

What are the Stimulating Factors Affecting NPL in Banking Sector of Bangladesh? Evidence from Econometric Exercises

Ratna Biswas¹, Mohammed Nazrul Islam², Chanu Gopal Ghosh³

¹M.A in Economics from University of Dhaka and Joint Director,

Department of Off-Site Supervision(DOS), Bangladesh Bank, Dhaka, Bangladesh

²M.A in Development Economics from South Asian University, New Delhi and Senior Principal Officer,
Planning and Human Resource Development Department,

³Chanu Gopal Gosh, MA in Economics from Chittagong University and General Manager,

^{2,3}Bangladesh House Building Finance Corporation, Dhaka, Bangladesh

ABSTRACT

A well-organized, well-structured and developed financial sector ensures efficient allocation of financial resources and perks up the competitiveness of the private sector, thereby promoting investment and growth in the real sector. The thrust of the development is to improve the regulatory and governance environment and to enhance the ability of bank owners, management and regulators, and the markets themselves to provide for better governance and regulation to achieve the objectives. In this perspective, improvement of the situation of non-performing loan is important. A high volume of non-performing loan can never be a boon for the economy. Credit to economy is the main source for financial support of business. On the other side, banks have limited investment tools for their deposits. This study presents results from an econometric analysis, favorably Random Effect Model, using pooled panel data collected from the central bank of Bangladesh categorizing four sectors of banking based on the pattern of ownership. Based on the analysis of the bank specific microeconomic factors, which are selected on the availability from reliable sources, used as the regressors, it is observed that the liquidity and the management soundness is more significantly affect the Non-performing loan(NPL) in Bangladesh. Therefore, the recommendation is placed towards formulation policy instruments in favor of solvency rather liquidity. In addition to that, the improvement of managerial efficiency must be sought as well.

KEYWORDS: NPL, Banking Sector, bank specific factors, liquidity, managerial efficiency

I. INTRODUCTION

The banking sector plays one of pioneer role in the economy of a country. Both macro and micro economic condition of a country is heavily influenced by banking sector. Bangladesh economy is rising along with the expansion of the service sector where the banking sector has a lion share. In the context of increasing non-performing loans (NPLs) compared to the total outstanding of loan in major part of the banking channel, the financial stability of the whole economy is threatened.

Banks as financial intermediary accept various time deposits and grants, medium and long-term loans and then refinance on condition that the borrower will repay the loan in due time and manner specified in the contract. In this way, banks earn profit, which is recycled into the economy through multiplying effects. Nevertheless, in real life ideal situation does not always prevail. In Bangladesh, many borrowers fail to repay the loans in time and in some cases, they do not repay at all. These loans are known as non-performing-loans (NPLs) which are classified by banks or financial institutions as per instruction of the regulator, Bangladesh Bank. These

are non-performing because of being incapable of adding profit in banking channel under prevalence (Baholli et al, 2015).

Moreover, credit rationing related to unwillingness of bank to accept additional credit risk produces adverse effects on the real economy. NPL is the key concern for banking authority to keep up profitable credit operation as it shrinks the availability of creditable fund. Loans comprise the most important asset as well as the primary source of earning for the banks and financial institutions. On the other hand, it is also the major source of risk for the bank management. Therefore, a prudent bank management should always strive to make an appropriate balance between its return and risk involved with the loan portfolio. Thus, to find out the reasons, which affect non-performing loans is important for bank as well as regulator for the sake of whole economy.

If the invested fund in an economy is not recovered timely, it limits the recycling of the fund and leads subsequently to economic stagnation. NPL affects banks' profitability

How to cite this paper: Ratna Biswas | Mohammed Nazrul Islam | Chanu Gopal Ghosh "What are the Stimulating Factors Affecting NPL in Banking Sector of Bangladesh? Evidence from Econometric Exercises" Published in International Journal of Trend in Scientific Research and Development (ijtsrd), ISSN: 2456-6470, Volume-4 | Issue-2, February 2020, pp.100-106, URL: www.ijtsrd.com/papers/ijtsrd29861.pdf



IJTSRD29861

Copyright © 2019 by author(s) and International Journal of Trend in Scientific Research and Development Journal. This is an Open Access article distributed under the terms of the Creative Commons Attribution License (CC BY 4.0) (<http://creativecommons.org/licenses/by/4.0>)



adversely because of keeping the provision of classified loans and consequent write-off as bad debts, reduces return on investment (ROI), and disturbs the capital adequacy ratio (CAR). It also increases the cost of capital, widens assets and liability imbalance and upsets the economic value additions (EVA) by banks.

