International Journal of Academic Research and Development
ISSN: 2455-4197
Impact Factor: RJIF 5.22
www.academicsjournal.com
Volume 2; Issue 5; September 2017; Page No. 348-352

Empirical analysis of basel effects on the interest rate of public and private banks: A case study of SBI and ICICI bank

[1] Dr. Ravindra Tripathi, [*2] Aamir Aijaz Syed

[1] Assistant Professor, Accounting and Finance, Department of Humanities and Social Sciences, Motilal Nehru National Institute of Technology, Allahabad, Uttar Pradesh, India

[2] Ph.D Scholar, Accounting and Finance, Department of Humanities and Social Sciences, Motilal Nehru National Institute of Technology, Allahabad, Uttar Pradesh, India

Abstract
The purpose of this working paper is to analyze the effect of Basel norms on the interest rate structure of both public and private bank of Indian banking industry by taking the time series data of two leading banks i.e. State bank of India and Industrial Credit and Investment Corporation of India from 2000 to 2015.The study used both qualitative and quantitative approaches and to analyze the data linear regression model is used for interest rate structure. To study the effect on interest rate this paper includes independent variable based on CAMEL approach. The ratio which are taken into consideration are Capital adequacy ratio, Asset management (Net Asset to loan given), Managerial Efficiency (Total advances to total deposit), Earning Ratio (Net interest income to total fund), and Liquidity Ratio (Liquid Asset to deposit ratio. The result of regression model summary statistics for average interest rate on loans shows that interest rate of loan has a strong correlation with explanatory variables that we used in this model. Explanatory variable explains 78.8 percent (public bank SBI) and 83.3 percent (private bank ICICI) of dependent variable and this can be concluded that the model is proper and fit. The empirical result shows the independent variables have a significant effect on the interest rate of the Indian Banking Industry.

Keywords: basel, camel approach, interest rate, time series, banking industry

Introduction

Basel Committee is established with the objective of strengthening the risk management capabilities of the banking industry. These accords emphasized on keeping adequate capital so that bank stability can be maintained at times of financial crisis or default. The new requirement of Basel 3 accords focused on increase capital buffer thus affecting the lending capabilities of bank and many author feared that this will increase the interest rate structure of banks (Bénassy, Jeanl, Taylor 2006) [6]. Many study suggested that standard of minimum capital requirement plays a major role in banking system regulation (Brunnermeier, *et al*., 2009) [4]. Financial default and increasing non performing loans prompted some weakness in the existing capital requirement and changes are under way (BASEL 3 accord) aimed at increasing the equity capital requirement for banks. Capital Adequacy ratio is the most important loss absorbing instruments of banks thus increase CAR will help in making more stable banking system but this will also create a credit crunch and bank will have less capital to lend. Many researchers feared that this will increase the lending rates of banks (Miles *Et al*., 2011) [6]

So this study tries to study the impact of these accords on the lending rates of two leading banks of Indian banking industry by using the linear regression model. This study incorporate many ratios based on CAMEL approach, to give a clearer picture. This paper is based on the studies of Ereza Arifi, Esat Durguti (2014) [8]. Apart from introduction this paper is divided into four section theoretical framework, methodology and findings and the last section concluding remarks.

Review literature and theoretical framework

Various researches have been done in the past in different countries to study the impact of BASEL accord on their banking structure seeing both the aspect of financial stability and liquidity crunch.

In the study of Adrain (2014) it's been concluded that banks adjust their liquidity in terms of risk weighted assets and capital requirement. Thus there is a strong correlation between capital requirement and liquidity.

On the other side of studies researcher suggest the keeping higher capital with banks, promotes better stability and long survival of banks (Adamati, DeMarzo, Hellwing, 2010) [5].

Higher capital requirements according to Basel III will increase the marginal cost of bank loans if, contrary to the Modigliani-Miller (1958) [1] theorem of capital marginal cost is greater than marginal cost of deposits, i.e. if there is a net cost capital growth. In this case, a higher cost of equity financing in connection with debt financing will lead banks to increase their lending price and can have effects on decline credit growth.

