Impact of Financial Risk on Financial Performance of Banks in Pakistan; the Mediating Role of Capital Adequacy Ratio

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ARTICLE DETAILS	ABSTRACT
History *Revised format: May 2020* *Available Online: June 2020*	Financial risks, cover credit, liquidity and operational risks, are the risks which banks face during their operations and all these risks have severe impact on the profitability of banks. The Basel Committee for Banking Supervision (BCBS) introduces Capital Adequacy Ratio (CAR) to overcome uncertainties and possible losses (Risk) to the banks. In this context, the aim in this study is to identify impact of financial risk on financial performance of banks in Pakistan with mediating role of Capital Adequacy Ratio (CAR). The findings show that credit and liquidity risks have negative relationship with financial performance, whereas operational risk has a positive relationship with financial performance and capital adequacy ratio of banks in Pakistan. This study is useful in devising the rules and regulations by the regulators (Basel Committee and State Bank of Pakistan) for risk measurement and management by the banking sector.
Keywords *Operational risk, Credit risk, Liquidity risk, Capital adequacy ratio, Financial performance*	
JEL Classification *G11, G14*	

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1. Introduction

Banks operate under a number of rules and regulations, where one of the regulations is to maintain a specific level of capital, the capital requirement can be in the shape of Capital Adequacy Ratio (CAR) or Minimum Capital Requirement (MCR). The capital related requirements are basically the buffer against financial risks faced by the financial institutions particularly by the banks. Under these regulations, banks can properly manage their risks and try to maximize their profit. The risk management departments were created in banks, where the main role of the department is to identify, measure and manage the financial risks.

Nowadays businesses face different challenges in their operations, where financial risk is one of the many challenges.

The banking sector of Pakistan is also facing uncertainties in their daily operations. One of the benefits of regulations is that these make banks better able to bear financial losses. CAR is a tool to assess and mitigate the future losses by the banks where they hold a portion of their capital against expected losses. In current challengeable and uncertain environment banks face two categories of risks, such as financial and non-financial risks. In this study, the focus is on the financial risks such as Credit Risk (CR), Operational Risk (OR) and Liquidity Risk (LR) to be faced by the banks in Pakistan.

A stable banking sector plays a main role in financial development of a country, but the banks are also exposed to several risks. According to Ali, Akhtar & Ahmed (2011) banks are exposed to various sorts of risks with various sizes and levels, where the main are financial risks, which influence the progress of banks. The classic objective of the management is to increase shareholders' wealth, so in order to safeguard shareholders' interest the banks' management should evaluate the cash flows and the unexpected risks pertaining to these cashflows by using different standard financial techniques and advanced risk prediction models.

Since past many years Pakistani financial system is facing many challenges and have rapid changes, where the banks are properly monitored by the State Bank of Pakistan (the apex regulator). The State Bank of Pakistan (SBP) tries to devise effective regulations and practices for the banks, but the banks' management due to some interests (which can be due to agency problem) try to manipulate the rules set by SBP (Haneef et. al, 2012). The regulator has also devised strict governance related regulations to address this issue. SBP is more concerned about the financial risks because in the current environment financial institutions have more exposed to financial risks than ever before. Even for the banks risk management plays a center role between cost minimization and profit maximization and it affects the financial performance of an institution. Most of the banks in Pakistan have risk management departments and their key role is to evaluate financial risk and to devise policies in order to eliminate these risks. Due to the reason the role of the regulator (in case of Pakistan that is SBP) has increased manifold.

The SBP constantly tries to make regulations to manage financial risks which are threatening to the stability of the banks and subsequently the whole financial system. Banks in Pakistan have to implement the risk management practices which have been introduced time to time by Basel Committee for Banking Supervision (BCBS) and SBP. One of the key risk management tools is to maintain CAR to counterfeit risks such as legal, credit, operational, IT, economic, Interest rate, liquidity etc. The management's main responsibility is to identify, evaluate, quantify, mitigate and monitor the risks at every level of banking operation. The SBP monitors and facilitates all the banks to do these activities and provides proper guideline in all the aspects. Banks also follow regulations related to these risks but still there are many loopholes in risk management practices by banks. The issue of financial risk management is very relevant in the context of Pakistan, but these risks and their relationships with the financial performance with the mediating role of the CAR have not been analyzed earlier. The focus of the study is to identify the relationship between financial risk and performance of the banks and to check how the CAR (a key risk management tool) mediates this relationship in the context of Pakistani banking sector.

The role of CAR as an effective risk management tool has been identified but no study exists which analyzes the mediating role of CAR in the relationship of risks and performance of the banks. Based on the above discussion the study has following objectives:
   a) To analyze the impact of financial risks on financial performance of the banks in Pakistan.
   b) To know whether Capital Adequacy Ratio mediates the relationship of financial risks and financial performance of the banks.

