{i,t} = \alpha_0 + B_1 \ln (C_{L,i,t}) + B_2 \ln (C_{F,i,t}) + B_3 \ln (C_{K,i,t}) + B_4 \ln (EQTA_{i,t}) + B_5 \ln (NLTA_{i,t}) + B_6 \ln (TA_{i,t}) + B_7 \ln (RKTA_{i,t}) + B_8 \ln (BRCH_{i,t}) + B_9 \ln (GRTH_{i,t}) + \varepsilon_{i,t} \quad [\text{Eq } 1]$$

$$PRM = B_1 + B_2 + B_3 \quad \text{(from Eq 1).}$$

In Eq.(1) above, REV is the dependent variable. On the other side, there are three input prices or costs which are labor cost (C_L), funds cost (C_F) and fixed capital cost (C_K). Additionally, the model incorporates bank- specific control variables including equity (EQTA), net loans (NLTA), size (TA), riskiness of assets (RKTA), number of branches (BRCH) and the GDP growth rate (GRTH). The subscripts, i represents Bank i, t denoting the time period and $\varepsilon_{i,t}$, refers to error term.

PRM was obtained by aggregating the input price elasticities of total revenues. Panzar and Rosse (1987) explain that in a monopoly, the PRM-statistic value is negative ($PRM < 0$) due to declining revenues caused by an increase in marginal cost. Whereas, in perfect market competition, the H-statistic equals one ($PRM = 1$). A value of PRM-statistic between zero and one ($0 < PRM < 1$) indicates monopolistic competition.

Hence, it was crucial to assess banks from a long-term standpoint. Consequently, the dependent variable in eq (1) was substituted with return on assets (ROA). The following model was therefore tested as:

$$\ln ROA_{i,t} = \alpha_0 + B_1 \ln (C_{L,i,t}) + B_2 \ln (C_{F,i,t}) + B_3 \ln (C_{K,i,t}) + B_4 \ln (EQTA_{i,t}) + B_5 \ln (NLTA_{i,t}) + B_6 \ln (TA_{i,t}) + B_7 \ln (RKTA_{i,t}) + B_8 \ln (BRCH_{i,t}) + B_9 \ln (GRTH_{i,t}) + \varepsilon_{i,t} \quad [\text{Eq } 2]$$

$$\text{Equilibrium statistic } E = B_1 + B_2 + B_3 \quad \text{(from Eq 2).}$$

When E substantially deviates from 0, it indicates that the market is out of equilibrium. This implies that, over the long term, fluctuations in asset returns are not consistently aligned with changes in input prices.

In Eq. (2) above, the sum of B_1, B_2, and B_3 produces the equilibrium statistic E. This is because, over the long-run, ROA is not correlated to input prices. In Eq. (2a) to evaluate banks for a long-run equilibrium perspective, the dependent variable, ROA was replaced by ROE.

$$\ln ROE_{i,t} = \alpha_0 + B_1 \ln (C_{L,i,t}) + B_2 \ln (C_{F,i,t}) + B_3 \ln (C_{K,i,t}) + B_4 \ln (EQTA_{i,t}) + B_5 \ln (NLTA_{i,t}) + B_6 \ln (TA_{i,t}) + B_7 \ln (RKTA_{i,t}) + B_8 \ln (BRCH_{i,t})$$

Volume 5 Issue No 1 (2026)
Online ISSN: 3006-2047
Print ISSN: 3006-2039

$+ B_9 \ln (GRTH_{i,t}) + \varepsilon_{i,t}$ _____ [Eq 2a]
Equilibrium statistic $E = B_1 + B_2 + B_3$_____ (from Eq 2a).

The Lerner Index (LI)

Over an extended timeframe, LI stood out as a primary metric for gauging market dominance and power. Market dominance can be described as the capability to vend goods at prices exceeding their marginal cost. The LI acted as a straightforward measure of CC, evaluating a company's pricing influence by measuring the disparity between selling price and marginal cost (Ariss, 2010; Shair, Sun et al., 2019; Aleemi, Uddin & Kashif, 2022). LI was computed as follows:

$$\ln COST_{i,t} = \alpha_0 + B_1 \ln Q_{i,t} + B_2^2 \ln Q^2_{i,t} + \sum_{k=1}^{3} \gamma_{k,t} \ln C_{K,\,i,t} + \sum_{k=1}^{3} \varphi_K \ln Q_{i,t}$$
$$\ln C_{K,\,i,t} + \Sigma^3_{k=1} \Sigma^3_{j=1} \ln C_{K,\,i,t} \ln C_{J,\,i,t} + \varepsilon_{i,t} \quad \text{[Eq 3]}$$