In Bangladesh perspective, before privatization and liberalization, banking activities were directed to disburse credit, according to the government's economic priority, and

hence, little attention was placed to identify the problem loans and making provisions thereon, although there was significant amount of hidden default loans. After 1982, the banking sector of Bangladesh underwent a rapid denationalization and privatization process. Henceforward, private banks were allowed to conduct banking operations in order to increase competition, reasons, the efficiency and productivity of the banking sector (Alexandin and Santoso, 2015).

But due to the various reasons in reality, the efficiency of the banking sector was not improved rather the credit discipline was further eroded. The very frequent and fashionable style of loan defaulting story in banking sector of Bangladesh is loan scam. Recently, a series of scams has started threatening the banking sector in a great way. Sonali Bank loan scam started the episode and is continuing with Bismillah, Basic Bank loan scam and so on in a large scale¹. The story of all episodes is almost same and follows a cycle. The short snap of NPL of various banks in middle quarters of fiscal year 2014-2015 was provided in the following chart.

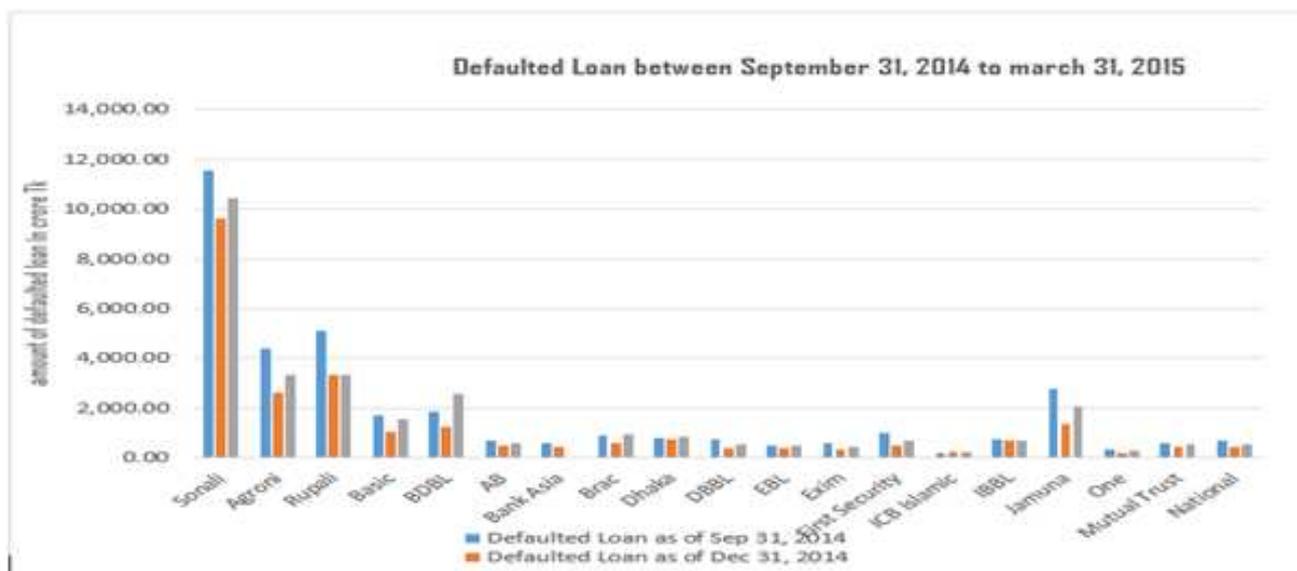


Figure 1.1: Amount of defaulted loan in Bangladesh Banking sector from specified period in FY 2014-2015. Source: Banking Regulation and Policy Department, Bangladesh Bank.

