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Bank profitability and its determinants in Pakistan: A panel data analysis after financial crisis

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Abstract

This study seeks to investigate the internal and external determinants of the Pakistan banking sector, specifically after the recent financial crisis of 2008. The sample data comprises of total 26 banks, which include 17 conventional, 5 Islamic and 4 public banks. The selected sample covers the period of five years from 2009 to 2013. A balanced panel data regression model has been used and considered return on assets (ROA) and return on equity (ROE) as an alternative of bank's profitability. The results of the study suggest that bank's profitability is significantly affected by its internal determinants while external determinants are insignificant. We find operating efficiency, liquidity, non-performing loans to total assets and real GDP has negative impact, whereas financial risk, gearing ratio, asset management, bank size, deposits, loans to total assets and inflation show positive impact on the assets side. On the other side, operating efficiency, gearing ratio, asset management, liquidity, deposits and real GDP have a positive impact while financial risk, bank size, asset quality and inflation exert negative impact on the equity side. During the study period, findings suggest that the Pakistan banking industry has managed well to avoid significant impact of external factors like inflation and GDP over profitability while efficient management is required to improve internal factors to be more profitable.

Keywords Banks, Assets, Operating costs, Profits, Assets size, Bank-specific determinants, Profitability.

1. Introduction

Banking institutions have a vital role to perform financial activities of economies. They dealt with financial instruments, payment mechanism, transfer and management of risk, assurance of transparency in financial markets and activity that assess the behavior of financial institutions. Particularly, Islamic banks have maintained its position well due to availability of potential target market (Ali and Raza, 2015a). It is also necessary for banks to create awareness about its product and services to be more profitable (Ali and Raza, 2015b; Ali et.al. 2015a; 2015b; 2015c). The banks are considered very essential for economy functions and also perform a very critical role as a financial intermediaries in the service providing economies. Furthermore, major crisis can be caused by insolvencies by the bank. The profitability of banking sector not only contribute in economies but also the instability of the financial system and enable economies to endure the external and negative financial shocks (Athanasoglou et al. 2005). Therefore, it is crucial to understand profitability determinants.

Banks not only contribute in an economy but also provide people to invest and save their money through secured and ensured mode of investment (Sufian and Habibullah, 2009). For this reason, Alper and Anbar (2011) suggest that technological advancement allows banks to move from traditional banking systems to advance system which leads to increase competition among the banks at national and international level.

In recent times, the banking system is more concerned about their profitability. But there are various external and internal factors that can affect bank's profitability. Past studies report external factors like liquidity, bank size, capitalization, operating efficiency, financial while external factors are generally associated with macro-economic environment like inflation and GDP. However, one study of Shaikh et.al. (2015) argued that conventional banks are more volatile than Islamic banks in Pakistan.

Globally, the banking system is the direct victim of the recent financial crisis of 2008. Considering the Pakistan economy, the financial institutions, particularly banking industry received the significant impact of this crisis time. The liquidity crises affect directly to the confidence of investors, but the overall banking industry did not collapse. Looking at a glance in recent times, the banking sector's profitability has declined during H1-CY13 by 16.5 percent, mainly due to increase in cost of borrowings, charge of higher provisions against the classified

portfolio and decline in the returns earned on activities related to lending. Moreover, the earning indicators of ROE and ROA also declined by 640bps and 70bps to 18.5 percent and 1.7 percent respectively. Furthermore, share of top 5 banks in terms of total profitability increased to 74.2 percent in H1CY13 as compared to 70.9 percent from last year as per the analysis of concentration in profitability. On the other hand, due to reduction in markup income on advances and loans, the banks' net interest income (NII) reduced by 18.4% during H1CY13. Nevertheless, the banking system has resilience to stress, shock on liquidity, contagion, market, and credit risk due to strong capital adequacy ratio. Essentially, all banks have capital adequacy ratios of above 13.1%, which means these banks can easily endure the solvency shock. However, liquidity stress shows that a sufficient fund provides the safety margin that is enough to meet significant volatile funds and withdrawals of deposits.

