THE IMPACT OF CAPITAL AND LIQUIDITY REQUIREMENTS ON THE LENDING ABILITY OF BANKS IN PAKISTAN

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Abstract

The study investigated the effect of bank capital ratio on bank lending depending on the liquidity level of 33 banks in Pakistan by using a two-step system GMM between 2006 and 2021. The empirical results suggest that bank capital is positively associated with lending, whereas bank liquidity is negatively related when the whole sample is taken and is negative for domestic banks. Besides, the interaction effect between capital and liquidity is positive (favourable) for domestic banks and negative (unfavourable) for the whole sample. The study provides implications for banking institutions and policymakers. Firstly, the assessment of the effectiveness of various determinants of bank lending is a prerequisite for any effort to improve the lending by the banks in Pakistan. Moreover, any policy to improve bank lending should be devised considering the relationship between capital and liquidity requirements.

Keywords: Bank Lending, Bank Capital, Bank Liquidity, Two Step System GMM, Interaction Effect.
JEL Classification: G01, G21, E51.

I. Introduction

The financial sector is the backbone of every economy, and banks are central to the financial system. A resilient banking sector is beneficial for the economic prospects of a country. Literature has proved that a sound and stable financial system accelerates the process of economic development of a country. The soundness of the banking systems affects the economic growth of a country by channelling the savings of diverse households into investment and allocating resources to projects having a higher marginal product of capital, as a result of which productivity increases. Likewise, they provide liquidity to profitable investors which are illiquid and reduce their chances of insolvency. Banks also Promote technological improvement by promoting businesses with new thoughts and facilitating trade by providing credit and payment guarantees to the businesses.

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Thus, the importance of the banking sector must be addressed because a rigorous and flourishing banking system acts as a catalyst for the growth and development of the economy. However, the Global Financial Crisis (GFC) of 2007-08 highlighted various flaws in the financial system around the world and explicitly stressed the role of excessive bank lending in propagating negative consequences to the real economy. It was witnessed during the GFC, predominantly in the United States, that banks had ample capital holdings. However, they ran out of liquidity, which caused them to stop lending and instead start accumulating liquid assets. This stoppage in lending negatively affected the output and employment across countries and caused a decline in growth and development.

To overcome the flaws in banking systems, policymakers and regulators presented changes in regulatory and supervisory standards, bringing about the improvement in the framework of prudential regulations through the endorsement of the Basel III agreement. The primary purpose of these improvements in the Basel standards is to toughen the capital and liquidity standards and build a strong foundation for a viable economic environment and resilient banking system [BCBS (2011)]. It requires banks to have a greater quantity and quality of capital and sufficient liquidity based on stable funding sources [Demirguc-Kunt, et al., (2013) and Vazquez and Frederico (2015)]. In particular, implementing Basel III will likely minimise the insolvency and liquidity risk confronted by the banks by increasing their loss-absorbing capability and high-quality liquid asset holdings. In other words, this framework is anticipated to strengthen the ability of the banking sector to absorb and mitigate negative external shocks by Raising the capital base quality, Setting up the liquidity coverage ratio, and Enhancing the supervisory overview.

Determining the relationship between bank capital and lending is essential to comprehend the connection between the financial sector and the real economy [Berrospide and Edge (2010)]. A considerable amount of research has been carried out to determine how real economy shocks affect capital ratios and their pro-cyclical characteristics, which tend to increase financial shock by forcing banks to reduce loan supply when it is most desirable. The impact of bank capital on lending has been examined in serval studies, including those by Kishan and Opiela (2000), Gambacorta and Marques-Ibanez (2011), Carlson, et al., (2013) and Košak, et al., (2015). However, bank liquidity was a key factor limiting bank lending during the 2008 Great Financial Crisis. As a result, researchers have recently turned their attention towards the question of how liquidity affects bank lending [Alper, et al., (2018)].

Pakistan is a growing nation whose financial environment has changed significantly in recent years as a result of the State Bank of Pakistan's (SBP) introduction of BASEL III to ensure that banks retain sufficient liquidity buffers to reduce the danger of a liquidity shortfall. These modifications seek to improve the stability and resilience of the banking sector. The introduction of the Liquidity Coverage Ratio (LCR) and Net Stable Funding Ratio (NSFR) align local practices with global

standards. At the same time, stricter loan approval criteria promote prudent lending practices and economic stability. These regulatory changes are crucial for understanding the current dynamics of the banking sector in Pakistan. They influence the financial institutions' operational strategies and impact various financial metrics, including capital adequacy and profitability. As such, analysing the effects of these changes on banking lending is essential for comprehending the broader implications for the financial system.

This study aims to explore the relationship between bank capital and bank lending, along with the impact of bank liquidity on lending for the banks in Pakistan. The study also explores the impact of the association between interaction terms of bank capital and liquidity ratio on bank lending by using the two-step system Generalised Method of Moments (GMM) estimation technique. By examining the interplay between Capital and liquidity regulations, lending and other bank-specific factors, we seek to provide valuable insights into the evolving landscape of Pakistan's financial sector.

The arrangement of this study is as follows: Section I contains an introductory text regarding bank lending and its determinants. Section II presents a review of existing literature. Section III provides information on the estimation technique and empirical methodology used. The data and empirical results are presented in Sections IV and V. Finally, Section VI presents the conclusion.

II. Literature Review

Ample literature has investigated the impact of several bank-specific and macroeconomic variables on bank lending. Bank capital is the most extensively used variable in the bank lending literature. Initially, the studies focused on the effects of bank capital on bank loan supply in corroborating the link between the financial sector and the macroeconomy [Bayoumi and Malander (2008)]. Another type of literature on bank capital focuses on the degree of the effect of bank capital ratios on loan supply [Košak, et al., (2015)]. In these studies, researchers analyse the comparative impact of various types of capital ratios (for example, risk-weighted capital ratios and leverage ratios). These studies show varying outcomes depending on the type of ratios and methodology used. The differences in results may also be explained through the diversity of samples considered (i.e. public banks, commercial banks, holding companies of banks, foreign banks, or domestic banks). In early studies, Bernanke and Lown (1991), Furlong (1992), and Hancock and Wilcox (1994) found a positive association between capital and the growth of bank loans in the United States. In recent studies, Catalán, et al., (2020) found the positive but non-linear impact of bank capital on bank lending for Indonesian banks. Altunbaş, et al., (2016) found that bank capital has a long-run relationship with loans for European countries. In contrast, several studies showed a positive linkage between capital and lending [Gambacorta and Shin

