Relevance of Financial Risk with Financial Performance: An Insight of Indian Banking Sector

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Abstract
Banking sector is considered as the lifeline of a nation, which translates the aspirations and hopes of people into reality. The mounting and massive expansion and diversification of banking sector has not been without its strains. With the elapsing time, Indian banking sector is entering continuously into newer phases, facing increasing competition from non-bank institutions not only in the domestic market but also in the international market. In the direction of successfulness and excellence, Indian banking sector, with the dawn of financial reforms, knocked the door of a new phase, where it witnessed major changes which include, but are not limited to interest rate deregulation, prudential norms, liberalization, globalization and more importantly entry of new private sector banks. This completely changed the style of operating of Indian commercial Banks. Despite the praiseworthy progression, Indian banking sector became prone to serious problems which resulted in decline of efficiency and productivity, eroded profits, deteriorated capital base which was further followed by bad quality of loan portfolios. These problems became greater setback in the process of bank's income generation and in beautifying their capital base. The deteriorated picture of capital has further led to inadequate loss provisions resulting into the adverse impact on depositor's and investor's confidence. Ultimately there appears the highest possibility of reputational risk to take place. Laconically, one of the main reasons behind such distortion and erosion of profits and capital base of commercial banks is financial risk to a greater extent. So, it is quite imperative to know the ups and downs of Indian commercial banks by studying and analyzing the relationship between their financial performance and financial risk. The present study is devoted in this direction which intends to explore the relationship between financial performance and financial risk by using the Linear Multiple Regression Model. The researchers have selected ten leading banks, five from each sector i.e. public and private, as representatives on the basis of their total assets. The analysis of the study validated that the two balance sheet risks (i.e. Interest Rate Risk and Liquidity Risk) are insignificant to the profitability whereas Credit Risk, Capital Risk and particularly Solvency Risk are statistically significant to the financial performance of Indian Commercial Banks. The study educed with a conclusion to have instrumental risk management approaches in practice to tackle financial risk exposure, aiming to stall the risk events before their intensity increases beyond the risk appetite of Indian commercial banks and snowball into a debacle.

Keywords: Financial risk, Financial performance, Commercial banks.

Introduction:

The banking sector, being the backbone of the economy is considered as the kingpin of the chariot of economic progress mainly for it contributes to its GDP. The banking sector of any nation is very prominent for it serves both the surplus units and deficit units by channelizing funds through a variety of services (Eken et al., 2012). The Indian government decided to liberalize its economy and erase all the boundaries for the foreign financial partners in order to take the sting out of the ailing economy. The liberalization move, which was putforth in 1991, has influenced all the spheres of national activity and perhaps the one, where the liberalization and deregulatory policies had the maximum impact was the banking sector (Chaudhary et al., 2012). The Indian banking sector has remarked prolific changes and has undergone many transformations making good progress and facing many challenges, since the economic and financial reforms initiated in 1991 (Haque, 2014). These reforms have caused many structural changes leading to re-orientation of the system as a whole. In the Pre-reform period, banks were delivering the services under administered and tightly controlled environment under the vigilance of the government. But soon the liberalization, privatization and globalization measures crept in; banks strived to infuse new changes in the system in the most innovative ways (Nadu). These measures were aiming to make the banking sector more versatile, competitive, productive and efficient and to adhere their practices to the international standards. With this purpose of paradigm shift, these reforms have turned Indian banks into strong, prosperous and profitable entities with prudential provisioning, NPA levels of international standard and with adequate level of capital base (Chaudhary et al., 2012). Further, economic reforms in India introduced certain changes like interest rate deregulation, introduction of prudential norms and allowed entry of new players specifically private and foreign partners, with new strategies and game plans (Herd, *et al.,* 2011).

