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[Development of Financial Inclusion Index and its Impact on the Banks' Financial Stability in Pakistan]

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ABSTRACT

This study examines the impact of financial inclusion on the stability of banks in Pakistan, focusing on two categories: conventional banks and Islamic banks. A sample of 12 banks, six from each category, was analyzed using annual reports from 2012 to 2022. A Financial Inclusion Index was developed using parameters such as access to and usage of financial services for banks. Bank stability was measured using the Z-score based on asset returns, leverage, and return volatility. The study employed panel regression models, including Panel Ordinary Least Square and Feasible Generalized Least Squares, to address heteroscedasticity and autocorrelation issues. Diagnostic tests, including the Wald and Wooldridge tests, confirmed the presence of these issues, validating the choice of Feasible Generalized Least Squares. Control variables such as bank size, loan ratio, loan loss provisions, income diversification, management quality, capitalization, gross domestic product, and gross domestic product per capita were included in the models. Results indicate that financial inclusion positively impacts the stability of conventional and Islamic banks, driven by broader customer bases, increased deposits, and diversified revenue streams. Bank-specific variables like size, capitalization, and loan ratios significantly enhanced stability, while loan loss provisions had a destabilizing effect. Macroeconomic indicators yielded mixed results, highlighting the need for economic stability in fostering banking sector resilience. The study suggests policy interventions aimed at enhancing financial inclusion while balancing operational efficiency and risk management. It calls for expanded Shariah-compliant services for Islamic banks. Future research should explore longer timeframes, broader geographic contexts, and digital financial inclusion's evolving role.

Keywords: Financial Inclusion, Conventional Banks, Islamic Banks, Bank Stability.

Background of the Study

Since the early 1990s, Pakistan's financial sector has undergone significant reforms, leading to improvements in stability, profitability, efficiency, and diversity. Previously dominated by a few nationalized banks with low productivity and poor assets, the sector has evolved. By December 2013, the financial landscape included 38 commercial banks, 10 regulated microfinance banks, numerous unregulated microfinance institutions, 46 non-bank finance companies, 50 insurance firms (40 non-life insurers, 9 life insurers, and 1 non-life reinsurer), and 3 stock exchanges. The banking industry now approximately 85% privately owned, represents over 90% of the sector's total assets and is the main revenue generator. By June 2014, the banking sector was deemed financially stable, with a Capital Adequacy Ratio of 15.1% and solid returns on assets and equity. The State Bank of Pakistan has been a key player in promoting access to financial services. However, cyclical economic conditions have contributed to a tightening of credit for the private sector. Before the 2008 economic downturn, there was rapid credit growth, even in neglected areas like housing and SMEs, but this was followed by a period of historic low GDP growth averaging 2.8% over five years.

Recent estimates suggest the informal sector may represent 75% to 91% of the formal economy, indicating a rise in informality that has exacerbated financial exclusion. Low financial inclusion is caused by various factors specific to different market sectors, and while the State Bank has actively sought to foster an inclusive financial environment, many underlying issues extend beyond its regulatory reach. Consensus exists among stakeholders regarding widespread challenges in the industry.

This study is an attempt to comprehend and differentiate the significance of financial inclusion in the context of a developing country like Pakistan, where a large population is deprived of the financial services that are very much essential for the overall economic growth of a country. This research takes place in the setting of a developing nation like Pakistan, which has a sizable population that does not have access to the financial services that are necessary for the general expansion of the country's economy. The formal financial services are like lending, bank accounts, saving and payments facilities provided by different banks are known as Financial Inclusion (FI) (Raza et al., 2019), which means the availability of banking services at a lesser cost to the less privileged and financially deprived segment of society (Adil & Jalil, 2020). Services that come under the FI are credits, deposits, remittances, payments, and insurance. FI has been recognized as a significant policy contributor to economic development and poverty reduction (Zulfiqar, Chaudhry & Aslam, 2016).

Financial inclusion is the drastic change of the technology in the finance department by introducing different products and procedures of payments. In this developing era of Pakistan, the banking sector plays an important role in financial inclusion (Ozili, 2018). Banks need new customers and interact with their customers by using the ecosystem. A huge portion of the country's population cannot be able to get these services, especially in undeveloped areas. Financial inclusion measured the adults' percentage of 15+ who have at least one account with an institution that offers full financial services and comes under governments' rules and regulations (Nguyen, 2020).