(2016), Gambacorta and Mistrulli (2004) and Labonne and Lame (2014)]. Karim, et al., (2014) found a positive association between bank capital in Islamic and conventional banks. Brei, et al., (2013) and Carlson, et al., (2013) found that bank capitalisation played a pivotal role in supporting bank lending. However, the marginal impact of capital on loan supply was more significant during the GFC financial crisis period only. Whereas Deli and Hasan (2017) and Francis and Osborne (2012) found a negative relationship between capital and lending, Along with bank capital, liquidity levels are the most commonly used variable in the studies when working on the factors affecting the credit supply by the banks [Alper, et al., (2018)]. Alfaro, et al., (2003), Gambacorta and Mistrulli (2004) and Allen and Paligovora (2015) studied the link between liquidity and bank lending, and the findings of their studies suggest liquidity is positively and significantly related to bank lending. Some studies, such as those by Rabab'ah (2015) and Alkhazaleh (2017), found that there is a negative relationship between liquidity and bank lending. Polizzi, et al., (2020) examined whether and to what extent bank capital requirements and liquidity standards influence the level of bank stability for 117 developed and developing countries during the period 2000 to 2016. Their results demonstrate that capital and liquidity directly and negatively affect the degree of bank stability. Mutarindwa, et al., (2020) studied that compliance with Basel III's main requirements, the Net Stable Funding Ratio (NSFR) and the risk-weighted Total Capital Ratio (TCR), matters for the lending and stability of African banks. Their findings showed that banks complying with the NSFR requirement lend less than their counterparts, while banks complying with the capital threshold lend more than the other banks.

The relationship between bank capital and lending and between bank liquidity and lending can be both positive and negative. Pakistan is a developing economy whose business sector relies profoundly on bank lending. Therefore, it is of utmost importance to find the factors that influence bank lending.

III. Empirical Methodology

The main aim of this study is to find how bank capital and liquidity affect loan supply by banks in Pakistan by using the two-step system GMM technique. Furthermore, this study also investigates the effect of interaction terms of capital and liquidity ratio on bank lending for Pakistani banks. To avoid reverse causality, bank-specific and macro-specific variables are lagged once (t-1).

The two-step GMM is asymptotically more appropriate and efficient than the one-step, as it states about the prospect of correlation amongst independent variables of the model and error term [Baltagi (2001)]. It is assumed that variables in the model, including the lagged dependent variable and bank-specific variables, particularly bank capital and liquidity, are correlated to the disturbance term. The GMM technique corrects the potential problem of inconsistency in the model [Arellano and Bond (1991),

Blundell and Bond (1998) and Iftikhar and Iftikhar (2018)]. Besides the Sargan Test, the Autocorrelation test, AR(1) and AR(2) are also performed. The Sargan Test tells about the validity of over-identifying restriction in the model, and the AR(1) and AR(2) are used for zero or no correlation.

The empirical model is as follows in Equation (1):

$$BNL_{i,t} = \beta_0 + \beta_1 L_{i,t-1} + \beta_2 \, capital_{i,t-1} + \beta_3 \, liquidity_{i,t-1} + \beta_5 \, Y_{i,t-1} + \beta_6 \, Z_{t-1} + \mu_i + \upsilon_t + \varepsilon_{i,t} \quad (1)$$

In Equation (1), BNL_i represents the dependent variable, which is the annual loan supply by bank 'i' in period 't'. The log of gross advances is used by banks as a proxy for loan supply. Meanwhile, $BNL_{i,t-1}$ denotes the lag of the dependent variable. Capital represents the regulatory capital ratio as defined in BASEL accords (the ratio of tier-1 and tier-2 capital to risk-weighted assets), which is used as a proxy of bank capital. In the same way, liquidity represents the ratio of cash and cash equivalent to total assets, which is used as the proxy of bank liquidity. Bank-specific variables other than Capital and liquidity are included in vector '$Y_{i,t-1}$', which are bank size, bank profit, and non-performing loans (which account for credit risk). Likewise, 'Z_{t-1}' denotes a vector of macro-specific variables, including the GDP growth rate, lending interest rate, and inflation rate. Likewise, 'μ_i' denotes unobserved individual specific effects; 'υ_t' denotes time-specific effect and '$\varepsilon_{i,t}$' denotes the error term. The inclusion of macroeconomic variables besides the bank-specific variables is to account for the macroeconomic environment, which plays a pivotal role in the determination of the bank's capability to escalate or shrink lending in Equation (2).

$$BNL_{i,t} = \beta_0 + \beta_1 L_{i,t-1} + \beta_2 \, capital_{i,t-1} + \beta_3 \, liquidity_{i,t-1} + \beta_4 \, cap*liq_{i,t-1} \quad (2)$$
$$+ \beta_5 \, Y_{i,t-1} + \beta_6 \, Z_{t-1} + \mu_i + \upsilon_t + \varepsilon_{i,t}$$

In Equation (2), the interaction term of capital and liquidity ratios denoted by '$cap*liq$' is included in the model, and its effect on bank lending is examined. The inclusion of the cross-term allows for capturing the changes in the capital ratio with the movements in the liquidity ratio and vice versa.

IV. The Data

This study investigates the micro-panel data on 33 Banks[1] in Pakistan over the period 2006 to 2021. Data on bank-specific variables such as bank capital, liquidity, size, loan quality, and profitability is collected from the balance sheets of individual banks along with financial statement for financial firms published by the State Bank

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[1] The list of banks name in Table A-1 (Appendix).

of Pakistan (SBP). The real growth rate of GDP, inflation, and lending rate of banks are used to integrate the business cycle's effects on bank lending. Data on these variables is collected from the World Development Indicators database (WDI) and the Economic Survey of Pakistan.

