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The Impact of Macroeconomic and Bank Specific Factors on Albanian Non-Performing Loans

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Abstract

Credit risk measurement of the banking system, the dominant component of the financial system of a country, is an important aspect where the interest of academics, economic agents and other professionals has been considerably increased, especially following the global financial crisis. In the last decade, non-performing loans have been in the spotlight almost all over the world, since their large and uncontrolled increase would lead to the eventual bankruptcy of the banking system as a whole. Analysis of the factors affecting credit risk for the banking system is an important analysis and can be seen as the key for credit risk management. This starts by the identification of direct and indirect determinants which exhibit an impact on credit risk, followed by the assessment of the impact (negative or positive impact). The main objective of this paper is to analyse the link between the macroeconomic developments and the banking credit risk in Albania, recently affected by unfavorable economic and financial conditions and to which, on this matter, the literature has not given a particular attention yet. The econometric model used is that of multiple linear regression where as the dependent variable is obtained the indicator of non-performing loans of the Albanian banking system and as independent variables are chosen a number of macroeconomic indicators and indicators of assets and liabilities of the system itself. Employing data approaches to this country over the period 2005-2014, I conclude that the banking credit risk is significantly affected by the macroeconomic environment: the credit risk increases when GDP growth, credit growth rate and the share price indices decrease and rises when the interest rate and loan to deposit ratio increase. Moreover, it is also positively affected by an appreciation of the real exchange rate.

Key words

Banking System, Credit Risk, Macroeconomic Determinants, Non-Performing Loans

1. INTRODUCTION

"*It is well enough that people of the nation do not understand our banking and monetary system, for if they did, I believe there would be a revolution before tomorrow morning*!" Henry Ford

The purpose of this article is to provide a comprehensive statement of theoretical and applied problems in the Albanian banking system. Regardless of Ford's fear, I don't think that reading this paper will cause a revolution, but at least, I hope to provide an enjoyable and interesting image of banking activity.

It is not necessary to be a specialist in the field of banks, in order to understand the importance of the banking system in our everyday life. We participate almost daily in activities in which this sector plays an important role. The mission of a performant banking system is to allocate the capital exclusively in profitable projects. To succeed, banks must be able to

determine which projects are profitable and which are not. If they do this correctly, then the economy has all the chances to work properly.

In the Albanian banking system, exposure to credit risk is the main risk from which the system is exposed to. Loans compose the majority of the banking system assets. Furthermore, in the last years, loan portfolio quality has been significantly deteriorated, which can be easily understood from the increase in non-performing loans. The main objective of this paper is to analyse the link between the macroeconomic developments and the banking credit risk in Albania, starting by the identification of direct and indirect determinants which exhibit an impact on credit risk. The econometric model used is that of multiple linear regression where as the dependent variable is obtained the indicator of non-performing loans of the Albanian banking system and as independent variables are chosen a number of macroeconomic indicators and indicators of assets and liabilities of the system itself. The method applied is the method of least squares and the model is tested in advance via EViews software for basic assumptions of the method.

2. MATERIALS AND METHODS

2.1 Literature Review

In the last decade, non-performing loans have been in the spotlight almost all over the world, since their large and uncontrolled increase would lead to the eventual bankruptcy of the banking system as a whole. Many researchers confirmed that the cause for a bank bankruptcy is also the quality of assets, which is an important predictor of its insolvency. Developments in the global economy and particularly the global economic crisis are exerting a negative impact on the Albanian market and are causing the contraction of the credit market. In the last years, credit growth decelerated progressively starting from the fourth quarter of 2008, from +5.02% to -1.86% in the third quarter of 2013.

According to the surveys conducted by the Bank of Albania, there are several reasons that forced commercial banks to constrain credit standards in the last five years, especially in the sector of small and medium enterprises, but also in the large enterprises sector. These reasons are also related with the increase in non-performing loans in the Albanian banking system. Firstly, this trend is related to the financial difficulties of the construction sector, processing industry and trade, repair of motor vehicles and household appliances. These sectors represent the largest share of the distribution of credit by economic sector and inevitably had a negative impact on the increase of non-performing loans. The recent published data of the World Bank, classify Albania as one of the countries with the highest level of non-performing loans among developing economies in Europe and Asia, with 18.2% of the total portfolio of loans granted at the end of 2015. In the meantime, the decrease of remittances has contributed, directly or indirectly, in the reduction of the solvency of the Albanian customers, without neglecting the large decline of the pace of economic growth in Albania, which has brought the weakening dynamism of the economy and economic operators. Finally, another reason is the outstanding liabilities of the government to private businesses for the public affairs committed. Buying financial products with high risk, strengthening banking supervision and screening of banks, taking decision based on a strong analysis of the cost-benefit, etc. are the suggestions provided by some economic experts, associated with the decrease of non-performing loans.

