

## **Financial and Non-Financial Business Risk Perspectives – Empirical Evidence from Commercial Banks**

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### **Abstract**

The purpose of this paper is to have an empirical examination regarding financial and non-financial risks because of the changing environment of banking. Banks today seek to rationalize, innovate and adaptive to changing situations and status as part of business because of the competitive economy. Successful supervision of risks and their forecast ought to help in lessen failures and losses. In that aspect, this paper focuses on financial and non-financial risk management perspectives on Pakistan's banking sector for the period 2006-2009. The paper adopts two regression models for the "controllable" variables in the data set to identify significant correlations. Size, Gearing ratio, and liquid assets found to have significantly affecting the financial risk while Size, NPLs ratio, and operating efficiency established significant relationship with the non-financial risk faced by the commercial banks. In general, results propose that banking system of Pakistan is well-diversified.

**Keywords:** Business Risk, Financial Risk, Non-Financial Risk, Credit Risk, Operational Risk, Commercial Banks, Islamic Banks, Pakistan

### **1. Introduction**

In 21st century business environment is added multifaceted and intricate than ever. The majority of businesses have to treat with uncertainties and qualms in every dimension of their operations. Without a doubt, in the present-day's unpredictable and explosive atmosphere all banks are in front of a hefty risks like: credit risk, liquidity risk, operational risk, market risk, foreign exchange risk, and interest rate risk, along with others risks, which may possibly intimidate the survival and success of the bank's.

The risks that are faced by businesses can be categorized into financial and non-financial risks. Both of these types of risks are very vital in order to safely run any business. This study will scrutinize credit risk having its financial nature and operational risk with its non-financial nature in context to Pakistan, as financial market of Pakistan is among volatile markets of the world which is filled with anonymity and escapade performances (Sadaqat, Akhtar, & Ali, 2011).

In financial risk Credit risk is extensively documented and familiar as the most significant and imperative in nature surrounded by loads of financial risk in front of banks (Sackett & Shaffer, 2006). The escalating assortment in the kinds of counterparties i.e. from individuals to governments, and the always mounting diversity in the outlines of obligation i.e. from auto advances to multifaceted derivatives contacts, has supposed that management of credit risk has bound to the front position of risk management strategies carried out by financial services businesses (Fatemi & Fooladi, 2006). The supervision and regulation of credit risk is now trite in financial businesses, where upholding is essential to be done in order to lessen possible losses from non-payment on loans.

Despite the fact that in the finance pitch, supervision and management of risks has always been a primary facet of the business distinctively in service upbringings, operational risk management has been for the most part ignored. Until the term 'operations risk' have officially invented in 1991 by the COSO report (COSO, 1991)<sup>1</sup>. Operational risk differs from other types of risks as it deals with established processes rather than managing the unknown circumstances (Frame, 2003). The depth and supervision of operational risk is fairly divergent from other kinds of banks financial risks. The assorted nature of operational risk from inner or outer interference to business activities makes difficult methodical and logical measurement and parameters (Jobst, 2007). Non-business risk occurs from failures in business policies and process, business strategies and failure in governances. Likewise for Islamic banks, non-compliance with Shariah principles in their products and services has a significant impact on the market position, and profitability. Figure 1.0 reports the financial and non-financial risk perspective that is under consideration in this study.

**Figure 1: Business Risk**



Risk management is a keystone of discreet banking practice. More appropriately today, banking is a business of risk. For this basis well-organized and competent risk management is utterly requisites. This study will examine the variables having significant affect on credit and operational risk on commercial banks of Pakistan.

<sup>1</sup> COSO (1991) Internal Control: Integrated Framework, Committee of Sponsoring Organizations of the Treadway Commission.

## 1.1. Research Question

In order to fill the demanding gap in the literature, this study will try to answer the following questions.

1. What are the variables that have significant affect on financial risk in commercial banks of Pakistan?
2. What are the variables that have significant affect on non-financial risk in commercial banks of Pakistan?

