Determining Indirect Cost of Financial Distress in Banking Sector of Pakistan

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The present study attempts to identity the determinants of indirect cost of financial distress in banking sector of Pakistan. Using published financial data of 25 banks for 7 years (i.e. 2009-2015) the present study estimates the relationship between various bank specific factors and indirect cost of financial distress. The study uses a two-step normal transformation method for continuous variables to ensure normality of data and has applied runs test to ensure the randomness of the unexplained variation. The study argues that only three factors are important in explaining the indirect cost financial distress in banking sector of Pakistan. These factors include non-performing loans, bank's credit rating and bank's cost of funds. Where NPL and BCO maintains a positive relationship, while credit rating has a negative relationship with indirect cost of distress in Pakistani banks.
Key Words: Financial Distress, Normality Transformation, Banking Sector

INTRODUCTION

Financial distress is a situation when a bank faces vulnerability in fulfilling its commitment to repay liabilities due to either high fixed cost, liquidity problem or due to its assets being sensitive to the economic conditions of the country. The state of financial distress, if persists over a long period of time may lead to a banking crisis in the country. During global financial crisis of 2006-2008 banks failed to survive and due to the downfall of economic activities many banks faced severe consequences. Consequently, a natural question emerges that what determines the cost of financial distress and can it be predicted especially in case of banking sector? Financial distress cost is mainly divided into two major components i.e. direct and indirect cost. Direct financial distress cost includes the administrative and legal costs linked with the bankruptcy process. Gruber & Warner (1977) pointed out that direct distress cost contributes very little, as compared to the indirect distress cost, toward overall bankruptcy cost of firm. The indirect financial distress costs represent costs which a company fails to pay when they become due which ultimately leads a firm towards failure. For instance, decline in sales variable as compared to the market (Pindado & Rodrigues, 2004). A financial distressed company may decide to cut down its research and development expenditures and marketing research expenditures. Companies with such behavior might be considered as financially distressed. However, in case of banking companies, Opler and Titman, (1994), argued that growth rate of sales of sector and growth rate sale of banks as the two major variables to determine the financial distress cost in banks, because insolvent banks often lose their market position while indulging in the financial distress even if they don't get default. Therefore, decline is bank sales as compared to the banking industry could be a measure of indirect cost of financial distress.

Present study attempts to address the reasons behind indirect financial distress cost in banking sector of Pakistan. The banking sector of Pakistan is conservative in risk taking and therefore is not largely affected by the global financial crisis. However, there are several domestic variables which could be responsible for indirect cost of financial distress in banking sector. In the light of existing literature and theories on determinants of financial distress cost, the present study provides a significant relation between financial distress costs and deposit rates, non-performing loans (NPLs), credit rating, holding of liquid assets, the total asset to total liability ratio , cash flow from operating activities, non-markup / interest income. The objective of this study is to estimate the relationship between the above-mentioned firm level factors and indirect cost of financial distress cost in banking sector of Pakistan.

Rest of the paper is organized as follows. Next section covers the relevant literature followed by a methodology section. Section 4 presents the estimated results while the last section concludes the discussion.

LITERATURE REVIEW

Existing literature provides evidence on determinants of financial distress cost in financial and non-financial sectors. Predicting the financial distress in companies remained in focus during last few decades. Altman (1984) worked on direct cost of financial distress which is the bankruptcy cost and he claimed that the average bankruptcy losses that bear by the firm are 1.8 million and these losses are almost 3.5% of the market value of the sampled banks. However, researchers are of the view that indirect cost of financial distress cannot be calculated with much accuracy due to their subjectivity and complex nature (Andrade & Kaplan, 1997; Gilson, 1990). Altman (1984) had worked on indirect losses first time and he evaluated the extent of bankruptcy losses while he also made a detailed comparison of tax benefits with the present value of bankruptcy losses. Opler and Titman (1994) had also worked on measuring the indirect losses of distress. Babenko (2004) had worked on indirect costs of financial distress and argued that default situation has inverse impact on customer loyalty and confidence. Chen & Merville (1999) had investigated the costs of distress in case of banking companies. They argued that distress banks normally offer high deposit rates to the different segment of the customers. Hannan & Hanweck, (1988); Park & Peristiani, (1998); Cook and

Spellman; (1994), have also suggested the same phenomena which supports the previous studies.

