IMPACT OF CUSTOMER TRUST, CAPITAL REGULATION AND BANK-SPECIFIC FACTORS ON THE STABILITY OF BANKS IN INDIA

Venkati Ponnala, Dr R. Kasilingam

1Doctoral Research Scholar (FT), 2Associate Professor and Guide
1Department of Management Studies (DMS), Pondicherry University, Puducherry-605014

Abstract: The banking system plays a prominent role in the economic growth of any country. A weak banking system endangers the long-term growth of an economy and prompts for a financial crisis that further can lead to an economic disaster. The purpose of this research study is to assess the influence of customer trust, capital regulation and certain bank-specific factors on the bank stability of public and private banks in India. For the purpose data collected from financial statements of 21 public and 19 private sector banks from RBI Database over a period of thirteen years in the span of 2005-2017. First financial ratios are calculated for all the banks in the specified period, then 3 years rolling mean and standard deviation of ROA is calculated to measure the Bank stability measure Z-Score. Then data truncated to four digits with the use of MS-Excel to bring the uniformity in the size of the ratios. With the use of 11 years data, tested for stationary and performed all the CLRM assumption tests, the model is estimated with the use of OLS fixed effect regression model which is suitable for data as per the Hausman specification test. The results show that capital regulation, profitability, bank size, and income structure exist significant positive effect on the bank stability measure Z-Score. The customer trust and NNPA have a significantly negative impact on bank stability. The other independent variables of model namely management quality, liquidity and efficiency are not significant. These findings provide an understanding of the factors that are influencing bank stability and serves as a tool to improve bank stability by focusing on the negatively impacting variables.

Keywords: Bank stability, Customer trust, Income structure, Liquidity, and profitability.

I. INTRODUCTION

Banks are very closely connected with everyone's daily lives and all the activities. Banks play an important role in enhancing and promoting economic development and efficiency by routing funds from saving unit to the borrowing units (individuals, firms, and government) of the economy those who are having better investment opportunities and contribute to the economic development of the country. Banks interact among themselves with a global network of banks to deliver financial products and services to their global as well as domestic customers. The country's financial system that effectively supports economic growth and development largely depends upon the reliability and soundness of its banking system. Banking system problems can condense the success of the monetary policy, create large financial costs related to salvaged distressed financial institutions, cause capital losses, and develop economic downturns. Moreover, the recent crises have shown how swiftly economic weaknesses in one country can spill over and infect others. Banking system stability is vital to restricting widespread social and economic impact that maybe arising from malfunctioning of individual banks in the industry. In India, RBI safeguards stability and proper functioning of the banking system through its regulations, supervision and regular monitoring of banks. The RBI has a responsibility to make appropriate standards of conduct, ensure sound and judicious banking practices, and to help to avoid illegal, ignominious or improper practices in the banking industry.

II. STATEMENT OF THE PROBLEM

Demirguc-Kunt and Kane (2002) show that banking system crises are utmost expensive for emerging economies. India is an emerging economy increasingly showing rapid growth, the role of banks in supporting the continual increase of investments is gaining more importance and as such, the stability of the banking became vital. Growing nature of the banks as financial mediators and, the rapid growth of total assets certainly causes alterations in the banks' business models and their attitudes towards risks. Mostly, therisk-taking behaviour may arise from diverse banking business models (rapid loan growth and diversification activities); and a sort of bank-level risks (an extremely high level of credit risk exposure, inefficiency and excess liquidity. For instance, banks are progressively engaged in diversification activities that are different from the traditional deposit-taking and lending functions and participation in unlawful off-balance sheet activities. Whether the effect of this diversification activity is uniform among different sized-banks and across business lines remain unanswered. In the same fashion, existing empirical work does not take into account
the stability and risk-taking behaviour of extremely big banks. It is unfortunate because of the risk-taking behaviour of systemically large banks may be too much when regulators are reluctant to take over (Acharya, 2007; Brown and Dinç, 2011).