Previously, many studies have been conducted on banks profitability (Levine and Zervos1998); (Hameed and Bashir, 2003); (Kosmidou, 2008); (Naceur and Omran, 2011). These studies conducted by a panel of different countries and the actual determinant of bank's profitability are inconclusive for an individual country like Pakistan. To the best of the author's knowledge, no such studies have been conducted on banks profitability in Pakistan after the recent financial crisis of 2008.

This study considered a panel of total 26 banks, which include 17 conventional, 5 Islamic and 4 public banks. This is the period when the banking system of Pakistan adapted more technological advancement. Furthermore, this study is different from previous studies in two different ways. Firstly, we investigated the bank's profitability in Pakistan on a panel of 26 banks covering the sample period mainly after the financial crisis. Secondly, previous studies considered Islamic and conventional banks separately by ignoring public banks. But we have analyzed the overall banking sector of Pakistan, including private, Islamic and publicly owned banks.

The remaining parts of the study are based on the following sections. Chapter two of the study comprises on past literatures, chapter 3 represents data and methodology, chapter 4 provide results and estimations and chapter five gives conclusion and policy implications.

2. Literature review

To identify the factors that affect bank's profitability, empirical investigations on banks profitability have paid much attention in recent times. Following are the studies in this section targeted to explain the profitability of banks.

Miller and Noulas (1997) investigated the large commercial bank's profitability in the late 1980s by using cross section and pooled time series cross section regression. The study sample covers the time period of 1985 to 1990 of total 201 banks. The results of the study suggest that banks, poor performance are due to real estate loans while construction and land development loans has a significant and positive impact on commercial banks profit. On the other side, these banks face negative impact of non-interest expense to total expense and loan loss provision to total loans. Overall findings recommend that, interest income growth is less than non-interest income growth while other loan categories has sharp increase due to increase in consumer loans.

In addition, Kunt and Huizinga (1998) highlighted the determinants of commercial bank's profitability by using the weighted least square method over the sample period of 1988 to 1995 of total 80 countries. The results of the study suggest that, low cost funding lead to higher profitability while inflation has positive impact on banks profitability because banks managed their cost well under high inflation.

To better understand the performance of financial institutions, Rosly and Bakar (2003) examined the comparative performance of mainstream banks and Islamic banks in Malaysia. The profitability performance is measured through return on asset (ROA), Asset utilization (AU), and return on deposit (ROD), operating efficiency ratio (OER) and investment to interest margin. . Results show that, Islamic banks attain higher ROA as compared to mainstream banks, but this higher ROA is not showing the efficiency of Islamic banks. In addition, the asset utilization and interest to investment margin in conventional banks were found to be significantly higher than Islamic banks. It can be concluded that the overall performance of conventional banks is higher than Islamic banks.

In the Middle East, Bashir (2003) investigation presented the internal and macro-economic factors impact on the performance of Islamic banks. The findings of the study revealed that, capital adequacy is positively associated with profitability while inflation has a positive and

significant impact on the profitability of Middle Eastern Islamic banks. Furthermore, foreign owned banks have a higher profitability ratio in contrast with locally owned banks.

A study conducted by Goddard et.al (2004) on the profitability of European banks over the sample period of 1992 to 1998 by using the auxiliary regression model. Evidence presented in their study confirms that bank's profitability has insignificant association with bank size while the risk has a positive and significant impact on profitability.

Another study of Izhar and Asutay (2007) investigated the profitability of Islamic banks. Their study concludes that inflation has a negative and significant impact on Islamic bank's profitability while service activities of Indonesian Islamic banks do not impact on profitability. It can be concluded that Islamic banks of Indonesia should revise their policies for inflation so as to maximize their profitability.

In the same vein, profitability of Tunisia commercial banks was analyzed by Bannaceur and Goaid (2008) for the time period of 1980 to 2000. Their investigation found that bank size is negatively associated with banks profit, whereas loans and stock market capitalization is positively associated with profitability. Overall findings suggest that, Tunisia bank's profitability can be enhanced through privatization of state owned banks, national regulation program and development of the equity market.

Similarly, Sufian and Chong (2008) examined the profitability of Philippine banks by using a regression model over the sample period of 1990 to 2005. The author finds that credit risk and bank size have a negative impact on profitability while capitalization and non-interest income is positively associated with it. In addition, the inflation in the country influenced negatively on banks profitability.

