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Impact of Basel III Ratio on Banking Sector of Pakistan

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Abstract

To overcome the lack of Basel II, the Basel committee introduced new regulations, Basel III, where the capital adequacy is 8%, but with this, maintaining leverage ratio and liquidity coverage ratio is also necessary. The study consists of Pakistan's five conventional and Islamic banks. However, this unique business model and capital structure of the Basel Committee ignore the large sector of Islamic banks, and the same structure is implied in both entities. The same banking regulation on different types of banks has different impacts on the profitability, cost efficiency, and performance of banks in Pakistan. The study collectively analyzed the effect of CAR and LR on profitability and cost efficiency on the financial performance of both banks. The data utilizes 10 top banks and the data from 2017 to 2023 when Basel III was implemented. For estimation, particularly focusing on the Husman effect, we find that Islamic and conventional banks handle risk and reward in asset-based lending differently, and how this affects the operational and financial stability of each banking type. The results emphasize the necessity of modified approaches that fit their contexts and customer preferences. It is advised that Islamic banks create innovative financial products to diversify their revenue streams beyond conventional income models to increase profitability while complying with the Islamic Shariah board.

Keywords: Capital adequacy ratio, leverage ratio, Basel III, return on asset, return on equity, cost-to-income ratio, overhead-to-asset ratio.

Introduction

Basel III is the newest and the 3rd development of the Basel Accords and is a global regulatory standard issued by the BCBS on capital adequacy (including a new leverage ratio and capital buffers), market liquidity risk (with short-term and long-term liquidity ratios), and stress testing focusing on stability. The G-20 agreed on the Basel III reforms to global regulatory standards in November 2010 and the Basel Committee on Banking Supervision published them in December 2010 (Committee on Banking Supervision, 2010). The Basel III framework aims to strengthen the safety and stability of the banking sector. It emphasizes the quality and quantity of the capital, leverage ratio, liquidity standards, and improved transparency. State Bank Pakistan gradually implemented Basel III in Pakistan, starting in Dec 2013, and was fully implemented by 2019. As it was fully implemented by 2019 and just after COVID-19, the impact of Basel III on the bank's performance did not show desired results because of the restriction imposed by the SBP on the banks as a preventive measure. Many studies are conducted to analyze Basel III globally, including Pakistan in their population measure, but not a single study is conducted only on Pakistan’s bank to determine its performance, cost efficiency, and risk associated with its liquidity. The data sometimes shows the perfect performance of Islamic banks because of riba. On the other hand, conventional banks' performance is highly impacted by interest-bearing instruments to maintain their capital requirements. Performance of Islamic and Conventional Banks The impact of the Basel III study shows that in some cases Islamic banks perform well because of shariah compliant product line, but in some scenarios, conventional banks have shown good performance because of interest-bearing factors, but they ignore the risk factor which may show a boarder view of the performance of Islamic and conventional banking (Hussain & Muhammad, 2022). In your study, we only focused on Pakistan’s banking sector, both conventional and Islamic banks, and

included financial risk in our study, i.e., credit risk, liquidity risk, and funding risk. Basel III also tries to fix some of the problems that were found in Basel I and II. COVID-19 hit the world so badly that the implementation of Basel III was also affected by it because of the regulatory changes during the pandemic (K. B. M. Rajibul Hasan & Gagan Pareek, 2022). Thus, now we can understand the full impact of Basel III and its regulations which affect the performance, profitability, and risk efficiency of the banking sector. This study aims to increase the quality and quantity of capital, enhance risk sensitivity, take new measures to limit excessive leverage, and maintain liquidity requirements. This study would also benefit economic development in the long run by increasing financial system credibility and efficiency. In the short run, Basel III would have certain transitional costs, such as decreased credit supply, higher interest rates, and reduced GDP growth while banks adjust to the revised regulations. The objective of this study is to estimate the impact of Basel III ratios on performance, such as:

1. To analyze the impact of the total capital ratio on a bank's profitability,
2. To determine the impact of the leverage ratio on the cost-to-income ratio and overhead-to-asset ratio.