So keeping both the approaches into consideration on Basel accord this paper tries to examine the mid approach and as there are no exact determinants of interest rate factors so CAMEL approach is being used in this paper tries to study

that how interest rate is affected over the years as BASEL got implemented, using time serious data from 2000 to 2015.

Data and methodology

The data which is used in this paper is collected from various publication and annual reports of bank into consideration. Data which is used in this analysis is of 15 years i.e. from 2000 to 2015, 15 years is taken so to study the full impact of BASEL norms on the interest rate structure of bank into consideration.

In the context of our analysis variables are divided into dependent and independent variable which will be tested in the econometric model. The dependent variable is interest rate on loans (Prime lending rate) whereas the independent variables are capital adequacy ratio, Net asset to loan given, Total advances to total deposits, Net interest income to total fund and liquid assets to deposits. Time series data is used to see the overall impact over the years and linear regression model is used to study the dependent variable.

The empirical model used in the study is:

Rt= c + β1 capital adequacy ratio +β2 net asset to loan given + β3 total advances to total deposits+β4 Net interest income to total fund +β5 liquid asset to deposit+ ε+ t

Where:

Rt = interest rate of loan for time t (2000-2015), C= Constant, E= Error term

Table 1(a): Descriptive Analysis of SBI bank

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Interest rate	16	10.25	14.58	12.36	1.539
CAR	16	11.88	14.25	12.94	.724
Asset Quality	16	1.56	6.03	2.748	1.445
Managerial Eff.	16	.44	1.03	.708	.175
Efficiency	16	1.33	3.38	2.44	.5437
Liquidity	16	7.98	25	13.11	4.827

Table 1(b): Descriptive Analysis of ICICI bank

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Interest rate	16	9.75	17.9	14.60	2.94
CAR	16	10.36	19.54	15.09	3.42
Asset Quality	16	.72	5.48	1.98	1.410
Managerial Eff.	16	.42	1.46	.93	.212
Efficiency	16	1.98	3.07	2.39	.311
Liquidity	16	6.45	39.85	15.37	7.582

The above tables i.e. 1(A) and 1(B) represents descriptive analysis of SBI and ICICI bank, the variable which are highlighted in the analysis are mean value, standard deviation and maximum and minimum value of the variable taken into consideration.

Descriptive analysis of SBI bank shows that the interest rate has a maximum value of 14.58 which is higher than the average of South Asian countries and the standard deviation is also quite high for the interest rate variable whereas when we see the descriptive analysis of ICICI bank we can find that the maximum value of interest rate is quite high as compared to SBI bank i.e. 17.9 percent with even higher standard deviation of more than 2 percent.

Capital Adequacy ratio of SBI bank has a mean of 12.94 which supports the BASEL recommendation of 12% CAR whereas when we see the CAR of ICICI bank we will find that the CAR of ICICI bank is far above the minimum requirement of 12% i.e. 15.09% but the standard deviation is also high means variability is more capital requirement of ICICI bank.

Asset quality mean value of SBI is 2.78 whereas of ICICI bank is 1.98 with standard deviation of 1.44 and 1.41, the asset quality of ICICI bank is more poor as compared to SBI bank whereas the overall asset quality of Indian banking system is worsening because of Loan default issue which need a careful introspection.

Managerial efficiency is better in SBI bank as compared to ICICI bank similarly the Efficiency ratio is quite high in SBI bank as compared to ICICI bank but the standard deviation of efficiency ratio of SBI bank is higher which shows that there is high variability in efficiency ratio of SBI bank.

Liquidity ratio maximum and mean value shows that ICICI bank is more liquid as compared to SBI bank. The mean value of ICICI bank is 15.37 whereas of SBI bank is 13.11.