Sufian and Habibullah (2009) also draw our attention on Chinese commercial bank's profitability by using a regression model over the sample period of 2000 to 2005. According to their findings, commercial bank's profitability is negatively associated with banks overhead cost while credit risk, capitalization and liquidity risk has a positive impact on profitability. In view of their results, they recommend that Chinese banks should focus on cost effective products along with maximum utilization of their resources.

In 2010, Sufian and Habibullah extended their study of Indonesian bank's performance during the financial crisis in the country over the sample period of 1990 to 2005. Their findings demonstrated that bank size and financial crisis in the study sample period is negatively associated with Indonesian bank's profitability while it has a positive association with economic growth.

Ariss (2010) has analyzed the competitive conditions exists in conventional and Islamic banking system. Their investigation also found the differences in profitability among these markets. They have used a sample of 13 countries bank for the year 2000 – 2006. The evidence reported in this study suggested that Islamic banks provide a greater share in the allocation of their assets to finance or loans as compared to conventional banks, which shows higher credit risk in Islamic banks. Overall, Islamic banks are not significantly profitable as the conventional banks are but Islamic banks' market is attracting more concentration compared to their peer.

One study of Alper and Anbar (2011) investigated the banks specific and macroeconomic determinants of Turkey commercial banks for the sample period of 2002 to 2010 by considering multiple regression technique. Findings suggest that bank size and non-interest income has a positive impact on profitability while bank loan are negatively associated with profitability. They recommend that by increase in non-interest income and bank size, Turkish bank can enhance their profitability.

Commenting on Saad and Moussawi (2012) investigation, the inflation in Lebanon does not impact on commercial bank's profitability while credit risk has negative association with profitability over the sample period of 2000 to 2010. They further conclude that Lebanon commercial banks have insignificant impact on profitability.

Tan and Floros (2012) identify the profitability of commercial banks in China over the sample period of 2003 to 2009 by using econometric techniques. Facts presented by their investigation suggest that bank size, non-traditional activity and taxation are negatively associated with banks profitability while Chinese banks are positively associated with high cost and high inflation rates.

A study of Masood and Ashraf (2012) with the aimed to bank specific and macroeconomic determinants of Islamic banks. They have considered a panel data of 25 Islamic

banks from 12 countries over the sample period of 2006 to 2010. The results of the study revealed that bank size has a positive impact on Islamic bank's profitability while asset management, capital adequacy and loans to assets are also contributing factor on banks ROA and ROE. In addition, RGDP has negative impact on banks ROA while the positive impact on ROE. Operating efficiency, deposits and liquidity showed an insignificant impact on banks profitability. It can be concluded that, banks with efficient management and larger bank size can increase return on asset.

3. Data and Methodology

In this study, panel data of total 26 banks, which include 17 conventional, 5 Islamic and 4 public banks is used. The selected sample is consisting of five years over the period of 2009 to 2013 which is mainly focused after the recent financial crisis in Pakistan. For each bank, the data is collected on an annual frequency for bank specific variables gathered from the annual balance sheet and income statements. On the other side, the data for macro-economic variables of annual inflation and economic growth are obtained from World Bank database. The present study employs the Hausman test (whether the fixed effect is an appropriate or random effect appropriate) for study variables. This methodology is common for panel data and is in line with past empirical studies (Raza et.al., 2013; Masood and Ashraf, 2012 and many more).

The list of selected variables along with their notation is presented in Table-1 while the explanation of profitability and its determinants are also mentioned (see appendix).

3.1 Profitability Measure

The profitability measures in previous studies are mainly used as ROA and ROE. Kosmidou (2008), Abbasoglu et.al (2007) used return on asset (ROA) as the dependent variable for profitability. ROA shows how banks generate their profit by using management's ability to utilize banks, real and financial investment (Hassan & Bashir, 2003). Furthermore, ROA is a good measure of profitability which is not much affected by high equity multipliers and firm can earn the maximum return on their asset portfolio (Rivard& Thomas, 1997). On the other side, return on equity (ROE) represents bank efficient management in utilizing its shareholder's investment. Hassan and Bashir (2003) suggest that most of the banks increase their ROE by getting more financially leveraged to competitive levels. Within the context of the above

arguments, this study uses both ROA and ROE for profitability measures of the Pakistan banking system.