Overall, they all reacted well to the challenges of reforms in a dynamic way and touched the milestones of profitability and performance continuously. Though, there exists a difference in profit making potential of banks, private sector banks ousted the public sector banks and took a lead in profitability. But on the flip side, they were exposed to the uncertainties, adverse movements of the market and more importantly the vagaries of national and international financial markets. Today, Indian banks with a plethora of diversified business activities operate in a market which is highly volatile and competition intensified. The volatility of interest rates triggers interest rate war which puts the bank's earnings at stake and thus inherits interest rate risk into the system. Hence, there is a need to quantify and put the interest rate exposure within the acceptable parameters (Charumathi, 2008). In the same vein, any undesired variability in the capital adequacy ratios pose capital risk, nonperforming loans transfer credit risk, inefficiencies in the funding mix and mismatching maturities of assets and liabilities give birth to liquidity and solvency risks. As a result, certain amount of undesirability and uncertainty concomitantly accompanies the services delivered by the bank though they are not all the fruitful.

Moreover, the profitability and financial risk exposure move in a synchronized parallel tandem. Any increase in the profitability turnover is desirable, but any undesirable increment in the intensity of financial risk beyond the risk appetite of the banks produces shocking and earthshaking results. In the light of these evidences, this paper makes an attempt to find the relevance between financial risk and financial performance of Indian banking sector through empirical analysis. This paper also aims to draw conclusions regarding the direction and magnitude of influence which the financial risks exert on the profitability of the Indian commercial banks.

Rest of the paper is structured as follows: Section II highlights the objectives of study and section III the set hypotheses, which is followed by conceptual framework of financial performance, financial risk and relationship between the two in section IV, section V and section VI respectively. The section VII, section VIII and section IX deals with research methodology, analysis and interpretation and findings of the study respectively, whereas section X concludes the study.

Objectives of the Study:

- To assess the relationship between financial risk and financial performance of Commercial banks in India.
- To measure the impact of financial risks on the financial performance of commercial banks in India.

Hypothesis of the Study:

Studies on the financial risks and financial performance of commercial banks are very limited (Amin et al.). Based on this fact, the present study attempts to hypothesize that Interest Rate Risk (IntRR), Liquidity Risk (LiqR), Credit Risk (CrR), Solvency Risk (SolR) and Capital Risk (CapR) are expected to influence firm's financial performance measured by Return on Assets (ROA). Subsequently, the following hypotheses are framed in this study:

H1: There is no significant impact of Interest Rate Risk on Return on Assets of Indian commercial banks.

H2: There is no significant impact of Liquidity Risk on Return on Assets of Indian commercial banks.

H3: There is no significant impact of Credit Risk on Return on Assets of Indian commercial banks.

H4: There is no significant impact of Capital Risk on Return on Assets of Indian commercial banks.

H5: There is no significant impact of Solvency Risk on Return on Assets of Indian commercial banks.

Financial Performance:

Financial performance has been arguably the most critical and continuously monitored aspect of commercial banks. It has gained momentum from the last couple of years, for the reason that banking sector is considered as the main engine of economic growth (Hazzi and Kilani, 2013)**.** Technically, financial performance is defined as a subjective measure which determines the operational efficiency of banks. It measures the financial soundness and health of the banking sector in monetary terms and thus, assists in making comparisons. There is ample of literature available on the subject of financial performance but least are the studies on its interaction with the financial risk.

Various determinants of profitability and different relationships has been brought into the spotlight as Najjar (2013)**,** examined profitability of banks through financial ratios and concluded that factors like operational efficiency, asset management and their size strongly and positively influence the financial performance of banks. Same has been advocated by Ongore and Kusa, (2013)*,* who further added other determinants like capital adequacy and liquidity. The researchers concluded with a positive relationship between profitability and capital adequacy. They also observed a negative relationship between profitability and asset quality, which validates high level of NPAs (Non performing assets), and poor asset quality of banks. In the same vein, Lipunga (2014)**,** explains that evaluating the profitability of banks is an important concern as determining the health of banking sector is to determine the health of the economy. The researcher in his study observed that the bank size, liquidity and management efficiency significantly affect the profitability of the banks whereas on the parallel side he found that capital adequacy is insignificant to the profitability of the banks under study. In the slightly different words, Frederick (2015) critically studied and concluded at factors like management efficiency, capital adequacy, asset quality, interest income and inflation are the significant factors affecting financial performance of the banks. Sound profitability of the banking sector retains the confidence of not only depositors but all the concerned stakeholders and improves the status of economy as a whole. In this direction, different approaches have been made to assess the financial health of the banks and different suggestions have been advocated by different researchers.