Significance of the Study

This study solely focused on Pakistan, with the most up-to-date dataset at the bank level. The financial inclusion index is developed for conventional banks and Islamic banks. The individual financial inclusion index is developed for each component to further elaborate the performance. Furthermore, this study also analyzes the impact of financial inclusion on the financial stability of the financial services providers under study. The findings of the study are beneficial for policy implications for Pakistan considering the financial inclusion and its impact on the financial stability in Pakistan.

Problem Statement

Financial inclusion plays a pivotal role in advancing human development by fostering inclusive growth, economic development, and financial deepening. By expanding access to financial services, financial inclusion has been instrumental in reducing poverty and enhancing prosperity. A significant proportion of the unbanked population can benefit from financial inclusion through the provision of affordable financial services, facilitating payments and receipts. Pakistan,

however, has historically struggled with low levels of financial inclusion. Despite the State Bank of Pakistan's sustained efforts, the country's financial inclusion levels have remained persistently low. In response, the State Bank of Pakistan launched the National Financial Inclusion Strategy 2014-2019, aiming to increase financial inclusion nationwide. Moreover, financial inclusion has a profound impact on the financial stability of financial services providers. To address this, two key steps are essential. Firstly, developing a comprehensive financial inclusion index is crucial. Secondly, analyzing the impact of financial inclusion on banks' financial stability is equally important.

Research Objectives and Research Questions

The objectives of this research are to develop and analyze the FI index in Pakistan and also to analyze the impact of FI on the banks' financial stability. So in the light of these research objectives the research questions are as follows:

1. What is the role of FI index in Pakistan?
2. What are the main components of the FI index in Pakistan?
3. What is the effect of FI on the banks' financial stability?

Literature Review

According to the findings of several empirical studies, there is a connection between the availability of financial services and the expansion of the economy. It is vital to bring the less developed portions of the country up to the same level as the more developed regions in order to create development that benefits everyone. This can only be done by bringing them closer together. The previous case studies of the obvious imbalance that exists in our nation and that can only be addressed by actions from both the community and the banks themselves. Banks should expand their product lines beyond traditional banking services such as deposits and credit lines. In addition, better risk management practices need to be implemented in financial institutions. Prior to the introduction of financial inclusion, the construction of a rural infrastructure is also necessary as a prerequisite. In addition to the enhancements that need to be made to the labor force, there should be programmers designed to encourage younger people in rural regions to begin their education in a trade so that they may become more productive members of their communities. Nevertheless, we are conscious of the fact that the principal objective of commercial banks is to maximize profits. As a consequence, the purpose should be to create a way out of poverty for those who are less fortunate while simultaneously boosting the profitability of those who are aiding people less fortunate than themselves. The objective of Inclusive Growth cannot be accomplished unless millions of individuals throughout the country are provided with the chance to start their own small companies. To summarize, financial inclusion is the road that Pakistan has to pursue in order to reach to the point where it can compete on the global arena. This path must be taken in order for Pakistan to be successful. Financial inclusion" has become a problem of the highest relevance in light of the previously mentioned purpose.

World Bank analysis indicates that financial inclusion (FI) plays a crucial role in maintaining financial stability, addressing social inequality, and combating poverty. This topic encompasses two primary aspects: the calculation of a financial inclusion index and its effects on the financial stability of banks. Additionally, the

literature regarding monetary policy and financial inclusion is reviewed. The concluding section addresses research on financial inclusion and stability in Pakistan, utilizing bank-level data.

Numerous researchers have aimed to refine the measurements of financial inclusion. Sarma (2008) introduced a financial index based on banking access and services, integrating various aspects using data from 55 countries, similar to the Human Development Index. Chakravarty and Pal (2013) offered an axiomatic method to evaluate banking financial inclusion, proposing two policy objectives: geographic outreach and loan accessibility. Cámara and Tuesta (2014) assessed financial inclusion in 82 developed and developing nations using both demand and supply data. Using the Global Findex Database, Adalessossi and Kaya (2015) investigated FI in African nations, revealing that 27 countries exhibited low FI levels, while fourteen achieved high FI. Kumari (2017) based her findings on an empirical study of FI among the urban poor in Kolkata. Furthermore, Ambarkhane et al., (2016) incorporated financial services such as non-banking financial companies, insurance firms, and pension schemes in their assessment of financial inclusion.