1. Bank Specific Variables

a) Bank Lending

The log of gross advances is used as a proxy for bank lending. It shows the total amount of credits issued by banks over an accounting period. The core business of banks is to lend and earn a profit on it. The more the bank lends, the more chances there are of higher profit. Generally, bank lending is considered pro-cyclical: it increases with the betterment of economic conditions and decreases during periods of financial distress [Anees, et al., (2023)].

b) Capital Ratio

We have used the regulatory capital ratio, defined as the ratio of tier-1 and tier-2 capital over risk-weighted assets, to measure the capital adequacy of banks as recommended under BASEL III. Capital protects banks from every kind of unsecured and uninsured risk and all sorts of losses. Generally, the higher the ratio, the more sound the bank [Kapan and Minoiu (2013)].

c) Liquidity Ratio

Currently, sufficient data is not available in Pakistan for the Liquidity coverage ratio as recommended by BASEL III to measure liquidity holdings of banks. Therefore, we have used liquid assets to total assets of banks as a proxy of bank liquidity in this study. Theory suggests that banks with higher liquidity ratios are in a better position to meet their stochastic withdrawals [Kashif, et al., (2016)].

d) Bank Size

To measure the impact of bank size on banks' lending activity, the natural logarithms of total assets of the individual bank are taken as a proxy for Bank size. The size of a bank measures the ability of banks to act as an intermediary and is a significant determinant of bank lending [Iftikhar, et al., (2022)].

e) Loan Quality

The ratio of non-performing loans to gross advances is taken as a proxy for loan quality. Delays and defaults in the loans produce an extremely unfavourable situation for the banks and the economy as a whole. The higher the value of the ratio of non-performing loans to gross advances, the worse the loan portfolio quality of a bank [Kashif, et al., (2016)].

f) Profitability

In our study, the ratio of profit after tax to total assets is used as a proxy of bank profitability. It measures profit earned per rupee of assets and imitates how efficiently banks manage their real investment resources to generate profits [Diaz and Pandey (2019) and Wasim, et al., (2023)].

2. *Macro specific variables*

a) *GDP Growth Rate*

The GDP growth rate is used as a control variable to capture the impact of the business cycle in the country. There are two theories with regards to the effect of GDP on lending. The first theory says GDP effect lending negatively because as the living standard of the people rises they demand less credit. The second says that with an increase in GDP people demand more loans from banks due to an increase in economic opportunities [Pradhan, et al., (2014)].

b) *Inflation*

The growth of CPI is used to measure the impact of inflation on lending. Theory suggests that ceteris paribus, firms like to take on debt financing under inflationary expectations. Therefore, a positive relationship between inflation and bank lending is expected [Pradhan, et al., (2014)].

c) *Lending Rate*

The lending rate is the rate that a bank charges a borrower to make a loan. An increase in the lending interest rate is expected to lower the demand for loans, so the association between bank lending and the lending interest rate may be negative [Anees et al., (2023)].

V. Empirical Results

Table 1 provides the summary statistics of bank lending and various factors affecting bank lending in Pakistan (including both bank-level and macro-level variables). It indicates the mean, standard deviation, minimum values, maximum values, and units of measurement for the complete set of variables of the whole sample, i.e. 33 banks of Pakistan. The bank lending and bank size variables are presented in logarithmic form, while all other variables are presented in percentage form. The mean value of bank lending is 17.7 per cent and changes from a minimum value of 10.40 per cent to a maximum value of 20.47 per cent.

Table 2 displays the correlation matrix of bank-specific and macro-specific variables. It is useful to notice that among bank-specific variables, the correlation between the bank capital and liquidity ratio is moderate, that is, around 48 per cent. In contrast,

TABLE 1

Summary Statistics of all variables

Variables	Obs.	Mean	Std. dev.	Max.	Max.
Bank Lending	440	17.79	1.57	10.17	20.90
Bank Capital	440	20.73	18.49	1.72	146.74
Bank Liquidity	440	11.63	9.04	2.08	64.40
Profitability	440	0.43	1.90	-7.18	5.30
Loan Quality	440	12.16	11.08	0.00	88.56
Bank Size	440	18.54	1.43	14.71	21.52
GDP growth	440	3.72	1.41	1.61	6.17
Lending Rate	440	12.60	1.43	10.15	14.53
Inflation	440	9.51	3.98	2.80	17.03

Source: World Development Indicators, Economic Survey of Pakistan, and State Bank of Pakistan.

among macro-specific variables, the correlation between the lending rate and GDP growth rate is around 63 per cent, which is also quite high. The Table also shows that there is a negative correlation between bank lending and capital, liquidity, and inflation rate. While bank size, profitability, lending rate, non-performing loan, and GDP growth rate are positively correlated with bank lending.

The dynamic estimation results of bank lending for banks in Pakistan are explained in Tables 3 to 6 by using the two-step system GMM technique. The Sargan test and Second order serial correlation tests provided values due to which the null hypotheses of the AR(1) and AR (2) tests could not be rejected, which endorsed that all the instruments used in each regression are valid.

TABLE 2

Correlation Matrix

Variables	1	2	3	4	5	6	7	8	9
Bank Lending	1.00								
Bank Capital	-0.65*	1.00							
Bank Liquidity	-0.48	0.51*	1.00						
Loan Quality	-0.07	-0.13*	-0.19	1.00					
Profitability	0.12*	-0.09	0.40*	0.34	1.00				
Bank Size	0.55*	-0.42*	-0.35*	0.01	0.32	1.00			
GDP Growth	-0.06	0.03	0.18*	-0.18*	0.00	-0.05	1.00		
Lending Rate	0.10	-0.01	0.01*	0.03*	-0.04	0.07	-0.63*	1.00	
Inflation	-0.13	0.07	-0.17*	0.03	-0.21*	-0.69*	0.56*	0.61	1.00

Source: Authors' estimation.

Table 3 contains the results for all the banks in Pakistan; similarly, Table 4 contains the results of the post-crisis period, Table 5 contains the results of domestic banks in Pakistan (which includes public and private banks and Islamic banks only), and Table 6 contains the results for the post-crisis period, i.e. 2010 to 2021. In Tables 3 to 6 the first column displays the outcome of the baseline regression model; columns 2 and 3 show the inclusion of Bank capital and bank liquidity terms, respectively. In column 4, bank capital and liquidity variables are used concurrently, along with bank-level and macro-level variables and column 5 regresses the interaction term of bank capital and liquidity ratios with the rest of the variables.