II. Background of the study:

The NPL always raises concerns among policy makers. Therefore, the central bank takes various measures to control the increasing volume of classified loans. Bangladesh Bank has also adopted various policies, such as, loan re-scheduling facility, introduction of CIB report, waiver of interest, write off bad loans etc. to check this excessive volume of NPL. But all these initiatives have not still been successful in producing the desired outcome. Although rescheduling reduces the amount of NPL, it cannot be an end in itself. Loan is rescheduled after the damage is already done. Moreover, statistics indicates that only a handful of lucky borrowers get this opportunity. These elite capturing is aggravating the status of NPL in banks and financial institutions. The real solution to this problem can be worked out when the reasons of NPL are known accurately and policies are put in place to prevent a loan from becoming an NPL. Hence, the different dimensions of NPL in Bangladesh deserve an independent analysis from both an academic point of view and a policy perspective. Against this backdrop, this study is an attempt to identify the factors that affect non-performing loan at the different categories banks and financial institutions of Bangladesh specifically the type and period wise NPL.

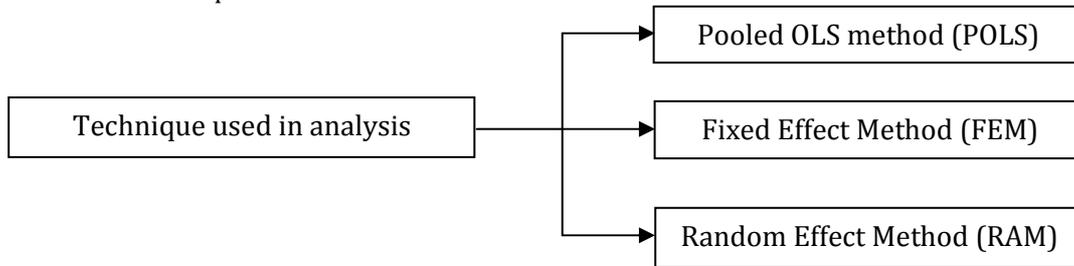
III. Methodology and Analysis:

Data collection, cross sections and time preference: For this study, the data are collected mainly from consolidated annual data from central Bank of Bangladesh, Bangladesh Bank quarterly, monthly economic trend and other secondary data sources available in Bangladesh Bank with the preference of time interval from 2005 to 2016 on yearly basis. In those data, the banking sectors are categorized in their kinds of ownership into four types - state-owned commercial banks (SCBs), state-owned development financial institutions (DFIs), private commercial banks (PCBs) and foreign commercial banks (FCBs), which are here taken as the no of cross sections. As the banks-wise data for the desired variables are not published in Bangladesh bank and not availed in other reliable sources as well in the time of study, the sector-wise data are used for data authenticity.

¹Sonali Bank Ltd is the largest a state-owned commercial bank and basic bank is a specialized state owned commercial bank and Bismillah is a private commercial company are found indulged in separate credit scam which has raised public outcry over the country in recent years.

Selection and description of variables: Literature surveyed for the study shows that the NPL is varying on many factors; primarily two types of factors; bank specific factors (microeconomic) and macroeconomic factors (Curak et al, 2013). The macroeconomic factors such as GDP, inflation, interest rate, real exchange rate, claim to be included in the analysis to trace the stimulating factors of NPL. But the direction of effect of those variables in NPL are not found deciding in literature (Baholli and others, 2015; Alexandin and Santoso, 2015). The influences are multiplied and adjusted with counter and anti-counter actions on NPL. This multiplicity and versatility of the effect of macro-variables is complicated and beyond of scope of the study. Therefore, this study has intended to focus only on some quantifiable Bank specific factors, taken as explanatory variables, such as capital adequacy (CAR), bank size (ASSET), liquidity ratio (LR), Profit to manpower ratio (PM) and expenditure to income ratio (EI) whereas NPL is taken as the dependent variable (regressand). Here, data of 56 banks divided into four sectors (SCB, DFI, PCB and FCB) and the 15 times periods (2005-2016) of balanced panel data in 48 observations.

Estimation of Model and Empirical Analysis: For analysis of this panel data, three major types of econometric technique are found in conventional literature provided as follows-



Among the three techniques mentioned above, the REM is used as favored model in this study which is described in the following with variables employed in.

$$NPL_{it} = \beta_{1i} + \beta_2 CAR_{it} + \beta_3 Asset_{it} + \beta_4 LR_{it} + \beta_5 PM_{it} + \beta_6 EI_{it} + U_{it} \dots \dots \dots (i)$$

$i = 1,2,3,4 \dots \dots \dots; t = 1,2,3 \dots \dots \dots, 15$ years.