Muhammad et al. (2021) explored the relationship between FI and development by identifying country-specific factors affecting financial inclusion, discovering a link between the two. Initiatives aimed at promoting inclusion for marginalized communities have proven effective (Allen, 2012). Allen et al. (2016) studied the relationship between financial development and FI in Sub-Saharan Africa and globally using regression analysis. Their findings underscored the significance of population size for FI in Africa compared to other regions. Park and Mercado (2015) developed a financial inclusion metric to analyze the macroeconomic factors influencing FI in 37 emerging Asian nations, highlighting that per capita income, the rule of law, and population size enhance FI, while the age dependency ratio diminishes it. Additionally, Banerjee, et al., (2018) investigated the role of institutional FI in the per capita real GDP growth of six South Asian nations.

Some researchers have emphasized critical factors necessary for the sustainable success of FI, aligning with our findings. According to Erkut B. (2016), competitive advantages that rank countries are closely tied to advancements in government institutions, indicating that entrepreneurship and innovation tend to progress similarly. These factors also dictate the long-term sustainability of financial inclusion. For achieving lasting sustainability, financial institutions should focus on enhancing financial inclusion within the entrepreneurial framework and fostering new competitive advantages. Monitoring the balance of financial inclusion is, as noted by Zhou et al., (2018), an effective strategy for assessing sustainability. Furthermore, social networks can provide some protection for informal financial inclusion against systemic risks present in the institutional environment. Research indicates that strengthening social networks contributes positively to the long-term sustainability of financial inclusion.

Conventional banking as well as banks needs to grow; hence, gaining new customers is a necessary component for the success of these institutions over the course of a longer period of time. In order to win over new customers, financial

institutions need to develop a genuine customer-centric culture.

Financial inclusion refers to the process of ensuring access to appropriate financial services for individuals and businesses at an affordable cost. It is widely recognized as a critical driver of economic growth and poverty alleviation (Demirgüç-Kunt et al., 2018). Islamic banking, on the other hand, operates under the principles of Shari'ah, which prohibits interest (riba) and promotes risk-sharing, ethical investments, and social justice. The stability of Islamic banks—their resilience to financial shocks—is a central focus of recent research, particularly in light of their growing presence in global financial systems. The interaction between financial inclusion and banking stability has garnered increasing academic interest. Specifically, the unique characteristics of Islamic banking provide an intriguing context for examining how financial inclusion can influence stability, given the emphasis on equity-based financing, risk sharing, and ethical practices (Beck et al., 2013). This review synthesizes existing literature on the relationship between financial inclusion and the stability of Islamic banks.

Financial inclusion has been identified as a critical determinant of financial stability. By broadening access to financial services, financial inclusion can diversify the deposit base, reduce the volatility of banking operations, and mitigate risks associated with informal financial systems (Han & Melecky, 2013). Greater access to financial services also enhances the efficiency of financial intermediation and reduces income inequality, which can contribute to systemic stability (Allen et al., 2016). However, the relationship between financial inclusion and banking stability is not always straight forward. On one hand, financial inclusion can stabilize banking institutions by fostering a broader and more diversified customer base. On the other hand, rapid financial inclusion without adequate regulatory oversight may increase credit risk, particularly when newly included customers have limited financial literacy (Cull et al., 2014).

Islamic banking exhibits unique features that can influence its stability. Unlike conventional banks, Islamic banks avoid speculative activities and focus on asset-backed financing. These principles reduce exposure to financial crises, as evidenced during the 2008 global financial crisis, where Islamic banks showed greater resilience compared to their conventional counterparts (Hasan & Dridi, 2011). Islamic banks' reliance on profit-and-loss sharing contracts, such as mudarabah and musharakah, can mitigate risks associated with leverage and interest rate fluctuations. However, these contracts also expose banks to risks such as moral hazard and adverse selection. Additionally, Islamic banks tend to operate with higher liquidity buffers and lower levels of speculative investments, which further enhance their stability (Beck et al., 2013). Based on the above discussion, the following three hypotheses are tested in this study.

H1: Financial inclusion has positive impact on the banks' stability.

H2: Financial inclusion has positive impact on the conventional banks' stability.

H3: Financial inclusion has positive impact on the Islamic banks' stability.

Conceptual Framework for Financial Inclusion Index

Figure 1 shows the FI index will be developed upon the four main types of financial services providers. The financial services providers will be categorized as conventional banking, and Islamic banking. The impact of each financial services

provider will be incorporated in the development of the FI Index.