Table 1. Non performing bank loans in relation to total gross loans. Source [18]

NON-PERFORMING LOANS IN RELATION TO TOTAL LOANS (2010-2015)						
Country	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
Albania	14.0%	18.8%	22.5%	23.5%	22.8%	18.2%
Greece	9.1%	14.4%	23.3%	31.9%	33.8%	34.7%
Kosovo	5.8%	5.7%	7.4%	8.5%	8.3%	6.2%
Macedonia	9.0%	9.5%	10.1%	10.9%	10.8%	10.3%
Montenegro	21.0%	15.5%	17.6%	18.4%	16.8%	13.4%
Serbia	16.9%	20.0%	18.6%	21.4%	21.5%	22.3%

From the region, Greece has recorded the highest value of non-performing loans with 34.7% of the total gross loans at the end of 2015, which can be easily understood by the debt crisis this country is still facing. Serbia has registered 22.3% of total gross loans, ranking first among West Balkan countries. After these two countries, Montenegro is ranked with 13.4%, followed by Macedonia with 10.3%. Of all the countries presented, Kosovo is the only country in the region which has managed to keep the percentage of non-performing loans in the single digits, while it managed to reduce this percentage even further at the end of 2015 if compared to the two previous years.

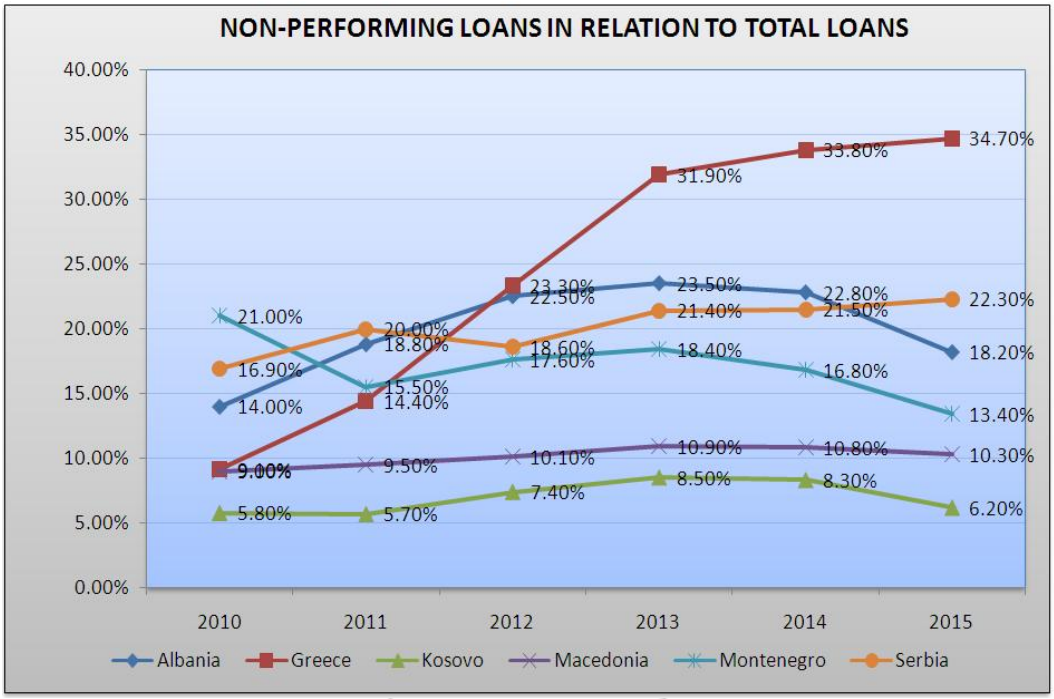

Figure 1. Non performing bank loans in relation to total gross loans.

Figure 1 shows fluctuating trends of non-performing loans percentages of countries that Albania is bordered with and Serbia. The trend of NPLs of the banking system in Albania is higher than other Western Balkan countries in 2013 and 2014, but it's seen a progress in 2015 as this percentage has decreased.