Given their growing role in economic development, and with the growing nature in banking companies of different size, ownership structure, and business mix strategy, it is totally unfortunate that no literature adequately deals with banks’ stability and risk-taking behaviour of public and private banks in India. Existing studies as to whether certain operating bank’s business models or benefits of an optimum asset or a business mix of banks could be linked to the development of greater risk-taking or improve bank stability, though many in number, but not yet come to a consensus. These studies do not provide a hint on the banks’ stability and risk-taking behaviour. Thus, to fill this gap, there is a need to refine the bank stability measures, to ensure that the banking sector more faithfully reflects market perceptions of bank risk exposure. Against this background, studying bank-stability from various aspects is critical. The objective of this research paper is to contribute to the existing banking literature in the course of highlighting the impact of customer trust, regulation, management quality and other bank-specific characteristics on stability of commercial banks of one of the fast-growing economies and provide answer for the research question, what factor determines the stability of banks in Indian banking system?

III. OBJECTIVES OF THE STUDY

The aim of the paper is to examine the impact of customer trust, capital regulation and the extent to which certain bank-level characteristics determine the stability of commercial banks in India.

3.1 Literature Review

What is bank Stability and how it is measured?

According to RBI “Banking stability is a yardstick to determine whether an economy is sufficiently strong enough to withstand both the internal and external shocks”. Banking stability depends upon the numerous factors of individual banks such as capital, liquidity, profitability, asset quality, business models, return on equity and return on assets. The stability of the banking system gets affected by conditions in the financial markets and the economy as a whole either negatively or positively. Eventually to identify what extent financial stability is safeguarded in the country by its ability to absorb the shocks. Stability of the banking sector may, therefore, be treated as a predecessor of stability of the financial system in an economy.

The selection of stability measure is important for any research study. The previous studies suggest the stability measures using either accounting-oriented measures or market-oriented measures. Accordingly, bank stability is measured by three different measures. One the Z Score is a standard measure of stability and distance to default; two the Merton Distance to Default (DD) Model and three the Standard Deviation of (ROA) Return On Assets.

In the literature, the ZScore measure extensively used and widely accepted as a stability measure along with a measure of risk-taking behaviour of banks. This model also used in widespread of empirical applications (Sundaram and Yermack, 2007). Furthermore, recent analyses have also confirmed that risk metrics created in the spirit of the Z-Score model are appropriate indicators of bank distress during the recent crisis (Altunbas et al., 2012). Using Zscore (Accounting based measure) as an indicator or measure of bank stability, Cihák and Hesse (2010) conducted a study for a sample of 397 conventional banks and 77 Islamic banks from 19 countries over the period of 12 year between 1993-2004and showed that the small banks (islamic) tend to be financially stronger (i.e., lower insolvency risk) than small conventional banks. Beck et al. (2012) found no evidence of adifference in the distance to insolvency (i.e., z-score) of Islamic as well as conventional banks using a sample of 422 conventional banks and 88 Islamic banks from 22 countries during the 1995 to 2010 period. However, they showed, that Islamic banks are subject to less cost-effective, but better capitalized and less subject to disintermediation during crises than conventional banks.

Customer trust and bank stability: Trust is a core feature of any banking industry. Without it, commercial banks, as well as central banks, could not be successful in achieving their goals. In terms of the placement of money, bank-customer relations allow two directions. In one direction the bank accepts a deposit from the customer, and in the other, the bank provides a loan to the customer. Both directions rely on trust devoted to the other party, since, in the future, the customer who made the deposit wishes to claim it or her money with interest. Numerous researchers have analyzed the question of trust in the economic relations between banks and their clients. History tells us that trust is one of the indispensable pillars of a sound and stable banking system. Trust needs the simultaneous existence and fulfillment of several factors and conditions: good performance, good reputation, stability, liquidity, profitability, solid ownership structure, capitalization above the requirement, reliable and continuous operation, provision of quality services, transparent disclosure of information, and adequate visibility in the market. While building up trust takes years and often decades, it can be lost in a matter of day or days. In the banking sector, the loss of trust characteristically leads to certain bankruptcy and the liquidation of the institution.