3.2 Internal Determinants

The internal determinants (independent variables) of profitability represent bank specific variables, which include Asset size (Log A), Asset quality (AQ), Liquidity (LQ), Asset management (OPI), Deposits (DEP), Gearing ratio (TDE), Operating efficiency (TOE) and Financial risk (TLA). Further explanation of internal determinants is as follows;

3.2.1 Asset size: Asset is used in this study as a proxy of bank size, which is mostly used in the previous studies. It is calculated by taking natural logarithm of total assets. Generally, bank size is positively associated with firm's profitability (Smirlock, 1985).

3.2.2 Asset quality: The asset quality in this study is measured by two sub categories (1) non-performing loans to total assets (2) loans to total assets. Aydogan (1990) argued that asset quality can be measured through non-performing loans to total assets which reflects the bank's loan portfolio and is negatively associated with profitability. In addition, loans to total assets are positively associated with profitability and it reflects banks income source.

3.2.3 Liquidity: Liquidity of banks is measured through liquid assets to total assets which imply that banks are more liquid if the ratio is higher. Bourke (1999) found positive impact of liquidity on profitability. Sometimes banks failure is due to inadequate liquidity while the opportunity cost of higher return is expected if more liquid assets are in hand.

3.2.4 Asset Management: Asset management is calculated by operating income divided by total assets. Chirwa (2003) and Miller and Noulas (1997) found a positive relationship with profitability which indicate higher the asset management, higher will be the bank's profitability.

3.2.5 Deposit: Banks heavily depend on deposits while generally it is positively associated with banks profitability. In addition, banks can transform their interest and profit earnings into loans to be more profitable.

3.2.6 Gearing ratio: This ratio is calculated through debt divided by equity. In financial institutions, financial losses can be absorbed by the capital of the bank, which surely provide

protection or assistance to the bank. Lower the debt to equity ratio, the most favorable condition is available for bank.

3.2.7 Operating efficiency: The operating efficiency is measured by dividing total operating expenses with total assets. The bank management efficiency is represented by operating efficiency whereas better management efficiency is associated with lower operating ratio.

3.2.8 Financial risk: Financial risk is used as a proxy variable which is calculated by total liabilities to total assets ratio. It reflects higher leveraged or lower capital. This ratio is generally has a negative impact on profitability.

3.3 External Determinants

External determinants (independent variables) of bank's profitability are expected to impact bank's profitability. For this reason, two macro-economic variables are used (1) Inflation (2) RGDP. These two variables are normally studied in the previous studies.

3.3.1 Inflation: In this study, annual inflation rate is used. Perry (1992) argued that bank's profitability depends on inflation in two cases. Anticipated and unanticipated inflation. The profitability is positively associated with inflation in anticipated case, while profitability is negatively linked with inflation in unanticipated inflation.

3.3.2 Real gross domestic product: In this study, RGDP is used for total economic activity and inflation is adjusted. Deposits and loans are likely to be affected from GDP, whereas past empirical investigations found a positive association with GDP growth (Biker and HU, 2002; Demirguc-Kunt and Huizinga, 1999)

3.4 Econometric Specification

Bank profitability is measured through panel data which consist of n cross-sections $n = 1, \dots, N$ and is observed at time period $t = 1, \dots, T$. The total observations are $n \times T$ and the basic regression model of Brooks (2008) for this study is as follows

$$y_{nt} = \alpha + \beta x_{nt} + \varepsilon_{nt}$$

Where, y is denoted as the dependent variable (Profitability) and α denotes intercept term. X represents explanatory variables (Independent variables) while β is regression coefficient. The basic functional form study model is as follows:

$$Profitability = f(Bank\ Specific\ Variables; Macro\ Economic\ Variables) \quad (2)$$

Here, profitability of banks is measured through return on assets (ROA) and return on equity (ROE) while bank specific variables are Asset Size, Capital Adequacy, Assets Quality, Liquidity, Deposits, Income Expenditure Structure and Macro Economic Variables include Economic Activity and Inflation.