Table 2(a): correlation matrix of SBI bank

	BPLR	CAR	Asset quality	Managerial. Eff	Earning	Liquidity
BPLR	1					
CAR	0.0075423	1				
Asset quality	-0.3139921	0.123958066	1			
Managerial. Eff	0.72856851	-0.231161241	-0.802506661	1		
Earning	0.52948043	0.097342948	-0.561620676	0.667035838	1	
Liquidity	-0.1655626	0.27612728	0.919803691	-0.662114347	-0.54688187	1

Table 2(b): Correlation Matrix of ICICI bank

	BPLR	CAR	Asset Quality	Managerial eff	Earning	Liquid
BPLR	1					
CAR	0.905332121	1				
Asset Quality	-0.319440927	-0.475040621	1			
Managerial Eff	0.047615383	-0.066711797	0.493085636	1		
Earning	0.726536568	0.615937751	-0.1369715	0.087645655	1	
Liquid	-0.03390524	-0.110369722	0.62074071	0.396081443	-0.043016535	1

Here from the correlation matrix of SBI bank we can see that Liquidity and Asset quality has a negative correlation with interest rate i.e. -0.165, -0.31 whereas managerial efficiency and earning and capital adequacy has a positive correlation i.e. 0.729, .529 and 0.0075, thus it can be concluded that as capital adequacy increases interest rates increases and vice versa. Capital adequacy has a positive relationship with asset quality, managerial efficiency and liquidity so this can be concluded that sound capital base can give better efficiency, better assets and liquidity. Asset quality has the highest correlation with managerial efficiency.

When we see the correlation matrix of ICICI bank we can find that interest rate has a positive correlation with all the explanatory variable except liquidity i.e. .90 capital adequacy, .31 asset quality, .047 managerial efficiency, .72 earning and -.03 with liquidity. Here also it can be concluded that higher capital adequacy means higher interest rate and vice versa. Earning has a highest correlation with interest rate means higher interest rate and higher earnings. Earning has a negative correlation with liquidity, higher liquidity and less earning can be concluded from this matrix.

Table 3(a): Breusch-Pegan Test for heteroscedasticity (SBI).

Descriptions	Interest rate on loans
Number of Observation	16
F-Statistic	2.87
Prob. F(5,10)	7.32
Prob chi square	9.3
R-Squared	9.43
Prob Chi square	.83

Table 3(b): Breusch-Pegan Test for heteroscedasticity (ICICI).

Descriptions	Interest rate on loans
Number of Observation	16
F-Statistic	2.13
Prob. F(5,10)	14.37
Prob chi square	14.23
R-Squared	8.26
Prob Chi square	.90

If the residuals of the regression have a systematically changing variability over the sample, that is a sign of heteroscedasticity (Gujarati, D, 2004). Breusch- Pegan test was used for general test of heteroscedasticity. From the table presented above the test result for regression analysis's p-values is considerably in excess of 0.05, we can say that there is no evidence for the presence of heteroscedasticity.

To examine the relationship between interest rate and explanatory variable n linear regression model is used.

Table 4: Linear regression Model Summary for average interest rate and explanatory variable for SBI and ICICI bank.

Model	R	R square	Adjusted R square	Standard Error
SBI	.887	.788	.682	.868
ICICI	.934	.873	.810	1.283

The result form the model show that dependent variable of both SBI and ICICI bank has a strong correlation with explanatory R in level of .887 and .934, R square of .788 and .873 which shows that 78 percent and 87 percent of dependent variable is explained from independent variable. Adjusted R square is coefficient of determination which tells us the variation in dependent variable due to the change in the independent variable, form the finding from the above table shows that 68 percent and 81 percent variation on interest rate is explained by explanatory variable at 5% level of significance.

Table 5: Linear regression ANOVA result

SBI	DF	Sum of Square	Mean Square	F	Significance f
Regression	5	28.023655	5.60	7.436	.0003
Residual	10	7.536919638	.753		
Total	15	35.560575			

ICICI	DF	Sum of Square	Mean Square	F	Significance f
Regression	5	113.799	22.7598	13.8102	.00003
Residual	10	16.480	1.6580		
Total	15	130.279			

Author Calculation, Dependent Variable: Interest rate

The ANOVA table shows that the population parameter had a significant level of 1% which shows that the data are ideal for making a conclusion for variable as the value of significance is less than 1%. Before applying regression data is tested for multi collinearity.