Knell and Stix (2009) describe the reasons behind the decline in public trust in banks in Australia during the period of global crisis. With focusing on the determinants that influence the level of public trust in banks. In this case, the authors find that an extension of deposit insurance cover had a positive effect on trust. In other study conducted by Mosch and Prast (2008) showed an evidence regarding public trust in banks in the Dutch banking and financial sector. According to surveys carried out in the period of four years between 2003 and 2006, and found a significant positive association between confidence in the economy and public trust in the country’s banking and financial institutions. Spanish researchers Carbó-Valverde et al. (2013) analyze the extent to which bank customers’ perceptions of several bank characteristics and attributes foster trust in banks. They also study the extent to
which a potential loss of trust in banks due to a financial crisis can be offset by improvements in bank customers’ perceptions of such attributes.

H₀: The Customer trust has a significant impact on bank stability

3.2 Capital Regulation and Stability

Hendrik Hakenes and Isabel Schnabel (2011) provided evidence that capital regulations imposed by the central banks may weaken the banking system through its influence on industry competition. Tight and strict capital regulation weakens competition for advances and loans, involving higher interest rates on loans, hence banks take higher risks.

H₀: Capital regulation has a significant negative impact on bank stability

3.3 Bank Size and Stability and Risk Taking

Hagendorff et al. (2012) raised two contrasting arguments as to how the relationship between systemic size and risk changes. One view holds that banks take on more risk as they grow in systemic size. This is because the failure of a systemically large bank creates considerable negative externalities often beyond a country’s overall financial system and its real economy. Since the outlook of large externalities raises the expectations that a bank will be subject to a bailout (Financial Stability Board, 2010; and BIS, 2011), systemically large banks may increase their implied claim on the financial safety net through higher risk-taking.

According to the study of US banks by Demsetz and Strahan (1997), it is shown that, though larger banks are well diversified in their activities than the smaller banks, but not able to take this advantage into less total risk. Rather, they are using diversification to their advantage to conduct operations with lower capital ratios and follows riskier strategies, with a better focus on the individual and corporate loans and expose to systematic risk. In contrast to the risk-shifting argument, the opposite view holds that increases in systemic size cause banks to involve in less risk-taking. The social costs of bailing out a systemically large bank can be prohibitive for countries and raise questions over their long-term solvency. This raises doubts over the ability of countries to bail out their systemically largest banks and raises the prospect of creditor losses should a systemically important bank default. In the absence of credible bank bailout guarantees, systemically larger banks may be subject to more rather than less market discipline and may display lower rather than higher risk as a result.

H₀: Bank size has a significant impact on bank stability

3.4 Income structure and Stability

Conventional insights in the banking studies argue that banks should be as diversified as possible. Generally, it is understood that diversification of business and different income sources should minimize the total risk and improve the stability, as diversification must smooth out operating income if income flows are not perfectly correlated (Busch and Kick, 2009).

Demirgüç-Kunt and Huizinga (2010), provided evidence that banking institutions become stable if they produce a larger portion of their income from non-interest earning activities. This effect depends upon bank size, however. While smaller banks take the advantage of income diversifying effects of a greater non-interest income, they find the reverse for large banks.

H₀: Income structure has a significant positive impact on bank stability

3.5 Bank Liquidity and Stability

“Liquidity is easier to recognize than define” (Crockett, 2008). It can be an intangible aspect in its simplest form, however, liquidity is nothing but having access to cash balances when it is required. According to Eminent economist Charles Goodhart “Liquidity and solvency are the heavenly twins of banking, frequently indistinguishable. An illiquid bank can rapidly become insolvent and an insolvent bank illiquid”. The literature on the Indian banking sector has overwhelmingly focused on measuring bank performance. These studies do not provide a hint on the banks’ stability and risk-taking behaviour. Thus, to fill this gap, there is a need to refine the bank stability measure, to ensure that the banking sector more faithfully reflects market perceptions of bank risk exposure.