In the sequel of this maxim, Sanghmi and Nazir (2010) analyzed the financial performance of banks using CAMEL model to highlight the significance of asset quality, management capability, liquidity and capital adequacy and arrived at the conclusion that these factors have a positive bearing on the profitability of the banks. Same approach was used by Prasad and Ravinder (2012), who necessitated the examination of bank's profitability by explaining that Indian banking sector is growing swiftly and becoming complex day by day. The need to kick around the profitability of banking sector was further elucidated by Gupta (2014) by holding that the progression of an economy is significantly supported by banking sector as this is the biggest institution of the country which mobilizes resources effectively and utilizes them optimally to enhance the operational efficiency through capital formation, innovation and monetization.

From the above studies and other relevant literature, various determinants of financial performance have been identified like, company size, liquidity, leverage, solvency, volume of capital, ownership structure, inflation, management efficiency(inefficiency), asset quality, capital adequacy, cost efficiency(inefficiency), bank diversification, reputation (goodwill) and Gross domestic product etc. Likewise, performance indicators identified include ROA (return on assets), ROE (return on equity), earnings yield, net interest margin etc.

V. Financial Risk:

Financial risk is an umbrella term which comprises a host category of risks including interest rate risk, liquidity risk, credit risk, solvency risk, forex risk and many more. In the general parlance, financial risk is a chance of arising loss which is triggered by the financial transactions of the bank like depositing, lending, borrowing, investing etc. Commercial banks are engaged in the business of financial risk. Throughout the globe, these banks deal with a host category of risks which have a direct impact on their performance. These risks prove to be a greater setback in the process of achieving growth in terms of size, assets and profitability of these commercial banks. Thus, such a crippling situation in the banking sector invites a better approach being put in place to understand these risks and develop an instrumental framework to handle them. The key risks which hamper the performance of banking companies include market risk i.e. adverse movement in the market instruments, credit risk, operational risks, liquidity risks, and strategic risks (like reputation risk), compliance risk or legal risk (failure to meet the regulatory norms like prudential norms, social goals etc.). Most of these risks can be categorized under a single umbrella term of financial risk.

Vi. Financial Performnace, Financial Risk and Their Relationship:

Tafri et al., (2009), Qin & Dickson (2012), and Ruziqa (2013) have stated that financial performance of banks is

also known as profitability which is normally measured in the form of ratios like return on assets (ROA), return on equity (ROE) and net interest margin (NIM). They have further mentioned that performance of banks is used to forecast the rise and fall of banks in the near future. In support of ROA to be used as a financial performance indicator, Samad and Glenn (2012) has explained its prominence by opining that it was one of the significant factors of US bank failure in 2009. There is limited literature available showing the relationship between financial risk and financial performance. Hawley's (1893) in his Risk theory of profit has given that return has a positive relationship with the risk. In other words, he holds that higher is the risk component, higher will be the return. Such a correlation is further supported by Aaker and Jacobson (1987).

This idea is felt by the banking institutions when they park their funds in the high return investments or loan avenues. But on the parallel side, the theory becomes hallucination, when the bank management fails to strike a balance between risk and return on their investments. In this perspective, there is possibility of two situations which are brilliantly explained by Bowman's (1979) in his Paradox theory of risk and return. He stated that there exists a negative relationship between risk and return because banks can maximize their returns and minimize the risk at the same time. In the slightly different words, he opined that when the bank fails to manage the risk exposure, the risk becomes high and the return ultimately decreases. Conversely, if the banks succeeded in managing the risk that means there is less risk and possibility of higher profitability. In a more elaborative fashion, the blueprint of relationship between individual risks and profitability is elaborated as under:

1. Interest Rate Risk: In the banking perspective, interest rate risk is seen as the change in net interest income due to the fluctuations in the interest rates. As long as the changes are predictable in magnitude, direction and the timing over the business cycle, interest rate risk is not taken highly. But as the rates start swinging swiftly, the financial institutions find it quite imperative to quantify and monitor these risks (Harrington, 1987). According to Tafri et al (2009), interest rate risk has a negative and weak significant impact on profitability. Thus, it is quite necessary for the banks to shield their profitability from the shocks of interest rate risk (Ponniah et al., 2014).

