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The Impact of Islamic and Conventional Banking Competition on Financial Stability

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| Arif Saleem Cheema [*] | Abdul Rashid [†] | Faisal Rizwan [‡] |

Abstract: The impact of banking competition on financial stability/fragility is an essential issue in the banking literature. There is much research on the association between financial stability/fragility and banking competition in developed countries. However, no prior research examines the comparison of conventional and Islamic banks. The study uses data from nine countries Pakistan, Indonesia, Malaysia, Bangladesh, Egypt, Kuwait, Oman, Iraq and Jorden for the period 2010-2020. This study uses a fixed effects model to examine the influence of competition and income diversity on bank financial stability. We study how these variables affect Islamic and conventional banks differently using an empirical framework. Our findings show a considerable positive association between competition and conventional banks' financial stability; however, this relationship was found to be insignificant for Islamic banks. Furthermore, according to our research, the diversification of income has a positive impact on the financial well-being of both Islamic and conventional banks. Our study highlights the significance of fostering trustworthy competition within the banking sector to enhance overall financial stability. Furthermore, our findings indicate that promoting healthy competition in the industry can contribute to the improvement of financial stability.

Key Words: Competition, Financial Stability, Diversification, Macroeconomic Variables

JEL Classification:

Introduction

The banking sector is critical to a country's economic success, and sustaining the stability of this sector is critical to maintaining financial stability in the economy. Competition is one of the key drivers of the banking sector, and it has significant implications for the stability of banks. However, other researchers have also highlighted the importance of considering factors such as competition among banks and market structure (Albaity et al., 2019; Beck et al., 2013). This research is a comprehensive effort to investigate the factors that influence banking stability to understand how banking systems are often unstable and vulnerable to financial problems. These factors are banking competition, diversification, and macroeconomic variables. Modern

[*] PhD Scholar, Faculty of Management Sciences, International Islamic University Islamabad (IIUI), Islamabad, Pakistan.

[†] Professor in International Institute of Islamic Economics, International Islamic University Islamabad (IIUI), Islamabad, Pakistan.

[‡] Associate Professor in Faculty of Management Sciences, International Islamic University Islamabad (IIUI), Islamabad, Pakistan.

Corresponding Author: Arif Saleem Cheema (Phd Scholar, Faculty of Management Sciences, International Islamic University Islamabad (IIUI), Islamabad, Pakistan. Email: arifcheema33@gmail.com)

competition-stability theory hypothesizes that competition decreases banks' risk-taking behaviour and improves bank stability (Schaeck and Cihák, 2014; Vives, 2019; Rakshit and Bardhan, 2019). The majority of research has shown that there is a significant association between competitiveness and financial stability.

According to the classic competition-fragility theory, banks become riskier due to competition for deposits. Because intense competition diminishes banks' market power to obtain monopoly rents, depressed profit margins and charter value encourage risk-taking to boost profit margins and make up for lost charter value (Moudud-ul-Haq et al., 2021). New market entrants may cause financial institutions' market share to decline, resulting in lower profitability. As a result, banks significantly raise their risky assets to compensate for the losses (Alam et al., 2019).

One of the most highly disputed topics among academics and policymakers is the effect of banking competition on financial stability in the banking sector. Martinez-Miera and Repullo (2010) examined the connection between bank competitiveness and lending process stability. They discovered that the theories of competition-fragility and competition-stability are both relevant, and there is a nonlinear relationship between competition and bank stability. There is still a lack of academic agreement over how bank competition affects bank stability and more empirical research is needed to understand this relationship. However, researchers have tested the competition and stability connection in different countries and periods. The results of these studies do not offer any definite proof of how bank competition affects bank stability or fragility. However, on the empirical side, the effect of competition on the stability of the financial system is one of the topics that scholars and decision-makers discuss the most.