H₀: Liquidity has a significant positive impact on bank stability

IV. RESEARCH METHODOLOGY

Quantitative methods approach with survey method is used to achieve the aim of the study. According to Creswell (2009), a quantitative method with survey approach permits the researcher to test the empirical theories by building the cause and effect relation between the variables. The sample of 40 (21 public and 19 private) commercial banks are chosen on the basis of the existence of at least thirteen years in the business (i.e. from 2005 to 2017) and used in the study. Structured document survey is used to collect the necessary data from RBI Database with accessing annual financials of each sampled banks for bank-specific factors. First, different financial ratios are calculated and truncated with using MS-Excel. The study uses panel data and the econometric approach with Classical Linear Regression Models (CLRM), before proceeding for regression panel unit root tests are performed to know that variables are stationary or not, as per the test, all the variable are stationary at the level, then the study tests all assumptions of CLRM. The panel regression analysis model with fixed and random effect estimated, to select the model which model is
applicable to the study, Hausman test performed, based on the test results, panel Ordinary Least Square (OLS) Method with Fixed Effect model is estimated to assess the impact of selected independent variables on bank stability.

The models for this study derived on the basis of prior studies such as Osuji and Odita (2012), and Abor (2005) and this equation is believed to capture the essence of the subject under study. The general model of this study, as found in other empirical literature is represented by:

\[ Y_{it} = \alpha + \beta X_{it} + \mu_{it} \]

Where:
- \( Y_{it} \) is the dependent or outcome variable.
- \( \alpha \) is the intercept (constant term or variable)
- \( \beta \) is the coefficient of the explanatory or independent variable.
- \( X_{it} \) is the independent or explanatory variable.
- \( \mu \) is the error term.
- \( i \) is the cross-section dimension or number of firms.
- \( t \) is the time series dimension or time periods.

The econometric form of a working model for the study is specified as

\[ Z_t = B_0 + B_1 \times TRUST_t + B_2 \times CAR_t + B_3 \times SIZE_t + B_4 \times INCSTRUC_t + B_5 \times LIQTY_t + B_6 \times EFFCY_t + B_7 \times PROFY + B_8 \times MQLTY + B_9 \times NNPA_t + u_{it} \]

Where, \( u_{it} \) is disturbance term, \( B_1 \) to \( B_9 \) are the parameters of explanatory (Independent) variables of dependent variable bank stability ZScore.

V. VARIABLE DESCRIPTION AND MODEL SPECIFICATION

3.1 Dependent Variable Bank Stability (ZScore)

The choice of Stability measures is of particular importance for the empirical analysis. The study employs Bank Stability (ZScore) as dependent variable which measures banks distance to default as given by Boyd and Nicoló (2005). The study calculates the Z-Score as:

\[ Z = \frac{\mu_{ROA} + CAR}{\sigma_{ROA}} \]

In the model natural log Z-score is used as a dependent outcome variable.

3.2 Independent Variables

In this paper, the researcher uses nine independent variables such as:

- **Customer trust (TRUST):** In the study annual deposit growth rate used as a proxy for customer trust in banks and it is derived as; = (Present year deposits – previous year deposits) divided with previous year deposits and multiplied with hundred
- **Capital Regulation (CAR):** Capital Adequacy Ratio (CAR) with Tier I and II capital to total assets used as a proxy for capital regulation and calculated as:
  
  Capital Adequacy Ratio (CAR) = Tier-I &II Capital / Total assets
- **Management Quality (MQLTY):** It is measured by Non-Interest Expenditure to Non-interest expenditure plus net interest income
- **Income Structure (INCSTRU):** It is the ratio of non-interest income (NII) to total income
- **Bank Liquidity (LIQTY):** The overall liquidity of the banks measured with Liquid Assets to Total Assets
- **Bank Efficiency (EFFY):** The efficiency of banking operations are measured with Cost to Income ratio
- **Bank Profitability (PROF):** Return on Equity (ROE) is used as a proxy for profitability and financial performance of the banks
- **Bank Size (SIZE):** measured as the natural log of total assets

Non-Performing Assets (NNPA): the ratio of net non-performing assets to net total assets

VI. DATA ANALYSIS, DISCUSSION AND SUMMARY

6.1 Descriptive Statistics

Table-I shows that the descriptive statistics for the bank stability measure of the Z score and its components Capitalization (Capital Adequacy Ratio – CAR-Tier I), Profitability (ROA) and Profit Volatility (standard deviation of ROA).