1.   *Results Estimation for all Banks*

The results in Table 3 show the estimation of the effect of Bank capital, liquidity, and other bank- and macro-specific variables on bank lending for all banks in Pakistan over the period 2006 to 2021. It was found that bank capital has a positive and significant effect on bank lending. The empirical findings suggest that capitalisation is playing an important role in boosting bank lending in Pakistan. Furthermore, banks in Pakistan are operating at a level of capitalisation where we cannot doubt their financial soundness. The result is consistent with Kim and Sohn (2017), Košak et al. (2015), Labonne and Lame (2014), Olszak et al. (2014), and Ladime et al. (2013), also found a positive relationship between bank capital and lending. On the contrary, many studies have found a negative effect of bank capital on lending.[2] Moreover, empirical results found a negative association between bank liquidity and lending. This finding suggests that as the lending by banks increases, the amount of illiquid assets in the total assets portfolio of banks also increases (since the loan is an illiquid asset). As a result, the level of liquid assets diminishes in the banks. This result is consistent with Rabab'ah (2015) and Olokoyo (2011). The bank capital and liquidity interaction term turns out to be negative; it indicates that the effect of capital on lending is negatively associated with liquidity, i.e., an increase in the liquidity ratio decreases the effects of an increase in the capital ratio on lending, which is consistent with Van Dan Dang (2021) and Dahir, et al., (2019).

As for bank-specific variables, the study shows that bank profitability has a negative relationship with bank lending, which suggests that as bank lending increases, its profit decreases. The findings of the result are in line with those found by Moussa and Chedia (2016). On the contrary, Kim and Sohn (2017) and Alkhazaleh (2017) found a positive relationship between profitability and bank lending. In Table 3, the regression equation finds that bank size has a positive and direct relationship with bank lending, which suggests that large banks tend to lend more than small banks; this result is alings with Chernykh and Theodossiou (2011) and Wasim, et al. (2022). Non-performing loans have a negative and direct relationship with Bank lending, which suggests that banks tend to cut as credit risk increases, decreasing the loan supply in the

TABLE 3

Dynamic Panel Estimation of Bank Lending with Bank Capital
and Liquidity for the Whole Sample During the Period 2006 to 2021

Variables	1	2	3	4	5
Bank Lending$_{t-1}$	0.70***	0.75***	0.68***	0.73***	0.69***
	(0.022)	(0.024)	(0.032)	(0.021)	(0.027)
Bank Capital$_{t-1}$		0.52**		0.52***	0.86***
		(0.053)		(0.073)	(0.226)
Bank Liquidity $_{t-1}$	-	-	-0.40***	-0.38***	-0.48**
			(0.174)	(0.146)	(0.237)
(Capital*Liquidity) $_{t-1}$	-	-	-	-	-2.456***
					(0.708)
Profitability$_{t-1}$	-2.41***	-2.20***	-2.14***	-2.01***	-2.50***
	(0.436)	(0.499)	(0.627)	(0.489)	(0.254)
Bank Size$_{t-1}$	0.22***	0.19***	0.22***	0.20***	0.23***
	(0.021)	(0.022)	(0.022)	(0.022)	(0.028)
Loan Quality$_{t-1}$	-0.47***	-0.51***	-0.33***	-0.50***	-0.40***
	(0.064)	(0.086)	(0.100)	(0.076)	(0.092)
GDP growth$_{t-1}$	0.05***	0.05***	0.06***	0.06***	.04***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.007)
Inflation$_{t-1}$	0.007***	0.006***	0.009***	0.009***	0.006***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Lending Rate$_{t-1}$	0.029***	0.032***	0.0028***	0.029***	0.021***
	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)
No. of Observations	408	405	408	408	372
Sargan Test	29.23	28.06	29.26	26.67	26.36
	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)
AR(1)	-2.2	-2.28	-2.26	-2.31	-2.21
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
AR(2)	-0.24	-0.35	-0.32	-0.42	-1.02
	(0.80)	(0.72)	(0.74)	(0.67)	(0.30)

Source: Authors' estimation.
Note: Figures in parenthesis are robust. Standard errors
*,**, ***, indicates significance at the 10%, 5 % and 1% level.

economy, which is consistent with the studies of Stepanyan and Guo (2011), Cucinelli (2015) and Eswanto, et al., (2016).

The relationship between GDP growth and bank lending is positive in Table 3, which is confirmed by many studies like Laidroo, (2014). According to the literature, the escalation in GDP growth reflects the development of the economy or a boost in economic activities, which motivates firms and households to borrow from banks and other financial institutions to increase their investment ability. Moreover, this result is also in line with the theory of the pro-cyclical relationship between economic growth and bank lending, which states that with the increase in economic growth, the banks will increase the level of credit supply. The relationship between inflation and bank lending is found to be positive at a 1 per cent level of significance, which is consistent with the findings of the results of Awdeh (2017), Moussa and Chedia (2016), Imran and Nishat (2013) and Stepanyan and Guo (2011). The result indicates that banks tend to lower loan supply when inflation is low because the real lending interest rate will be lower, which will reduce their profit. Another reason that could be inferred from this result is that with the increase in the inflation rate, the real interest rate tends to fall. As a result, the cost of borrowing for the borrower decreases, which enhances the demand for credit in the economy. The relation between lending interest rate and bank lending is found to be positive at the conventional 1 per cent level of significance in all the columns, with the value ranging between 2.1 per cent to 3.2 per cent, which suggests that with the increase in average lending rate, banks tend to supply more loans. Ayieyo (2016), Olusanya, et al., (2012), Akinlo and Oni (2015), and Bunda and Desquilbet (2003) found a negative relationship between lending interest rate and bank lending.

The robustness of the results is confirmed even after examining them over two different periods, i.e., the whole period and the post-crisis period. Table 4 shows the estimation of the results over the period 2010 to 2021, which covers the post-financial crisis period. The lagged value of the dependent variable is positive and has a significant impact on bank lending at a 1 per cent conventional level. The result shows that the relationship between bank capital and lending is positive, consistent with the finding of previous Table 3.

The value of the coefficient of bank capital is statistically significant at a 1 per cent level of significance. After looking at these results, it can be concluded that banks in Pakistan maintained adequate capital for the whole sample period, which allowed them to sustain lending during crises and post-crises. The study showed that the relationship between bank liquidity and lending is still negative during the post-crisis period, proposing that the increase in liquidity deteriorates the supply of loans by banks [Alkhazaleh (2017)]. This result presents a noteworthy finding that the relation between liquidity and lending was not affected by financial crises in the case of Pakistan when both domestic and foreign banks operating in the country are taken in the model. The relationship of interaction terms of capital and liquidity ratio is found to be negative.