The paper unfolds as follows. In the subsequent section we thrash out the literature and the advancement of research questions. In the third section we reports research methodology containing particulars about data & statistics. Empirical results are then presented, and conclusions are set out in the fourth and fifth section respectively.

## 2. Previous Research

Al-Tamimi and Al-Mazrooei (2007); Hassan (2009) found credit risk and operational risk among most vital risk that the banks are facing while study UAE banks and Islamic banks in Brunei Darussalam.

### 2.1. Credit Risk

The Jarrow-Turnbull model<sup>2</sup> was amongst the pioneer studies that had openly arbitrary interest rates at its center. Barry, Baker and Sanint (1981) found that impulsiveness in fund accessibility from rural banks added to elevated credit risks. Deakins and Hussain(1994) emphasized on investing in both resources and time during risk assessment process, which in turn makes possible for bank to not only overcome unfair selection but also shows the way to beneficial customer relationship.

Moreover there is a sky-scraping risk of malfunction right through the phase of financial stress of banks with elevated credit risk and rigorous portfolios (Barnhill, Papapanagiotou, & Schumacher, 2002). Moreover the study found credit value of bank's portfolio the most significant risk factor. Brown and Wang (2002) stated that blend of credit spread option and hedging significantly lessen credit risk of sub-investment bond portfolio.

Peter and Peter (2006) found significant impact of negative equity risk and loan-to-value ratio as drivers of default credit risk while study Australian State housing authorities with main aim to approximate the likelihood of credit default risk. Likewise while studying practices adopted for credit risk management by large US based financial institutions found single most vital underlying principle of credit risk models it to recognize default risk of counterparty (Fatemi&Fooladi, 2006).The pragmatic results points that superior capital adequacy ratio (CAR) appears to lessen the level of problem of non-performing loans (Boudriga, Taktak&Jellouli, 2009).

### 2.2. Operational Risk

The term 'operations risk' have formally invented in 1991 by the COSO report (COSO, 1991). Wiseman and Catanach (1997) stated that organizations need to assemble agency and prospect theories for modelling risk, and found them as both directly associated with choice of risk. Ray and Cashman (1999) reported that operational risk influence decision making in numerous ways, additionally risk assessment is considered necessary from both market participant perspective and system perspective.

While studying mitigation of operation risk in British retail banks (Blacker, 2000) specified that mitigation of operational risk holds comprehensive sequences of connections among process, technology and people. The study reported responsibility for operation risk alleviation lies with business unit management, as restrictions were rested upon business unit, which convinced the mitigation of operational risk. Elliott et al. (2000) found operational risk as a construction of organization and the scaffold in which operational risk operates. Cornalba and Giudici (2004) found

<sup>2</sup> <http://en.wikipedia.org/wiki/Interest>; [http://en.wikipedia.org/wiki/Jarrow-Turnbull\\_model#cite\\_note-0](http://en.wikipedia.org/wiki/Jarrow-Turnbull_model#cite_note-0)

that banks are looking to fuse both quantitative and qualitative data requirements of advance measurement approach to measure operational risk.

Power (2005) portrayed notice to the paradox and challenges of operational risk plan, as being part to broaden 'enforced self-regulation' into the operations of banking. The study established that Basel II banking regulations has successfully institutionalized the type of operational risk and pressure in three areas; i.e. data collection, definitional issues and extents of quantification, that represent the importance of operational risk. In addition, (Flores, Ponte & Rodriguez, 2006) emphasized on the use of information system (IS) and condensed capacity to take up new methods and policies for conniving and scheming operational risk.

Laviada (2007) stated that well-ordered structure of operational risk management will underpin and reinforce organization's internal controls. Te study also emphasized to label internal audit for whole method of completion & execution for organizing operational risk.

### 3. Research Methodology

This study is anticipated at investigating business risks in commercial banks of Pakistan. The study will examine the research questions in a construe vision with an explanatory approach.

#### 3.1. Research Models

Credit risk and operational risk are the two dependent variables for this study. Description of dependent and independent variables along with their proxies are reported in Table 3.1.

