ON EXAMINATION OF IMPACT OF PROVISIONING ON THE SIZE OF BANKS

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Abstract: *This article examines how the provisioning impacts on assets of Scheduled Commercial Banks(excluding the Regional Rural Banks). The two stage least square regression mechanism has been employed to analyse the sequential flow of provisioning on the bank credit and ultimately it impacts on the asset of Scheduled Commercial Banks. A panel data set with the bank groups as the cross-sectional units have been prepared for the period 2000 to 2016. It is apparent from the regression analysis that the provisioning for the non-performing assets has statistically significant and negative effect on the bank credit, whereas, the provisioning for other and provisioning for tax have statistically significant and positive effect on the bank credit. Subsequently, the two stages least square regression analysis reveals that the weighted average lending rate has statistically significant and negative effect on the non-performing assets, further the non-performing assets has statistically significant and negative effect on the assets of banks. Bank credit and investment have statistically significant and positive effect on the assets of the banks.*

Keywords: *Provisioning, Assets of banks, Bank Credit, 2SLS, Panel data*
JEL Classifications*: E51, G51, C36, C23*

INTRODUCTION

In the emerging market economy like India the growth of Non-Performing Assets (NPAs) has been accelerating as NPAs are positively correlated with the growth credit disbursement. Consequently, the increasing volume of NPAs adversely impacts the assets size of the banks, for example, Jayakkodi & Rengarajan (2016).While taking the precautionary measures, banks do the provisioning against the disbursed amount with respect to the repaying worthiness of borrowers. But, the provisioning for loan loss has negative effect on the credit disbursement, for example, Bebeji, Dogarawa, & Sabari (2014) and normally, the provisioned amount could

not contribute in the assets growth of the banks. This theoretical background inspires us to investigate the relational framework of provisioning[1] and size of banks.

While the investigation of literature, it has been found that there is good stream of studies which have explored the impact of the non-performing assets on the performance of banks. Still, the investigation of literature witnessed the gap of availability of studies which could have examined the effect of provisioning on the size of banks. Hence, this study set an objective to understand the framework of sequential impact of provisioning on the bank loans and furthers the impact of bank loans on the size of banks[2]. For estimating the impact of different kind of provisioning on the bank credit and further its impact on the assets of banks, a panel data regression analysis approach has been applied. The data have been panelled over four banks groups[3] and pooled over the period 2000 to 2016.

The rest of article has been organised in the following manner: Section (2) present the literature review; Section (3) presents the methodology; Section (4) reports the empirical results and discussions; and section (5) ends with the summary and conclusions.

LITERATURE REVIEW

Bhat (2004) conducted a study to understand how the companies substitute trade credit for bank credit during period of restricted monetary policy. The study was conducted by using the panel data panelled over the 828 manufacturing companies for a period from 1990 to 2001.The findings of study suggested that the magnitude of substitution of trade credit for bank credit is statistically significant during the monetary restrictive years. Further the study disclosed that the trade credit contributes around 40% in the assets formation of the sample companies in India.

Further the literature insighted that there exists an inverse relationship between the asset quality and non-performing assets. For example, Chilukuri, Rao & Madhav (2016) conducted a study to examine the assets quality of the scheduled commercial banks. The study was conducted for the period of 12 years ranging from 2001 to 2012. They concluded that the assets quality of all the scheduled commercial banks was increased over the period as the

[1]The banks provisioning includes the provisioning for tax, provisioning for others, provisioning for tax and provision for investment and provisioning for non-performing assets.
[2]This study measures the size of bank by using the assets of banks.

[3]12 Bank Groups include State Bank of India and its Associates, Nationalized Banks, Private Banks and Foreign Banks

ratio of NPAs to advances had shown a decline for the public sector banks, private sector banks and foreign banks.

The past studies of Garg (2016) and Yeuksel (2017) explored the causes and determinants of non-performing assets. Garg (2016)conducted a study to understand the concepts of NPAs, identify the causes of NPAs and its impact on the Indian banking sector. Study was conducted based on the data collected from the Annual Reports of Banks, Report on Trend and Progress released by RBI, Manual of instructions on loans and advances, research papers and published articles. Study concluded thatNPAs had adverse impact on the profit which ultimately lead to the loss of long-term business opportunities. Moreover, reduction in the profitability adversly impact the Return on Investment (ROI) as well.The low return on investment and loss of money interms of NPAs deteriorate market reputation and brand image of the banks.