<table>
<thead>
<tr>
<th>Values</th>
<th>ZSCORE</th>
<th>ROA_TR</th>
<th>SDEV_ROA</th>
<th>CAR_T1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>128.6144</td>
<td>0.842295</td>
<td>0.236953</td>
<td>10.45050</td>
</tr>
<tr>
<td>Median</td>
<td>64.01105</td>
<td>0.890000</td>
<td>0.162050</td>
<td>9.285000</td>
</tr>
<tr>
<td>Maximum</td>
<td>2917.928</td>
<td>2.020000</td>
<td>2.081800</td>
<td>55.93000</td>
</tr>
<tr>
<td>Minimum</td>
<td>3.304800</td>
<td>-2.040000</td>
<td>0.005700</td>
<td>4.880000</td>
</tr>
<tr>
<td>Std. Dev.</td>
<td>241.7251</td>
<td>0.686322</td>
<td>0.246648</td>
<td>4.441783</td>
</tr>
<tr>
<td>Observations</td>
<td>440</td>
<td>440</td>
<td>440</td>
<td>440</td>
</tr>
</tbody>
</table>
Table-1 shows that the large and outsized variation exists in bank stability measure across the Indian commercial banks. When the Zscore measure is averaged across the time; and it generates a cross-sectional series whose correlation with Zscore is about 128.6144 and a median of 64.01105. It indicates that a wider range exists among banks, it also shows that the existence of both banks that either close to insolvency (Z score value close to 0), as well as banks with higher value in their stabilities (very large Zscore value). The mean Z score is 128.6144, with a minimum of 3.3048 and a maximum of 2917.928. This means profitability has to fall by 128.6144 standard deviations in the average bank to wipe out equity while it needs to fall by only 3.3048 standard deviations in the riskiest bank. The changes in the average profitability (ROA) over the period is quite lowering with ammuninum of -2.04% and a maximum of 2.02%, with an average value of 0.014% whilst the Profit Volatility (SDROA) varies with ammodaterpersion of 0.005 to 2.0818 and a mean value of 0.2369. Capitalization (CAR-Tier-I) varies between 4.88% and 55.93%, with an average value of 10.45%, which is more than the minimum requirement of 8% determined by the central bank and the international standard for capital adequacy (Bank for International Settlements, 2010).