2. Liquidity Risk: In 2000, Basel Committee on Banking Supervision defined liquidity as the ability to fund increases in assets and meet obligations as they come due (BCBS, February 2000). Therefore, liquidity risk refers to the inability of the bank to reduce liabilities and increase assets. The results of the study conducted by Ruziqa (2013) indicated that liquidity risk has a positive significant impact on profitability while as Shen et al., (2009) concluded with a negative association between liquidity risk and profitability of the banks.

3. Credit Risk: According to RBI, it is the risk that a party to a contractual agreement or transaction will be unable to meet its obligations or will default on commitments and it can be associated with almost any financial transaction. Thus, credit risk results in varying net worth due to the failure of the contractual debt of the counter party to meet the obligation (Pyle, 1997). According to Qin & Dickson (2012), credit risk negatively affects the profitability of the banking institutions. Hence, nonperforming assets are problematic for commercial banks as they primarily depend on interest payments for income.

4. Solvency Risk: A general definition of bank solvency is the ability of the bank to pay its obligations when they come due without interrupting banks' activities. Thus, Solvency risk may be defined as the variations in the equity to absorb losses or the potential inability to meet the maturing obligations. Capital to assets ratio represents the bank's cushion against unanticipated losses and thus protects the interests of uninsured depositors.

5. Capital Risk: Capital is considered as the bank's cushion to absorb the losses in the event of debacles. Once capital of the bank is deteriorated by losses, it triggers a series of events like bank's solvency and credit standing strongly deteriorates which is followed by the decline in the value of market instruments, decrease in the financial ratios which further results in a deficiency, thus making debts of the bank unsustainable (Bessis, 2011). Hence, Capital to risk weighted assets ratio (CRAR) has been used as a proxy measure which is arrived at by dividing the capital of the bank with aggregated risk weighted assets for credit risk, market risk and operational risk. The higher the CRAR of a bank, the better capitalized it is (RBI).

VII. RESEARCH METHODOLOGY:

a) Data and Sample of the Study:

The study is analytical and empirical in nature which intends to establish a relationship between financial risk and financial performance of commercial banks in India. For the Indian banking sector, a limited number of studies depicting the present scenario of financial risks and profitability have been performed so far. Therefore, the present work tries to study the relevance of financial risks and financial performance inorder to improve the understanding of the Indian commercial banks and to provide an insight to the banking authorities, investors, and regulatory authorities. From the Indian banking sector, ten commercial banks have been selected based on the size of their total assets, five from each public sector and private sector, as the representative banks. The financial data have been collected from the

annual reports of the selected commercial banks and annual publications of Reserve Bank of India and some relevant information has been brought from the websites (moneycontrol.com and rbi.org). In order to carry out the study, a period of five years from 2008-09 to 2012-13 has been taken and five types of financial risks have been observed empirically. These risks include interest rate risk, liquidity risk, credit risk, capital risk and solvency risk. As for the dependent variable, the financial performance of the commercial banks is measured through return on assets ratio (ROA).

b) Data Analysis Techniques

The study made use of Linear Multiple Regression Model to establish the relationship between financial risk and financial performance of commercial banks in India. For the effective analysis of the data, SPSS software and MS-excel has been used. For determining the relationship, the study uses return on assets (ROA) as proxy for the firm's financial performance as a dependent variable and independent variables comprising of interest rate risk, liquidity risk, credit risk, capital risk and solvency risk. Further, analysis of variance (ANOVA) test has been employed to test the effectiveness or significance of the regression model at 95 percent confidence level and 5 percent level of significance. Also, parametric tests like F-test and *t*-test have been made use of to check the appropriateness and significance of relationship between the variables under consideration. Before arriving at a regression model, a correlation matrix was developed to see any relationships between the independent variables. Moreover, the use of correlation matrix helped us to detect any chances of multicollinearity.