TABLE 4

Dynamic panel estimation of bank lending with bank capital
and liquidity for the whole sample during the period 2010 to 2021

Variables	1	2	3	4	5
Bank Lending$_{t-1}$	0.67***	0.74***	0.63***	0.66***	0.70***
	(0.020)	(0.030)	(0.020)	(0.020)	(0.050)
Bank Capital$_{t-1}$		0.68***		0.49***	1.50***
		(0.190)		(0.070)	(0.450)
Bank Liquidity $_{t-1}$			-1.40***	-1.62***	-0.89**
			(0.210)	(0.220)	(0.360)
(Capital*Liquidity) $_{t-1}$					-7.84***
					(2.300)
Profitability$_{t-1}$	-6.62***	-7.68***	-6.20***	-5.86***	-3.84***
	(0.810)	(0.720)	(0.670)	(0.690)	(1.300)
Bank Size$_{t-1}$	0.31***	0.28***	0.34***	0.34***	0.27***
	(0.030)	(0.036)	(0.021)	(0.037)	(0.062)
Loan Quality$_{t-1}$	-0.251	-0.357***	-0.234***	-0.598***	-0.380***
	(0.119)	(0.160)	(0.123)	(0.196)	(0.128)
GDP growth$_{t-1}$	0.052***	0.049***	0.046***	0.020***	0.029***
	(0.004)	(0.009)	(0.004)	(0.012)	(0.007)
Inflation$_{t-1}$	0.005***	0.004***	0.006***	0.006***	0.009**
	(0.001)	(0.001)	(0.002)	(0.002)	(0.003)
Lending Rate$_{t-1}$	0.034***	0.038***	0.032***	0.029***	0.022***
	(0.003)	(0.004)	(0.005)	(0.006)	(0.003)
No. of Observations	289	288	288	288	288
Sargan Test	26.78	25.76	26.24	22.17	25.6
	(0.99)	(0.99)	(0.99)	(1.00)	(1.00)
AR(1)	-1.73	-1.82	-2.13	-2.16	-2.00
	(0.08)	(0.06)	(0.03)	(0.03)	(0.04)
AR(2)	0.37	0.41	0.36	0.15	0.25
	(0.70)	(0.67)	(0.71)	(0.87)	(0.79)

Source: Authors' estimation.
Note: Figures in parenthesis are robust. Standard errors
*,**, ***, indicates significance at the 10%, 5 % and 1% level.

However, the value of the coefficient is three times higher than the value found in Table 3, with a 1 per cent level of significance. The relationship between return on assets and lending remains consistently negative; however, the coefficients are significantly higher than those presented in Table 3. Moreover, the coefficient for bank size is nearly identical to that in the preceding Table 3.

The negative correlation between loan quality and bank lending was corroborated by the findings in Table 4, which exhibited coefficient values lower than those presented in Table 3. This shows that Pakistani banks were able to reduce the number of defaulting loans after the crisis period. The lending interest rate and inflation are statistically significant at the 1 per cent level, exhibiting the same sign as observed in Table 3.

2.   *Results Estimation for Domestic Banks*

In Table 5, we excluded foreign banks for the whole sample period, i.e. 2006 to 2021; bank capital still has a positive and significant influence on bank lending. The coefficient values of the capital ratio in Table 5 are lower than those in Tables 3 and 4, suggesting that the impact of extra capital ratios on lending diminishes when foreign banks are included in the model. Moreover, the coefficient of bank liquidity turns out to be positive and significant at 1 per cent, which is in contrast to the results found in Tables 3 and 4. The positive relation between bank liquidity and lending for domestic banks suggests that with the increase in liquidity in the domestic banking system, the bank credit to the economy also increases and vice versa. This result is consistent with Olokoyo's (2011) and Laidroo (2014) findings, who also found a positive relationship between bank liquidity and lending.

The relationship between the cross term of bank capital and liquidity ratio with the bank lending was found to be positive, suggesting a positive interaction effect exists between bank capital and liquidity ratio with bank lending for domestic banks operating in the country. This result implies that the liquidity level of the bank increases; the effect of the capital ratio tends to be positive on bank lending and vice versa. The finding of this result is consistent with Thornton and Tommaso (2019) and Kim and Sohn (2017). Table 5 also presents that among the bank-specific variables, bank profitability and asset quality have a negative and significant. Conversely, Tables 3 and 4 show that bank lending is positively and significantly correlated with bank size.

When foreign banks are taken out of the model, the impact of non-performing loans on lending is increased, as evidenced by the higher loan quality coefficient than those obtained in Tables 3 and 4. This also confirms the clean behaviour of foreign banks in Pakistan. In Table 5, the effect of all macro-specific variables is positive and significant, except inflation, which is insignificant in column 5.

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[2] Bridges, et al., (2014) and Aiyar, et al., (2016).

TABLE 5

Dynamic panel estimation of bank lending with bank capital
and liquidity for domestic banks in Pakistan during the period 2006 to 2021

Variables	1	2	3	4	5
Bank Lending$_{t-1}$	0.62***	0.67***	0.63***	0.70***	0.61***
	(0.010)	(0.020)	(0.030)	(0.030)	(0.090)
Bank Capital$_{t-1}$		0.31***		0.21**	0.30**
		(0.060)		(0.080)	(0.120)
Bank Liquidity $_{t-1}$			1.58***	1.51***	0.93***
			(0.180)	(0.260)	(0.470)
(Capital*Liquidity) $_{t-1}$					8.13***
					(1.400)
Profitability$_{t-1}$	-1.07***	-0.98*	-1.16***	-2.19**	-2.34***
	(0.330)	(0.580)	(0.420)	(0.850)	(0.070)
Bank Size$_{t-1}$	0.25***	0.22***	0.26***	0.20***	0.26***
	(0.020)	(0.020)	(0.030)	(0.030)	(0.070)
Loan Quality$_{t-1}$	-0.57***	-0.64***	-0.77***	-0.95***	-1.11***
	(0.090)	(0.160)	(0.130)	(0.200)	(0.280)
GDP growth$_{t-1}$	0.04***	0.04***	0.02***	0.02***	0.04***
	(0.004)	(0.003)	(0.005)	(0.005)	(0.009)
Inflation$_{t-1}$	0.003**	0.003**	0.002*	0.004***	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)
Lending Rate$_{t-1}$	0.027***	0.028***	0.020***	0.028***	0.029***
	(0.003)	(0.003)	(0.003)	(0.004)	(0.005)
No. of Observations	381	381	381	381	381
Sargan Test	24.56	24.32	22.47	18.86	11.9
	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)
AR(1)	-2.22	-2.28	-2.2	-2.3	-2.42
	(0.02)	(0.02)	(0.02)	(0.02)	(0.01)
AR(2)	-0.36	-0.36	-0.05	-0.29	-0.03
	(0.71)	(0.71)	(0.95)	(0.97)	(0.97)

Source: Authors' estimation.
Note: Figures in parenthesis are robust. Standard errors
*,**, ***, indicates significance at the 10%, 5 % and 1% level.