In [Eq. 3] $Q_{i,t}$ pertains to the aggregate output or total assets of bank i at the given period t, wherein $C_{K,\,i,t}$ represented the three input costs as delineated in Eq. (1). $Q^2_{i,t}$ allowed for the possibility of the presence of a nonlinear association between competition and profitability (Martinez-Miera & Repullo, 2010). The following formula is utilized to compute the marginal cost of bank:

$$MC_{assets,\,i,t} = COST_{i,t} / Q_{i,t} [\, B_1 + B_2 \ln Q_{i,t} + \sum_{k=1}^{3} \varphi_K \ln C_{K,\,i,t} \,] \quad \text{[Eq 4]}$$

In [Eq.4] the $MC_{assets,\,i,t}$ represents bank i total assets' marginal cost at time t. LI was then calculated with the following formula:

$$LI_{i,t} = (PRICE_{assets,\,i,t} - MC_{assets,\,i,t}) / PRICE_{assets,\,i,t} \quad \text{[Eq 5]}$$

$PRICE_{assets,\,i,t}$ was calculated by dividing total REV, encompassing both interest and non-interest components, by total assets, with i and t act as subscripts denoting individual banks and time, respectively. The LI generally falls within a range of 0 to 1. A LI of 0 signifies a state of perfect competition, meaning the firm has no market dominance. Conversely, an LI approaching 1 indicates weak price competition, showing that the firm holds substantial market control.

The Influence of Penetration of FBs on Competition

During the second stage, we undertook an evaluation to scrutinize the impact of FBs penetration on the competitive landscape of the banking industry in Pakistan. The fundamental model for investigating the effect of the entry of FBs on competition was outlined as follows:

$$Comp_{i,t} = c + B \cdot FP_t + \gamma \cdot X_{i,t-1} + \theta \cdot Y_{j,t} + \text{year dummies} + \varepsilon_{i,t} \quad \text{[Eq 6]}$$

In [Eq 6] the dependent variable was evaluated utilizing both the PRM and the LI. The degree of FP was appraised by utilizing either the fraction of total assets held by FBs or the proportion of the number of branches operated by FBs to the total count of banks in a host country. The subscripts i and t represent individual banks and time, correspondingly. The $X_{i,t-1}$ encompassed a set of institution-specific indicators, such as the bank size, equity, profitability or return on assets, net loans, riskiness of assets etc. The $Y_{j,t}$ included country-specific factors, such as GDP growth, etc.

Volume 5 Issue No 1 (2026)
Online ISSN: 3006-2047
Print ISSN: 3006-2039

The Effect of Competition on Banks Profitability

During the third phase of our research, the study examines how competition affects financial success of banks. Specifically, this study inspect how competition influences key financial performance indicators, including risk-adjusted return on assets (RAROA), return on assets (ROA), risk-adjusted return on equity (RAROE), and return on equity (ROE). In line with standard econometric practice, profitability is measured using ROA and ROE alongside their risk-adjusted counterparts, while controlling for key bank-level characteristics such as capital adequacy, liquidity conditions, and asset size (Ali, Khan, Masood, & Alim, 2024). Adopting the following model form (Ariss, 2010), this study compares the Profitability of the three different segments within Pakistan's banking region. The general form of the model was as follow:

$$PROF_{i,t} = f(CC_{i,t} + Z_{i,t} + ISLAM_i + FORG_i) \quad [Eq\ 7]$$

$$ROA_{i,t} = f(CC_{i,t} + Z_{i,t} + ISLAM_i + FORG_i) \quad [Eq\ 7\text{-}a]$$

$$ROA_{ADJ\ i,t} = f(CC_{i,t} + Z_{i,t} + ISLAM_i + FORG_i) \quad [Eq\ 7\text{-}b]$$

$$ROE_{i,t} = f(CC_{i,t} + Z_{i,t} + ISLAM_i + FORG_i) \quad [Eq\ 7\text{-}c]$$

$$ROE_{ADJ\ i,t} = f(CC_{i,t} + Z_{i,t} + ISLAM_i + FORG_i) \quad [Eq\ 7\text{-}d]$$

In the eq. PROF refers to return on assets ($ROA_{i,t}$ & $ROE_{i,t}$) and the risk-adjusted return on assets ($ROA_{ADJ\ i,t}$ & $ROE_{ADJ\ i,t}$) for bank i during time period t. $ROA_{ADJ\ i,t}$ was calculated through the formula previously used by stiroh (2004), and Mercieca, Schaech and Wolf (2007). Similarly, $ROE_{ADJ\ i,t}$ was also computed.

$$ROA_{ADJ\ i,t} = ROA_i / \delta\ ROA_i \quad [Eq\ 8]$$

In Eq [8] ROA_i, represents the mean return on assets and $\delta\ ROA_i$, denotes the standard deviation of ROA for each bank. In equation [7] CC represents two competition proxies, $Z_{i,t}$ (bank market share and size) are control variables and the dummy variables ISLAM and FORG were used to differentiate among the three segments of banks.