Jayakkodi & Rengarajan (2016) conducted a study to examine the impact of NPAs on the return of assets of public sector banks and private sector banks. Study was conducted for eight banks[4]including four large pubic sector banks and four large private sector banks. For analysing the impact of NPAs on the performance of banks, secondary data was collected from the annual reports of the respective banks for the period of 5 years from 2010-11 to 2014-15. Ratio analysis approach has been applied for the variables including the Gross NPA ratio[5], Net NPA ratio[6], Problem Asset Ratio[7], Depositors Safety Ratio[8], Shareholders risk ratio[9] and Return on assets ratio[10].The study concludes that the NPAs of public sector banks are comparatively higher than the private sector banks as the public sector banksdisburse the loan to the priority sector, while theprivate sector banks pursue the more secured loan policy. Further the study concluded that the NPAs has the adverse impact on the banking performace.

Bebeji, Dogarawa, & Sabari (2014)conducted a study to examine the impact of loan loss provisioning on the bank credit in Nigeria. Study was conducted based on the secondary data collected from 10 sampled banks for a period of seven years from 2002 to 2008. Study

[4]The Sechuled Commercial Banks include: State Bank of India, Punjab National Bank, Bank of Baroda and Bank of India and private sector banks include: ICICI Bank, HDFC Bank, Axis Bank and Federal Bank.
[5]Gross NPAs Ratio = Gross NPAs / Gross Advances
[6]Net NPAs = Gross NPAs – Provisions / (Gross Advances –Provisions)
[7]Problem Assets Ratio=Gross NPA / total assets
[8]Depositors Safety Ratio = total standard assets/total outside liabilities
[9]Shareholders Risk Ratio = Net NPA/ Total Capital and Reserves
[10]Return on Assets = Net Profit ×100/ Total Assets

concluded that loan loss provisions has negative impact on banks credit. Study further suggested that the tightening ofthe provisioning is required on non-performing loans.

Ghosh (2017) examined the sector specific NPLs in US using the data for 100 largest commercial banks for a period 1992q4- 2016q1. Further the study investigated the impact of NPLs on sector-specific product and labor markets. Study was conducted by using the panel data analysis approach. Both the static and dynamic models have been estimated. For estimating the impact of bank level variables[11] and macroeconomic variables[12] on NPLs, 10 econometric models have been formulated. The empirical analysis revealed that the increase in the capital caused a significant increase in the total NPLs and at the disaggregated level, it caused an increase in the NPLs of real estate and farm loans as well. The lending specilisation measured by loan to assets ratio caused a significant decline in the total NPLs, real estate NPLs and farm C&I loans. The deterioration of bank's loan quality significanty caused an increase in the NPLs. Finally the bank profitability significantly reduced the NPLs. Turining to the macroeconomic variables, it was found that the inflation and real GDP caused a significant positive effect in the NPLs reduction while the unemployment caused an increase in the NPLs. Further the study concluded that the NPLs have the most pronounced effect on US housing prices, real GDP growth and housing starts. The non-performing construction and land development have the most severely negative impact on the respective sector sepcific employment growth.

METHODOLOGY

Model and Hypotheses

The survey of literature provided the guidelines to examine the impact of loan loss provisioning on the bank credit.

Hypotheses tested

To understand the linkage between the assets, bank credit and provisioning, following two hypotheses have been put forth in the light of the above discussed past studies.

[11]Capital to assets ratio used to measure the capitalisation, loans to assets ratio used to measure lending specialisation, provisioning for loan and lease loss to loan used to measure the credit quality, share of non-interest income to total income used to measure the diversification, return on assets used to measure the profitability, and non-interest expenses to total assets used to measure the operational efficiency.

[12]GDP growth, interest rate, Housing Price Index (HPI), and Unemployment rate.