**Table 3.1:** Variable, their Proxies and Symbols

Symbols	Variables	Proxies
CR	Credit Risk	Total Debt/Total Assets
OR	Operational Risk	Return on Assets= EACS/Total Assets
LNTA	Bank's Size	Logarithm of Total Assets
GR	Gearing Ratio	Total Debts/Equity
NPLs	NPLs Ratio	Non-Performing Loans/Total Loans
OE	operating Efficiency	Total Operating Expenses/Total Assets
LA	Liquid Assets	Total Loans /Total Deposits

#### Model (A): Financial Risk

$$\text{Credit Risk} = \alpha + \text{LNTA}\beta_1 + \text{GR}\beta_2 + \text{NPLs}\beta_3 + \text{OE}\beta_4 + \text{LA}\beta_5 + \epsilon$$

#### Model (B): Non-Financial Risk

$$\text{Operational Risk} = \alpha + \text{LNTA}\beta_1 + \text{GR}\beta_2 + \text{NPLs}\beta_3 + \text{OE}\beta_4 + \text{LA}\beta_5 + \epsilon$$

#### 3.2. Research Design

For this research design to exhibit, regression analysis<sup>3</sup> is utilized in the management, presentation and analysis of empirical results. The multi-variant regression model will be used to test the significance of variables on financial and non-financial risk.

##### 3.2.1. Data Collection

For this research design, the researcher will gather data, collate published studies from different local and foreign universities and articles from books and journals, and published annual reports of the banks, website of State Bank of Pakistan, and the websites of Karachi & Lahore Stock Exchange is used. Afterwards, the researcher will summarize all the information.

<sup>3</sup> Koutsoyiannis (2003); Kahane(2001) reported that statistically least square is most reliable due to the fact that it has a universal quality to reduce bias and variance.

### **3.2.2. Population Classification & Sample**

Even though this study has a broad scope, but boundaries like ease of access of data, time, relative size, their existence in the market, have been the main causes that constrained this study. In total 28 commercial banks of Pakistan are selected and analyzed, that covers a period of 2006-2009. This includes public sector commercial banks, private sector commercial banks and Islamic banks. The lists of banks that are included in this study are reported in Table 3.2 (See Appendix).

### **3.3. Explanation of Variables**

#### **3.3.1. Credit Risk**

This study will use debt-to-asset ratio as a proxy for gauging credit risk as conferred by Athanasoglou, Brissimis and Delis (2008). This ratio elucidates how much the company relies on debt to finance its assets. This will be calculated as debt capital by total assets. Barnhill, Papapanagiotou and Schumacher (2002) used debt to value ratio as root for assigning credit ratings. Bauer and Ryser (2004) stated debt ratio as a significant boundary that strengthens bank's hedging options. Also the study reported that banks with risk dropping strategy had high initial debt ratio, liquidation cost and high asset volatility.

#### **3.3.2. Operational Risk**

In order to measure non-financial risk aspects, return on assets (ROA) will be employed as proxy for gauging operational risk. This ratio gives a scheme as to how well-organized organization is at using its assets to make earnings<sup>4</sup>. This will be designed by dividing a company's annual earnings by its total assets. Return on Assets (ROA) reveals tangible operating presentation and recognized to have significant affect on operational losses (Wiseman & Catanach, 1997). Bokpin and Isshaq (2009) used return on asset (ROA) as a proxy for measuring overall's firm's earning ability. Gillet, Hubner and Plunus (2010); Sensarma and Jayadev (2009); Siddiqui (2008) Finer return on asset (ROA) ratio will tell better skills to transform asset into net earnings which lead the way to enhanced risk management.

#### **3.3.3. Non-Performing Loan (NPLs) Ratio**

Non-Performing loan ratio is used as independent variable which identifies loans in evasion or close to being in default<sup>5</sup>. Boudriga, Taktak and Jellouli (2009) reported profitability of banks negatively affected by the degree of Non-Performing Loans (NPLs) ratio.

#### **3.3.4. Gearing Ratio**

Gearing ratio is a vital variable for the credit position. This will be measure by Debt to equity ratio, explains the credit quality of an institution (Barnhill, Papapanagiotou, & Schumacher, 2002). This variable will assign what portion of equity and debt the banks are utilizing for its assets financing.