TABLE 6

Dynamic panel estimation of bank lending with bank capital
and liquidity for domestic banks in Pakistan during the period 2010 to 2021

Variables	1	2	3	4	5
Bank Lending$_{t-1}$	0.72***	0.71***	0.67***	0.69***	0.63***
	(0.026)	(0.031)	(0.039)	(0.066)	(0.065)
Bank Capital$_{t-1}$		0.34***		0.48***	0.82***
		(0.127)		(0.160)	(0.326)
Bank Liquidity $_{t-1}$			1.17***	0.92***	2.23***
			(0.531)	(0.129)	(0.821)
(Capital*Liquidity) $_{t-1}$					-6.35***
					(3.847)
Profitability$_{t-1}$	-2.05*	-3.25*	-7.16***	-3.95***	-1.84*
	(1.073)	(1.726)	(1.645)	(1.408)	(1.032)
Bank Size$_{t-1}$	0.23***	0.24***	0.27***	0.24***	0.312***
	(0.026)	(0.030)	(0.042)	(0.070)	(0.049)
Loan Quality$_{t-1}$	-0.89***	-0.59***	-1.13***	-0.66***	-0.68***
	(0.134)	(0.201)	(0.172)	(0.112)	(0.301)
GDP growth$_{t-1}$	0.019***	0.031***	0.026***	0.016*	0.032***
	-0.005	-0.005	-0.008	-0.009	-0.011
Inflation$_{t-1}$	0.001	0.002	-0.007**	-0.004	0.0008
	-0.001	-0.003	-0.003	-0.004	-0.003
Lending Rate$_{t-1}$	0.02***	0.03***	0.04***	0.02***	0.015***
	(0.006)	(0.007)	(0.007)	(0.003)	(0.009)
No of Observations	278	278	278	278	278
Sargan Test	16.13	19.78	18.49	21.68	16.26
	(0.99)	(1.00)	(0.99)	(0.96)	(1.00)
AR(1)	-2.08	-2.17	-1.98	-1.98	-1.77
	(0.03)	(0.02)	(0.04)	(0.04)	(0.07)
AR(2)	-0.13	-0.03	-0.13	-0.08	-0.48
	(0.89)	(0.97)	(0.89)	(0.93)	(0.62)

Source: Authors' estimation.
Note: Figures in parenthesis are robust. Standard errors
*,**, ***, indicates significance at the 10%, 5 % and 1% level.

Table 6 shows the estimation results of the domestic banks of Pakistan after the period of post-global financial crises (2010 to 2021). The effect of bank capital and liquidity on lending is positive. The coefficient of interaction term of capital and liquidity turns out to be negative, which implies that after the financial crisis period, the additional liquidity exerts a negative effect on the impact of capital on lending, which means the bank reduces the supply of loans when the liquidity ratio is increased. The asset quality and profitability have a negative and significant influence on lending, similar to the results found in Table 5.

The coefficient of loan quality and bank profitability is higher than in Table 5. The coefficient of loan quality is significant at a 1 per cent significance level. In comparison, bank profitability is significant at a 10 per cent significance level in columns 1, 2 and 5 and a 1 per cent significance in columns 3 and 4 Furthermore, the effect of bank size on lending remains the same even after crises, i.e., positive with a 1 per cent significance level. The effect of GDP and lending interest rate on lending remains positive and significant in Table 6. In addition, only column 3 of Table 6 shows a substantial inflation coefficient.

VI. Conclusion and Policy Recommendations

This study examined the effect of capital and liquidity ratio on bank lending from 2006 to 2021 by using panel data from 33 banks in Pakistan and applying the two-step system GMM technique. The results of the study indicate that capital ratios have a positive and significant relationship with bank lending regardless of the type of bank. In contrast, liquidity ratios have a negative relation with lending when all the banks are taken in the sample. It has a positive effect on lending when only domestic banks are considered in the sample. To determine whether this effect remain the same or not after the financial crisis, the results of the post-crisis Liperiod were examined separately. These results suggested that the influence of capital and liquidity ratio on lending was stronger after the crisis period for the whole sample. Furthermore, the study also provided evidence that the influence of liquidity ratio on lending for the domestic banks changed slightly after the global financial crisis sample.

Along with the individual effect of capital ratio and liquidity ratio, this study also examined the interaction effect of capital and liquidity ratios on lending. The result of the study indicated that there is a negative interaction effect between capital and liquidity for the whole sample. However, it is positive when only domestic banks are taken into account in the sample. The interaction term of capital and liquidity suggests that after the financial crisis period, the additional liquidity in banks exerts negative pressure on the effect of bank capital on lending, which means that banks tend to reduce lending with the increase in their liquidity in order to compensate with the changes in capital requirement. Among the macro-specific and other bank-specific variables, bank asset quality and bank profitability have a negative relationship. In contrast, bank size,

GDP growth, lending interest rate, and inflation have a positive relationship with bank lending. These results remain the same during and after the crisis period regardless of the type of banks in the sample.

The results of our study suggest some vital policy implications. Firstly, any policy action to sustain lending by the banks in Pakistan should be congenial to be more effective, i.e., it should keep in view various banks' characteristics and behaviours. Moreover, capital and liquidity requirements changes are mutually inclusive and should be employed harmoniously. Lastly, the negative relationship between non-performing loans and bank lending suggests that regulators should diligently observe and monitor the risk of loan default while devising any policy to increase bank lending.

References

Aiyar, S., Calomiris, C. W., and Wieladek, T., (2016), How does credit supply respond to monetary policy and bank minimum capital requirements?, European Economic Review, 82: 142-165.

Akinlo, A.E., and Oni, I.O., (2015), Determinants of bank credit growth in Nigeria 1980-2010, European Journal of Sustainable Development, 4: 23-30.