Here, β_{1i} is not fixed rather is assumed to be random variable with mean value of β_1 where

$$\beta_{1i} = \beta_1 + \varepsilon_i \dots \dots \dots (ii)$$

β_{1i} = Intercept value for individual bank. ε_i = Random error term with $(0, \sigma^2)$.

The desired equation of the model is found by substituting (ii) into (i)

$$NPL_{it} = \beta_1 + \varepsilon_i + \beta_2 CAR_{it} + \beta_3 Asset_{it} + \beta_4 LR_{it} + \beta_5 PM_{it} + \beta_6 EI_{it} + U_{it} \dots \dots \dots (ii)$$

$$NPL_{it} = \beta_1 + \beta_2 CAR_{it} + \beta_3 Asset_{it} + \beta_4 LR_{it} + \beta_5 PM_{it} + \beta_6 EI_{it} + W_{it} \dots \dots \dots (iii)_2$$

where $W_{it} = \varepsilon_i + U_{it}$

At first, the Pooled Ordinary Least Square (POLS) method is used to regress the variables. After Pooled OLS, it is found that the variable CAR, Size, LR, PM are statistically significant. Only EI has shown the statistically insignificant value. Even R^2 - value is less than the Durbin-Watson statistics.

However, the problem here, the banking sectors individually are not distinguished. It is assumed that all the banking sectors are same in case of Pooled OLS method, there is a possibility of having the correlation between the error term and the some of the regressors in the model. Hence, it is needed the test to accept or reject the null hypothesis; the differential intercepts are equal to zero. It is seen that the differences are in banking sector is not equal to zero. Therefore, given the circumstances, the Pooled OLS cannot be considered as desirable technique.

In case of Fixed effect method (FEM), it has been found that the statistically significant variables are only two. These are LR and EI. Interestingly, the results obtained from the Random effect method (RAM) has shown the same manner as the Fixed effect method. The variables LR and EI are the only significant in RAM too. Even, the trend, the sign of variables is same in both cases. To accept the result between FEM (Fixed effect model) and REM (Random effect model) the Hausman Test has been carried out. In case of Hausman test, the null hypothesis was 'FEM & REM estimators do not differ substantially'.

² ε_i = Cross- section random error, U_{it} = Idiosyncratic random error, NPL= Non Performing Loan, CAR= Capital adequacy ratio, Asset= Size of the bank on asset basis, LR= Liquidity, PM= Profit to Manpower Ratio, EI = Expenditure to Income ratio.

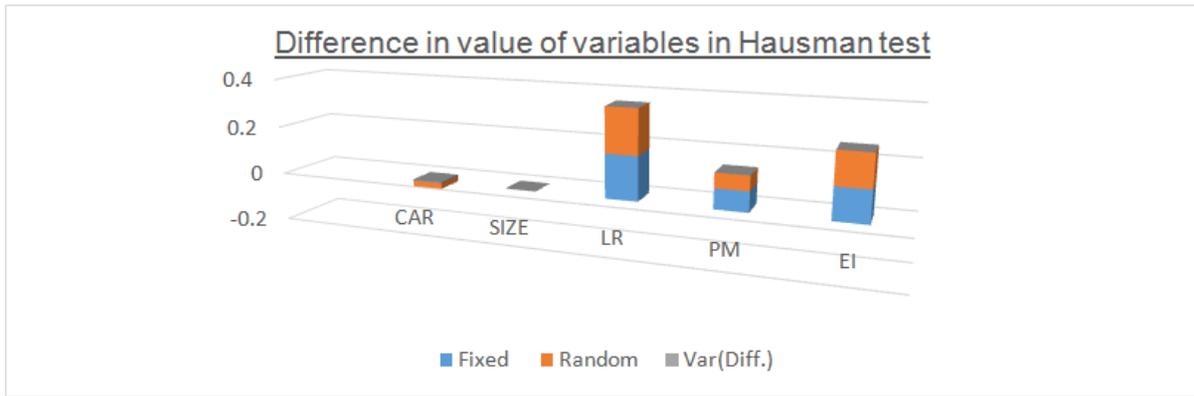


Figure3.1: The result of Hausman test showing the differences between the values of coefficients is insignificant.