#### **3.3.5. Bank Size**

Size of the bank can be a momentous determinant of bank's position for the fact that it affects both the ease of access to liquidity and costs. This study will use Bank size as explanatory variable and will use natural logarithm of total assets as proxy for measuring bank size as used by (Wiseman & Catanach, 1997; Dinger, 2009; How, Karim & Verhoeven, 2005; Esty, 1998).

#### **3.3.6. Operating Efficiency**

This study will measure operating efficiency of banks as independent variable. Total operating expenses divided by total assets is used as proxy for measuring operating efficiency (Alexiou & Sofoklis, 2009; Sufian & Habiullah, 2009; Ramlall, 2009). This variable will explain how well a bank workout its assets and liabilities internally in order to successfully manage their risk dimensions.

<sup>4</sup> Retrieved November 27, 2010, from <http://www.investopedia.com/terms/r/returnonassets.asp>

<sup>5</sup> Retrieved November 27, 2010, from <http://www.investopedia.com/terms/n/nonperformingloan.asp>

### 3.3.7. Liquid Assets

In financial risk the element of liquidity of the banks considered most important factor of risk management. In banks financial practices, lending to other banks, institutions, individuals and companies from the deposits of assets side is routine practice of banking operations. The banks earns major portion of their income from lending in the form of interest. The empirical evidence used this variable to measure the liquidity of banks by using ratio total loans to total deposits (Spathis, Koasmidou, & Doumpos, 2002; Al-Tamimi, 2005).

## 4. Empirical Results

### 4.1. Descriptive & Pearson Correlation Statistics

Descriptive statistics are reported in table 4.1, which shows the value of mean and standard deviation of all variable included in this study. Mean values give the idea about the central tendency of the values of the variables included in this study, whereas values for standard deviation measure, put in the picture about the broadness or dispersal of the data in the sample. The first two variables i.e. credit risk and operational risk are considered as dependent variables, while the rest of them are explanatory (independent) variables.

**Table 4.1:** Descriptive Statistics

Descriptive Statistics		
	Mean	Std. Deviation
Credit Risk	0.8247	0.1895
Operational Risk	2.7679	0.0413
Size	7.6959	1.1410
Gearing ratio	8.6563	5.8905
NPLs	0.0580	0.0589
Operating Efficiency	0.0305	0.0175
Liquid Assets	0.9151	0.2237

The Pearson correlation matrix is reported in Table 4.2, which establish that in broad-spectrum the correlation among the conventional and Islamic banks variables is not well-built, signifying that the problem of multicollinearity is absent or nonexistent<sup>6</sup>. The Pearson correlation matrix shows the negative relation of operating efficiency with gearing ratio, while the rest of the relation reports positive relation.

**Table 4.2:** Pearson Correlation Coefficients

Pearson Correlation Coefficients					
	LNTA	GR	NPLs	OE	LA
LNTA	1	0.414**	0.119	0.143	0.735**
GR		1	0.001	-0.122	0.464**
NPLs			1	0.374**	0.234*
OE				1	0.343**
LA					1

\*Correlation is significant at the 0.01 level (2-tailed)

\*\*Correlation is significant at the 0.05 level (2-tailed)

<sup>6</sup> Kennedy (2008) reported that the setback of multicollinearity is there only when the correlation is over 0.80, which is not the situation in these results.