The rapid expansion of Islamic finance in a highly competitive environment clearly raises concerns about the financial soundness of both the conventional and Islamic banking systems. Furthermore, to promote economic contact between market segments and achieve both allocational and administrative efficiencies, a strong and well-functioning banking sector is required (Rashid and Jabeen, 2016). On the other hand, Banks focus on diversification strategies in order to limit the adverse effects of competition, generally shift their business from interest to non-interest products (Zouaoui & Zoghlami, 2020; Tariq et al., 2021) and the variations in the income structure influence the bank's financial stability (Doan et al., 2018; Abedifar et al., 2018; Adesina, 2021). Traditional bank investors have expressed interest in Shari'ah-compliant products to diversify. The Islamic banking business can develop and market solutions that meet the interests and desires of both Muslim and non-Muslim investors (Rashid & Riaz, 2018). Diversification and economies of scope would achieve sustainable growth in the banking industry. In addition, all those banks with operating leverage can get an advantage from diversification's cost benefits. Diversified banks, on the other hand, can profit from economies of scale by lowering overall risk, boosting performance, and enhancing bank stability (Köhler, 2015; Le, 2017; Adesina, 2021). Therefore, by studying the recent empirical research, we observe that there is a lack of research regarding the effect of competition and diversification on the financial stability of the banking sector.

This research work has several distinctive characteristics that differentiate it from the existing literature on the financial performance of the dual system. This study offers important new perspectives on how to handle bank competition in countries with both conventional and Islamic banks. It clarifies how a bank's market position may significantly improve stability, which is important for researchers and policymakers. The study's findings show that the Lerner Index has a negative impact on banks' financial health. These findings are consistent with the competition stability theory, which contends that increased competition benefits conventional banks by increasing their earnings and strengthening their capacity to deal with challenging situations. However,

Islamic banks are not affected by this effect. Notably, the study emphasizes how income variety can help conventional and Islamic banks both increase their financial soundness. This research is organized as follows. The existing literature is studied and arranged in Section Two, and an explanation of the methodology and data is mentioned in section three. The results of the analysis are elaborated in Section Four. Finally, the conclusion of the study is reported in section five.

Literature Review

In the past, researchers have used a range of approaches and investigated a range of situations to assess the financial stability of both Islamic and conventional banks. Various scholars have different opinions on this issue. Several believe that smaller Islamic banks display stronger financial stability when compared to both conventional and larger Islamic banks, while some argue that Islamic banks exhibit weaker stability when compared to conventional banks (Beck et al., 2013).

According to researchers (Alam et al., 2019; Ariss, 2010), intense competition between conventional and Islamic banks can devalue their brands and cause financial instability. Here is a brief review of previous research examining how banking competition and diversity affect the banking sector's financial stability. According to Rashid et al. (2017), the Islamic banking system contributes to the creation of financial sustainability compared to traditional banks. Islamic banking has a part in helping a stable and sound financial system. Even though Islamic banks have a brief history than their conventional counterparts, the former attracts more interest from researchers, investors, and policymakers due to their various products and operating procedures. Moudud-ul-Haq et al. (2021) investigated how banking competition affected the Middle Eastern (MENA) and North African (MENA) countries' financial stability and ownership structure. Their research showed a strong and unfavourable correlation between banking competition and financial stability. Their research showed a strong and negative correlation between banking competition and financial stability.

The promotion of efficiency, the encouragement of product innovation, and the diversification of loan offerings are three ways that competition may improve bank stability (Fiordelisi and Mare, 2014; Noman et al., 2018). Due to increased manufacturing efficiency brought on by bank competition, financial services and products can be of higher quality and overall banking industry growth can be accelerated (Rakshit and Bardhan, 2019). Theoretical theories and strong empirical data support both positions. The competition fragility/stability theory has been the subject of many studies and investigations that extend different countries and time periods, with varying outcomes and ambiguous findings. As a result, it is urgently necessary to conduct a thorough empirical study to determine the financial stability of the traditional and Islamic banking sectors in developing countries.