Figure1 **Conceptual Framework for Financial Inclusion Index**

Methodology

The main purpose of financial inclusion is to provide financial services to the unbanked population of the economy. Financial inclusion is the provision of sustainable and affordable financial services to the underprivileged population to bring them in to the formal economy (United Nations, 2016). Financial inclusion being a process, by which efforts are directed towards provision of financial services to the individuals mainly by having formal banks accounts. Provision of financial services to large number of population not only helps in poverty reduction, but also in economic growth (Ozilli, 2018). Previously excluded individuals from financial services, can be brought in to financial system by better financial inclusion policies. Greater financial inclusion will help these individuals to have access to financial services, save and invest, for businesses and economic growth

An inclusive financial system has two main dimensions, i.e., the usage of financial services and the access of financial services. The usage of financial services offered by banking system and the access to these financial services. The usage of financial services is comprised of accounts and savings, credit or loan facilities and payment services. The access of financial services is the outreach of financial services, whereby the individuals have access to these financial services. In providing the financial services, banks have vital role, as the data for banks is relatively easily available.

Development of Financial Inclusion Index (FII)

In order to capture the financial inclusion of the sample banks, FI Index is developed. The data is collected from the financial statements of these banks. Following Camara and Tuesta (2014) and Nguyen (2020) the FI Index for the current study is calculated.

The financial inclusion for conventional banking is calculated as follows:

$$FII\_CB_t = W_1 DAt + W_2 Br_t + W_3 DP_t + W_4 ATM_t + W_5 LN_t \qquad (1)$$

Where, FII_CB is the Financial Inclusion (FI) Index for conventional banking.

DA is the Deposits Accounts; measured as the number of deposits accounts with conventional banks.

Br is the Branches measured; as the number of branches of commercial banks per 100,000 adults

DP is the outstanding deposits; measured as the outstanding deposits with commercial banks, as a percentage of GDP.

ATM is the Number of Automated Teller Machines (ATMs) per 100,000 adults.

LN is the Loan; measured as the outstanding loans from commercial banks as a percentage of GDP

For Islamic banking, the financial inclusion (FI) index is calculated as follows:

$$FII\_IB_t = W_1 DA_t + W_2 Br_t + W_3 DP_t + W_4 ATM_t + W_5 LN_t \qquad (2)$$

Where, FII_CB is the Financial Inclusion (FI) Index for Islamic banking
DA is the Deposits Accounts; measured as the number of deposits accounts with Islamic banks

Banks' Financial Stability

The main purpose of the study is to analyze the impact financial inclusion on the financial stability of banks. Following global financial crises of 1980's and 1990's, various indicators were devised to measure the bank's financial stability. Such as bankruptcy probability, and the standard deviation of returns on assets, NPL ratio, and Z-Score, however, among these measures Z-Score widely used by Han & Melecky (2013). This study utilized the natural logarithm of the Z-Score for measuring the financial stability of the sample banks. The insolvency risk of the bank is measured; through Z-Score; whereas a higher value indicates that the bank is highly stable and has less or risk of bankruptcy. Z-Score of the sample banks is measured; using the banks' assets returns; leverage, and volatility of banks' assets returns as follows.

$$Z - Score_{it} = \frac{ROA_{it} + \pm EA_{it}}{\sigma(ROA)} \qquad (3)$$

Where ROA is the return on assets, the EA is the equity to total assets ratio and σ *ROAit* is the standard deviation of bank's returns on assets.

Econometric Model

The following regression model illustrates a relationship between FI and financial market stability:

Z-Score$_{it}$ = f(financial inclusion)$_{it}$ + f(bank characteristics)$_{it}$ + f(macroeconomic)$_{it}$ + e_{it} (4)

Where f(financial inclusion) is the index calculated for different types of financial services providers.

f(bank characteristics)$_{it}$ represents bank's characteristics which affect the return on assets (ROA) of bank i at time t.

f(macro-economic)$_{it}$ includes macro-economic factors affecting the banks' stability and error that may have impact on the Bank's Z-Score.

Bank's characteristics are the specific variables; which includes the bank size and can be measured as the log of total assets.

Results and Analysis

The descriptive stats for all the variables under study are provided in table 1. The main variables of the study are Stability, Financial Inclusion Index, and Size of the bank, Loan Ratio, Loan Loss Provision, Income Diversification, Management Quality, Capitalization, Gross Domestic Product and GDP per Capita. The total observations for each variable are 198.