RESULTS AND DISCUSSION

Table 1 presents the summary statistics for several crucial variables across the three banks categories of Pakistani banks: conventional Banks (Panel A), Islamic Banks (Panel B), and FBs (Panel C). Conventional banks hold larger deposits and assets but show lower ROA and ROE. Islamic banks have moderate assets with higher ROA, while FBs, despite smaller assets and limited branch network, record the highest ROE, reflecting efficient equity use. Profitability, costs, and growth vary across all banks, highlighting diverse strategies and market conditions.

Table 1: Descriptive Statistics

Var	LD	LTA	NLTA	LREV	LFC	LOC	LEQTA	RKTA	ROA	ROE	GRTH	BRCH
	Panel A: Conventional Banks											
Obsn	265	265	265	265	265	265	265	265	265	265	265	265
Mean	8.54	8.67	8.64	7.15	7.04	6.88	7.42	0.01	0.01	0.07	3.83	2.53
St. Dev.	0.53	0.52	0.52	0.99	0.47	1.14	1.14	0.02	0.15	0.32	1.92	0.52
Min	7.1	7.38	7.22	0.00	5.71	0.00	0.00	-0.07	-.09	-3.18	-1.27	1

Volume 5 Issue No 1 (2026)
Online ISSN: 3006-2047
Print ISSN: 3006-2039

Max	9.62	9.82	9.8	8.48	8.24	8.23	8.91	0.11	0.04	1.69	6.51	3.24
	Panel B: Islamic Banks											
Obsn	90	90	90	90	90	90	90	90	90	90	90	90
Mean	7.91	8.13	8.02	6.76	6.58	6.5	7.16	0.007	0.054	0.101	3.83	2.39
St. Dev.	0.802	0.638	0.756	0.666	0.63	0.746	0.449	0.011	0.206	0.099	1.93	0.28
Min	6.29	6.91	6.5	5.49	5.03	5.03	5.99	-0.01	-0.01	-0.11	-1.27	1.3
Max	9.35	9.48	9.45	8.4	7.86	7.83	8.27	0.04	0.41	0.46	6.51	2.98
	Panel C: Foreign Banks											
Obsn	50	50	50	50	50	50	50	50	50	50	50	50
Mean	7.38	7.85	7.74	6.35	6.16	6.14	6.99	0.003	0.013	0.147	3.9	0.358
St. Dev.	1.18	0.555	0.647	1.17	0.317	0.302	0.334	0.013	0.024	0.147	2.03	0.166
Min	0.0	6.77	5.86	0	5.29	5.29	6.48	-0.02	-0.08	-0.19	-1.27	0
Max	8.43	9.15	9.11	7.88	6.66	6.65	8.08	0.06	0.05	0.49	6.51	0.48

Note: The table displays the descriptive statistics for key variables utilized in the study, organized into three panels: Panel A (Conventional Banks), Panel B (Islamic Banks), and Panel C (FBs). The table reports the number of observation (Obs), mean, standard deviation (std. Dev.), minimum (Min), and maximum (Max) values for each variable. The dependent variables are logged Revenue (LREV), Return on Assets (ROA) and return of equity (ROE). Independent variables are logged deposits (LD), logged financing cost (LFC) and logged operating cost (LOC). Control variables consist of logged total assets (LTA), net loans to total assets (NTLA), logged equity to total assets (LEQTA), riskiness to total assets (RKTA), GDP growth rate (GRTH) and number of branches (BRCH).

Table 2 reports concentration ratios for the biggest 3 banks including deposits, loans and assets for both the conventional and Islamic banks. Overall, findings shows that generally the Islamic banks consistently show high concentration range (70-100%), suggesting dominance by few players and limited competition. The outcomes are consistent with Ariss (2010), who also revealed that Islamic global markets are more concentrated than conventional ones, indicating dominance by a few key players and less competition. In contrast, Conventional banks generally remain below 50%, which suggests relatively low market concentration and more competition, reflecting a more oligopolistic or monopolistic market structure.