H_1: Banking competition has a significant influence on the financial stability of banks.

Moving to non-traditional sources of income (diversification) is one strategy to survive in a competitive climate and enhance the financial stability of banks (Rashid et al, 2017; Zouaoui and Zoghlami, 2020; Tariq et al., 2021). It aids banks in maintaining or gaining market share and financial stability (Goddard et al., 2008). DeYoung and Roland (2001) found that diversification increases bank risk by increasing profit volatility and fixed costs. Aside from competitive burdens, banks adopt non-conventional operations for hedging, improving income, and operating efficiency (Landskroner et al., 2005; Abedifar et al., 2018; Doan et al., 2018). Although these studies point to the benefits of diversification, Diversification's effect on stability is unclear. The influence of income diversity on risk-adjusted returns and profitability has generated a lot of discussion among researchers. Some contend that income diversification and certain financial parameters don't significantly relate.

In fact, according to Adesina (2021), more diversification may cause banks to lose stability, effectiveness, and profitability. This viewpoint is based on contemporary portfolio theory, which contends that by utilising economies of scope, diversified banks can get the best performance results. According to the modern portfolio theory, diversification enables banks to distribute their risks across many revenue sources. Banks can reduce their exposure to certain industries or economic conditions by providing a wide range of financial goods and services. Adesina (2021), however, disputes this idea and claims that excessive variety may result in a loss of focus and expertise, leading to reduced stability and efficiency. According to Stiroh (2004), there has not been a definitive conclusion reached about how the impact of operational diversification on bank profits. As a result, a bank's decision to extend its activities and diversify its portfolio depends on whether diversification's benefits outweigh the costs. The relationship between competitiveness and stability may be influenced by the extent to which banks engage in diversified activities. Such as the influence of competition on bank stability may be greater/lesser in countries in which banks do not explore non-traditional operations at all or go into non-traditional activities to a lesser extent than in countries in which banks significantly diversify their activities (Tariq et al., 2021).

On the other hand, income diversification may support or diminish the link between competitiveness and stability. In other words, competitive forces may compel banks to adopt portfolio diversification methods, which could harm bank stability. For various reasons, banks are compelled to diversify their portfolios by adopting hedging strategies to enhance efficiency and profitability.

H₂: Diversification has a significant influence on the financial stability of banks.

Many internal as well as macroeconomic factors that are significant in influencing the financial performance of a bank have been highlighted by extensive empirical research (Curak, Poposki, & Pepur, 2012). These variables cover a wide range of areas, such as leverage ratios, overheads, liquidity, earnings, concentration, credit risk, operating costs, solvency risk, bank size, and deposits. Additionally, it has been discovered that macroeconomic variables like interest rates, GDP growth, currency rates, and inflation have a big impact on a bank's financial success. Leverage ratios are a key indicator of a bank's capital structure and its capacity for risk management. Increased reliance on debt funding is indicated by increasing leverage ratios, which can increase financial risks but also perhaps boost returns. The bank's performance is regressed against inflation and GDP. It is found that while the performance of banks is negatively connected with both GDP and inflation, the influence of inflation is statistically significant while the impact of GDP is negligible.

Jokipii and Monnin (2013) look at how inflation and real output growth affect the banking system's stability. They discover a connection between stable banking sector conditions and real output growth. We assume GDP growth has a negative/positive impact on bank stability because investment opportunities are better during up cycles (bank risk). Another essential economic determinant of bank stability is the unemployment level in the country. Heffernan and Fu (2008) investigate the factors that affect bank performance while taking unemployment into account. They assert that there is an inverse relationship between unemployment rates and bank performance since rising unemployment is predicted to diminish aggregate demand and increase loan default rates. Financial deepening has diverse effects, as indicated by Loayza and Ranciere (2006). Long-term growth is positively influenced, although a short-term negative impact is also identified. Arcand et al. (2012) extend Beck and Levine's (2004) finding that the association between financial deepening and financial stability is positive in an attempt to reconcile the divergent viewpoints expressed in the literature.