2. Literature Review
Financial risk is defined as uncertainty of the future financial outcomes which can influence the profitability and targets of the institutions. Financial risk is the major risk category which severely affects performance of the financial institutions. Li & Zou (2014) found that banks are exposed to several risks like: credit, liquidity, operational, reputational and legal. Each of these risks harmfully affects the cashflows of the institutions. Adeusi et.al, (2014) also identified that there are six types of banks' related risks.: credit, market, operational, liquidity, reputational and legal risks, which can affect the cashflows and profitability, thus subsequently affect the shareholders' wealth in negative ways.

Credit Risk (CR) is defined as counterparty or default risk on loans/ advances by the banks, which is very critical for the banks' financial performance as it is dependent upon the advances-base of the banks. If the advances are not collected properly so it can be a genuine danger to the operations of banks. The relationship between CR and performance has been established by Bhattaria, (2016) and Rahim (2013). According to Li & Zou (2014) the default of several clients on loans may bring about a large misfortune for banks. CR has been recognized by Basel Committee of Banking Supervision (BCBS) as a primary risk faced by the financial institutions even in the earlier phase of development of the Basel Accords.

According to Haneef et. al (2012) liquidity of banks can also affect the performance of the banks. Liquidity Risk (LR) basically originates due to the weak deposit base of a bank. Shen et.al (2009) found the importance of LR for the banks and recommends the ways to mitigate the risk. According to Moosa & Li (2013) Operational Risk (OR) is originated due to people, processes/ procedures and technology. It was not until the mid-1990s (due to the collapse of Barings Bank) that the term 'operational risk' was originated. According to Haneef et. al (2012) the BCBS incorporated this risk in Basel Accord II. Blunden (2014) identified that the OR can be damaging for the banks and can even cause the collapse of the institutions. Kallenberg (2009) found that the OR can be very expensive for the banks, as it is very difficult to mitigate this risk, but it has severe negative affect on cashflows of the banks in short run.

Effective management of risks is of a very much importance in safeguarding the cashflows and also the financial performance. There are a number of risk management tools available with the banks, where the key tool is Capital Adequacy Ratio. As indicated by Li & Zou (2014) capital adequacy requirement is basically the minimum amount of capital which a bank holds as required by a regulatory body. This guarantees the investors that the banks hold enough capital as a safeguard against all types of financial risks. This ensures that the banks have enough capital as buffer against risks (Noman et. al, 2015). Li & Zou (2014) found that CAR is a percentage of capital maintained by the banks against the risk weighted assets of the banks. The ratio is calculated as the total capital to risk weighted assets of the banks. Overall, two types of capital, Tier 1 and Tier 2 capital, are measured for use in the calculation of CAR. Capital is considered key to absorb the risks posed by a number of factors, which affect the financial performance and cashflows of the banks. As indicated by Zhang & Daly (2014) Return on Assets (RoA) is affected by the capital quality of the banks. Large banks normally maintain high level of capital; thus, size affects the CAR of the banks and subsequently the performance in positive manner of that large size banks (Li and Zou, 2014).

2.1 Theoretical Framework
In this study we check the impact of financial risk on performance of banks in Pakistan with mediating role of CAR (a risk management tool). The dependent variable is financial performance while the independent variable is financial risk, where the financial risk includes CR, LR and OR. CAR is used as a mediating variable, whereas bank size is used as a control variable. Return on Asset (RoA) can be used as a measure of financial performance as also used by earlier studies like the studies of Adekunle et. al (2014), and Adeusi et. al (2014). While to measure CR we use leverage ratio (Total debt/total equity) as also used by Aslam et. al (2016) and Li & Zou (2014), total cash to total assets is used to measure LR as also used in earlier studies, while for measuring the operational risk we use return on total assets following earlier studies, and the mediating variable of CAR is measure through the ratio of Tier 1 Capital + Tier 2 Capital / Risk Weighted Assets, size is calculated as natural logarithm of total assets.

2.2 Econometric Equations
The study uses Baron and Kenny (1986) four steps approach, where the equations are:

$$RoA = \beta_0 + \beta_1 CR + \beta_2 LR + \beta_3 OR + \text{€} \qquad \text{(Eq. 1)}$$
$$CAR = \beta_0 + \beta_1 CR + \beta_2 LR + \beta_3 OR + \text{€} \qquad \text{(Eq. 2)}$$
$$RoA = \beta_0 + \beta_1 CAR + \text{€} \qquad \text{(Eq. 3)}$$
$$RoA = \beta_0 + \beta_1 CR + \beta_2 LR + \beta_3 OR + \beta_4 CAR + \text{€} \qquad \text{(Eq. 4)}$$

3. Methodology
This study uses nine years of financial statements data from ten commercial banks collected form the official websites of the banks. The dependent variable is Return on Asset (RoA) and independent variables are CR, OR and LR, where CAR is taken as a mediating variable and control variable is bank size. Operationalization of the variables are

mentioned in Table 1.