(c) **Analytical model**

The following Linear Multiple Regression Model is used in this study:

$$FP = \alpha + \beta1.IntRR + \beta2.LiqR + \beta3.CrR + \beta4.CapR + \beta5.SolR + \varepsilon it$$

Where:

- **α:** The intercept of equation.

β1, β2, β3, β4 and β5: Coefficients for independent variables.

- **FP**: Represents the financial performance of banking companies which is measured by ROA (taken as a proxy value).
- **IntRR:** Represents the variation in the interest earnings, which is referred as interest rate risk. The proxy value used for this variable used is net interest margin.

LiqR: Represents liquidity risk, calculated by the current ratio.

CrR: Represents the credit risk of banks, calculated by the non performing assets ratio which is calculated as *net non performing assets divided loans given.*

CapR: Shows the fluctuations in the amount of capital (capital risk), measured by the proxy value of capital to risk weighted assets ratio (CRAR).

SolR: Stands for solvency risk. The proxy value used for this variable is solvency ratio.

- **εit**: Stands for error term.

VIII. Analysis And Interpretation Of Data:

1) Descriptive Statistics:

Table-1 Descriptive Statistics.

Variable	*Mean*	*Standard Deviation*
ROA	1.18	0.38
IntRR	2.64	0.82
LiqR	0.04	0.03
CrR	1.10	0.69
CapR	14.81	2.59
SolR	1.10	0.33

Source: *Results Obtained from using SPSS Software .*

Table-1 represents the descriptive statistics of all the variables under study. It reveals that mean profitability and standard deviation of all the banking companies as measured by return on assets (ROA) amounts to 1.12 percent and 0.38 percent respectively. In the same way, average and standard deviation of interest rate risk (IntRR) and Liquidity Risk (LiqR) stands at 2.64 percent and 0.04 percent, 0.82 percent and 0.03 percent respectively. Similarly, credit risk (CrR) quantified by the non performing assets ratio (NPAs) amounted to 1.10 percent with a standard deviation of 0.69 percent. Capital Risk (CapR) measured by the capital to risk weighted assets ratio (CRAR) arrived at 14.81 percent with a standard deviation of 2.59 percent and finally, the solvency risk (SolR) measured by the solvency ratio amounted to 1.06 percent with a standard deviation of 0.33 percent.

Table-2 Mean of Variables.

Items	ROA	IntRR	LiqR	CrR	CapR	SolR
SBI	0.80	2.87	0.04	**1.81**	13.28	0.92
Bank Of India	0.76	2.39	0.03	1.24	12.22	0.84
Canara Bank	1.08	2.29	0.02	1.38	13.81	1.03
IDBI Bank	0.82	1.42	0.03	1.24	12.84	0.62
SBI Mysore	1.00	2.84	0.02	1.50	12.70	0.90
ICICI Bank	1.43	2.36	**0.11**	1.36	**18.35**	1.40
HDFC Bank	**1.61**	**4.30**	0.05	0.30	16.53	**1.51**
Yes Bank	1.30	2.57	0.06	0.10	17.98	1.30
Federal Bank	1.05	3.45	0.02	0.58	17.35	1.30
Karnataka Bank	0.60	2.00	0.02	1.51	13.05	0.86