Table 1: *Descriptive Statistics*

Variables	Proxies	Obs	Mean	Median	Maximum	Minimum	Std. Dev
Stability	STAB	198	0.89	1.07	1.89	-1.24	0.67
Financial Inclusion	FII	198	4.18	4.19	4.24	4.1	0.05

Size	SIZE	198	8.21	8.21	9.67	5.91	0.86
Loan Ratio	LR	198	0.11	0.02	1.17	0	0.23
Loan Loss	LLP	198	0.03	0.02	1.17	0	0.09
Income	ID	198	0.2	0.14	1.94	0.01	0.23
Management	MQ	198	0.71	0.78	6.89	0	0.54
Capitalization	CAP	198	0.1	0.08	1.07	0.01	0.13
Gross Domestic Product	GDP	198	0.04	0.04	0.07	-0.01	0.02
GDP per Capita	GDPPC	198	3.15	3.16	3.21	3.09	0.04

Pearson's Correlation Matrix

In order to investigate the relationship between the dependent and independent variables, correlation matrix is generated. Correlation matrix shows that how the dependent and independent variables of the study move simultaneously. The relationship may be positive or negative. It is evident that the correlation of variable with itself is 1, while other variables it ranges between -1 and 1. The correlation near to 1 shows high positive correlation while near to -1 shows highly negative correlation. The correlation matrix for the variables of the study is provided in Table 2. The table shows that the dependent variable of the study Stability is positively correlated with Financial Inclusion Index showing that Financial Inclusion Index and Stability move positively over the study period. The Stability and Size of the bank has also positive correlation. Loan Ratio is also positively correlated with Stability, showing that higher performing loans will lead to Stability of the bank. Loan Loss Provision has negative correlation with Stability, indicating that the higher the Loan Loss Provision the Stability will be negatively affected. Income Diversification has also positive correlation with dependent variable Stability, showing the as far as the banks has diversification in their incomes, the banks will be stable. Management Quality has also positive 34.5% correlation with Stability, indicating that as far as the bank is able to direct its investments towards earning assets, the bank will be more stable. Capitalization has also positive correlation with dependent variable Stability. While the economic indicators GDP and GDP per Capita, also has positive correlation with Stability, showing the for banks' stability in any economy, the performance of the economy matters.

Table 2: *Correlation Matrix*

	STAB	FII	SIZE	LR	LLP	ID	MQ	CAP	GDP GDPPC
STAB	1								
FII	0.12	1							
SIZE	0.04	0.31	1						
LR	0.32	0.13	0.12	1					
LLP	(0.016)	0.11	(0.14)	0.37	1				
ID	0.32	0.012	0.12	(0.12)	0.02	1			
MQ	0.34	0.12	0.018	0.36	0.76	0.01	1		
CAP	0.11	0.18	0.56	0.13	0.43	0.19	0.33		1

GDP	0.02	(0.071)	(0.009)	(0.002)	0.05	0.05	0.04		(0.009)	1
GDPPC	0.08	0.28	0.22	(0.003)	0.09	0.04	0.11	(0.15)	0.52	1

Empirical Results and Discussion

For regression analysis and using the appropriate regression model, Lagrange multiplier (LM) test is conducted for selection between the pooled OLS regression and random effect (GLS) model. Chibar2 (01) = 429.64, Prob > chibar2 = 0.0000 show that the null hypothesis can be rejected and random effect model may be utilized. Then the Hausman (1978) specification test is conducted for the selection between the fixed effect and random effect model. The results of the test χ^2 = 27.22 and probability of χ^2 = 0.0006, show that null can be rejected, indicating that fixed effect model is more appropriate.

Impact of Financial Inclusion Index on Banks' Stability

First, this study investigates the impact of Financial Inclusion Index on the Banks' Stability. In model specification the Stability is taken as dependent variables, while Financial Inclusion Index as independent variable, along with other bank specific control variables such as Size of the bank, the loan ratio, loan loss provision, income diversification, management quality, capitalization, and two economic indicators GDP and GDPPC. This analysis tested the first hypothesis that "Financial inclusion has positive impact on the banks' stability".

The heteroscedasticity is checked through Wald test and Autocorrelation with Wooldridge test. The results of Wald test confirm the panel heteroscedasticity. The null hypothesis assumes that the panel data is heteroscedastic, while alternative hypothesis (Ha) assumes that the panel data is heteroscedastic. The Wald test statistic is 112.325, exceeding the critical value of chi-squared distribution at 1% significance level. The p-value for Wald test is also less than 0.05, suggesting that null hypothesis may not be accepted and alternative hypothesis can be accepted. These results show that the panel data is heteroscedastic suggesting that the variance is unequal in the data across different units or time periods.