H₃: *Macroeconomic* factors have a

significant impact on bank financial stability. Two bank-specific factors, bank size and leverage are used as a control variable in this study. The size of a bank is a key driver of its diversification, fragility, and stability. Large banks can geographically disperse their operations along with the typical scale and scope diversification to lower risk (Meon and Weill, 2005). A possible description for this finding about the inverse association between capital ratio and bank size is offered by Tabak et al. (2012). They believe that a large bank benefits more from competition than smaller banks do.

Equity of total assets (leverage) is to account for the correlation between bank fragility and capitalization levels, as an indicator of capitalization, the equity-to-total-assets ratio is used. By absorbing large shocks and protecting banks from falling asset values, capital lowers the probability of collapse (Lehar, 2005). Bank leverage is a buffer against shocks and may provide secret information about a bank's future performance. Based on their various hypotheses, the expected association between bank capital and bank stability and risk differs (Berger et al, 2017). The use of borrowed cash to improve the possible return on investment is referred to as leverage. In the context of banking, leverage measures how much debt a bank has in comparison to its equity. While leverage can help banks generate higher returns on equity in good times, it can also increase their vulnerability to financial instability during economic downturns.

H₄: *Bank*-specific factors (Bank size and leverage) have a significant influence on the financial stability of banks.

Data and Methodology

The sample for this study includes countries with both conventional and Islamic banks between 2010 and 2020. Completely functional Islamic banks, Islamic banking windows, and countries where at least one full-fledged Islamic bank operates. Data from conventional banks match with Islamic banks' data available in the same country. Our sample includes nine countries that have both

conventional and Islamic banks. These are Pakistan, Indonesia, Malaysia, Bangladesh, Egypt, Kuwait, Oman, Iraq and Jorden. The total number of observations is 3278, and data is accessible to compute all variables and their proxies. Annexure (1) explain the measurement and proxies of variables.

In this research, we examine whether bank competition and diversification influence the financial stability of banks. Panel data analysis techniques were used to examine the data. Commonly used panel data methods such as pooled OLS, random effects and fixed effects are conducted for nine countries' data. Hausman test is used to choose or select the suitable and appropriate technique from fixed or random effects. Although the fixed effect reflects each company's unique effect, all sample units' slope coefficients continue to be constant. The random effect, in contrast, does not explain any connection between individual effects or groups.

For estimation purposes, a general form of equation (1) is as follows,

$$ZSCR_{ijt} = \alpha_0 + \beta_1 LI_{ijt} + \beta_2 DIV_{ijt} + \beta_3 INF_{jt} + \beta_4 UNE_{jt} + \beta_5 GDP_{jt} + \beta_6 FND_{jt} + \beta_7 BKS_{ijt} + \beta_8 LVR_{ijt} + \varepsilon_{ijt} \quad \text{Eq(1)}$$

where subscript i indexes the bank, t indexes the time and j indexes the countries at which the annual data is collected. Zscore represents the banking sector's financial stability as a dependent variable, α_0 is the constant, and β1 to β8 represents the coefficients of independent variables. LI shows the learner index which represents the competition of banks. DIV is the income diversification of banks, Macroeconomic variables are represented as inflation (INF), unemployment (UNE), economic growth (GDP), and financial deepening (FND). Bank-specific variables use bank size (BKS) and bank leverage (LVR).