Table-2 Correlation matrix of all variables

<table>
<thead>
<tr>
<th>Variable1</th>
<th>LOGZSORE_T</th>
<th>TRUS_T_DGROWTH</th>
<th>T1_T2_CAR</th>
<th>MNGQLTY</th>
<th>INCOME_STRUCTUERE</th>
<th>LIQDT_LA2TA</th>
<th>EFFICIENCY</th>
<th>PROF_ROE</th>
<th>SIZE_LOGTA</th>
<th>NNP</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOGZSCORE_T</td>
<td>1.000</td>
<td>0.151</td>
<td>0.236</td>
<td>-0.306</td>
<td>0.110</td>
<td>0.033</td>
<td>-0.230</td>
<td>0.571</td>
<td>0.011</td>
<td>-0.474</td>
</tr>
<tr>
<td>TRUST_DGROWTH</td>
<td>0.151</td>
<td>1.000</td>
<td>0.152</td>
<td>0.040</td>
<td>0.0961</td>
<td>0.2892</td>
<td>0.002</td>
<td>0.368</td>
<td>-0.193</td>
<td>0.474</td>
</tr>
<tr>
<td>T1_T2_CAR</td>
<td>0.236</td>
<td>0.152</td>
<td>1.000</td>
<td>-0.1401</td>
<td>0.2904</td>
<td>0.1348</td>
<td>0.009</td>
<td>0.1829</td>
<td>-0.2621</td>
<td>0.2686</td>
</tr>
<tr>
<td>MNGQTY</td>
<td>-0.306</td>
<td>0.040</td>
<td>-0.1401</td>
<td>1.000</td>
<td>0.0205</td>
<td>0.5447</td>
<td>0.002</td>
<td>0.1616</td>
<td>-0.2621</td>
<td>-0.2686</td>
</tr>
<tr>
<td>INCOME_STRUCTUERE</td>
<td>0.110</td>
<td>0.0961</td>
<td>0.2904</td>
<td>0.100</td>
<td>0.205</td>
<td>0.3232</td>
<td>0.4391</td>
<td>0.0777</td>
<td>0.1616</td>
<td>-0.2621</td>
</tr>
<tr>
<td>LIQDT_LA2TA</td>
<td>0.033</td>
<td>0.2892</td>
<td>0.1348</td>
<td>1.000</td>
<td>0.0961</td>
<td>0.3232</td>
<td>0.1128</td>
<td>0.063</td>
<td>0.002</td>
<td>-0.230</td>
</tr>
<tr>
<td>EFFICIENCY</td>
<td>-0.230</td>
<td>0.2072</td>
<td>0.1128</td>
<td>1.000</td>
<td>0.100</td>
<td>0.3232</td>
<td>0.1616</td>
<td>0.1000</td>
<td>0.002</td>
<td>-0.230</td>
</tr>
<tr>
<td>PROF_ROE</td>
<td>0.571</td>
<td>0.5447</td>
<td>0.3232</td>
<td>0.3232</td>
<td>0.0777</td>
<td>0.4391</td>
<td>0.1128</td>
<td>0.1000</td>
<td>0.002</td>
<td>-0.230</td>
</tr>
<tr>
<td>SIZE_LOGTA</td>
<td>0.011</td>
<td>0.1616</td>
<td>0.0777</td>
<td>0.4391</td>
<td>0.2072</td>
<td>0.1128</td>
<td>0.1000</td>
<td>0.002</td>
<td>0.011</td>
<td>-0.474</td>
</tr>
<tr>
<td>NNP</td>
<td>-0.474</td>
<td>-0.2621</td>
<td>-0.2621</td>
<td>-0.2686</td>
<td>-0.1616</td>
<td>0.1000</td>
<td>0.3065</td>
<td>0.002</td>
<td>0.011</td>
<td>-0.474</td>
</tr>
</tbody>
</table>

Table-2 indicates that the correlation matrix of all the study variables. Since all study variables have correlation values less than 0.8, including all variables simultaneously may not cause a serious multicollinearity problem. There are no severely correlated variables in the correlation matrix, the researcher believes that it would be unnecessary to work out further multicollinearity tests of variance inflation factor so that the study just reports the cross-correlation matrix among the main interest of independent variable in the model.

6.2 Results of Panel Data Regression Analysis (Fixed Effect) Model or LSDV Model

In this study as presented in research methodology part, first unit root test for all the variable are performed and found all the variables are stationary at level and diagnostic tests were carried out to confirm that the data satisfy the basic assumption of the CLRM.

Selection of estimation model between random effect model and fixed effect model performed Hausman specification test. This test helps to identify the efficient estimation technique for given data.

Null Hypothesis $H_0$: Random Effect estimation model is appropriate

Alternative Hypothesis $H_1$: Fixed Effect estimation model is appropriate

Table-3 Hausman Test
Table-3 shows the results of Hausman specification and indicates that probability value is 0.0372 which is less than 0.05, hence we cannot accept the null hypothesis. The test result suggeststhat the fixed effect model is suitable.