From the above discussion, following 2 models are used in this study which is as follows:

$$ROA = \alpha + \beta_1 AS_{nt} + \beta_2 AQLT_{nt} + \beta_3 AQNPL_{nt} + \beta_4 LIQ_{nt} + \beta_5 DEP_{nt} + \beta_6 OPI_{nt} + \beta_7 TOE_{nt} + \beta_8 TDE_{nt} + \beta_9 TLA_{nt} + \beta_{10} RGDP_{nt} + \beta_{11} INF_{nt} + \varepsilon_{nt} \quad (3)$$

$$ROE = \alpha + \beta_1 AS_{nt} + \beta_2 AQLT_{nt} + \beta_3 AQNPL_{nt} + \beta_4 LIQ_{nt} + \beta_5 DEP_{nt} + \beta_6 OPI_{nt} + \beta_7 TOE_{nt} + \beta_8 TDE_{nt} + \beta_9 TLA_{nt} + \beta_{10} RGDP_{nt} + \beta_{11} INF_{nt} + \varepsilon_{nt} \quad (4)$$

4. Empirical estimations

Table-2 represents the correlation matrix between explanatory variables used in multivariate regression analysis. This table is revealing the degree of correlation. From the matrix, the correlation between the explanatory variables is not too high, suggesting the nonexistence of multicollinearity in the model. When the correlation is 0.8, then there exists a multicollinearity problem which is not in our case.

Table-2 Correlations between Independent variables

	AQLT	AQNPL	DEP	LIQ	OPI	TOE	TLA	TDE	LNTA	INF	RGDP
AQLT	1.000										
AQNPL	-0.382	1.000									
DEP	-0.618	0.571	1.000								
LIQ	-0.104	-0.093	0.104	1.000							
OPI	0.511	-0.616	-0.078	0.011	1.000						
TOE	-0.540	0.631	0.065	-0.061	-0.055	1.000					
TLA	0.205	-0.197	-0.582	0.076	0.470	-0.426	1.000				
TDE	0.103	0.113	-0.104	-0.639	0.027	0.061	0.020	1.000			
LNTA	-0.149	0.027	0.553	0.067	-0.314	0.112	-0.069	0.018	1.000		
INF	0.003	0.016	-0.022	0.143	0.057	0.052	0.062	-0.056	-0.136	1.000	
RGDP	-0.041	-0.044	0.033	-0.242	-0.034	-0.057	-0.073	0.041	0.142	-0.508	1.000

Source: Authors estimations

To determine which method is appropriate between fixed effect and random effect model, Hausman test is used (Greene, 2000). In this test, if the null hypothesis (i.e. Country effects are not correlated with the regressors) is rejected then fixed effect model is appropriate. Consequently, the results obtained from the Hausman test indicate that null hypothesis is rejected and fixed effect model is appropriate for our study. The results estimated from the fixed effect model are presented in table-3.

<Insert table 3 here>

Table-3 shows that, the operating efficiency (TOE) of banks is negatively associated with return on assets (ROA). This result supports findings from previous studies of Sufian and Habibullah (2009) and Alexious and Sofoklis (2009) observed negative impact on return on assets (ROA). The financial risk (TLA) has a positive and significant impact on return on assets (ROA) which means that banks use their deposits as leverage type and depositors are the part of risk sharing. These findings are consistent with Masood and Ashraf (2012). The gearing ratio (TDE) shows positive and significant impact on return on assets (ROA) which signify that profitability of banks increase with higher level of gearing ratio. The positive and significant relationship is found between asset management (OPI) and return on assets (ROA). These findings are consistent with past studies of Miller and Noulas (1997) and Chirwa (2003). The study finds that bank size (Log A) has a positive and significant impact on return on assets (ROA) and support previous study findings of Smirlock (1985) and Masood and Ashraf (2012). Furthermore, Liquidity (LQ) has negative and significant association with return on assets (ROA) which is consistent with Molyneux and Thornton, (1992) and Guru et al., (1999). As expected, the deposit ratio shows positive and significant impact on return on assets (ROA) which signify that banks can increase their profitability by increasing their deposit ratio. The asset quality ratio of banks is divided into two ratios.