Empirical Results

The sample's descriptive statistics are shown in Table 4.1. There are nine countries with dual banking systems in the study sample, and the total number of observations is 3278. The main variables of interest are financial stability, measured by ZSCR and competition measured

by learner index (Ll). The mean value of the Zscore is 20.402 (STD=20.507), while the minimum value is -12.813 and the maximum value 269.339. Learner index means value 0.008 (STD=1.098) and minimum value -5.932 maximum value of 3.655. Fiordelisi and Mare (2014) found similar results in descriptive statistics while studying Financial Stability and banking competition in European Cooperative Banks. Amazingly, the Lerner Index has some negative values for some observations. We suggest that this could occur when banks begin operations and incur substantial fixed costs (for example, for fixed assets). Income diversification (DIV) mean value of 0.354 (STD=0.123) and two bank-specific variables, leverage and bank size as a control variable, are calculated.

Table 1

Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max	p1	p99	Skew.	Kurt.
ZSCR	3278	20.402	20.507	-12.813	269.339	-3.686	96.192	4.043	35.389
Ll	3278	.008	1.098	-5.932	3.655	-4.328	1	-1.687	7.371
DIV	3278	.354	.123	0	.5	.006	.5	-1	3.365
LVR	3278	.308	.396	-6.22	1.146	-.365	.995	-4.423	66.336
BKS	3278	13.203	2.57	2.944	19.154	6.944	18.31	-.323	2.804
INF	3278	.041	.046	-.009	.295	-.008	.144	1.896	9.643
UNE	3278	.106	.111	0	.389	0	.373	.84	2.825
GDP	3278	.04	.028	-.104	.139	-.047	.096	-.811	5.036
FND	3278	.471	.297	.054	1.37	.068	1.231	1.127	3.468

Table (1) presents a correlation analysis of all variables using a complete sample. The complete sample correlation analysis explains the detailed picture of the variable's relationship. Financial stability (Zscore) has a significant negative correlation with the learner index ($r = -0.195$) and also has a negative relationship with diversification ($r = -0.011$). Lerner index has a negative correlation with financial stability, which supports the financial stability theory, which suggests increased competition is positively related to stability. Macroeconomic variables have a significant relationship with the financial stability of banks, such as Inflation related negatively ($r = -0.182$), unemployment-related positively ($r = 0.066$), and financial deepening also has a significant positive association ($r = 0.081$). Bank-specific control variables also have a significant positive correlation with the dependent variable, bank leverage ($r = 0.086$) and bank size ($r = 0.136$). Correlation analysis also checked that there is no discriminant validity issue in the data. It also clarified that the problem of multicollinearity did not exist among the variables, as the correlation values were less than 0.80.

Table 4

Correlation Analysis

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) ZSCR	1.000								
(2) Ll	-0.195*	1.000							
(3) DIV	-0.011	0.022	1.000						
(4) LVR	0.086*	0.220*	0.099*	1.000					
(5) BKS	0.136*	-0.437*	-0.001	-0.424*	1.000				
(6) INF	-0.182*	-0.071*	0.113*	-0.088*	-0.037*	1.000			
(7) UNE	0.066*	0.064*	-0.057*	0.044*	-0.033	-0.001	1.000		
(8) GDP	0.076*	-0.324*	0.198*	0.000	0.042*	0.006	-0.011	1.000	
(9) FND	0.081*	0.101*	0.147*	0.066*	0.190*	-0.259*	-0.110*	-0.237*	1.000

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Empirical Results for Full Sample

To investigate the relationship of dependent variables with the financial stability of banks, having a sample of conventional and Islamic banks, we investigate the equation, and the results are given in Table 4.3. Results in model (1) present full sample data and the Hausman test suggests a fixed-effect model (P-value < 0.05) for full sample data. It is found that out of eight variables, six variables have a significant relationship with financial stability, having a P-value less than 0.05, and two variables have an insignificant relationship.