Alkhazaleh, A. M. K., (2017), Does banking sector performance promote economic growth? Case study of Jordanian commercial banks, Problems and Perspectives in Management, 15(2): 55-64.

Allen J., Paligovora T. (2015), Bank loans for private and public firms in a liquidity crunch, Journal of Financial Stability, 18: 106–116

Alper, K., Binici, M., Demiralp, S., Kara, H., and Özlü, P., (2018), Reserve requirements, liquidity risk, and bank lending behavior, Journal of Money, Credit and Banking, 50(4): 817-827.

Altunbaş, Y., Di Tommaso, C., and Thornton, J., (2016), Do better-capitalised banks lend less? Evidence from European banks, Finance Research Letters, 17: 246–250.

Anees, Z., Iftikhar, K., and Rizvi, S. Z. A., (2023), Impact of Basel Accord on bank lending: A case study of Pakistani commercial banks, Pakistan Journal of Social Research, 5(1): 381–391.

Arellano, M., and Bond, S., (1991), Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations, The review of economic studies, 58(2): 277-297.

Awdeh, A., (2016), The determinants of credit growth in Lebanon, International Business Research, 10(2): 9, https://doi.org/10.5539/ibr.v10n2p9

Ayieyo, J. O., (2016), Determinants of Lending Behavior in Selected Commercial Banks in Kenya, International Journal of Economics, Commerce and Management, 14(9): 767–782.

Baltagi, B., (2008), Econometric analysis of panel data, John Wiley & Sons.

Basel Committee on Banking Supervision (2011), Basel III: A Global Regulatory Framework for More Resilient Banks and Banking Systems, Bank for International Settlements (BIS) publications.

Bayoumi, T., and Melander, O., (2008), Credit matters: empirical evidence on U.S. macro-financial linkages (No. 8-169). International Monetary Fund, https://www.imf.org/external/pubs/ft/wp/2008/wp08169.pdf

Bernanke, B. S., Lown, C. S., and Friedman, B. M., (1991), The credit crunch, Brookings papers on economic activity, 1991(2): 205-247.

Berrospide, J. M., and Edge, R. M., (2010), The Effects of Bank Capital on Lending: What Do We Know, and What Does It Mean?, International Journal of Central Banking, 10(1): 907-957.

Blundell, R., and Bond, S., (1998), Initial conditions and moment restrictions in dynamic panel data models, Journal of Econometrics, 87(1): 115-143.

Brei, M., Gambacorta, L., and Von Peter, G., (2013), Rescue packages and bank lending. Journal of Banking & Finance, 37(2): 490-505.

Bridges, J., Gregory, D., Nielsen, M., Pezzini, S., Radia, A., and Spaltro, M. (2014). The impact of capital requirements on bank lending. Bank of England, Quarterly Bulletin, 54(1): 103-138.

Bunda, I., and Desquilbet, J. B., (2008), The bank liquidity smile across exchange rate regimes, International Economic Journal, 22(3): 361–386. https://doi.org/10.1080/10168730802287952

Carlson, M., Shan, H., and Warusawitharana, M., (2013), Capital ratios and bank lending: A matched bank approach, Journal of Financial Intermediation, 22(4): 663–687.

Catalán, M., Hoffmaister, A. W., and Harun, C. A., (2020), Bank capital and lending: Evidence of nonlinearity from Indonesia, Journal of Asian Economics, 68: 101199. https://doi.org/10.1016/j.asieco.2020.101199

Chernykh, L., and Theodossiou, A. K., (2011), Determinants of bank long-term lending behavior: Evidence from Russia, Multinational Finance Journal, 15(3/4): 193–216.

Cucinelli, D., (2015), The impact of non-performing loans on bank lending behaviour: Evidence from the Italian banking sector, Eurasian Journal of Business and Economics, 8(16): 59-71.

Dahir, A. M., Mahat, F., Razak, N. H. A., and Bany-Ariffin, A. N. (2019), Capital, funding liquidity, and bank lending in emerging economies: An application of the LSDVC approach, Borsa Istanbul Review, 19(2): 139–148.

Deli, Y., and Hasan, I., (2017), Real effects of bank capital Regulations: Global evidence. SSRN Electronic Journal. https://papers.ssrn.com/sol3/Delivery.cfm/123456789_14852.pdf?abstractid=3017179&mirid=1

Demirguc-Kunt, A., Detragiache, E., and Merrouche, O., (2013), Bank capital: Lessons from the financial crisis, Journal of Money, Credit and Banking, 45(6): 1147–1164.

Diaz, J. F., and Pandey, R., (2019), Factors affecting return on assets of U.S. technology and financial corporations, Jurnal Manajemen dan Kewirausahaan, 21(2): 134-144.

Economic Survey of Pakistan (Various issues): Ministry of Finance, Government of Pakistan

Eswanto, E., Andini, R., and Oemar, A., (2016), Pengaruh Tingkat Suku Bunga Pinjaman, Non-Performing Loan, Dana Pihak Ketiga, Inflasi dan Produk Domestik Regional Bruto terhadap Permintaan Kredit Bank Umum di Jawa Tengah Periode 2009-2013, Journal of Accounting, 2(2): 20–37.

Financial Statements Analysis of Financial Sector (various issues), Statistics and DWH Department, State Bank of Pakistan.

Francis, W. B., and Osborne, M., (2012), Capital requirements and bank behaviour in the U.K.: Are there lessons for international capital standards?, Journal of Banking & Finance, 36(3): 803–816.

Furlong, F. T., (1992), Capital regulation and bank lending, Economic Review-Federal Reserve Bank of San Francisco, (3): 23-33.

Gambacorta, L., and Marques-Ibanez, D., (2011), The bank lending channel: lessons from the crisis. Economic policy, 26(66): 135-182.

Gambacorta, L., and Mistrulli, P. E., (2004), Does bank capital affect lending behaviour? Journal of Financial Intermediation, 13(4): 436-457.

Gambacorta, L., and Shin, H. S., (2016), Why bank capital matters for monetary policy, Journal of Financial Intermediation, 35: 17–29.

Hancock, D., and Wilcox, J. A., (1994), Bank capital and the credit crunch: The roles of risk-weighted and unweighted capital regulations, Real Estate Economics, 22(1): 59–94.

Iftikhar, K., and Iftikhar, S. F., (2018), The impact of the business cycle on capital buffer during the period of Basel-II and Basel-III: Evidence from the Pakistani banks, International Journal of Financial Engineering, 5(04): 1850036.