Modigliani & Miller (1958) emphasized upon the recognition of the financial distress and in that course of action are to identify the capital structure framed by any of the firm. Capital structure choice of any of the firm will tell the real story of the financial distress causes and effects. This scenario despite the disagreement of various quarters (on the assumption of tax free and imperfect market) is widely explained by the researchers in order to maintain a sustainable growth.

Elton et al. (2001) is on the viewpoint that it is not necessary that insolvency is always attached with the default spread. On the other hand, it is also important to note that taxes impact on a higher level to the firm than the fear of default. So, the managing of the different products and services in accordance with the market is of more importance. The more the mix of the ideas is developed the more the firm sustained its position in the market and performs better.

Opler & Titman, (1994) state that cost and benefits of Leverage is another important factor which is normally under study to see its impact on the probability of financial distress cost. It is evident from the analysis of the literature that high leverage is considered to be the main cause of financial distress. But it is not easy to just predict the same keeping in mind the concept of debt and equity.

Bulot and Norhana (2015) analyzed 190 financially distressed firms and investigated the reasons of indirect financial distress cost in non-financial firms. They argued that size of the firm, level of intangible assets and existence of alternative opportunities of investment are the important determinants of indirect cost of financial distress in Malaysian firms. A similar relationship has also been reported by Bulot et al. (2014)

Most of the studies on indirect cost of financial distress have been conducted in non-financial sector of developed economies, while evidence from financial sector of emerging economies is still limited. According to Farooq & Jibran (2018), who conducted a five-step systematic literature review following Appiah et al. (2015) on studies conducted on indirect cost of financial distress, concluded that "the study of indirect cost in developing countries is a literature gap". The present study, therefore, attempts to contribute an evidence on indirect cost of financial distress in banking sector of Pakistan.

RESEARCH METHODOLOGY

For the purpose of this study, a sample of 25 banks (see list in appendix A) has been taken based on random selection. The sample represents 90% of total deposit of all listed banks. For the purpose of estimation, the data of variables has been collected from published annual report for the time period starting from 2009 to 2015 (182 firm year observations) and estimated using least square regression. Barnes (1982) and Deakin, (1976) noted that researchers in the field of corporate finance severely depart from the assumption of normality while using regression models therefore, the present study suggests to use a two-step normal transformation method for continuous variables suggested by Templeton (2011). Given below is the research model used for the study along with the explanation of proxy variables.

$$ICD_{it} = \beta_0 + \beta_1 NPL_{it} + \beta_2 CR_{it} + \beta_3 BCO_{it} + \beta_4 NMI_{it} + \beta_5 CFO_{it} + \beta_6 LA_{it} + \beta_7 TLTA_{it} + e_{it}$$

Where; for all firms i at time t:

ICD = Indirect Cost of Distress (Sales growth of sector – Sales growth of bank i at time t.)
NPL = Non Performing Advances to Total Assets
CR = Credit Rating
BCO = Bank's Cost of Funds to Total Assets
NMI = Non Markup / Interest Income to Total Assets
CFO = Cash Flow from Operating Activities to Total Assets
LA = Liquid Asset to Total Assets
$TATL$ = Total Assets to Total Liability Ratio

Financial distress cost of a bank is measure with a proxy variable Indirect Cost of Distress (ICD) which is equal to the difference of sales growth of banking sector as a whole and the bank. Indirect cost of distress is defined in the literature as the cost of deteriorating financial condition of a firm (Opler & Titman, 1993). Altman & Hotchkiss (2006) suggested to measure ICD with deterioration of competitive operational performance of a firm. Following Pindado & Rodrigues (2005) the present study has used opportunity loss as a proxy of indirect cost of distress which is measure through the difference between sales growth of the sector and sales growth of the bank. As positive value shows that the bank is under performing in its operations and facing an indirect distress cost.

On the right-hand side of the model, the study has suggested five exogenous and two control variables in the light of existing literature. One of the important variables which impacts the cost of distress is the Non-Performing Loans (NPL) of any bank. As per banking definition NPL are those loans which are due over 90 days from due date. Banks put such loans in the default category, and they are expected to contribute towards the indirect cost of distress. Based on the literature we hypothesize a positive relationship between NPL and ICD.

Ha₁: There is a positive relation between Non − Perfroming loans and indirect distress cost

The second important determinant of indirect cost of distress is the credit rating of a bank. The bank with high credit rating should be facing lesser cost of indirect distress. Therefore, we hypothesize a negative relationship between bank's credit rating and the cost of distress.