Literature Review

A country’s financial system is crucial for its economic growth. It involves financial markets and intermediaries that transfer funds from savers to borrowers who can use them more productively. This creates money and generates risk, which requires regulation (Shakdwipee Pushpkant & Mehta Masuma, 2017). Regulating bank capital is essential for the system. This is because banks have two main ways of funding their activities. One is borrowing money, which means they too must pay back their lenders or risk going bankrupt. The other is using their own money (equity), which gives them more cushion if their assets lose value. The more equity a bank has, the more likely it can survive tough times and meet its obligations (Burhouse,

2003). The international financial markets faced many disruptions, such as the Herstatt crisis of June 26, 1974, and the collapse of the Bretton Woods system. To deal with the fallout, the G-10 countries set up a permanent committee at the Bank for International Settlements (BIS) in 1975, named the Basel Committee on Banking Supervision (Committee on Banking Supervision, 2014). This committee later created the Basel Accords, which are supervisory standards and guidelines and statements of best practice for banks. The committee's decisions are not legally binding. The fundamental component of any country's economy is its banking sector. The failure of the banks would be extremely disastrous for the economy. The 2007–2009 global financial crisis brought to light the causes of the bank's failure. The potential risk of maturity mismatch and additional risk factors are the primary cause of bank failures. On the bank balance sheet, there is an unstable funding mix. This demonstrates the need to alter the legislative and supervisory framework for managing bank liquidity. Basel III will help reduce bank failures and increase bank stability through a combination of structural liquidity and capital adequacy. The Basel III's capital structure or liquidity cushion enhanced the financial stability of the banking sector (Saba et al., 2017). The interrelationships between Basel capital regulation risk and efficiency in Pakistani banks from 1995-2015. The study found that Basel capital regulation is treated differently to both variable risk and the efficiency of the bank. Basel II is more successful than Basel I in reducing risk and increasing its financial stability and efficiency (Bashir & Hassan, 2017). In the new Basel III Accord, capital requirements have been strengthened to prevent excessive risk taken by banks. This result suggests that commercial banks reduce the risk of their asset portfolios in response to strict risk-based capital requirements. The variables used in the analysis are regulatory measures regarding bank capital, capital adequacy ratio, portfolio risk of bank assets, and the ratio of risk-weighted assets to total assets. Bank asset portfolio risk is effectively decreased by Basel III's risk-based capital

regulation (Ashraf et al., 2016). Basel standards were created to improve how banks and other financial institutions manage their risk profiles. Now, a newer and more advanced version of Basel II known as "Basel III" has entered the market, which is expected to make the banking system more stable and resilient to disturbances. Basel rules, if fully implemented, will completely alter the regulatory environment of the global economy (Kaur & Kapoor, 2015). A study of Basel III disclosure compliance in emerging markets. This is based on his three market variables: size, leverage, and profitability of listed banks. For Basel disclosures, size was found to be the most influential factor for each of the three categories of independent factors, followed by profitability and level of financial leverage. It is important for all banks, regardless of size, to leverage their strengths to withstand the ongoing economic crisis while preventing it from turning into a true financial crisis (Thomas et al., 2023). Some of the research which was conducted to find out the impact of Basel III compliance on different diversions, most of it focuses on a bank's size, risk, profitability, leverage ratio, its liquidity and cost efficiency and its overall effect on financial distress and banks' performance. The Basel III Standard requirement encourages banks to hold elevated levels of capital and limit leverage. Its purpose is to increase the quality and quantity of capital that banks must hold or acquire to reduce their financial risks. The Basel III reforms make sure that every bank that operates internationally has a strong and reliable cushion of capital that can withstand losses in times of economic turmoil.

H1: Total Capital Adequacy ratio has a significant impact on the' Banks profitability.

They also measure additional risk-based capital, that is leverage, which makes it a lengthy process for banks. Last Basel III requires which facilitate the banks in a time of need to facilitate economic recovery (King et al., n.d.). As Islamic banks already have higher capital and core capital elements such as equity and retained earnings, an increase in capital requirements may

not affect their performance. On the other hand, conventional banks before Basel requirements use a high level of debt financing and less equity. So, requirements of Basel requirements may raise the financial cost to maintain high equity and lower its profitability (Zins & Weill, 2017).

H2: Leverage ratio has a significant impact on the' Banks performance.

Liquidity risk also adversely affects banks' performance. Similarly, Islamic banks also maintain their liquidity according to its unique value and operation under the shariah compliant principle. Thus, it is hypothesized that requirements of the Basel III requirement must have a positive impact on Islamic banking and increase its performance and risk more efficient than conventional banks.