Iftikhar, K., Imran Khan, M., and Khan, L., (2022), Capital Buffer in The Presence of Market Structure and Business Cycle: An Assessment. Journal of Development and Social Sciences, 3(3): 17– 27. https://doi.org/10.47205/jdss.2022 (3-III) 02.

Imran, K., and Nishat, M., (2013), Determinants of bank credit in Pakistan: A supply-side approach, Economic Modelling, 35: 384–390.

Kapan, T., and Minoiu, C., (2013), Balance sheet strength and bank lending during the global financial crisis, SSRN Electronic Journal. https://doi.org/10.2139/ssrn.2276338

Karim, M. A., Hassan, M. K., Hassan, T., and Mohamad, S., (2014), Capital adequacy and lending and deposit behaviours of conventional and Islamic banks, Pacific-Basin Finance Journal, 28: 58-75.

Kashif, M., Iftikhar, S. F., and Iftikhar, K., (2016), Loan growth and bank solvency: Evidence from the Pakistani banking sector, Financial Innovation, 2: 1–13.

Kim, D., and Sohn, W., (2017), The effect of bank capital on lending: Does liquidity matter? Journal of Banking & Finance, 77: 95-107.

Kishan, R. P., and Opiela, T. P., (2000), Bank size, bank capital, and the bank lending channel. Journal of Money, Credit and Banking, 121–141.

Košak, M., Li, S., Lončarski, I., and Marinč, M., (2015), Quality of bank capital and bank lending behaviour during the global financial crisis, International review of financial analysis, 37: 168-183.

Labonne, C., and Lame, G., (2014), Credit growth and bank capital requirements: Binding or not? SSRN Electronic Journal. https://doi.org/10.2139/ssrn.2417334.

Ladime, J., Sarpong-Kumankoma, E., and Osei, K. A., (2013), Determinants of bank lending behaviour in Ghana, Journal of Economics and Sustainable Development, 4(17): 42-47.

Laidroo, L., (2014), Lending growth and cyclicality in Central and Eastern European Banks, TTU Economic Research Series.

Moussa, M. A. B., and Chedia, H., (2016), Determinants of bank lending: Case of Tunisia, International Journal of Finance and Accounting, 5(1): 27-36.

Mutarindwa, S., Schäfer, D., and Stephan, A., (2020), The impact of liquidity and capital requirements on lending and stability of African banks. Journal of International Financial Markets, Institutions and Money, 67: 101201.

Olokoyo, F. O., (2011), Determinants of commercial banks' lending behavior in Nigeria. International Journal of Financial Research, 2 (2), https://doi.org/10.5430/ijfr.v2n2p61

Olszak, M., Pipień, M., and Roszkowska, S., (2014), The impact of capital ratio on lending of EU banks – the role of bank specialisation and capitalisation. Equilibrium Quarterly Journal of Economics and Economic Policy, 11(1): 43, https://doi.org/10.12775/equil.2016.002

Olusanya, S. O., Oyebo, A. O., and Ohadebere, E. C., (2012), Determinants of lending behaviour of commercial banks: Evidence from Nigeria, a co-integration analysis (1975-2010), Journal of Humanities and Social Science, 2(1): 125-135.

Polizzi, S., Scannella, E., and Suárez, N., (2020), The Role of Capital and liquidity in bank lending: Are Banks safer? Global Policy, 11: 28-38.

Pradhan, R. P., Arvin, B. M., Norman, N. R., and Nishigaki, Y., (2014), Does banking sector development affect economic growth and inflation? A panel cointegration and causality approach, Applied Financial Economics, 24(7): 465–480, https://doi.org/10.1080/09603107.2014.881968

Rabab'ah, M., (2015), Factors affecting the bank credit: An empirical study on the Jordanian commercial banks, International Journal of Economics and Finance, 7(5): 166–178.

Stepanyan, V., and Guo, K., (2011), Determinants of bank credit in emerging market economies, IMF Working Paper, 11(51): 1. https://doi.org/10.5089/9781455218035.001

Thornton, J., and Di Tommaso, C., (2019), Liquidity and capital in bank lending: Evidence from European banks. Finance Research Letters, 34: 101273. https://doi.org/10.1016/j.frl.2019.08.021

Van Dan Dang, N., (2021), Bank Liquidity and Lending Behavior: Evidence from the Vietnamese Banking System, International Journal of Business and Society, 22(1): 240–256, https://doi.org/10.33736/ijbs.3173.2021

Vazquez, F., Federico, P., (2015), Bank Funding Structures and Risk: Evidence from the Global Financial Crisis, Journal of Banking and Finance, 61: 1-14.

Wasim, SZ., Iftikhar, K. and Rizvi, SZA (2023), Does financial inclusion catalyse trade, International Journal of Financial Engineering, 10: (3).

Wasim, SZ., Iftikhar, K. and Rizvi, SZA, (2022), Relationship between Financial Inclusion, Trade, and Economic Growth, Pakistan Journal of Social Research 4 (03): 675-684.

World Development Indicators, Retrieved from the World Bank website, http://databank.worldbank.org/data/source/world-development-indicators

APPENDIX

TABLE A-1

List of Banks Name

Al-Baraka Bank (Pakistan) Ltd.	Allied Bank Limited
Askari Bank Limited	Bank Al Falah Limited
Bank Al Habib Limited	Bank of Khyber Limited
Bank of Punjab Limited	Bank of Tokyo-Mitsubishi Ltd. (MUFG Bank Ltd.)
BankIslami Pakistan Limited	Barclays Bank PLC, Pakistan
Burj Bank Limited	Citibank N.A.
Deutsche Bank A.G.	Dubai Islami Bank Pakistan Ltd.
Faysal Bank Limited	First Women Bank Ltd.
Habib Bank Limited	Habib Metropolitan Bank Limited
Industrial and Commercial Bank of China	J.S. Bank Limited
KASB Bank Limited	MCB Bank Limited
Meezan Bank Limited	MIB Bank
National Bank of Pakistan Limited	NIB Bank Limited
Samba Bank Limited	Silk Bank Limited
Sindh Bank Limited	Soneri Bank Limited
Standard Chartered Bank (Pakistan) Ltd.	Summit Bank Limited
United Bank Limited	

Source: List of scheduled banks, State Bank of Pakistan.