VII. REGRESSION ANALYSIS (FIXED EFFECT) MODEL OR LSDV MODEL

Table-4 Regression analysis
Dependent Variable: LOGZSCORE_T
Method: Panel Least Squares
Sample: 2007 2017
Time Periods included: 11
Cross-sections included: 40
Total (balanced) panel observations: 440

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>0.320831</td>
<td>0.673948</td>
<td>0.476048</td>
<td>0.6343</td>
</tr>
<tr>
<td>TRUST_DGROWTH</td>
<td>-0.002652</td>
<td>0.001295</td>
<td>-2.048461</td>
<td>0.0412</td>
</tr>
<tr>
<td>T1_T2_CAR</td>
<td>0.025261</td>
<td>0.007256</td>
<td>3.481216</td>
<td>0.0006</td>
</tr>
<tr>
<td>MNGQLTY</td>
<td>0.001707</td>
<td>0.004885</td>
<td>0.349379</td>
<td>0.7270</td>
</tr>
<tr>
<td>INCOME_STRUCTURE</td>
<td>0.013308</td>
<td>0.007576</td>
<td>1.756505</td>
<td>0.0798</td>
</tr>
<tr>
<td>LIQDT_LA2TA</td>
<td>-0.013480</td>
<td>0.008219</td>
<td>-1.640009</td>
<td>0.1018</td>
</tr>
<tr>
<td>EFFICIENCY</td>
<td>-0.009594</td>
<td>0.006081</td>
<td>-1.577754</td>
<td>0.1154</td>
</tr>
<tr>
<td>PROF_ROE</td>
<td>0.017342</td>
<td>0.003512</td>
<td>4.937979</td>
<td>0.0000</td>
</tr>
<tr>
<td>SIZE_LOGTA</td>
<td>0.197201</td>
<td>0.095971</td>
<td>2.054791</td>
<td>0.0406</td>
</tr>
<tr>
<td>NNPA</td>
<td>-0.036514</td>
<td>0.015655</td>
<td>-2.323382</td>
<td>0.0202</td>
</tr>
</tbody>
</table>

Table-4 shows that the results of the panel data regression (fixed effect model) estimation, and it indicates that the R² statistics and adjusted R² statistics value 0.4336 means 43.36% and 0.4955, which means 49.55% respectively. The results indicate that the changes in the independent variable explain 49.55% of the change in the dependent variable bank Z-score. The selected variables are the good explanatory variables of stability of banks in India. The F-Statistics probability P-value 0.0000 indicates strong statistical significance and enhances the validity of the selected estimation model.

Based the results presented in the Table 4, five independent variables namely customer trust measured as annual deposit growth rate, CAR measured as Tier-I &II capital to total assets, bank size (BSIZE) measured with natural log value of total assets, return on equity (ROE), and net non-performing assets (NNPA) measured as net non-performing assets to net assets had statistically significant of impact on bank stability at 5% level of significance with P-values of 0.0412, 0.0006, 0.0000, 0.0406, and 0.0202 respectively. On the other hand variable income structure (INCSTR) measured with non-interest income to total income has statistically significant impact at 10% significance level with a p-value of 0.0798.

Table 4 also shows that the coefficient of variables CAR, ROE, SIZE and INCSTR has significant and positive impact on the bank stability, this indicates that there is a direct relationship between stated independent variables and bank stability measure Z-Score. Thus the increase in these variables leads to a better stability. On the other side variable like Customer Trust (Deposit Growth Rate) and NNPA has assigned and negative impact on bank stability, and exhibits that there exist an inverse opposite
relationship between the aforementioned independent and bank stability measure. In the present study, nine independent variables were used, out of which, six variables are significant. The Working model with Substituted Coefficient is:

\[
\text{LOGZSCORE} = 0.32083 \times \text{TRUST DGROWTH} + 0.025260 \times \text{T1 T2 CAR} + 0.0017068 \times \text{MNGQLYT} + 0.0133075 \times \text{INCOME STRUCTURE} - 0.013479 \times \text{LIQDT LA2TA} - 0.00959 \times \text{EFFICIENCY} + 0.017342 \times \text{PROF ROE} + 0.197201 \times \text{SIZE LOGTA} - 0.036514 \times \text{NNPA} + [\text{CX=F}]
\]

Based on the literature it is hypothesized, that customer trust measured by annual deposit growth rate has a significant and direct or positive impact on bank stability (Zscore). In reality, the regression coefficient of the variables -0.00262 and P value 0.0412 indicates that there is a negative and significant impact on bank stability. It means when bank mobilizes more and more deposits, it has to find the ways to convert them into advances and investments, hence bank take additional risks that lead to lesser stability in banks. Thus the hypothesis that state there exists a significant and positive effect of customer trust on bank stability may be rejected or the data used in the analysis did not support the hypothesis.