Research Methodology

This study is based on quantitative data extracted from the financial statements of banks. It is based on financial ratios. There is an analysis of Islamic and conventional banks to see how Basel III impacted their profitability, cost efficiency, and risk associated with their liquidity. Islamic Banks have different performance or profitability because of shariah-compliant products and exemption of interest-bearing instruments. This research depends on the financial ratios and further analysis of the correlation among the variables. The population of this study is all the banks, but we include only (HBL, UBL, NBP, ABL, Alfalah Bank, Meezan Bank, Bank Islami, Albaraka Bank, Dubai Islamic Bank, Fasal Bank) five Islamic banks, and five conventional banks. Basel III requirements (Total capital ratio, leverage ratio, and liquidity ratio) were mentioned by BSCS in 2013. The formulas and minimum capital requirement under BSCS are as follows (Hussain & Muhammad, 2022):

Total Capital Ratio = (TierI+ Tier II)/ Risk Weighted Asset = 8%

Leverage Ratio = Capital Exposure/ Exposure Measure

Liquidity Coverage Ratio = High Quality Liquid Asset/ Net Cash Flow of 30 days = 100%

The research may be helpful to the banks, aware of the impact of Basel III in this challenging environment. For this study, secondary data will be used. It is easily gathered from the website of the State Bank of Pakistan and the financial statements of these banks. Two independent variables are Total Capital, i.e., Capital Adequacy Ratio and Leverage ratio, and cost-dependent variables are ROA, ROE, cost-to-income ratio, and overhead-to-asset ratio.

Calculation of the ratios used in the study

Ratio	Abbreviation	Formula	Remark	Source
Profitability Ratio				
Return on asset	ROA	ROA= Net profit after taxes/total asset	Higher the ROA Higher will be the firm's financial performance and better asset's utilization.	(Lawrence J. Gitman, 2012) (Al-Hares et al., 2013)
Return on equity	ROE	ROE= Net profit after taxes/owner's equity	Higher the ROE the greater the firm's performance	(Lawrence J. Gitman,2012) (Al-Hares et al., 2013)
Cost efficiency ratio				
Cost to income ratio	CIR	CIR= Operating expense/operating income	It is essential for creditworthiness and how efficiently banks operate	(Saba et al., 2017)
Overhead to asset ratio	OVTA	OVTA= operating expense/taxable interest income +operating income	An efficiency measurement that compares a company's operating expenses (overhead cost) to its total assets.	(Will Kenton, 2021) (Ali Khrawish & Mousa Al-Sa, n.d.)

The table above shows all the calculations of ratios used in this study. This study compared the financial indicators (profitability and liquidity) of Islamic and conventional regions of HBL Pakistan, considering the impact of Basel III standards. Therefore, in addition to profitability and liquidity calculations, calculations according to the BASEL III standard are also used (Bibi & Mazhar, 2019). A descriptive statistic is a summary statistic that quantitatively defines or examines every aspect of a set of data, whereas descriptive statistics is the process of employing and evaluating those statistics. EViews software will be used in this study, as it is used in panel

data. The techniques applied in it are regression and augmented dickey fuller Test. Regression is a statistical approach for determining the strength and type of connection between one dependent variable and a set of independent variables.

Analysis

Variables	ADF	Prob
CAR	30.3616	0.0000
LR	37.4460	0.0000
ROA	21.4214	0.382
ROE	7.56500	0.9998
CIR	7.49069	0.3594
OVERTA	22.3001	0.0000

The Augmented Dickey-Fuller test is used to test the unit root test of time series data. The significant p-value ($p<0.05$) shows that the data is stationary. The Leverage ratio has the highest value of ADF, i.e., 37.44 with a 0.00 probability, which is exactly less than 0.05, and the lowest score is 7.49 with 0.99 belonging to the cost-to-income ratio. The leverage ratio's highest value indicates a bank's ability to meet its short-term obligations. At the same time, the lowest cost-to-income ratio indicates that banks maintain their cost efficiency. The capital adequacy ratio and overhead to asset ratio have a high ADF, indicating that banks have enough capital to ensure their potential losses.