(1) Loans to total asset (AQLT)

(2) Non-performing loans to total assets (AQNPL)

In our findings, AQNPL ratio shows a negative and insignificant impact on return on equity (ROA) which imply that increase in non-performing loans lead to decrease in profitability whereas AQLT ratio impact positive and significant on return on equity (ROA). For macro-economic determinants, a real gross domestic product (RGDP) has a negative and insignificant impact on return on assets (ROA). This result supports previous studies of Masood and Ashraf

(2012) whereas inflation have a positive and insignificant effect on return on assets (ROA) supporting Guru et al. (2002), Jiang et.al(2003); Pasiouras and Kosmidou (2007); Fadzlan and Kahazanah (2009); Garcia-Herrero et al. (2009) and Tan and Floros (2012) findings. In addition, the value of adjusted R^2 is 0.7428 which imply that all explanatory variables jointly predict 74.28% return on assets. The probability value of F-statistics shows that the overall model is significant and best fit for analysis.

<Insert table 4 here>

Table-4 represents the bank specific and macro-economic determinants of return on equity (ROE). The operating efficiency (TOE) has a positive and significant impact on return on equity (ROE) which support Wasiuzzaman and Gunasegavan (2013) findings. The financial risk has negative and significant effect on return on equity (ROE) which indicate that banks with lower capital or higher leverage can impact negatively on profitability. The gearing ratio (TDE) and asset management (OPI) of banks is positive and significantly associated with return on equity (ROE). The results are consistent with Masood and Ashraf (2012) findings. Wasiuzzaman and Gunasegavan (2013) also found that bank size has negative impact on profitability which further supports our findings. Moreover, liquidity (LQ) has a positive and significant impact on return on equity (ROE) supporting Wasiuzzaman and Gunasegavan (2013) investigations while deposits (DEP) are also positively associated but insignificant impact on return on equity (ROE). In addition, AQNPL and AQLT ratios are negatively associated with return on assets (ROE) but have significant and insignificant impact respectively. Findings from Masood and Ashraf (2012) support our results for non-performing loans. On the other side, real gross domestic product (RGDP) impact positive and insignificant while inflation has a negative and insignificant impact of on return on equity (ROE) which is supported by Masood and Ashraf (2012); Wasiuzzaman and Gunasegavan (2013) findings. The value of adjusted R^2 is 0.8353 which imply that all explanatory variables jointly predict 83.53% return on equity. The probability value of F-statistics show that the overall model is best fit for analysis.

5. Conclusion and Policy implications

The present study is a first attempt in Pakistan to investigate the banking sector profitability after the recent financial crisis. Our investigation determines bank specific and macro-economic variables by using the panel data of 26 banks, which include 17 conventional

banks, 5 Islamic banks and 4 public banks over the sample period of 2009 to 2013. This study uses panel data method (fixed effect model) whereas return on assets (ROA) and return on equity (ROE) is used as profitability measures.

Based on empirical findings, operating efficiency found negative and insignificant impact on the asset side while positive and significant effect on the equity side. Financial risk has a positive association with return on assets (ROA) whereas negative relationship with return on equity (ROE). Similarly, bank size has a positive impact on profitability. During the sample under study, the gearing ratio and asset management show positive and significant impact on banks profitability. We further find that, gearing ratio and asset management exert positive and significant impact on profitability. Bank size on the other hand effect positive and significant on the asset side while the negative and significant impact on the equity side, but liquidity has a negative and significant impact on return on assets (ROA) while positive and significant on return on equity (ROE). The asset quality for non-performing loan to total deposits has negative impact on profitability, but asset quality loans to total assets contribute positively on the asset side and negative on the equity side.

The impact of economic growth contributes insignificant impact on profitability, but it is negatively associated with asset side and positively on the equity side. Conversely, inflation has a positive impact on return on asset (ROA) and negative impact on return on equity (ROE) but the impact is insignificant on profitability.