Since the estimated Chi-square value is not statistically significant, the null hypothesis has been accepted that there is no significant difference in the estimated co-efficient of the two models. It seems, there is no substantial correlation between the error term and one or more regressors. Hence, we can accept the random effects model in disfavor of the fixed effect model. It is also noted that in the last part of table of the Hausman test the value of any coefficient isn't significantly different in the two models.

IV. Explanation of the result:

Now, it is needed to discuss the behavior of variables in the REM model. At first, the less value of R² than that of DW removes the possibility of spurious regression. Therefore, the result found from this regression analysis is consistent.

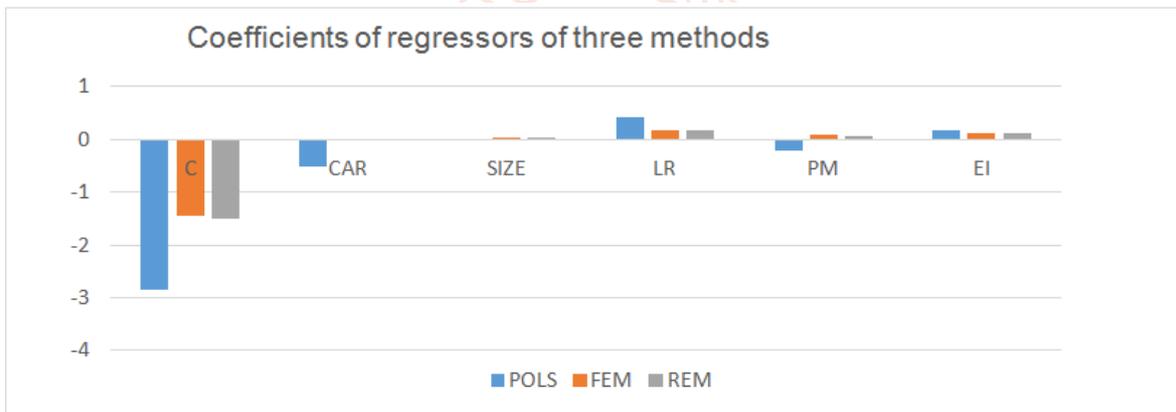


Figure4.1: The sign and value of coefficients affecting NPL are found from three types of equation in panel data analysis

Among the five explanatory variables, LR and EI has been found influencing the NPL significantly. The influences of other three variables are not significant in this analysis. It has been come out that the LR is positively related to the NPL. It is quite similar to many studies in the literature (Vantansever & Stepsen, 2013; Curak et al 2013). The implication is that the more liquidity of bank, the more tendency to disbursing credit (Investopedia, 2017). Banks feel pressure to accept more credit proposals in case of excess liquidity. As a result, the selection of right borrower is not always ensured. The scope of adverse selection is increased in the way of desperate investing mode of banking arisen from the extra liquidity.