	Mean	**Median**	**Max.**	**Min.**	**Std. Dev.**	**Skewness**	**Kurtosis**	**Jarque-Bera**	**Probability**	**Sum**	**Sum.Sq.Dev.**
CAR	0.177415	0.168850	0.398300	0.001560	0.046131	1.046159	11.53332	225.1529	0.000000	12.41906	0.146838
CTIR	0.525991	0.534150	0.939800	0.103900	0.119309	-0.05924	5.712730	21.50441	0.000021	36.81940	0.982191
LR	0.046789	0.044300	0.076500	0.024600	0.010628	0.928633	3.809089	11.97019	0.002516	3.275200	0.007793
OVERTA	0.394991	0.409100	0.799200	0.113000	0.161775	0.184407	2.525164	1.054356	0.590268	27.64940	1.805813

ROA	0.010506	0.009950	0.030200	0.001000	0.004708	1.082305	6.026387	40.43292	0.000000	0.735400	0.001529
ROE	0.032029	0.018450	0.316700	0.010600	0.040763	5.138591	35.25334	3342.203	0.000000	2.242000	0.114653

The descriptive statistics of all the banks would either be Islamic banks or conventional banks. For each variable for all banks, the table shows the mean, median, standard deviation, kurtosis, skewness, and Jarque bar test. We observe a different significance in the data. The capital adequacy ratio has a maximum value of 0.39 and a minimum of 0.001 and, positively skewed, it shows that the data is not desirably distributed whereas CITR is slightly positively skewed where all measures of the central tendency are equal. On the other hand, LR is positively skewed. Another statistical measure of kurtosis refers to the degree of presence of outliers in the distribution, which measures financial risk as well. CAR, CITR, and LR are leptokurtic, which is K >3, which shows a high level of risk but the possibility of higher returns. Whereas Jarque's bare probability of all the variables is normally distributed and rejects the null hypothesis. We also find great variation in the data. This is because of the size of the banks (Hussain & Muhammad, 2022).

	CAR	**CR**	**CTIR**	**FR**	**IIER**	**LCR**	**LR**	**NIM**	**NPL**	**OVTA**	**ROA**	**ROE**
CAR	1.000000											
CIR	-0.273733	0.191169	1.000000									
LR	-0.051963	-0.137940	-0.004207	0.106962	-0.013970	-0.118809	1.000000					
OVERTA	-0.249397	-0.183673	0.309993	0.368252	0.033996	-0.054295	-0.187321	0.017981	0.005015	1.000000		
ROA	0.320923	-0.089792	-0.610840	-0.167364	-0.247898	0.111736	-0.193526	0.039787	-0.008467	-0.173565	1.000000	
ROE	-0.023434	-0.096767	-0.060062	0.200431	-0.103871	0.100987	-0.170944	0.026708	0.064534	0.032164	0.028853	1.000000

The capital adequacy ratio is positively correlated with ROA and negatively correlated with CTIR, LR, OVERTA, and ROE. The cost-income ratio is positively correlated to OVERTA and negatively correlated with LR, ROA, and ROE. The leverage ratio is negatively correlated with OVERTA, ROA, and ROE. Overhead to asset ratio is positively correlated with ROE and negatively correlated with the ROA. Return on asset and return on equity both are positively correlated to each other.

Variable	Fixed	Random	Probability
ROA	0.010590	0.014042	0.0445
	0.193626	0.120560	0.0337
ROE	0.176357	-0.057734	0.0001
	-1.829564	-0.750576	0.3502
CIR	-0.123451	-0.378178	0.0054
	-4.194657	-2.463944	0.0105
OVERTA	-0.374307	-0.492746	0.0198
	-1.081290	-1.130365	0.9365

For regression, we used the least square method of panel data analysis for the Husman effect on the variables. We checked the effect or relationship of dependent variables or independent variables on each other. We have a total of four variables that are dependent on the other two independent variables. Through this, we analyzed the profitability and cost efficiency of the bank. According to the data shown in Table 1, ROA has a significant effect on the capital adequacy ratio and leverage ratio with a probability of less than 0.05. The ROA has a fixed effect of 0.015090, which is less than the random effect, so if you accept the fixed effect. On the other hand, ROE has a significant effect on the CAR. In ROE, the random effect -0.05734 is negative but significant, so we accept the random effect for all the two variables. This result is consistent with those of (Ravindu Dananjaya Joseph, 2021) and ROE has a fixed positive strong effect which indicates significant profit must be earned by the shareholder, whereas a random model shows a negative value, suggesting a variability in returns among different entities. The extremely low probability of 0.0001 of both the banks being either conventional