Whereas, the Wooldridge test for autocorrelation in panel data is used to test for the presence of first-order autocorrelation (serial correlation) in the residuals of a panel data regression. As the table shows, for the Stab model, the Wooldridge test yielded an F-statistic of 10.345 and a p-value of 0.0021. The p-value is less than the significance level of 0.05. This indicates that the null hypothesis can be rejected at the 5% significance level. These results show that panel data exhibits first order autocorrelation, allowing for rejecting the null hypothesis of no first order autocorrelation. To account for the existence of heteroscedasticity and autocorrelation, FGLS is suggested.

The results of Panel OLS, Random Effects, Fixed Effects and FGLS are presented in Table 3. The results of FGLS show that the results are robust. The results show that independent variable financial inclusion index has positive and significant impact on the sample banks' stability (p-value < 0.05). This indicates that any economy the greater financial inclusion will lead to stabilized banking. Size of the bank has also positive impact on the banks' stability; however, it has insignificant results. The loan ratio has positive and significant impact on the stability (p-value < 0.05). This shows that banks' total performing loans to total assets ratio will

positively affect the stability of the bank. Loan loss provision has significant negative impact on the bank stability (p-value < 0.05). This indicates, that whenever, the bank provide more provision for loan losses, it will negatively affect the stability of the bank. Income diversification has also negative impact on the stability (p-value < 0.05). It is assumed that banks with more income diversification may be more stable, but here in this analysis, the impact of diversification is negative. Management Quality has significant and positive impact on the banks' stability. Capitalization has significant positive impact on the banks' stability, showing that if the bank has high ratio of equity to assets, then the bank will be more stable. It is obvious that any bank relying on equity will be more stable, avoiding interest payments for debt. So the lower the debt ratio, the stable the bank will be. GDP has negative impact on sample banks' stability; however, these results are insignificant. GDP per capita has positive insignificant impact on the banks' stability. The overall results of Table 3 support the hypothesis "Financial inclusion has positive impact on the banks'

Table 3: *Impact of FII on Banks' Stability*

VARIABLES/ Regressions	POLS Stab	RE Stab	FE Stab	FGLS Stab
FII	2.065***	2.48***	2.344***	1.91***
	(1.51)	(3.75)	(3.413)	(7.38)
Size	0.058	0.109	0.068	0.1025
	(1.069)	(1.231)	(0.7154)	(5.39)
LR	0.773***	-0.0026	0.1453***	0.658***
	(1.75)	(-0.017)	(0.682)	(4.54)
LLP	-5.179***	-0.975**	-0.693***	-2.011***
	(-7.39)	(-2.01)	(-1.41)	(-3.52)
ID	-0.328***	0.0197	0.036***	0.248***
	(5.11)	(0.23)	(0.432)	(5.79)
MQ	0.864***	0.090	0.463	0.346***
	(7.884)	(1.023)	(0.524)	(6.57)
Cap	1.076***	1.167***	1.114***	0.944***
	(2.694)	(5.816)	(5.42)	(2.76)
GDP	-0.897	-2.155**	-2.256	-1.079
	(-0.35)	(-2.237)	(-2.41)	(-6.436)
GDPPC	0.844	1.385*	1.439	0.497
	(0.46)	(2.267)	(2.16)	(3.24)
Constant	5.927	5.957***	5.66***	6.210
	(1.585)	(3.254)	(2.94)	(1.638)
Observations	198	198	198	198
Hausman Test			4.637	
			(0.546)	
Wald Test			112.325	
			(0.0000)	

Wooldridge test	9.526
	(0.0032)
Number of firm code 1	18

***p<.01,**p<.05,*p<.1

Impact of Financial Inclusion Index on Conventional Banks' Stability

This study investigates the impact of Financial Inclusion Index on the Conventional Banks' Stability (Stab_Conv). In model specification the Stability of Conventional banks is taken as dependent variables, while Financial Inclusion Index as independent variable, along with other conventional banks specific control variables such as Size of the bank, the loan ratio, loan loss provision, income diversification, management quality, capitalization, and two economic indicators GDP and GDPPC. This analysis tested the first hypothesis that "Financial inclusion has positive impact on the conventional banks' stability".