The ratio of Tier I & II capital to total assets indicate the capital regulation and shows that the capital adequacy of the banks. The coefficient of this variable is 0.0006 and P-value 0.02526 indicates that there exist a significant and positive impact of CAR on bank stability at 5% significance level. It is in contrary the past studies and prior expectation and indicates that the existence of direct or universe relationship between CAR and Bank stability. This exhibits that an increase in Tier I and Tier II capital certainly leads to an increase in bank stability. Hence the H0 hypothesis that says capital regulation has a significant and negative impact on bank stability is rejected.

The income structure of the banks measure with non-interest income to total income has a positive coefficient 0.0017 and P-value of 0.0798 which is significant at 10% significance level and exhibits that a positive impact on bank stability. This is particularly supported by the theory and previous studies (Demirguc-Kunt and Huizinga, 2010; Busch and Kick, 2009). Thus the hypothesis income structure has a significant and positive effect on bank stability is accepted. The profitability measure with ROE is the indicator of the performance of the banks. The prior studies show that ROE has a significant and direct impact on bank stability, implies that the banks with greater ROE are better and stable. The study results show that the coefficient for ROE is 0.0173 with a P-value of 0.0000 which is significant at 1% significance level and exhibits that the positive or direct impact of ROE on the stability of the banks. Thus the hypothesis of profitability measured with ROE has a positive and statistically significant impact on bank stability is accepted.

The size of the banks measured by the natural log of total assets has an impact on the bank stability. In literature there are two different views, as per the “too big to fail” argument, big banks would get benefit from an implicit assurance, and cut their cost of funding and invest in high-risk assets (Iannotta et al. 2007). Hence, the banks identified with “too big to fail” status could take extreme risk. However, the small banks have as small amount of liquidity (Berger and Bouwman 2009) and take the lesser risk. Hence, there exist a negative relationship between bank size and bank risk exposure. The results of model estimation show that the coefficient of the Bank size ration 0.1972 with a P-value of 0.0406 is significant and indicates that there exist a significant and positive impact of size on stability. Hence the hypothesis that states bank size has significant impact on bank stability is accepted. The literature shows that the ratio of net non-performing assets to net assets has a significant negative impact on the stability of banks. The estimation result indicates that it is true with a coefficient of 0.0286 and a P-value of 0.0020 and significant at 5% level of significance. Hence the hypothesis of NPNA has a significant and negative impact on the bank stability. Other variable included in the model namely, management quality has positive but not significant impact on the stability on the other hand variables like efficiency measured by the cost to income ratio and liquidity measured by liquid assets to total assets has negative but not significant effect on the bank stability.

VIII. CONCLUSION

The purpose of this paper is to assess the impact of customer trust, capital regulation, and certain bank-specific factors on the stability of public and private commercial banks in India. For the purpose required data gathered from annual financial statements of 21 public and 19 private sector banks from RBI Database of banking time series over a period of 13 years (2005-2017). First different financial ratios are calculated for all the banks for all the years in the specified period, then 3 years rolling mean and standard deviation of ROA is calculated to measure the bank stability measure Z-Score with the use measure suggested by (Boyd and Nicolo, 2005). After that, the data truncated to four digits with the use of MS-Excel to bring the uniformity in the size of the ratios. With use of 11 years (excluding 2005 and 2006) data, data tested for stationary and performed all the CLRM assumption tests; model is estimated with the use of OLS fixed effect regression model which is suitable for data as per the Hausman test. The results of the model show that capital regulation, profitability, bank size, and income structure has a positive and significant impact on the bank stability. The customer trust and NNPA has a significant and negative impact on bank stability. Other variable used in the model management quality, liquidity and efficiency are not significant to the stability of banks. To conclude that mostly results are in line with the previous studies. The findings of this research work provide an understanding of the factors that are influencing on bank stability and serves as a tool to improve bank stability by focusing on the negatively impacting variables.
REFERENCES