## 4.2. Regression Results (Model A & Model B)

The empirical findings of both models of business risks give similar results. Regression results for Model (A) and Model (B) are reported in Table 4.3 and Table 4.4 respectively as follows:

**Table 4.3:** Regression Results for Model (A)

<b>Dependent Variable: Credit Risk</b>					
<b>Method: Least Squares</b>					
<b>Sample: 2006M01 2009M12</b>					
<b>No. of Observations: 112</b>					
<b>Durbin-Watson Test: Standard Errors &amp; Covariance</b>					
<b>Coefficients-Model A</b>					
	<b>Un-standardized Coefficients</b>		<b>Standardized Coefficients</b>	<b>T</b>	<b>Sig.</b>
	<b>B</b>	<b>Std. Error</b>	<b>Beta</b>		
Constant	-0.00874	0.03475		-0.25132	0.802
LNTA	0.05396	0.00652	0.40176	8.27077	0.000
GR	0.00745	0.00125	0.23172	5.96122	0.000
NPLs	0.05252	0.11308	0.01632	0.46445	0.643
OE	-0.60279	0.41759	-0.05578	-1.44347	0.152
LA	0.40318	0.04655	0.47621	8.66091	0.000
<b>R-squared</b>		0.89	<b>Mean dependent var</b>		0.8247
<b>Adjusted R-squared</b>		0.88	<b>S.D. dependent var</b>		0.1786
<b>Sum squared resid</b>		0.442	<b>F-statistic</b>		169.992
<b>Durbin-Watson stat</b>		1.877	<b>Prob(F-statistic)</b>		0.0000

**Table 4.4:** Regression Results for Model (B)

<b>Dependent Variable: Operational Risk</b>					
<b>Method: Least Squares</b>					
<b>Sample: 2006M01 2009M12</b>					
<b>No. of Observations: 112</b>					
<b>Durbin-Watson Test: Standard Errors &amp; Covariance</b>					
<b>Coefficients-Model B</b>					
	<b>Un-standardized Coefficients</b>		<b>Standardized Coefficients</b>	<b>T</b>	<b>Sig.</b>
	<b>B</b>	<b>Std. Error</b>	<b>Beta</b>		
Constant	-0.01765	0.01284		-1.37407	0.172
LNTA	0.00955	0.00241	0.326617	3.962812	0.000
GR	-0.00048	0.00046	-0.06930	-1.05082	0.296
NPLs	-0.29585	0.04180	-0.42215	-7.07726	0.000
OE	-1.3519	0.15436	-0.57424	-8.7578	0.000
LA	0.00733	0.01720	0.03978	0.4264	0.671
<b>R-squared</b>		0.681	<b>Mean dependent var</b>		-0.0000003
<b>Adjusted R-squared</b>		0.666	<b>S.D. dependent var</b>		0.34050
<b>Sum squared resid</b>		0.060	<b>F-statistic</b>		45.213
<b>Durbin-Watson stat</b>		1.508	<b>Prob(F-statistic)</b>		0.0000

The major financial risk of a banking business is credit risk (Sackett & Shaffer, 2006). The banks specific factors can enhance probability of credit risk at higher side. The focal non-financial risk in a banking business is operational risk which measures the effective implementation of internal control systems. The bank size influences the credit risk and operational risk positively and having a significant relation at 0% level of significance in both models. These findings can be supported with the findings of (Wiseman & Catanach, 1997; Esty, 1998; How, Karim & Verhoeven, 2005; Jacobson, Linde & Roszbach, 2006; Demirovic & Thomas, 2007; Ashraf, Altunbas & Goddard, 2007; Dinger, 2009; Akhtar, Ali, & Sadaqat, 2011; Ali, Akhtar, & Ahmed, 2011). Because larger banks enjoy a higher return that's the reason their risk would be higher.

In debt financing it is important for banks to maintain their gearing ratios at sufficient levels. Nevertheless, their future requirements would be changed according to the financing needs of the time. The gearing ratio found to be significant relationship with credit risk at 0% level of significance and positively affecting the financial risk of the business as suggested by (Sensarma & Jayadev, 2009), whereas its relationship with operational risk is contradictory. The gearing ratio has a negative and insignificant relationship with operational risk. The ratio of non-performing loans to total loans found to be a relation positive and insignificant with credit risk. Although NPLs ratio have a negative and significant conflicting relationship at 0% level of significance with operational risk. This negative and significant relation is in agreement with (Sacket & Shaffer, 2006).