The heteroscedasticity is checked through Wald test and Autocorrelation with Wooldridge test. The results of Wald test confirm the panel heteroscedasticity. The null hypothesis assumes that the panel data is heteroscedastic, while alternative hypothesis (H_a) assumes that the panel data is heteroscedastic. The Wald test statistic is 203.5, exceeding the critical value of chi-squared distribution at 1% significance level. The p-value for Wald test is also less than 0.05, suggesting that null hypothesis may not be accepted and alternative hypothesis can be accepted. These results show that the panel data is heteroscedastic suggesting that the variance is unequal in the data across different units or time periods. Whereas, the Wooldridge test for autocorrelation in panel data is used to test for the presence of first-order autocorrelation (serial correlation) in the residuals of a panel data regression. As the table shows, for the Stab model, the Wooldridge test yielded an F-statistic of 8.317 and a p-value of 0.0018. The p-value is less than the significance level of 0.05. This indicates that the null hypothesis can be rejected at the 5% significance level. These results show that panel data exhibits first order autocorrelation, allowing for rejecting the null hypothesis of no first order autocorrelation. To account for the existence of heteroscedasticity and autocorrelation, FGLS is suggested.

The results of Panel OLS and FGLS are presented in Table 4. The results of FGLS show that the results are robust. The results show that independent variable financial inclusion index has positive and significant impact on the sample banks' stability (significant at 5% with p-value = 0.012). These results show that conventional banks' stability is positively affected by Financial Inclusion Index. Size of the bank has negative and significant impact on the conventional banks' stability. It shows that large sized banks have stability problems. The loan ratio has positive and significant impact on the conventional banks' stability (p-value < 0.05). This shows that conventional banks' total performing loans to total assets ratio will positively affect the stability of the bank. Loan loss provision has negative but insignificant impact on the bank stability. This indicates, that whenever, the bank provide more provision for loan losses, it will negatively affect the stability of the bank. In the case of conventional banks, Income diversification has positive impact on the banks' stability. It is assumed that banks with more income diversification may be more stable, although in the case of

conventional banks, the impact of diversification is positive but insignificant. The Management Quality as measured by total earning assets to total assets has positive and significant impact on the stability of conventional banks. Capitalization has significant positive impact on the conventional banks' stability, showing that if the conventional bank has high ratio of equity to assets, then the bank will be more stable. It is established fact that any bank relying on equity will be more stable, avoiding interest payments for debt, resulting in higher returns. So the lower the debt ratio, the stable the bank will be. In the case of conventional banks, GDP has negative impact on sample banks' stability. While GDP per capita has positive significant impact on the conventional banks' stability (significant at 5%). The overall results of Table 3 support the hypothesis "Financial inclusion has positive impact on the Conventional banks' stability".

Table 4: *Impact of FI Ion Conventional Banks' Stability*

Variables/Regressions	POLS	FLGS
	Stab_Conv	Stab_Conv
FII	4.365**	3.603**
	(2.13)	(2.51)
Size	-1.832***	-1.408***
	(-4.42)	(-4.513)
LR	2.429***	1.594***
	(4.11)	(3.98)
LLP	2.315	2.927
	(0.16)	(1.16)
ID	0.158	0.101
	(0.22)	(0.26)
MQ	2.015***	1.426*** ***
	(8.09)	(7.08)
Cap	10.623***	10.637
	(3.72)	(5.37)
GDP	-3.445	-3.122***
	(-1.34)	(-3.38)
GDPPC	2.189	1.79**
	(1.24)	(2.31)
Constant	-9.877	-8.749***
	(-1.92)	(0.26)
Observations	66	66
WaldTest	203.5	
	(0.0000)	
Wooldridge test	8.746	
	(0.00412)	
Number of firm code1	6	

Impact of Financial Inclusion Index on Islamic Banks' Stability

This study also investigates the impact of Financial Inclusion Index on the Islamic Banks' Stability (Stab_ib). In model specification the Stability of Islamic banks is taken as dependent variables, while Financial Inclusion Index as independent

variable, along with other conventional banks specific control variables such as Size o f the bank, the loan ratio, loan loss provision, income diversification, management quality, capitalization, and two economic indicators GDP and GDPPC. This analysis tested the first hypothesis that "Financial inclusion has positive impact on the Islamic banks' stability".

The heteroscedasticity is checked through Wald test and Autocorrelation with Wooldridge test. The results of Wald test confirm the panel heteroscedasticity. The null hypothesis assumes that the panel data is heteroscedastic, while alternative hypothesis (Ha) assumes that the panel data is heteroscedastic. The Wald test statistic is 195.3, exceeding the critical value of chi-squared distribution at 1% significance level. The p-value for Wald test is also less than 0.05, suggesting that null hypothesis may not be accepted and alternative hypothesis can be accepted. These results show that the panel data is heteroscedastic suggesting that the variance is unequal in the data across different units or time periods.