The empirical results obtain from this study has reasonable policy relevance. The argument could be producing that more new products and services can help banks to be more profitable. For this reason, technology advancement is a major tool for banks to have a competitive advantage over its peer. The successes of the Pakistan banking sector depend on profitability, efficiency and competitiveness. Consequently, profitability allows banks management and policy makers to find alternative solutions to use their resources for optimal level of output. Additionally, return on investment is an important element and has ability to minimize risk to ensure the competitiveness of the Pakistan banking industry. Therefore, the regulatory and policy implication is directed towards increasing the profitability of the banking sector.

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Appendix

Table-1 Profitability determinant of Bank

Determinants	Variable	Measure	Notation
<i>Dependent variable</i>		Return on assets (ROA) = net profit/total assets	ROA
	Portability	Return on equity (ROE) = net profit/equity	ROE
<i>Bank-specific</i>	Asset size	Natural logarithm of total assets	LogA
	Asset quality	Loans/total assets	AQLT
		Non-performing loans/total assets	AQNPL
	Liquidity	Liquid assets/total assets	LQ
	Deposits	Deposits/total assets	DP
	Asset Mgt	Operating income/total assets	OPI
	Operating efficiency	Total operating expense/total assets	TOE
	Gearing ratio	Total debt/total equity	TDE
Financial risk	Total liabilities/total assets	TLA	
<i>Macro-economic</i>	Economic activity	Annual real GDP growth rate	RGDP
	Inflation	Annual inflation rate	IF

Table- 3 Determinants of return on assets (ROA)

Variables	FEM		
	Coeff.	t-stats	Prob
C	0.0294	0.3088	0.7584
TOE	-0.2464	-0.7842	0.4355
TLA	0.0156	2.2192	0.0297**
TDE	0.0882	4.0417	0.0001*
OPI	0.0041	2.3133	0.0236**
Log A	0.014	2.5927	0.0116**
LIQ	-0.0044	-1.7035	0.0928***
DEP	0.0672	2.4266	0.0178**
AQNPL	-0.0439	-0.2817	0.7789
AQLT	0.1955	2.8509	0.0057*
RGDP	-0.0003	-0.5513	0.5831
INF	0.0012	0.7346	0.465
Adj. R²	0.7428		
F-stats (Prob.)	9.9230(0.000)		

Source: Authors estimations

*Note: *1, **5 and ***10 percent level of significance*

Table- 4 Determinants of return on assets (ROE)

Variables	FEM		
	Coeff.	t-stats	Prob
C	7.9695	4.7337	0.0000
TOE	0.2970	2.4796	0.0170**
TLA	-1.0133	-6.2193	0.0000*
TDE	13.8803	6.7352	0.0000*
OPI	4.7890	2.2297	0.0308**
LogA	-1.2045	-6.6810	0.0000*
LIQ	0.0310	2.1671	0.0356**
DEP	0.0381	1.3786	0.1748
AQNPL	-0.2300	-2.5877	0.013**
AQLT	-0.0591	-1.6657	0.1027
RGDP	0.0246	0.5490	0.5857
INF	-0.0019	-0.6910	0.4931
Adj. R²	0.8353		
F-stats (Prob.)	14.2274(0.000)		

Source: Authors estimations

Note: *, **5 and ***10 percent level of significance

Table 5: List of Sample Banks of the Study

Sr.No	Conventional banks	Islamic banks	Public banks
1	Allied Bank Ltd	Al Barakah bank Ltd	Bank of Punjab Ltd
2	Askari Bank Ltd	Bank Islami Pakistan Ltd	Bank of Khyber Ltd
3	Bank Alfalah Ltd	Burj Bank Ltd	National Bank of Pakistan Ltd
4	Bank Al habib Ltd	Dubai islamic Bank Ltd	First women Bank Ltd
5	Faysal Bank Ltd	Meezan Bank Ltd	
6	Habib Bank Ltd		
7	Habib Metro bank Ltd		
8	JS Bank Ltd		
9	KASB Ltd		
10	MCB Ltd		
11	Samba Bank Ltd		
12	Silk Bank Ltd		
13	Soneri Bank Ltd		
14	Standard chartered bank Ltd		
15	Summit Bank Ltd		
16	United Bank Ltd		
17	Barclays bank Ltd		