Table 6: Variance influence factor f test

Variable	VIF (ICICI)	VIF (SBI)
Capital Adequacy	2.39	2.32
Asset Management ratio	2.76	2.17
Managerial Efficiency	1.40	7.34
Efficiency Ratio	1.74	3.06
Liquidity Ratio	1.80	15.11
Mean VIF	2.012	6.10

Author Calculation

Co linearity statistics shows that VIF values i.e. 2.012 and 6.10 is less than 10 which means that multi collinearity of data on regression are proper and fit.

Table 7(a): Linear Regression Coefficient ICICI bank

Model	Un Standardized		Standardized Coefficient	T	Sig
	B	Standard Error	Beta		
Constant	-2.10	2.879		-.730	.482
CAR	.676	.150	.785	4.519	.001
Asset	-.126	.391	-.060	.-321	.755
Managerial	.6356	1.859	.045	.342	.740
Efficiency	2.34	1.406	.247	1.664	.127
Liquidity	-.003	.059	-.008	-.053	.958

Table 7(b): Linear Regression Coefficient SBI bank

Model	Un Standardized		Standardized Coefficient	T	Sig
	B	Standard Error	Beta		
Constant	-4.82	4.95		-.972	.352
CAR	.46	.329	.217	1.40	.888
Asset	-.85	.252	.-799	3.002	.006
Managerial	.23	2.45	.50	.023	.002
Efficiency	12.36	2.35	1.40	5.02	.001
Liquidity	-.051	.57	-.108	-.053	.931

Authors Calculation

From the above table it can be concluded that both liquidity and asset have a negative relationship with interest rate which supports the previous results whereas CAR, managerial and efficiency ratio has a positive relationship. Thus with increase in capital adequacy interest rate also increases and vice versa.

Conclusion and findings

The main objective of this study was to study the factors which affect the interest rate and how capital adequacy ratio is affecting interest rate. This study was basically based on two banks and on time series data from 2000 to 2015.

The findings which are derived from the study are as follows:

Firstly this study show that capital adequacy has a positive relationship with banks interest rate thus if higher CAR will be there than this will adversely increase the interest rate of banking sectors and thus credit will be affected. This supports the apprehension of scholars who thinks that BASEL 3 and increase CAR ratio will adversely affect the credit condition of the economy as interest rate will see upward trends.

Secondly this study shows that banks have increase profitability over the years because of high interest charges but the increased loan default are affecting the profitability of banks.

Thirdly liquidity and asset management ratio has a negative relationship with interest rate as liquidity increases interest rate falls to an extent as bank tries to increase the credit growth.

In the end based on literature review as well as the results came from our analyses through variables there is a potential increase of increase of lending price (interest rate on loans) in the banking system in India if the Basel III framework is implemented and this is in accordance with findings of

Modigliani-Miller (1958) [1]: a higher cost of equity financing in connection with debt financing will lead banks to increase their lending price as well as may have effects on decline credit growth.

References

1. Modigliani F, MH Miller. The cost of capital, corporation finance and the theory of investment, The American Economic Review, 1958; 48:261-297.
2. Gujarati D. Basic Econometrics. Fourth Edition. New York: The McGraw-Hill, 2004.
3. Bénassy Jeanl, Taylor principle. Interest rate rules, inflation and the Taylor principle: an analytical exploration, 2006; 27(1):143-162.
4. Markus K Brunnermeier. Deciphering the Liquidity and Credit Crunch, Journal of Economic Perspectives, 2009; 23(1):77-100.
5. Admati, DeMarzo Hellwig. Fallacies, Irrelevant Facts, and Myths in the Discussion of Capital Regulation: Why Bank Equity is Not Expensive, Preprints of the Max Planck Institute for Research on Collective Goods Bonn, 2010, 42.
6. Miles DG, Marcheggiano, Yang J. Optimal Bank Capital, CEPR Discussion, 2011, 8333.
7. ADRIAN T. Financial Intermediaries and the Cross-Section of Asset Returns, The journal of Finance. 2014; 69(6):2557-2596.
8. Ereza Arifi, Esat Durguti, Qazim Tmava, Nexhat Kryeziu. Emperical Analysis of the interest rate of KOSOVO banking structure, Europen scientific journal, 2014, 10.
9. SBI Annual Reports from year 2001 to 2015.
10. ICICI Annual Reports from year 2001 to 2015.