H1: In the first hypothesis, it has been put forth whether the provisioning by the banks have any impact on the bank credit. The mathematical form of the hypothesis has been placed as mentioned below:

$$LCCOD = f(Provisioning^{+}, \quad WALR^{+}) \tag{1}$$

Where $LCCOD$ represents the Loan, Cash Credit and Over Drafts, $Provisioning$ represents the various Provisioning including the provisioning for tax, provision for other and provisioning for non-performing assets.$WALR$represents the weighted average lending rate.

H2: In the second hypothesis, it has been put forth whether the bank credit have any impact on the assets of the banks. The mathematical form of the hypothesis has been placed as mentioned below:

$$Assets = f(LCCOD^{+}, \quad INV^{+}, \quad GNPAs^{-}) \tag{2}$$

Where $Assets$rrepresents the Assets of Banks, $LCCOD$ represents Loan, Cash Credit and Over Draft, INV represents the investment and $GNPAs$ represents the Gross Non-Performing Assets.

In the aforesaid equation the plus $(+)$ symbol indicate the positive effect and minus $(-)$ symbol indicates the negative effect.

Data sources and description

The hypothesis testing has been performed by using the data of banking sector which have been sourced from the Annual Banking Statistical Return published by Reserve Bank of India. Further details of the data have been mentioned in the Table 1.

Sr.	Variables	Notation	Units	Frequency	Period
1	Provisioning for Taxation	$Ptax$	Millions	Annual	2000-2016
2	Provisioning for Others	$Poth$	Millions	Annual	2000-2016
3	Provisioning for NPAs	$Pnpa$	Millions	Annual	2000-2016
4	Provisioning for Investments	$Pinv$	Millions	Annual	2000-2016
6	Gross Non-Performing Assets	$GNPA$	Millions	Annual	2000-2016
7	Assets with the banking system	$Assets$	Millions	Annual	2000-2016
10	Loans Cash Credit and Overdrafts	$LCCOV$	Millions	Annual	2000-2016

11	Weighted Average Lending Rate	$WALR$	Millions	Annual	2000-2016

Table 1: Data Details

Empirical Results and Discussion

For testing the hypothesis, panel data have been prepared with four bank groups as the cross section units for the period from 2000 to 2016. For the estimation of following regression equations formed for the testing the hypotheses, different diagnostic tests have been applied. After getting the satisfactory results of diagnostic tests, the regression equations have been estimated and the results of same are presented in the respective tables.

$$LCCOD_{it} = \alpha + \beta_1 Ptax_{it} + \beta_2 Poth_{it} + \beta_3 Pnpa_{it} + \beta_4 WALR + \varepsilon_{it} \quad (3)$$

$$Assets_{it} = \alpha + \beta_1 LCCOD_{it} + \beta_2 INV_{it} + \beta_3 GNPA_{it} + \varepsilon_{it} \quad (4)$$

Further for examining the impact of different kinds of provisioning on the bank credit, the provisioning for tax, provisioning for others and provisioning for non-performing assets have been regressed on the bank credit. The weighted average lending rate has been used as the control variable in the regression equation. The results of the estimation of regression equation 3 are presented in the Table 2.

The provisioning for others have statistically significant and positive effect on the bank credit, whereas the provisioning for non-performing assets has statistically significant and negative effect on the bank credit. Further the estimation of equation 3 reveals that one percent increase in the provisioning for others causes an increase of 1.33% on the bank credit. The weighted average lending rate has statistically significant and negative effect on the bank credit and further it reveals that 1% increase in the weighted average lending rate causes a decline of 0.95% on the bank credit.

Explanatory Variables	Fixed Effect Model	Random Effect Model
Provisioning for tax	0.1827311 (0.744)	-0.0403924* (0.921)
Provisioning for other	1.334525* (0.000)	0.4123524* (0.100)
Provisioning for non-performing assets	-0.5939037* (0.079)	0.030116* (0.884)
Weighted Average Lending Rate	- 0.9594512* (0.008)	- 0.173829 (0.427)
Constant	-4.680982 (0.550)	10.32868* (0.017)

Hausman Test	Chi2(2)= 20.06 and Prob>chi2 = 0.0005, the null hypothesis of Hausman test is rejected. Hence the fixed effect model is an appropriate model	

Table 2: Bank credit has been used as a dependent variable

Data Source: Statistical Report of Banks in India (STRBI) and estimated are calculated by Author

To understand further, a two stage estimation approach has been applied to test whether the provisioning for non-performance assets is an endogenous variable. With the support of Durbin Square and WU-Hausman test, it has been identified that the provisioning for non-performance assets is not an endogenous variable (Table 3).