Ha₂: There is a negative relation between Bank's Credit Rating and indirect cost of distress

The third factor which is expected to determine the cost of distress is the bank's cost of funds (BCF) which is the average cost which banks bears on maintaining customer's deposit. This includes the cost of administration and management of customers' accounts. This bank with high cost of funds may face a hard time in terms of high indirect distress cost. Therefore, we expect a positive relationship between Bank Cost of Funds and Indirect Cost of Distress.

Ha₃: There is a positive relation between Bank Cost of Funds and indirect cost of distress

Non-interest income is another source from which bank tries to maintain the quality of its services. As a result of good services. Non-interest income is bank and creditor income derived primarily from fees including online charges; cheques return charges, monthly account service charges and statement of accounts charges. The fees regarding the collection of different departments provide non-interest income is a way of generating revenue and ensuring liquidity in the event of increased default rates. Penalty charges, late fee and over the

limit fees charges on credit cards is also a non-markup income which contribute in profit of the firm. Non-interest income comprises of asset sales, penalties, overdraft and other services Automated Teller Machines are a major tool for the banks for generating non-interest income while some make money from the general transactions such as Draft, Payment Orders, Call Deposits and online transaction fee. The present study hypothesizes a negative relationship between non-interest income and indirect cost of financial distress.

Ha_4: There is a negative relation between Non − Interest Income and indirect cost of distress

Finally, cash flow statement reflects the cash flow from operating activities. The data of cash inflow and outflow is measured in the cash flow statement. Capital expenditure and cash paid to stockholders in the shape of dividend, the amount received against the issuance of the stocks and bonds and the amount spent to retire the bonds are not part of this event. The cash received against the liquidation or sale of the long-term assets are also not the part of the activity. The present hypothesize a negative relationship between cash flow from operations and financial distress cost.

Ha_5: There is a negaive relation between cash flow and indirect cost of distress

The standard techniques to check the validity of assumptions of least square regression are applied. To check the validity of no multicollinearity, correlations among all independent variables have been closely observed and variance inflation factors (VIF) are also calculated. As there is no polynomial variable or interaction term in the proposed model therefore, we do not expect multicollinearity to inflate the standard error. In order to check the validity of no autocorrelation we plotted residual lag on X-axis and residual on Y axis but no uniform pattern was observed. In addition to the plotting method Durbin-Watson statistic was also calculated to see in the values remain between 1.5 and 2.5. Further to test heteroscadasticity, Bruce-Pagan and Bridge-White tests were applied. The results suggested that the model statistic are not affected by any of the above problems. The estimated results using the ordinary least square regression are presented in the next section.

ESTIMATED RESULTS
Table 1: Descriptive Statistics

Variable	Qbs	Min	Max	Mean	St. Dev
ICD	182	-1.11	0.42	-0.105	0.226
NPL	182	0.00	0.52	0.117	0.090
CR	182	1.00	9.00	6.186	2.552
BCO	182	0.07	0.09	0.077	0.007
NMI	182	-0.42	11.82	0.389	.9335
CFO	182	-0.32	1.89	0.077	.1816
LA	182	0.00	0.14	0.060	.0314
TATL	182	0.49	0.78	0.885	.0733

The correlation matrix show that NPL has a positive correlation with ICD which mean that as the amount of non-performing loan increases the amount of indirect cost also increases. This positive co-movements predicts a positive relation between NPL and ICD. On the other hand CR shows at negative association with ICD which ultimately means that as credit rating of bank improves the chances of indirect cost of distress decrease. It also predicts that credit rating is a negative determinant of financial distress cost.

Table 2: Correlation Analysis

Variable	ICD	NPL	CR	BCO	NMI	CFO	LA
NPL	.217**	1					
CR	-.215**	-.107	1				
BCO	.180	.095	-.009	1			
NMI	.080	.019	-.112	.170	1		
CFO	.016	-.072	.068	.234*	-.008	1	
LA	.051	-.119	-.283**	.025	.072	.089	1
TATL	.063	.122	-.059	-.037	-.251**	-.077	-.052

*Note: Here * represents variable is significant at 1% level of significance*

Panel A of table 3 shows the estimated results of full model designed in the light of existing literature. The estimated results show that NPL and BCO has a significant and positive relation with ICD while the relationship of CR is significantly negative which is in line with the hypothesizes relationship between NPL, CR, BCO and ICD. Therefore, null hypothesis H1, H2 and H3 of no relationship have been rejected as their coefficients are significantly different from zero. However, the relationship of ICD with rest of the two variables i.e. NMI and CFO and control variables is insignificant therefore, we cannot reject H3 and H4. Based on the result of panel A, the study proposed a model with only significant variables and estimated results are presented in Panel B. It is pertinent to note that the explanatory power of the model, in terms of adjusted R is increased after excluding the insignificant variables which justifies the exclusion of insignificant variables.