Table 2: Concentration Ratios (CR_3) based on Deposits, Loans, and Assets

Year	CR_3 (Deposits)		CR_3 (Loans)		CR_3 (Assets)		CR_3 Overall	
	Convenl.	Islamic	Convenl.	Islamic	Convenl.	Islamic	Convenl.	Islamic
2010	0.464	0.885	0.448	0.887	0.454	0.859	0.456	0.877
2011	0.456	0.902	0.444	0.904	0.453	0.868	0.454	0.891

Volume 5 Issue No 1 (2026)
Online ISSN: 3006-2047
Print ISSN: 3006-2039

2012	0.452	0.898	0.434	0.897	0.438	0.858	0.441	0.884
2013	0.463	0.892	0.453	0.891	0.456	0.857	0.456	0.881
2014	0.455	0.891	0.452	0.884	0.453	0.862	0.453	0.878
2015	0.448	0.888	0.432	0.878	0.436	0.864	0.439	0.877
2016	0.451	0.859	0.438	0.86	0.443	0.837	0.443	0.852
2017	0.455	0.877	0.448	0.878	0.448	0.843	0.452	0.866
2018	0.438	0.867	0.446	0.864	0.445	0.831	0.443	0.854
2019	0.441	0.841	0.451	0.843	0.451	0.841	0.447	0.841
2020	0.439	0.844	0.436	0.846	0.437	0.829	0.437	0.841
2021	0.431	0.857	0.413	0.852	0.416	0.833	0.424	0.847
2022	0.438	0.861	0.422	0.861	0.426	0.839	0.429	0.854
2023	0.402	0.849	0.427	0.866	0.429	0.852	0.419	0.855
2024	0.423	0.875	0.469	0.879	0.468	0.835	0.453	0.863
All years	0.437	0.864	0.441	0.866	0.442	0.842	0.441	0.857

Note: The table presents the concentration ratios (C_3) of deposits, loans, and assets for conventional and Islamic category of banks in Pakistan from 2010 to 2024. The table includes values for deposits, loans and assets and an overall measure of concentration for both banking systems and last row provides the average C_3 ratios for all years.

Table 3 shows Concentration ratios for the top 5 banks. The Conventional banks hold significant shares in deposits, loans and assets, indicating moderate competition, while Islamic banks dominate across all metrics, reflecting extreme concentration and limited competition. This suggests very limited competition and exhibits oligopoly or near monopoly market structure in Islamic banking. The results align with Ariss (2010), who also found that the Islamic banking segment is highly concentrated.

Table 3: Concentration Ratios (CR_5) based on Deposits, Loans, and Assets

	CR_5 (Deposits)	CR_5 (Loans)	CR_5 (Assets)	CR_5(Overall)

Volume 5 Issue No 1 (2026)
Online ISSN: 3006-2047
Print ISSN: 3006-2039

Year	Convenl.	Islamic	Convenl.	Islamic	Convenl.	Islamic	Convenl.	Islamic
2010	0.636	0.993	0.622	0.97	0.63	0.979	0.629	0.981
2011	0.63	0.992	0.616	0.974	0.625	0.982	0.623	0.983
2012	0.618	0.992	0.602	0.97	0.609	0.979	0.61	0.98
2013	0.629	0.992	0.621	0.972	0.627	0.98	0.626	0.982
2014	0.629	0.994	0.622	0.974	0.629	0.981	0.627	0.983
2015	0.618	0.994	0.603	0.973	0.611	0.981	0.611	0.983
2016	0.612	0.995	0.602	0.98	0.609	0.986	0.608	0.987
2017	0.612	0.995	0.603	0.98	0.608	0.98	0.608	0.985
2018	0.603	0.996	0.606	0.968	0.611	0.97	0.607	0.978
2019	0.608	0.996	0.617	0.952	0.621	0.954	0.615	0.968
2020	0.6	0.996	0.595	0.954	0.6	0.956	0.598	0.969
2021	0.592	0.996	0.569	0.95	0.576	0.953	0.579	0.966
2022	0.594	0.997	0.581	0.953	0.587	0.956	0.587	0.969
2023	0.553	0.998	0.575	0.957	0.586	0.958	0.571	0.971
2024	0.568	0.998	0.59	0.952	0.594	0.953	0.584	0.968
All years	0.596	0.996	0.595	0.959	0.6	0.962	0.597	0.973

Note: The table shows the concentration ratios (C5) for deposits, loans and assets in both conventional and Islamic banks in Pakistan from 2010 to 2024. The table provides annual concentration ratios for deposits, loans, and assets, along with an overall measure for conventional and Islamic banks both. The final row presents the average C5 ratios across all years.