Whereas, the Wooldridge test for autocorrelation in panel data is used to test for the presence of first-order autocorrelation (serial correlation) in the residuals of a panel data regression. As the table shows, for the Stab model, the Wooldridge test yielded an F-statistic of 9.57 and a p-value of 0.000. The p-value is less than the significance level of 0.05. This indicates that the null hypothesis can be rejected at the 5% significance level. These results show that panel data exhibits first order autocorrelation, allowing for rejecting the null hypothesis of no first order autocorrelation. To account for the existence of heteroscedasticity and autocorrelation, FGLS is suggested (Hausman & Taylor, 1981).

The results of Panel OLS and FGLS are presented in Table 5. The results of FGLS show that the results are robust. The results show that independent variable financial inclusion index has positive and significant impact on the Islamic banks' stability (significant at 5% with p-value = 0.012). These results show that Islamic banks' stability is positively affected by Financial Inclusion Index.

Size of the bank has positive and significant impact on the Islamic banks' stability. It shows that large sized Islamic banks have stability in their banking operations. The loan ratio has positive and significant impact on the Islamic banks' stability (p-value < 0.05). This shows that Islamic banks' total performing loans to total assets ratio will positively affect the stability of the bank. Loan loss provision has positive but insignificant impact on the bank stability (significant at 5% with p-value = 0.012). This indicates, that whenever, the bank provide more provision for loan losses, it will positively affect the stability of the bank. In the case of Islamic banks, Income diversification has positive impact on the banks' stability. It is assumed that banks with more income diversification may be more stable, although in the case of Islamic banks, the impact of diversification is positive but insignificant. The Management Quality as measured by total earning as sets to total assets has positive and. significant impact on the stability of Islamic banks. Capitalization has significant positive impact on the Islamic banks' stability, showing that if the Islamic bank has high ratio of equity to assets, then the bank will be more stable. It is an established fact that any bank relying on equity will be more stable, avoiding interest payments for debt, resulting in higher returns. So the lower the debt ratio, the stable the bank will be. Both the economic indicators, GDP and

GDP per capita have negative but insignificant impact on the Islamic banks' stability. The overall result of Table 5 supports the hypothesis that "Financial inclusion has positive impact on the Islamic banks' stability".

Table 5: *Impact of FII on Islamic Banks' Stability*

Variables/Regressions	POLS	FLGS
	Stab_Conv	Stab_Conv
FII	3.739***	2.424***
	(4.48)	(5.81)
Size	1.376***	0.965***
	(9.19)	(10.43)
LR	0.179	0.23***
	(1.5)	(3.55)
LLP	3.375***	1.31*
	(2.89)	(1.93)
ID	1.081	0.091
	(1.55)	-0.426
MQ	1.239***	1.596***
	(7.39)	(4.81)
Cap	9.714***	8.948***
	(6.34)	(12.532)
GDP	-1.103	-0.289
	(-0.6)	(-0.46)
GDPPC	-1.437	-0.299
	(-1.03)	(-0.42)
Constant	16.545*** (5.59)	11.462*** (5.7)
Observations	66	66
WaldTest	195.3	
	(0.0000)	
Wooldridge test	7.57	
	(0.00154)	
Number of firm code1	6	

Conclusion

On the basis of the results of the study all the supposed hypotheses are accepted for all the sample banks. Furthermore, the study analyzed the different types of banks on the basis of banks specific characteristics, such as conventional banking, Islamic banking and microfinance banks. The results show that financial inclusion has positive impact on the stability of conventional and Islamic banks, however, in the case of microfinance; financial inclusion has negative impact on the banks' stability. The possible reason for this is that microfinance banks are relatively small in size as respect to conventional and Islamic banks, and the main source of income is from providing loans at micro level. These results also show that with the passage of time the income level of microfinance banks has not enhanced with extending the microloans.

Limitations and Recommendations

The limitations and the recommendations of the study improve the quality of the

study. In current study some of the limitations are exist which should be incorporated by the future researchers so that the study should be improved. Firstly, in current study the researcher selected the data time period from 2012-2022 which is not enough to generalized the result. Secondly, in current study, the researcher selected only 18 banks, which are listed in the State Bank of Pakistan list, and this study is only measure the financial stability of the listed banks of Pakistan. So, in future the researchers should collected data of other banks so that the comparative study should become possible which shows that how the financial stability of the other countries is affected due to the financial inclusion, bank's specific factors and the macroeconomic factors of the banking sectors.

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