Table 3: Model Results

Panel A: Full Model				
Variable	Coef.	Std Error	t-value	p-value
Constant	-0.569	0.289	-1.968	0.051
NPL	0.471	0.192	2.446	0.015
CR	-0.061	0.007	-2.314	0.022
BCO	4.628	2.511	1.843	0.067
NMI	0.011	0.019	0.573	0.567
CFO	0.011	0.095	0.113	0.910
LA	0.205	0.578	0.355	0.723
TATL	0.149	0.237	0.631	0.529
$F= 3.05$*, $R^2= .112$, Adjusted $R^2= .075$. Durbin Watson 1.754; Max VIF 1.15				
Panel B: Proposed Model				
Variable	Coef.	Std Error	t-value	p-value
Constant	-.434	.187	-2.324	.021
NPL	0.467	0.184	2.531	.012
CR	-.017	.006	-2.692	.008
BCO	4.938	2.362	2.090	.038
$F= 7.010$*, $R^2= .108$, Adjusted $R^2= .093$.				

Estimated results of table 3 show that model's explanatory power is low and there could be two possible reasons of the low coefficient of determination. First, some important variables which determined the indirect cost of financial distress are omitted and second, the unexplained part of the variation in the indirect cost of financial distress is purely random and cannot be determined. As in the literature review section, it has been discussed that the study has considered all significantly important determinants of financial distress so the only possibility is to check if the unexplained part i.e. residual has a normal distribution and is following a random path. Initially the study adopted "Run's Test of Randomness" to test the randomness of residuals. And later the data of depended variable has been transformed for normality and rerun the model.

Table 4: *Model Results (Normality Transformation)*

Panel A: Full Model				
Variable	Coef.	Std Error	t-value	p-value
Constant	-2.159	1.236	-1.746	0.083
NPL	2.393	0.817	2.930	0.004
CR	-0.068	0.030	-2.312	0.022
BCO	19.056	10.674	1.785	0.076
NMI	0.082	0.079	1.034	0.302
CFO	0.206	0.401	0.513	0.608
LA	0.866	2.453	0.353	0.724
TATL	0.821	1.011	0.811	0.418
$F= 3.705$*, $R^2= .134$, Adjusted $R^2= .098$. Durbin Watson 1.933; Max VIF 1.150				
Panel B: Proposed Model				

Variable	Coef.	Std Error	t-value	p-value
Constant	-1.525	0.796	-1.916	0.057
NPL	2.349	0.785	2.992	0.003
CR	-0.075	0.028	-2.712	0.007
BCO	22.176	10.074	2.201	0.029
$F= 8.188*$, $R^2= .125$, Adjusted $R^2= .110$				

Table 5: Runs Test of Randomness

	Z-value	Asymp. Sig (2-tails)
Median	-0.605	0.545
Mean	-0.730	0.465

In order to verify the distribution of unexplained variation the study applied runs test of randomness. The results of table 5 shows the test results using median and mean as cut-off point. The insignificance of the test statistics show that residual is randomly distributed. Therefore, the assumption of independently and identical distribution of residual stands true. Based on the result the study argues that the unexplained variation in model the model is random and also normally distributed therefore, justifies the proposed model in section B of table 4.

CONCLUSION

Using the historical data of banks in Pakistan the present study attempts to model the indirect cost of financial distress in banking sector. The estimated results suggest that non-performing loans, credit rating and bank cost of funds are the main determinants of financial distress. Non-performing loans and cost of funds, when increased, increase the indirect cost of distress while high credit rating indicates low indirect cost of distress. The results are valuable for the banking professionals to streamline the banking operations before it is too late. Although Pakistani banking industry is presumed to be conservative however, the results of the present study provides an opportunity to consider important banking variables as whistle blower. Pakistan being a developing economy has much more to lose in case of any perceived threat to its financial market therefore, it is important for the banks to take preemptive measures to safeguard their interest

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