The Lerner Index (LI) (=-1.445, P-value 0.05) has shown that banks' financial health and market competition have a substantial positive association. This result is consistent with earlier research by Moussawi and Mansour (2021) and Rehman et al. (2021). The findings suggest that lower bank financial stability is related to higher values of the Lerner Index, which measures poor competitiveness. A lower Lerner Index value, which denotes intense competition, is associated with higher financial stability, these outcomes are in line with other research works by Noman et al. (2018), Vives (2019), Rakshit and Bardhan (2019), and Rehman et al. (2021) and imply that strong market competition benefits banks' financial stability. It's crucial to keep in mind, nevertheless, that these findings go against those of several other research that suggested that intense competition in the banking industry would reduce the franchise value of banks and cause financial fragility (Moudud-ul-Haq et al., 2021; Alam et al., 2019; Ariss, 2010). Despite this paradox, the constant beneficial impact of banking sector competition on financial stability, as seen in this study and supported by other earlier research studies, highlights the complex and complicated nature of the connection between competition and bank performance. Macroeconomic benefits are envisaged as a result of increased banking competition, as lower interest rates on loans are projected to enhance corporate investments and hence boost economic growth (Moussawi and Mansour, 2021).

Hypothesis H1 and the connection between competitiveness and financial stability in this study are supported by the competition-stability theory. A monopoly corporation will set its prices higher than a competitive firm, which will lead to a loss of efficiency, according to the SCP hypothesis (Structure-Conduct Performance), which was initially put forth by Bain in 1951. Hicks (1935) put out the idea of the Quiet Life Hypothesis (QLH), which states that businesses with market dominance are less efficient. This idea supports the view that competition positively affects the degree of cost efficiency attained.

The H2 is supported by the income diversification coefficient, which in this model has a considerable positive influence on the financial performance of banks (=23.41, P-value 0.05). In banks with a larger income variety diversity, financial stability and a high z-score are more common. According to the projected coefficient value, the z-score will increase by 23.41 units for every additional unit of income diversity. Income diversity and financial stability are positively correlated, according to earlier studies (Rahim and Zakaria, 2013; Rashid et al., 2017). They also got to the conclusion that the stability of the economy is positively and significantly impacted by having a diverse income. Both types of banks have a positive association with financial performance. Financial stability and a high z-score are more frequent in banks with a higher income variety diversity. The study's findings are consistent with modern portfolio theory, which lays out the steps an investor takes to select a portfolio and is where the concept of revenue diversification was first introduced. Effective diversification, according to the principles of modern portfolio theory, can help lower the bank's overall risk and boost its productivity.

We include macroeconomic variables in the model, namely, GDP, inflation, unemployment and financial deepening. GDP (β=10.991, P-value <0.05) has a statistically significant and positive impact on financial stability. This result means that banks' financial stability is likely going to get better with an increase in GDP. This indicates that an

economy with a higher GDP is more likely to give banks a favourable environment for better performance. The findings of earlier research are in agreement with this result, like Shahid and Abbas (2012), and Rashid et al. (2017). Unemployment (=-3.177, P-value 0.05) has a negative and statistically significant influence on bank financial stability, implying that high unemployment is associated with financial instability. This finding is constant with previous research (Heffernan and Fu (2008) which found that when the unemployment level increases in the country, financial stability will decrease. These results of macroeconomic variables support the H3 hypothesis. The estimates of macroeconomic variables recommend that inflation and financial deepening have an insignificant relationship with financial stability (β=-3.257, P-value >0.05) and (β=-0.634, P-value >0.05), respectively. Higher economic inflation results

in a worse z-score for banks. According to this study, the likelihood of insolvency rises as the economy's price levels rise. Inflation has a detrimental effect, according to previous research (Shahid and Abbas, 2012; Cihak and Hesse, 2010). Bank-specific control variables like leverage and bank size have a significant relationship with financial stability. Leverage has a positive association (β= 8.18, P-value <0.05) and bank size have a negative relationship with financial stability (β= -1.956, P-value <0.05). This result shows that increases in leverage will cause high bank financial stability and an increase in bank size will reduce financial stability. In terms of how the size of the bank's assets affects its financial stability, this suggests that banks with higher asset levels typically have lower stability.