Source: *Results Obtained from using SPSS Software.*

Table-2 provides the information about the mean of all the variables for all the banking companies selected. While amongst the banks under study, HDFC Bank registered the highest mean value of profitability i.e. mean ROA for the bank is 1.61 percent, which indicates the sound financial performance of the bank as compared to other banks. As far as the interest rate risk is concerned, HDFC Bank has earned a substantial amount of interest earnings as the net interest margin for the bank is 4.30 percent. In terms of interest earnings, HDFC Bank is followed by Federal Bank (3.45 percent) and Sate Bank of India (2.87 percent). The liquidity position of the ICICI Bank is highest as compared to other banks under study, whether public or private. State Bank of India being the benchmark for other banks in the country has witnessed the highest level of nonperforming assets, followed by Karnataka Bank with 1.51 percent and SBI Mysore with 1.5 percent. All the banks under study have adhered well to the norms of capital adequacy. The capital to risk weighted assets ratio for all the banks is well above 10%, ICICI Bank ranks first with 18.35 percent of CRAR, followed by YesBank with a CRAR of 17.98 percent and Federal Bank with a CRAR of 17.35 percent. Finally, the solvency ratio is highest in case of HDFC Bank i.e. 1.51 percent, followed by ICICI Bank with a solvency ratio of 1.40 percent. In another perspective, private sector banks in the country have taken a lead in profitability for which the ratio of ROA is almost above 1.00. Further, the averages of interest earnings of private sector banks also exceed the public sector banks. The private sector banks like HDFC Bank, Yes Bank and Federal Bank have shown the lowest level of nonperforming assets ratio among all the banks under the study, which implies an effective credit management system in these banks. In spite of maintaining a sound percentage of CRAR, the public sector banks lag behind private sector banks in this perspective as well. Furthermore, if we look at the average of solvency ratio, private sector banks also occupy the highest place in this aspect.

Correlation Analysis:

Table-3 Correlation Matrix.

	ROA	IntRR	LiqR	CrR	CapR	SolR
ROA	1.000					
IntRR	.595**	1.000				
LiqR	.370**	.040	1.000			
CrR	-.762**	-.391**	-.072	1.000		
CapR	.796**	.424**	.520**	-.572**	1.000	
SolR	.873**	.630*	.459*	-.571	.733*	1.000

**Correlation is significant at the 0.01 level (2-tailed).
*Correlation is significant at the 0.05 level (2-tailed).
Source: *Results Obtained from using SPSS Software.*

Table-3 presented above highlights the correlation matrix of various independent variables used in this study. As is evident from the above table, the pair wise correlation coefficients (Spearman correlation) indicate statistically significant positive correlation between ROA and IntRR, LiqR, CapR and SolR at the 0.05 level of significance in a two tailed test. On the contrary, ROA is found to be negatively correlated with CrR at 5 percent level of significance. The correlation matrix also reveals that among the independent variables, there is a highly positive and statistically significant relationship between SolR and CapR. Similarly, it is found that there is a positive and statistically significant relationship of CapR with IntRR, LiqR and SolR. On the other hand, the correlation matrix also depicts that the variable CapR and CrR are negatively correlated with each other, which means that increase in one is accompanied by decrease in other and vice versa. Similarly, a negative relationship is also found between CrR and LiqR; however, the relationship is found to be insignificant from statistical point of view. Although the correlation coefficient between CaR and SolR indicates the model is suffering from multicollinearity. Therefore, to detect the problem of multicollinearity and to avoid biased regression coefficients, due care will be taken in the subsequent regression analysis by evaluating the tolerance levels and VIF values of the independent variables used in this study.

Collinearity Statistics:

Table-4 Collinearity Statistics.

Variable	VIF*	Tolerance
IntRR	1.923	.520
LiqR	1.867	.536
CrR	1.880	.532
CaR	2.804	.357
SolR	3.631	.275

***VIF:** Variance inflation Factor.*
***Source:** Results obtained using SPSS Software.*

It is quite elicit from the table-4 that the VIF value for all the variables ranges from 1.86 to 3.63. These observations verify that VIF of independent variables are within the acceptable terms as none of the variables surpasses the threshold limit of 10. In addition to VIF Values, the tolerance value is also used to detect the chance of multicollinearity between independent variables, for which the values in the above table are not near to zero. In the sequel of these maxims, we conclude that there is no problem of multicollinearity between the variables considered under the study (Gujarati & Porter 2009 and Marquardt, 1970).

1) Regression Model Summary:

From the table-5 of Regression analysis, we can make the first important inference that there are five variables which have bearing on the profitability of the commercial banks under consideration. All the variables taken for the study are quantified by the respective parameters. Any undesirable deviation in these variables which negatively affects the financial performance of the banks is recorded as risk. As per the ANOVA statistics depicted in the table-5, the results show that the model is fit and appropriate; as the corresponding P-value is less than 0.05 percent (F-statistics of the model meets the appropriate statistical criteria). The explanatory power (R^2) of the regression model is 0.843 implying that the model explains approximately 84 percent of the change in the ROA (proxied for financial performance) of the commercial banks selected under the study. In other words, 84 percent of the variation in the financial performance of commercial banks is explained by the independent variables together, the remaining 16 percent is attributed to other factors outside the model.