Explanatory Variables	First Stage (Gross Non-performing Assets as Dependent Variable)	Second Stage (Assets with Banks as Dependent Variable)
Provisioning for tax	0.8189241* (0.001)	-0.3648092 (0.415)
Provisioning for other	0.4092702* (0.006)	0.2830214 (0.600)
Provisioning for non-performing assets	-	0.5739835 * (0.035)
Weighted Average Lending Rate	-0.4401566* (0.001)	-
Constant	17.58136 (0.000)	11.44988 * (0.002)
Test of endogenous Ho: variables are exogenous	Durbin Score Chi_Square = 0.67556 (P = 0.4111) Wu-Hausman F(1,63) = 0.630838 (P = 0.4301)	Hypothesis is accepted and hence the variable is an exogenous.

Table 3: Bank credit has been used as a dependent variables (2SLS)

Data Source: Statistical Report of Banks in India (STRBI) and estimated are calculated by Author

Further for examining the impact of bank credit on the banks' assets formation, along with the other variables, Loans Cash Credit and Overdrafts have been regressed on the assets of banks and the results of same have been placed in Table 4. Table 4 represents that Loans, Cash Credit and Overdrafts have statistical significant and positive effect on the assets of banks. With the support of Durbin Square and WU-Hausman test, it has been identified that the gross non-performing assets is endogenous variable which is endogenised by the

weighted average lending rate (Table 4). Table 4 indicates that one percent increase in the weighted average lending rate caused a decline of 0.5512 percent to gross non-performing assets. Further, it has been found that one percent increase in Loans Cash Credit and Overdrafts causes an increase of 0.4079 % of crease in the assets of banks. The one percent increase in the investment causes an increase of 0.26358 % of increase in the assets of banks, whereas, the one percent increase in the gross non-performing assets causes a decrease of 0.4702% in the assets of banks.

Explanatory Variables	First Stage (Gross Non-performing Assets as Dependent Variable)	Second Stage (Assets with Banks as Dependent Variable)
Loans Cash Credit and Overdrafts	0.2328209 (0.218)	0.4079769 * (0.001)
Investment	-0.161816 (0.397)	0.2635838* (0.031)
Gross Non-Performing Assets	-	-0.4702834* (0.000)
Weighted Average Lending Rate	- 0.5512029* (0.000)	-
Constant	17.58136 (0.000)	2.857874* (0.067)
Test of endogenous Ho: variables are exogenous	Durbin Score Chi_Square=5.49101 (P = 0.0191)	Hypothesis is rejected and hence the variable is an endogenous.
	Wu-Hausman F(1,63)= 5.53415 (P = 0.0218)	

Table 4: Assets of banks has been used as a dependent variables (2SLS)

Data Source: Statistical Report of Banks in India (STRBI) and estimated are calculated by Author.

CONCLUSIONS

The study has examined the impact of provisioning on the assets of Scheduled Commercial Banks. For the estimation of determinants of bank credit and its impact on the assets of SCBs, a panel data analysis approach has been applied. The estimation of regression equation reveals that the provisioning for other and provisioning for tax has positive and significant effect on bank credit, whereas, the provisioning for non-performing assets has negative and significant effect on the bank credit. Subsequently, bank credit has positive and significant effect on the assets of the banks. This study insight that one percent increase in the provisioning for tax and provisioning for other, respectively, causes 0.18% and 1.33% of

increase in the bank credit. Further,1% increase in bank credit and investment, respectively, causes and increase of 0.40% and 0.26% in the assets of banks. The results of this study are in the line of past studies, for example,Chilukuri, Rao, & Madhav (2016), Garg(2016), Rajha (2016) and Jayakkodi and Rengarajan(2016).

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