or Islamic. ROE shows a negative fixed and random effect on the leverage ratio and the probability of 0.3502, which is higher than the $p<0.005$, which suggests there is an insignificant and negative relationship. This indicates financial instability, insolvency, and a company operating with negative equity. According to (Bahadur Budhathoki et al., 2020), ROE and NIM hurt banks' leverage. To analyze the fixed effects and random effects results along with their related probabilities, to analyze the link between the Cost to Income Ratio (CIR) and the two financial ratios: Capital Adequacy Ratio (CAR) and Leverage Ratio (LR). There are statistically significant correlations between the Cost to Income Ratio and all two ratios (CAR and LR). The cost-to-income ratio has no significant random or fixed effect but a significant probability of less than 0.05. Again, the leverage ratio has no random or fixed effect but a significant probability of 0.0105. Furthermore, CAR and LR tend to decline as the CIR rises, indicating a decrease in operational efficiency. This suggests that banks with high operational costs relative to income may be less leveraged (lower LR), and less capitalized (lower CAR). In contrast to the random effects, which imply variations in individual bank behaviors resulting from different operational contexts or strategies, the fixed effects show direct implications. Improving CIR may be essential for enhancing the general state of the financial system, including capital adequacy and leverage ratios. This result is consistent with those of (Jagirani et al., 2023) and (Bitar et al., 2018). The overhead-to-asset ratio and the CAR have a negative relationship, according to both fixed and random effect models. We accept the fixed effect, which is less than the random effect. In particular, the CAR is predicted to fall by 0.492 for the random impact model and 0.374 for the fixed effect model for each unit increase in the overhead to assets. The probability of the CAR is statistically significant. This implies that the CAR is significantly impacted by the overhead-to-asset ratio.

The fixed effect and random effect coefficients are both negative, indicating that the leverage ratio tends to decline when the overhead-to-asset ratio rises. This suggests that a lower level of financial leverage could result from higher overhead costs relative to assets, which would mean that banks would be depending less on debt financing relative to their assets. As Islamic banks have asset-based financing, it is not efficient to meet its leverage ratio. The probability of leverage ratio is not statistically significant (Hussain & Muhammad, 2022).

Conclusion

In this study, we are investigating the impact of Basel III on profitability and cost efficiency on the performance of the bank, either a conventional bank or an Islamic bank. Basel III regulations under the supervision of SBP of Pakistan imply both types of banks currently working in Pakistan. The results show that ROA significantly improves capital adequacy, leverage, and liquidity ratios, emphasizing the importance of profitability in preserving a sound financial structure in both conventional and Islamic banks. On the other hand, ROE shows a negative link with leverage ratios, suggesting instability in the financial system, especially for Islamic banks. This inverse relationship implies that Islamic banking's generally high operating costs and low-interest revenue may hinder profitability, which would then impact equity and general financial soundness. The data demonstrates that a higher Cost to Income Ratio (CIR) has a negative correlation with CAR and LR, suggesting that banks who have higher operating expenses in comparison to their revenue are less able to manage their capital and leverage. This result is consistent with earlier research demonstrating the importance of operational effectiveness for financial stability. The consequences for Pakistan's Islamic and conventional banks are significant; raising overall financial performance requires increasing cost-effectiveness. The fact that LCR appears to have been ignored in this regard reinforces the need for improved liquidity management procedures, particularly in stressful economic

circumstances. The findings suggest that banks, particularly Islamic ones, face unique challenges that require effective and efficient capital management and liquidity while maintaining profitability, particularly considering Pakistan's current economic condition, which is marked by shifting interest rates and regulatory changes. Basel III's requirement that banks maintain high-quality liquid assets presents additional obstacles to profitability, highlighting the delicate balance that banks must walk between meeting regulatory compliance and the financial performance of the bank.

Recommendation

There is evidence that the different ways that conventional and Islamic banks manage risk and return on asset-based lending have an impact on the operational and financial health of each. This emphasizes the necessity of strategies that fit specific frameworks and market expectations. Islamic banks should think about creating new financial products to diversify their sources of revenue beyond traditional income spread to increase profitability while preserving Islamic investing standards.

It is necessary that both Islamic and conventional banks in Pakistan concentrate on the following to increase the banking sector's resilience and adaptability in dealing with economic uncertainties:

1. Enhancing the capital adequacy ratio, leverage ratio, and liquidity coverage ratio by strengthening cost management procedures and by decreasing the cost-to-income ratio.
2. Improving liquidity management plans efficiency, particularly in the context of the rising non-performing loan rate.

3. Promoting innovative banking solutions that satisfy consumer demands and meet legal requirements, particularly for Islamic banks negotiating specific ethical challenges.

4. These findings provide a valuable foundation for future research to build upon.

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