Table-5 Regression Analysis.

Independent Variable	Dependent Variable	Beta Coefficient	Standard Error	T-statistics	F value or Sig. Value
(Constant)	ROA	.173	.176	.986	.330
IntRR	-	.036	.032	1.113	.272
LiqR	-	.200	.892	.225	.823
CrR	-	-.186	.037	-4.978	.000
CapR	-	.033	.012	2.691	.010
SolR	-	.524	.109	4.801	.000
R Square					**.840**
Adjusted R Square					**.838**
F-Statistics					**71.249**
Prob. (F Stats)					**.000**

Predictors: IntRR *- Interest Rate Risk,* ***LiqR*** *- Liquidity Risk,* ***CrR*** *- Credit Risk,* ***CapR*** *- Capital Risk and* ***SolR*** *- Solvency Risk.*
Dependent Variable: ROA *(Return on assets).*
Source: *Results obtained using SPSS Software.*

The regression equation of the model would be:

ROA = 0.173 + 0.036IntRR + 0.2LiqR + (-0.186)CrR + 0.033CapR + 0.524SolR

Statistical Inferences:

Return On Assets (ROA):

The regression coefficient for ROA in the Table-5 is 17.3 percent, which implies holding all the variables at constant level of zero, there would be a profitability of 17.3 percent.

Interest Rate Risk (IntRR):

Table-5 reveals that there is a positive but statistically insignificant relationship between ROA and interest rate risk. The regression coefficient of 3.6 percent for interest rate risk indicates that if there is a unit change in interest earnings, profitability will change by 3.6 percent. But on the other hand, this implication is statistically insignificant as the significance value for this variable is above the standard value of 0.05 (i.e. at 5 percent Level of Significance). In the light of these evidences, the hypothesis (H1) stating no significant impact of Interest Rate Risk on ROA stands accepted.

Liquidity Risk (LiqR):

The regression coefficient for liquidity risk is 20 percent as revealed by the Table-5 which shows positive relationship between ROA and liquidity risk. But on the flip side, significance value of 0.823 for the variable is above the significant value (0.05) which indicates the variable is not significant. In addition to this inference, if there is a unit change in liquidity position of the banks, there would be a change of 20 percent in their profitability, though it is not statistically true. Thus, it can be concluded that there exists a positive insignificant relationship between liquidity risk and ROA, which hereby validates that the respective hypothesis (H2) stands accepted.

Credit Risk (CrR):

For this variable, the regression coefficient and significance value arrived at -18.6 percent and 0.00 respectively, which signifies a negative and statistically significant relationship between ROA and credit risk. The statistical observations for this variable imply that a unit increase in the non performing assets ratio will lead to a decrease in profitability by -18.6 percent and vice-versa. Therefore, hypothesis (H3) claiming no significant impact stands rejected as is validated by the statistical observations.

Capital Risk (CaR):

The statistical observations for this variable express a significant positive relationship between ROA and capital risk as the regression coefficient and significance value for this variable stand at 3.3 percent and 0.01 respectively. There would be significant change of 3.3 percent in profitability of the banks by a unit change in capital to risk weighted assets ratio (CRAR). However, in this study all the banks have been in full compliance with the capital

adequacy norms during the study period. Thus, these inferences confirm that the hypothesis (H4) claiming no impact on profitability stands rejected.

Solvency Risk (SolR):

Table-5 further reveals that there is a strong impact of solvency on the profitability of the firms. In otherwords, Solvency is the main determinant of profitability of commercial banks as the statistical values for this variable signal its positive and significant relationship with the profitability. The regression coefficient of 52.4 percent and significance value of 0.00 for this variable is quite higher and lower than other variables respectively. The statistical values intimate that a unit change is solvency will be followed by 52.4 percent change in profitability. Therefore, the respective hypothesis (H5) stands rejected as confirmed by the Table-5.