Table 3

Empirical Results for Full Sample, Conventional and Islamic Banks

Variables	Full Sample Model (1)	Conventional Banks Model (2)	Islamic Banks Model (3)
LI	-1.445***	-1.513***	-0.138
	(0.184)	(0.181)	(0.813)
DIV	23.410***	20.133***	24.253***
	(1.917)	(1.948)	(6.315)
INF	-3.257	-6.238	-3.720
	(4.200)	(4.242)	(14.014)
UNE	-3.177**	-2.442	-8.275
	(1.566)	(1.577)	(5.438)
GDP	10.991**	1.528	39.546***
	(4.578)	(4.714)	(13.420)
FND	-0.634	-1.080	6.208**
	(1.200)	(1.263)	(3.149)
LVR	8.180***	6.351***	51.936***
	(0.684)	(0.668)	(3.685)
BKS	-1.956***	-1.777***	-4.118***
	(0.209)	(0.230)	(0.484)
Constant	36.388***	35.496***	59.909***
	(3.073)	(3.334)	(7.683)
Observations	4,165	3,770	395
R-squared	0.266	0.251	0.595
Number of IDs	379	343	36

Note: Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Differential Effects for Conventional and Islamic Banks

Separate calculations were carried out for conventional and Islamic banks in order to compare the varied effects of independent factors on financial stability. The results, which make use of OLS regression, fixed effects, and random effects, are shown in models (2) and (3) of Table 4.3. A fixed-effect model is appropriate for both conventional and Islamic banks, according to the Hausman test, which was conducted. This was shown by a P-value below 0.05.

The Lerner Index significantly negatively correlates with banks' financial stability, according to an analysis of conventional banks' findings (model 2) (=-1.513, P-value 0.01). A low score for the Lerner Index denotes strong competition, and higher levels of bank competition was found to improve conventional banks' financial stability. This result is consistent with the findings of Rehman et al. (2021), who also found that bank competition had a favourable and significant impact on financial soundness. Additional investigations by Schaeck and Cihák (2014), Vives (2019), and Rakshit and Bardhan (2019) revealed similar findings. These results demonstrate how bank competition and financial stability have a persistent positive relationship in traditional banking, demonstrating how more competition can lead to better financial performance. It's vital to remember that different financial situations may have distinct unique dynamics and mechanisms underpinning this relationship.

When we examine the existence of Islamic banks in a model (3), we find an important connection between these institutions' financial stability and competitiveness. It's crucial to remember that there is not a statistically significant association for this link. These results are consistent with earlier research (Schaeck and Cihak, 2007; Rashid et al., 2017), which also recognized the minimal effect of banking competition on the financial soundness of Islamic banks. Within this paradigm, income diversification has a notable and advantageous effect on the financial

health of both Islamic and conventional banks. The coefficient for Islamic banks (β=24.253, P-value 0.01) shows a substantial positive link, and the coefficient for conventional banks (β=20.133, P-value 0.01) also shows a significant positive relationship. These results suggest that by having a larger variety of revenue streams, banks of all types can improve their financial stability. It follows logically that income diversity contributes positively and significantly to the improvement of banks' financial health. Notably, when compared to conventional banks, the effect of income diversification seems to be more evident among Islamic banks, because their sources of income are not limited to lending-based activities. However, these banks rely on a number of different revenue streams that help to increase their financial stability. Similar outcomes were reported in earlier studies (Pennathur et al., 2012; Goddard et al., 2008).

Macroeconomic variables' effects are examined, and we show that GDP growth has a beneficial impact on the financial stability of both Islamic and conventional banks. But only Islamic banks at the 1% level have statistical significance for this relationship, while it appears to have an insignificant effect on conventional banks. This finding aligns with previous research conducted by Shahid and Abbas (2012), Cihak and Hesse (2010), and Rashid et al. (2017), which also reported insignificant effects of GDP growth on conventional banks' financial stability.