Table 4 displays the year-wise HHI values for the conventional and Islamic banks. For both sectors, HHI values consistently remain above 1,800 points across the years, indicating high concentration, reduced competition, and potentially higher market

Volume 5 Issue No 1 (2026)
Online ISSN: 3006-2047
Print ISSN: 3006-2039

power for these dominant banks. Conventional banks score 8,500 to 9,400, while Islamic banks range from 26,000 to over 31,000 points, reflecting extreme dominance and minimal competition. The findings of the HHI index in this study contradict those of Al-Muharrami (2009), Ariss (2010), Gajurel (2010), and Hamza & Kachtouli (2014), concluding that both conventional and Islamic markets are only weakly concentrated.

Table 4: Hirschman Herfindahl Index (HHI) Using Deposits, Loans and Assets

Year	Convnl.	Islamic	Year	Convnl.	Islamic	Year	Convnl.	Islamic
2010	9366.8	3008.9	2015	8886.5	2922.1	2020	8759.0	2835.0
2011	9238.6	3225.6	2016	8837.6	2698.8	2021	8470.7	3032.9
2012	8924.6	3049.6	2017	8872.3	2880.1	2022	8727.5	3076.7
2013	7835.6	2932.1	2018	8652.0	2843.4	2023	8685.7	3136.8
2014	9200.8	2911.5	2019	8929.1	2807.4	2024	9139.2	3152.7

Note: The table presents the Hirschman Herfindahl Index (HHI) for conventional and Islamic banks in Pakistan spanning from 2010 to 2024.

Table 5 displays the PR H-statistic values, using the revenue as a dependent variable to find out the effect of variation in the input prices on the total revenue. Based on the PR H-statistic values for all years, both conventional and Islamic banks falls within the range of $0 < PRM < 1$, indicating a market characterized by monopolistic competition where banks hold some market power and can influence prices to a degree, but they still face competitive limits. These results align with earlier studies (Khan, 2009; Ariss, 2010; Hamza & Kachtouli, 2014; Rafay & Farid, 2019; and Gautam, 2021).

Table 5: Rosse and Panzar (PRM) H-Statistics

Year	Convnl.	Islamic	Year	Convnl.	Islamic	Year	Convnl.	Islamic
2010	0.044	0.072	2015	0.047	0.039	2020	0.031	0.044
2011	0.045	0.045	2016	0.047	0.037	2021	0.038	0.038
2012	0.046	0.051	2017	0.049	0.05	2022	0.028	0.036
2013	0.044	0.047	2018	0.036	0.036	2023	0.029	0.045
2014	0.038	0.039	2019	0.034	0.04	2024	0.051	0.059

Note: The table presents the PRM (H-statistic) for conventional and Islamic banks in Pakistan from 2010 to 2024.

The Table 6 displays the equilibrium statistics E values of the PR model, utilizing the ROA as a dependent variable. Overall, conventional banks are consistently balanced whereas Islamic banks show more fluctuations and fail to maintain sustained equilibrium. In line with Hamza and Kachtouli (2014), both markets exhibit near-zero E values, suggesting the absence of long-term equilibrium.

Table 6: Equilibrium Statistics ROA as a Dependent Variable

Year	Convnl.	Islamic	Year	Convnl.	Islamic	Year	Convnl.	Islamic
2010	-0.001	0.003	2015	0.012	0.008	2020	0.01	0.007
2011	0.007	0.002	2016	0.012	0.006	2021	0.009	0.004
2012	0.012	0.013	2017	0.012	0.013	2022	0.004	0.007

Volume 5 Issue No 1 (2026)
Online ISSN: 3006-2047
Print ISSN: 3006-2039

2013	0.01	0.008	2018	0.009	0.007	2023	0.003	0.009
2014	0.009	0.006	2019	0.004	0.007	2024	0.015	0.016

Note: The table presents the Equilibrium Statistics (E), refer to eq 7, for conventional and Islamic banks in Pakistan from 2010 to 2024.

The Table 7 displays the PRM equilibrium E values, utilizing ROE as the dependent variable. Results of the equilibrium statistics E values for both the banks generally show a mix of equilibrium and non-equilibrium states with the fluctuations in E values, suggesting varying effects of input prices on return on equity over time. However, Islamic banks generally show more stability with E value of exactly 0 in 2020 or near 0 in 2010 and 2014.

Table 7: Equilibrium Statistics with ROE as Dependent Variable

Years	Convnl.	Islamic	Years	Convnl.	Islamic	Years	Convnl.	Islamic
2010	-0.095	0.053	2015	0.124	0.020	2020	-0.021	0.081
2011	0.020	0.040	2016	0.130	0.066	2021	0.164	0.000
2012	0.129	0.156	2017	0.125	0.079	2022	0.033	0.069
2013	0.120	0.166	2018	0.061	0.089	2023	-0.059	0.058
2014	0.075	0.066	2019	-0.029	0.066	2024	0.134	0.230

Note: The table presents the Equilibrium Statistics (E), refer to eq. 7, for conventional and Islamic banks in Pakistan from 2010 to 2024.