The operating efficiency basically measures the minimum utilization of resources which give the maximum returns. The relationship of operating efficiency with operational risk is negative and significant at 0% level of significance as the importance of operating efficiency is specified by (Al-Tamimi & Al-Mazrooei, 2007; Alexiou & Sofoklis, 2009; Sufian & Habiullah, 2009; Ramlall, 2009). Moreover the significance relation of operating efficiency can be supported by previous study (Ali, Akhtar, & Ahmed, 2011) The relationship of operating efficiency with credit risk is negative but insignificant. The liquidity is a distinct perspective of risk management, but its affect on financial and non-financial risks measured in form of liquid assets. The liquid assets found to be a positive relationship with credit risk and operational risk, whereas it affects the both business risks significantly and insignificantly respectively. The positive relation of liquid asset is supported by (Spathis, Koasmidou, & Doumpos, 2002; Al-Tamimi, 2005). Spathis, Koasmidou and Doumpos(2002) stated the positive relationship the ratio of total loans over total deposit regarding the profitability of banks which means that the banks whose credit worthiness is greater, are more liquid.

## 5. Summary and Concluding Remarks

The importance of the study to fill the gap of empirical evidence on business risk practices in banking sector of Pakistan. This study implied the financial and non-financial risk practices for all commercial banks (conventional and Islamic) as specified by State Bank of Pakistan. This study covered the period of 2006-2009. The financial risk is measured with the credit worthiness of the banks and the non-financial risk is measure with the efficiency and effectiveness of banks' operational activities. This study has successfully identified the factors that are significantly affecting financial and non-financial risk faced by the banks.

The relationship of bank size is found to have positive and significant relation with financial and non-financial risk. The NPLs ratio and operating efficiency established the negative and significant relationship with operational risk. This can be explained with the fact that the unusual lending of loans and sustained expenses is found to be the major portion of non-financial risk faced by the banks. Liquid asset is found to have a positive relationship with both financial and non-financial risk, whereas its affect on credit and operational risk is significant and insignificant respectively. The relationship of gearing ratio with operational risk is negative and significant, while it insignificantly affected by the credit risk. The high geared ratio is attributed with the fact that the banks rely on the borrowing because their major source of finance contains debt financing with the combination of equity finance. Finally, this study does not establish the affect of other risk that is faced by the banking industry such as foreign exchange risk and market risk. This remains an aim of future research.

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## Appendix

### Appendix-I. List of Banks included in this study

LIST OF BANKS					
Conventional Banks			ISLAMIC BANKS		
Sr.	PRIVATE SECTOR	Sr.	PUBLIC SECTOR	Sr.	
1	Allied Bank Limited	1	National Bank of Pakistan	1	Bank Islami Pakistan Limited
2	Summit Bank Limited <sup>7</sup>	2	The Bank of Punjab	2	Dawood Islamic Bank Limited
3	Askari Bank Limited			3	Dubai Islamic Bank Pakistan Limited
4	Atlas Bank Limited			4	Al-Baraka Bank (Pakistan) Limited
5	Bank Al-Falah Limited			5	Meezan Bank Limited
6	Bank Al-Habib Limited			6	Emirates Islamic Bank
7	Faysal Bank Limited				
8	Habib Bank Limited				
9	Habib Metropolitan Bank Limited				
10	JS Bank Limited				
11	KASB Bank Limited				
12	MCB Bank Limited				
13	Mybank Limited				
14	NIB Bank Limited				
15	SAMBA Bank Limited <sup>8</sup>				
16	SILKBANK Limited				
17	Soneri Bank Limited				
18	Standard Chartered Bank (Pakistan) Limited				
19	The Royal Bank of Scotland Limited				
20	United Bank Limited				

<sup>7</sup> Summit bank limited, formerly was Arif-Habib Bank. Data for the year 2007 to 2009 was taken from the annual reports from of Summit bank limited and data for the year 2006 was taken from the annual report of Arif-Habib bank.

<sup>8</sup> SAMBA bank Limited, formerly was Crescent Commercial Bank. Date for year 2009 and 2009 was taken from the annual reports of SAMBA bank and for year 2007 and 2006, data was collected from the annual reports of Crescent Commercial Bank