Moving on to the impact of inflation, we observe that it has a limited effect on the stability of both Islamic and conventional banks. As economic inflation increases, the z-score of banks decreases, indicating a higher likelihood of insolvency. This implies that the danger of financial hardship for banks rises as price levels in the economy rise. These results are in line with studies by Cihak and Hesse (2010) and Shahid and Abbas (2012), which also discovered that inflation had a detrimental impact on bank stability.

Overall, these findings demonstrate the complex link between macroeconomic factors and banks' financial soundness. Even though

GDP growth shows a favourable impact on financial stability, Islamic and conventional banks' importance of this relationship varies. On the other hand, inflation exerts a negative effect on bank stability, suggesting the importance of monitoring and managing inflationary pressures to mitigate risks to the banking sector. Bank-specific control variables like leverage and bank size have a significant association with financial stability. Leverage has a positive association ($\beta= 6.351$, P-value <0.01) and bank size has a negative association with financial stability ($\beta= -1.777$, P-value <0.01). This result shows that increases in leverage will cause high bank financial stability and an increase in bank size will reduce financial stability.

Overall, the findings imply that conventional and Islamic banks make different contributions to financial stability. The main cause of these various effects is the differences between the two types of banks' guiding philosophies. Islamic banks are allowed to carry out their investment and financing operations in line with the Shariah code of conduct, while conventional banks are required to operate on a predetermined rate of interest for lending and borrowing operations. Therefore, in comparison to conventional banks, our findings indicate that Islamic banks' financial stability is not influenced by competition. The result implies that Islamic banking may be promoted without the threat of competition. The overall findings of this research are consistent with the previous research and provide an understanding to compare the results within dual banking system economies.

Conclusion

This study examined how bank competition affects the financial health of banks and found some interesting findings. In conventional banks, the results showed a strong positive association between competitiveness and financial stability, whereas Islamic institutions showed no such relationship. The study additionally showed that revenue diversification has a beneficial and significant impact on the financial health of both conventional and Islamic banks. These results indicate that embracing non-traditional sources of income through diversification is a viable strategy for banks to thrive in a competitive environment. Based on the empirical findings, this research presents implications and policy recommendations that hold significance for banks, regulatory bodies, academics, and practitioners. The results affirm that a highly competitive market benefits the financial positions of conventional banks, whereas competition may not have a significant impact on the financial stability of Islamic banks. Moreover, the findings suggest that banks should prioritize income diversification as a means to stabilize their financial positions within highly competitive markets. By understanding the implications of competition and the potential benefits of diversification, banks can devise effective strategies to navigate the challenges posed by competitive market environments. Regulatory bodies can also consider these findings when formulating policies and frameworks to promote financial stability and sustainable growth in the banking sector. Academics and practitioners can leverage this research to deepen their understanding of the factors influencing bank performance and contribute to the advancement of knowledge in the field.

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Appendix

Variables	Description
Financial Stability	Z-score is used for measuring stability, where ROA is the return on assets, E/TA is the equity to total assets ratio and σROA is the standard deviation of ROA $$Zscore_{i,t} = \frac{ROA_{i,t} + {}^{E_{i,t}}/_{TA_{i,t}}}{\sigma ROA_{i,t}}$$
Banking Sector Competition	Lerner index is calculated for measuring competition, where MC is marginal cost and Price is the output price on bank level $$Lerner_{it} = \frac{Price_{i,t} - MC_{i,t}}{Price_{i,t}}$$
Diversification	Income diversity =(Net interest income - other operating income)/Total operating income
Bank Size	Bank size is calculated as the log value of total assets
Leverage	leverage was measured by the ratio of total equity to total assets.
GDP	GDP Growth is calculated as the change in GDP in current market prices from one period to the next
Inflation	Inflation is calculated as the annual inflation rate of growth in the CPI
Financial deepening	Credit supply to private sector/GDP used as a proxy for financial deepening
Unemployment	Unemployment rate by dividing the number of unemployed people by the total number in the labor force