VI. Findings Of The Study:

The gist of the empirical analysis relating to relevance of financial risk with the financial performance of Indian commercial banks educed as under.

In the first place, the study witnesses an extraordinary growth of private sector banks which surpasses the performance of public sector banks as is evident from the statistical inferences of the data. As far as the profitability, interest earnings, liquidity ratio, capital adequacy ratio and solvency risk is taken account of, the representative private sector banks acted as benchmarks for public commercial banks under consideration.

In the second place, there is no denial of the fact, as is elicit from the analysis of data, that both public and private sector banks are exposed to the vagaries of financial risk. On the other hand, both the public and private sector banks during the study period of 2008-09 to 2012-13, have also maintained their capital base well above the norms of capital adequacy, which is measured by the CRAR (Capital to Risk Weighted Assets Ratio).

In the third place, it is also commendable on the part of private sector banks that they are well cautious about the quality of loan portfolios, as is evident from the table-3, where the private sector bank i.e. Yes Bank registered the lowest level of nonperforming assets Ratio of 0.10 percent in contrast to the public sector bank i.e. State Bank of India, which recorded the highest level of non productive assets of 1.81 percent. The statistical evidences regarding the private sector bank signify many inferences which include sound liquidity management, effective credit policies and management, efficient loan review mechanism and continuous surveillance of lendings and advances.

In the fourth place, HDFC Bank amongst all the ten banks under study has witnessed a remarkable performance in terms of profitability with a ROA of 1.61 percent. Further, it can also be concluded that the bank has succeeded to a greater extent in juxtaposition to other commercial banks, in managing the exposure of its interest earnings to interest rate risk (IntRR) and enhancing its capital base and maintaining solvency risk exposure under its thumb.

In the fifth place, the empirical study highlighted a significant conclusion regarding the solvency risk. The Regression Model Analysis singled out the solvency risk from all the variables, which have statistically significant positive relationship with the profitability of commercial banks. It would lead to a corresponding change of 52.4 percent (Table-5), if there is brought a unit change in solvency risk.

In the sixth place, the explanatory power (R^2) of regression Model amounts to 84 percent, which validates that 84 percent change in financial performance is caused due to the independent variables, whereas the rest of 16 percent change is caused due to other factors which have not been considered in the study.

VII. Conclusive Remarks:

The introduction of prudential norms into the Indian banking industry has made the banks to contemplate repeatedly over the concerns of profitability, risks and capital adequacy. While ascending the ladder of profitability, banks experience certain twists and turns reflecting various types of financial risks. As validated by the study, interest rate risk, liquidity risk, credit risk, capital risk and solvency risk possess the power of bringing change of 84 percent in profitability of the banks, out of which solvency risk alone has the same power of 52.4 percent. It is due to the increased prominence of brainchildren of financial reforms, which has put the financial risk management to the forefront of today's financial landscape. The study found that solvency risk, credit risk and capital risk are significantly associated with profitability, whereas the two balance sheet risks i.e. interest rate risk and liquidity risk, are statistically insignificant to the profitability of Indian commercial banks. Financial performance has arguably been the most important and continuously monitored aspect of commercial banks. In order to safeguard the profitability and sustenance of operations, banks should revamp the conventional risk management system, be cushioned with adequate level of capital, develop the regulatory insights to avoid the legal or compliance risks, adopt the proactive approaches and be forewarned, strategize dynamically with special attention to credit risk management, assume the deterministic and practical scenarios with respect to interest rate risk and liquidity risk and let the risk management practices to trickle down from headquarters to the branch offices. Further, commercial banks should install the latest advances in their systems,

processes, strategies, internal controls and transparency in services and operations to enhance operational efficiency and thus their profitability. These evidences, procedural guidelines and suggestions will assist the Indian commercial banks to a far extent to stall the risk events before they mature and snowball into a huge debacle. It would otherwise be a grave mistake, if Indian commercial banks allowed themselves to be lulled into complacency.

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