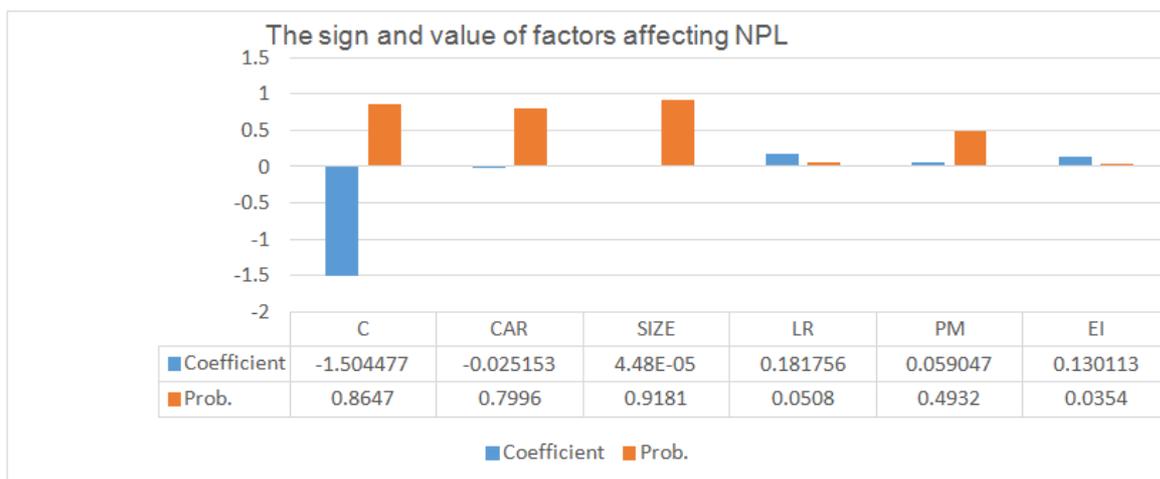


Figure4.2: The sign and the value of the stimulating (explanatory) variables affecting NPL, the dependent variable with probability of significance

The second significant variable is the EI. It is very interesting and intuitive in this analysis. EI is taken as one indicator of management soundness. As much as the expenditure is incurred against the income, as much as the worse in management efficiency. Hence, the positive relation of EI with the NPL implies that the lack of quality management deteriorates the situation of NPL in the banking sectors. The efficiency of management covers many issues from the sanctioning to the closing of the loan. How much the credit worthiness of information of the borrowers, minimizing the information asymmetry and adverse selection, assigning the skilled manpower in recovery team, policy of recovery etc.

V. Conclusion and Recommendation:

Banking as an emerging sector is enhancing its coverage with the expansion of the service sector in the development of the capitalist mode of economy in the country. However, the sector endowed with low profitability and inadequate capital base is a concern for recent years. The cause behind the scenario lies in the ever-increasing accumulation of high percentage of non-performing loan over a long period. It needs to mention that management of NPL must be multi-pronged with different strategies pursued at the different stages. Therefore, it should be investigated to trace out the root cause of the NPL to manage it effectively. In this study, the accepted model shows that among the selective bank specific microeconomic variables, the liquidity ratio and the expenditure to income ratio are found to be significantly affecting the non-performing loan in Bangladesh banking sector.

The more liquidity of asset of bank encourage to invest more which gear up the non-performing loan. But the more value of CAR reduces the trend of NPL (Das and Ghosh, 2007). From this twist, it is inferred that the policy instrument ought to be taken to increase the solvency of bank not the liquidity only. Another significant ratio in the study found is the expenditure to income ratio which is more intuitive. As the earlier discussion, the ratio is considered as the index of management soundness or in other word the efficiency, so the sounder or more efficient management can effectively reduce the NPL in bank. Therefore, it is recommended to adopt policy supports to upgrade the managerial/executive efficiency of banking sector.

Acknowledgement:

We are expressing gratitude to the people who extended their enormous co-operation in completing study especially to **Professor Dr. Nazma Begum and Mahtab Uddin** Faculty, Department of Economics, University of Dhaka for their constructive suggestions and valuable comments.

We are also thankful to our offices namely Bangladesh Bank (BB) and Bangladesh House Building Finance Corporation (BHBFC) for giving us the valuable scope for carrying on the research work as well as providing source of data.

However, any mistake committed, solely remains on the weakness of the author.

APPENDIX

Results of econometric equations:

1. Pooled OLS Method

Dependent Variable: NPL
Method: Panel Least Squares
Date: 06/19/17 Time: 11:04
Sample: 2005 2016
Periods included: 12
Cross-sections included: 4
Total panel (balanced) observations: 48

Finally, unbounded gratitude towards our family for their sacrifice in continuing the research work.

Reference:

[1] Aleandri, M. B., and Santoso T. I., (2015) "Non-performing loan: Impact of Internal and External Factor (Evidence in Indonesia)" *International Journal of Humanities and Social Science Invention*, vol.4.January 2015.

[2] Asfaw A. S., Bogale, H. N., and Teame, T. T., (2016). "Factors affecting non-performing loans: Case study on Development Bank of Ethiopia Central Region" *International Journal of Scientific and Research Publication*, Vol.6. Issue 5, May 2016.

[3] Baholli, F., Dika, I., MSc. and Xhabija, G., (2015). "Analysis of Factors that Influence Non-Performing Loans with Econometric Model: Albanian Case" *Mediterranean Journal of Social Sciences*, Volume 6(1), January 2015.