Table 8 presents the LI (LI) values for conventional, Islamic, and all banks in Pakistan (2009 to 2023). Results show consistently high LI values near 1 across all categories, indicating strong market power, weak competition within the banking sector of Pakistan, and banks' ability to price above marginal costs, especially conventional banks. These findings align with Hamza & Kachtouli (2014), who note weaker competition in developing countries, and with Ariss (2010) and Hassan et al. (2021), who suggest Islamic banks display greater dominance and stability. Similarly, the persistent high LI values for all the banks might point to an oligopolistic or monopolistic market structure where few players dominate the market, potentially leading to higher profits but favorable conditions for consumers.

Table 8: Lerner Index (LI) - Conventional and Islamic Banks

Year	Convnl.	Islamic	Both	Year	Convnl.	Islamic	Both	Year	Convnl.	Islamic	Both
2010	0.9996	0.9995	0.9995	2015	0.9996	0.9995	0.9995	2020	0.9996	0.9995	0.9995
2011	0.9996	0.9995	0.9995	2016	0.9996	0.9995	0.9995	2021	0.9996	0.9995	0.9995
2012	0.9996	0.9995	0.9995	2017	0.9996	0.9995	0.9995	2022	0.9996	0.9995	0.9995
2013	0.9996	0.9995	0.9995	2018	0.9996	0.9995	0.9995	2023	0.9996	0.9995	0.9995
2014	0.9996	0.9995	0.9995	2019	0.9996	0.9995	0.9995	2024	0.9996	0.9995	0.9995

Volume 5 Issue No 1 (2026)
Online ISSN: 3006-2047
Print ISSN: 3006-2039

20	0.999	0.99	0.99	20	0.999	0.99	0.99	20	0.999	0.99	0.99
13	6	95	95	18	6	95	95	23	6	95	95
20	0.999	0.99	0.99	20	0.999	0.99	0.99	20	0.999	0.99	0.99
14	6	95	95	19	6	95	95	24	6	95	95

Note: The table presents the LI for conventional banks, Islamic banks, and all banks in Pakistan from 2010 to 2024.

Table 9 presents regression model results using two competition models; the PR H-statistics and Lerner gauge to access the impact of foreign bank penetration on competition. The findings, based on the key competition measures, namely the PRM (H-statistics) and LI, suggest that the entry of FBs is linked to a reduction in competition within the Pakistan's banking system. By targeting profitable segments, they weaken local banks and may reduce overall competition in the banking sector. Bank size significantly affects competition, with larger banks enhancing it, while higher GDP growth is linked to declining competition. The findings align with those of Claessens et al. (2001), Lensink & Hermes (2004) and Yin (2021), who found that, on average, an increase in the entrance of FBs correlates with reduced competition in the host nation. Additionally, they observed that competition tends to rise in developed nations but decreases in developing ones. Likewise, Iqbal & Fikri (2025) show that foreign bank presence plays a significant role in shaping the efficiency–profitability relationship, as greater global integration facilitates portfolio diversification while simultaneously increasing domestic banks' exposure to external economic shocks.

Table 9: Effect of FBs Penetration on Competition

VAR.	PRM Competition_H	Competition_Hroe (ROE)	Competition_LI
Forgn penet	-.0101**	-2.248	-.0283**
	(0.0041)	(1.937)	(0.0147)
LGDP	0.0002	0.1238	-.0131***
	(0.0003)	(0.1225)	(0.0030)
LTA	0.0001	.0694*	.0073***
	(0.0001)	(0.0387)	(0.0009)
RKTA	.0166***	-0.5979	-.0559**
	(0.0023)	(1.0866)	(0.0262)
ROA	-.0234***	6.802***	-6.2677***
	(0.0028)	(1.3080)	(0.0315)
-CONS	-0.0019	-1.5208*	100.0367***
	(0.0017)	(0.7963)	(0.0192)
Year	Yes	Yes	Yes
OBSNS	265	265	265
R-squared	0.4703	0.2094	0.5632

Note: The table represents the regression findings examining the effect of foreign bank entrance on three different measures of competition within the banking sector. Column

Volume 5 Issue No 1 (2026)
Online ISSN: 3006-2047
Print ISSN: 3006-2039

(1) presents the results for competition_H, from Panzar-Rosse H-statistic; Column (2) shows competition_Hroe, which incorporates the H-statistic with return on equity; and Column (3) reports competition_LI, based on the LI. The primary independent variable is foreign bank presence (for_pres), while control variables include log GDP (LGDP), log total assets (LTA), riskiness of total assets (RKTA), and return on assets (ROA). The table provides estimated coefficients with standard errors in parentheses, and statistical significance is indicated by *** (p<0.01), ** (p<0.05), and * (p<0.1). The constant term is labeled (CONS), year fixed effects are included (Year), no of observation is included for all the models denoted by (observations) and the R-squared values reflect the explanatory power of each model.