Table 1: Measurement of Variables

Concept	Variables	Indicator	Measurement
Financial Risk	Credit Risk	CR	Total Debt/Total Equity
	Liquidity Risk	LR	Total Cash /Total Assets
	Operational Risk	OR	Net Income /Total Assets
Financial Performance	Return on Assets	RoA	Net Profit before Tax/ Total assets
Capital Adequacy	Capital Adequacy Ratio	CAR	Tier 1 Capital + Tier 2 Capital / Risk Weighted Assets
Control variable	Size		Natural Logarithm of Total Assets

4. Empirical Results, Analysis and Interpretation

The table 2 shows the descriptive statistics. The average mean of profitability (as proxied by RoA) is 14.7 percent and average means of CR, OR and LR are 0.9117, 0.0148 and 0.0907 respectively. Whereas average bank size is 26.8639 and CAR on average is .1389.

Table 2. Descriptive Analysis:

	Mean	Std. Deviation	N
Return on Assets	.0147	.00865	90
CR	.9117	.04818	90
LR	.0907	.02719	90
OR	.0148	.00824	90
CAR	.1389	.03659	90
Size	26.8639	.59922	90

Regression Equation Step 1: *Direct Relation*

Financial Performance= β0+ β1credit risk $_+$ β2liquidity risk$_+$ β3Operational risk$_+$ €

Table 3: Regression Analysis

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.001	.004		-.311	.756
	CR	.000	.004	-432	5.087	.052
	LR	.002	.006	-.006	.301	.764
	OR	1.036	.023	.988	45.630	.000
	R Square	.972	Adjusted R^2	.971		

a. Dependent Variable: Return on Assets

R square shows that 97.2 percent of the variation in ROA is explained by this model. Results also show that CR has significantly negative relationship with ROA of the banks in Pakistan, the LR has also negative relationship with ROA, but the relationship is insignificant, where the previous researchers also found the same relationship in their studies such as Ali at. al (2011) and Poudel (2012). The OR has a significantly positive relationship with ROA.

Regression Equation Step 2: *Independent Variable and mediating variable*

Capital Adequacy Ratio= β0+ β1credit risk + β2liquidity risk+ β3Operational risk+ €

Table 4: Regression Analysis

Model	Unstandardized		Standardized	t	Sig.
	B	Std. Error	Beta		
(Constant)	.148	.078		1.897	.061
CR	-.024	.083	.032	-.291	.047
LR	-.223	.124	.166	-1.791	.077
OR	2.221	.472	.501	4.705	.000
R Square	.324	Adjusted R^2	.300		

a. Dependent Variable: Capital Adequacy Ratio

The table 4 shows that 32.4 % variation in ROA is explained by this model. The results show that CAR has significant positive relationship with CR and OR, whereas has insignificant positive relationship with LR.

Regression Equation Step 3: *Independent variables and mediating variable*

Financial Performance= β0+ β1CAR+ €

Table 5: Regression Results

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-.003	.003		-.939	.351
1 CAR	.126	.021	.534	5.928	.000
R Square	.285	Adjusted R^2	.277		

a. Dependent Variable: Return on Assets

The value of R square shows that 28.5% variation in ROA is explained by our model. The table shows that there is a significant and positive relationship between ROA and CAR and the results corroborates the findings of Ongore and Kusa (2013).

Regression Equation Step 4: *Independent variables and dependent variable with effect of mediating variable*

Financial Performance= β0+ β1credit risk ₊ β2liquidity risk₊ β3Operational risk₊ β4CAR + €

Table 6: Regression Coefficients

Model	Unstandardized		Standardized	t	Sig.
	B	Std. Error	Beta		
(Constant)	-.001	.004		-.311	.756
1 CR	.000	.004	-.432	5.087	.052

	LR	.002	.006	-.006	.301	.764
	OR	1.036	.023	.988	45.630	.000
	(Constant)	-.001	.004		-.313	.755
	CR	.000	.004	-.432	5.087	.051
2	LR	.002	.006	-.006	.303	.763
	OR	1.036	.026	.987	40.435	.000
	CAR	.000	.005	.601	9.748	.032
	R Square	.972	Adjusted R^2	.971		

a. Dependent Variable: Return on Assets

The R square value shows that 97.2 percent change in ROA is explained by our model. The table 6 shows that the CAR mediates the relationship between financial risks and ROA of commercial banks.

5. Conclusion and Recommendations

The study analyses the impact of financial risks on financial performance of banks in Pakistan and checks the mediating role of CAR in this relationship (which is the main contribution of the study). The study concludes that there is a direct relationship between financial risk and financial performance of banks and moreover the results show that the CAR mediates this relationship. The study is particularly beneficial for the bank management in mitigating their financial risks. The findings can be useful for regulators in devising capital requirements for banks in Pakistan. Investors can also gauge risk profile and risk management strategies adopted by the banks while taking investment decisions. The research can also be extended to Islamic and foreign banks. In future primary data can also be used in risk measurement/ management studies. Market risk is also a part of financial risks so can be included in future studies.

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