[4] Cheng, M. C., Lee C., Pham, Q. N. T. and Chen, H. Y., (2016). "Factors affect NPL in Taiwan Banking Industry" *Journal of Accounting, Finance and Economics*, vol.6 No.1. March 2016.

[5] Curak, M., Pepur, S., and Poposki, K., (2013). "Determinants of non-performing loans - evidence from Southeastern European banking systems- *Banks and Bank Systems*, Volume 8(1), April 2013.

[6] Investopedia, 2017. <http://www.investopedia.com/terms/o/overall-liquidity-ratio.asp#ixzz4lm4CFpaA>8.

[7] Investopedia,2017.,<http://www.investopedia.com/articles/investing/100313/financial-analysis-solvency-vs-liquidity-ratios.asp#ixzz4lm2GdSeh>

[8] Nkurrenah, N., (2014). "Factors affecting non-performing loans: A case study of commercial Bank of Africa-CBA (Kenya), Chandaria School of Business, *United States International University-Africa*, Summer -2014.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-2.843418	9.989555	-0.284639	0.7773
CAR	-0.519050	0.128538	-4.038100	0.0002
SIZE	-0.001444	0.000521	-2.769548	0.0083
LR	0.425313	0.113627	3.743058	0.0005
PM	-0.214312	0.086346	-2.482012	0.0171
EI	0.173893	0.097193	1.789145	0.0808
R-squared	0.754463	Mean dependent var		14.26458
Adjusted R-squared	0.725233	S.D. dependent var		11.01933
S.E. of regression	5.776143	Akaike info criterion		6.461818
Sum squared resid	1401.281	Schwarz criterion		6.695718
Log likelihood	-149.0836	Hannan-Quinn criter.		6.550209
F-statistic	25.81077	Durbin-Watson stat		0.810724
Prob(F-statistic)	0.000000			

2. Fixed Method:

Dependent Variable: NPL				
Method: Panel Least Squares				
Date: 06/19/17 Time: 11:07				
Sample: 2005 2016				
Periods included: 12				
Cross-sections included: 4				
Total panel (balanced) observations: 48				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.457129	6.326377	-0.230326	0.8190
CAR	-0.003076	0.099337	-0.030962	0.9755
SIZE	4.77E-05	0.000436	0.109606	0.9133
LR	0.176099	0.090683	1.941916	0.0534
PM	0.080126	0.086985	0.921146	0.3626
EI	0.126777	0.059927	2.115539	0.0408
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.918418	Mean dependent var		14.26458
Adjusted R-squared	0.901683	S.D. dependent var		11.01933
S.E. of regression	3.455172	Akaike info criterion		5.484982
Sum squared resid	465.5904	Schwarz criterion		5.835833
Log likelihood	-122.6396	Hannan-Quinn criter.		5.617569
F-statistic	54.88068	Durbin-Watson stat		0.942663
Prob(F-statistic)	0.000000			

3. Random method

Dependent Variable: NPL				
Method: Panel EGLS (Cross-section random effects)				
Date: 06/19/17 Time: 11:16				
Sample: 2005 2016				
Periods included: 12				
Cross-sections included: 4				
Total panel (balanced) observations: 48				
Wansbeek and Kapteyn estimator of component variances				

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.504477	8.778176	-0.171388	0.8647
CAR	-0.025153	0.098451	-0.255487	0.7996
SIZE	4.48E-05	0.000433	0.103426	0.9181
LR	0.181756	0.090384	2.010931	0.0508
PM	0.059047	0.085428	0.691190	0.4932
EI	0.130113	0.059856	2.173791	0.0354
Effects Specification				
			S.D.	Rho
Cross-section random			12.18290	0.9256
Idiosyncratic random			3.455172	0.0744
Weighted Statistics				
R-squared	0.161332	Mean dependent var	1.163957	
Adjusted R-squared	0.061490	S.D. dependent var	3.564080	
S.E. of regression	3.452764	Sum squared resid	500.7063	
F-statistic	1.615879	Durbin-Watson stat	0.890404	
Prob(F-statistic)	0.176856			
Unweighted Statistics				
R-squared	0.037252	Mean dependent var	14.26458	
Sum squared resid	5494.412	Durbin-Watson stat	0.081143	