Table 10 presents the regression results of the effect of competition, measured by the PRM (H-statistics), ROE-based H-statistics, and the LI, on key financial performance indicators (both normal and risk adjusted ROA, ROE) for both the conventional and Islamic banks. For conventional banks, PRM H-statistics and ROE-based H-statistics show significant positive effects (1% level) on ROA, and ROE, while the LI reveals a negative relationship with ROA, and both normal and risk adjusted ROE, reflecting reduced profitability due to decline in pricing power. The squared terms indicate that competition initially decreases returns but later enhances them, particularly for ROA and ROE. Islamic banks also exhibit a positive relationship between competition and performance, with significant coefficients for the PR H-statistics and ROE-based H-statistics, though the LI shows diminishing returns beyond a certain level of competition. Economic growth (LGDP) has mixed impact, but significantly boosts ROE in Islamic banks. Overall, these findings support the ES hypothesis in Pakistani banking sector. This indicates that competition enhances profitability for both conventional and Islamic banks. These results are consistent with studies by Berger (1995) and Pham et al. (2020), who reported similar positive relationships between competition and profitability in other countries. However, Shair et al. (2019) found that competition, measured by the LI and Boone indicator, negatively affected profitability in Pakistani banking sector, supporting the SCP hypothesis. Similarly, Shaheen et al. (2024) figured out that in line with the market power hypothesis, the results suggest that heightened competitive pressure is associated with a short-run decline in bank profitability, largely driven by rising credit risk and the narrowing of interest margins.

Table 10: Effect of Competition on Profitability

VAR	ROA ADJ	ROA	ROE ADJ	ROE	VAR	ROA ADJ	ROA	ROE ADJ	ROE
Panel A: Conventional Banks Competition measured through PRM (H-Statistics)					**Panel B: Islamic Banks**				
Competition_H	.044***	.002***	-.009***	.025***	**Competition_H**	0.53***	1.028***	159.269***	9.801***
	(0.007)	(0.000)	(0.002)	(0.003)		(0.187)	(0.108)	(34.179)	(2.552)

Volume 5 Issue No 1 (2026)
Online ISSN: 3006-2047
Print ISSN: 3006-2039

Competition_H²	350.961***	6.902***	-1.913	267.59***	**Competition_H²**	-26.157***	-1.489	-1825.14	12.153
	(99.653)	(1.216)	(27.377)	(41.767)		(7.581)	(4.863)	(1538.15)	(114.861)
LGDP	-0.222	-.008**	0.085	0.048	**LGDP**	0.003	0	1.481**	0.084
	(0.327)	(0.004)	(0.079)	(0.121)		(0.004)	(0.002)	(0.737)	(0.550)
CONS	3.032	.06**	-0.383	-0.341	**CONS**	-0.077	0.001	-10.266*	-0.585
	(2.349)	(0.025)	(0.571)	(0.870)		(0.030)	(0.017)	(5.299)	(0.396)
Year	Yes	Yes	Yes	Yes	**Year**	Yes	Yes	Yes	Yes
OBSRNS	265	265	265	265	**OBSRNS**	90	90	90	90
R-squared	0.226	0.346	0.224	0.251	**R-squared**	0.203	0.493	0.403	0.421
Competition measured through ROE of the PRM (H-Statistics)									
Competition_Hroe	.493***	.021***	-.092**	1.003***	**Competition_Hroe**	174.65*	.929***	0.373	1.000***
	(0.155)	(0.002)	(0.042)	(0.031)		(90.431)	(0.254)	(0.429)	(0.059)
Competition_Hroe²	-16918.694**	-1299.143***	10753.886***	3264.449***	**Competition_Hroe²**	-1.688e+08***	147472.3	-176310	414.925
	(7004.76)	(111.127)	(1942.94)	(1430.29)		(6.1E+07)	(231298)	(390263.0)	(53929.8)
LGDP	0.175	0.004	-0.001	-0.008	**LGDP**	-2.079	-0.081	-0.122	0.000
	(0.350)	(0.005)	(0.083)	(0.061)		(46.559)	(0.141)	(0.238)	(0.033)
CONS	0.226	0.022	0.238	0.052	**CONS**	164.079	0.536	1.129	0.000
	(2.518)	(0.340)	(0.600)	(0.442)		(332.861)	(1.009)	(1.703)	(0.235)
Year	Yes	Yes	Yes	Yes	**Year**	Yes	Yes	Yes	Yes

Volume 5 Issue No 1 (2026)
Online ISSN: 3006-2047
Print ISSN: 3006-2039

OBSRNS	265	265	265	265	**OBSRNS**	90	90	90	90
R-squared	0.278	0.463	0.223	0.402	**R-squared**	0.154	0.186	0.201	0.408
Competition measured through Lerner Index									
Competition_LI	-18.332	-1.999***	-334.155***	-294.794*	**Competition_LI**	72852.571***	410762.39***	607876.71***	26855.98
	(411.5)	(0.634)	(108.723)	(159.669)		(22409.7)	(50394.6)	(118693.0)	(36280.4)
Competition_LI²	772.622	91.772***	16734.671***	14641.529*	**Competition_LI²**	-36446.2***	-205665.13***	-304252.71***	-13500.2
	(20554.000)	(31.653)	(5430.99)	(7975.83)		(11212.5)	(25212.6)	(59382.2)	(18151.2)
LGDP	0.065	0	0.042	.207*	**LGDP**	0.013	-0.09	-0.221	.105*
	(0.331)	(0.000)	(0.080)	(0.118)		(0.044)	(0.080)	(0.189)	(0.058)
CONS	1061.506	108.139***	16680.81***	14836.405*	**CONS**	-36406.304***	-205096.77***	-303622.31***	-13356.5
	(20595.9)	(31.713)	(5441.340)	(7991.000)		(11197.2)	(25182.0)	(59310.2)	(18129.2)
Year	Yes	Yes	Yes	Yes	**Year**	Yes	Yes	Yes	Yes
OBSRNS	265	265	265	265	**OBSRNS**	90	90	90	90
R-squared	0.168	0.295	0.179	0.263	**R-squared**	0.192	0.424	0.346	0.381

Note: The table presents the regression results for Conventional and Islamic banks, examining the effect of competition on four performance metrics: risk-adjusted return on assets (ROA_{ADJ}), return on assets (ROA), risk-adjusted return on equity (ROE_{ADJ}), and return on equity (ROE) which are the dependent variables. The key independent variables include the PRM H-statistic (Competition_H) and its squared term (Competition_H^2), the competition measured by PRM H-statistics with return on equity (competition_Hroe), and its squared term (competition_$Hroe^2$), the competition measured by LI (competition_LI), and its squared term (competition_LI^2). The control

Volume 5 Issue No 1 (2026)
Online ISSN: 3006-2047
Print ISSN: 3006-2039

variable is log GDP (LGDP). The table provides estimated coefficients with standard errors shown in parentheses. Statistical significance is showed by *** ($p<0.01$), ** ($p<0.05$), and * ($p<0.1$). The constant term is denoted by (_CONS), year-fixed effects are included (Year), and the number of observations (OBSERVATIONS) is provided. The R-squared values reflect the proportion of variance explained by each model.

CONCLUSION

The results from the traditional measures reveal varying levels of competition and concentration in the Pakistani banking sector between Islamic and conventional banks. Islamic banks operate in a highly concentrated, less competitive environment dominated by a few large players, limiting innovation, customer choice, and competitive pricing. Relative to Islamic banking segments, conventional banks, offer a more competitive market with better services and pricing. PRM H-statistics revealed monopolistic competition in both sectors. The LI further supported significant market power, indicating oligopolistic or monopolistic structures, with pricing consistently above marginal costs over the study period. The study further reveals that an increase in the number of FBs results in reduced competition within Pakistan's banking sector. Additionally, the study supports the Efficiency Structure (ES) Hypothesis, showing that heightened competition positively impacts financial performance within Pakistani banking sector.

The findings underscore the need for Islamic banks to diversify services and improve efficiency, while regulators should encourage new entrants to reduce concentration and promote innovation. Foreign investment policies should be structured to ensure it fosters healthy competition. The positive link between competition and financial performance suggests that promoting competition could enhance economic growth, reduce financial costs, and improve credit access. However, high concentration in Islamic banks may pose risks to financial stability, necessitating a more diversified and competitive market structure.

This study limitation includes the exclusion of newer control variables, such as number of ATMs, no of accounts, and exchange rate fluctuations, due to inconsistent data. Additionally, reliance on the PRM H-statistic and LI entails assumptions that may not fully apply in Pakistan's evolving regulatory context. Moreover, the use of secondary financial data restricts analysis to quantitative measures, leaving out qualitative factors like service quality and customer satisfaction. Future research should address these gaps by incorporating these variables and extending the analysis to multiple countries for a broader understanding of competition in different banking environments.

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