Based on a detailed literature review on loans and factors influencing their level, it's observed that most researchers distinguish two categories of factors: external factors and internal factors. The external factors are generally associated with the country's macroeconomic indicators, such as the GDP, unemployment rate, inflation rate, etc. whereas the internal factors are related to specific banking factors, such as credit growth, loan interest rate, loans to assets ratio, the quality of credit monitoring service, etc.

Keeton and Morris [14] in a study on 2470 US banks tried to understand why the level of losses on loans differs from one bank to another. Some banks have higher losses by chance, others by the weak management of the process of lending and some others have created a well-diversified portfolio, which allowed them to maintain a lower risk and facilitate lending standards. Another explanation of high losses on loans is the occurrence of banks in areas with poor economic conditions, suggesting that banks would be less vulnerable to these losses if they would lend loans to a wider geographical area. An increase in loan growth is likely to lead to higher loan losses only if the source of the faster loan growth is a shift in the supply of bank credit, related to the fact that banks become more willing to lend and they ease their credit standards [15]. As a key factor influencing the level of non-performing loans is the composition of the loan portfolio, which plays an important role as an indicator of banking risk profile. Inefficient banks, which perform a weak review and pursuit of the borrowers, will have a lower portfolio quality. Generally, the competitive environment in which banks operate can affect the level of credit risk they want to undertake [5]. Hess, Grimes and Holmes [8], analysed determinants of bank credit losses in Australasia, dividing them in two categories: macroeconomic and banking factors. Analysis was based on a comprehensive dataset retrieved from original financial reports of 32 Australasian banks (1980- 2005). Credit losses rise when the economy is weak. Larger banks provide more credit losses while less efficient banks have greater asset quality problems. The empirical results of the research made by Boudriga, Taktak and Defi [2], indicate that higher capital adequacy ratio (CAR) and prudent provisioning policy seems to reduce the level of non-performing loans and the effective way to reduce them is through strengthening the legal system and increasing transparency and democracy, rather than focusing on regulatory and supervisory issues. In their paper, Louzis, Vouldis and Metaxas [4] used dynamic panel data methods to examine the determinants of non-performing loans in the Greek banking sector. Both macroeconomic and bank specific factors have an effect on loan quality and these effects vary between different categories of loans (consumer, business and mortgage loans). The results showed that non-performing loans in the Greek banking system can be explained mainly by macroeconomic variables such as: GDP, interest rates, unemployment and management quality.

According to Bofondi and Ropele [11], the quality of lending to households and firms can be explained by a small number of macroeconomic variables, mainly related to the general state of economy, the cost of borrowing and the burden of debt. Similarly, Carlos [3] investigated the macroeconomic determinants of non-performing loans in Italy and Spain for the period from 2004 to 2012. The macroeconomic variables used were: credit growth, inflation, wage, unemployment and GDP. The results suggested that a shift in unemployment has a faster impact on non-performing loans in the Spanish economy than in the Italian economy. This variable had a positive and significant correlation for the both countries data. On the other hand, GDP variable had a positive correlation for the Italian data and a negative one for the Spanish data. Another study of Jakubik and Reininger [6], based on quarterly data of some European countries (Bulgaria, Croatia, Czech Republic, Hungary, Poland, Romania, Russia, Slovakia and Ukraine), confirmed a negative statistically significant correlation between non-performing loans and economic growth. The study refers to the correlation between non-performing loans and the following indicators: loans deferred (lagged) (positive correlation), real GDP (negative correlation), stock index (negative correlation), loans in the private sector compared with GDP (positive correlation) and nominal exchange rate (positive correlation). In a similar study, Klein [7] evaluated the macroeconomic and bank specific determinants of non-performing loans in Central, Eastern and South Eastern Europe over 1998-2011. The author's results confirmed that the level of non-performing loans tends to increase when unemployment rises, exchange rate depreciates and inflation is high.

I[1] have also studied, by using a multiple regression model, the impact of macroeconomic determinants on the level of non-performing loans for Romanian banking system, over the period 2006-2011. My results showed a positive statistically significant correlation between unemployment and non-performing loans and a negative correlation of them with the interest rate.

Outside of Europe, Jordan and Tucker [1] examined the impact of non-performing loans on economic growth in The Bahamas utilizing a vector correction model. The main findings revealed that growth in macroeconomic activity tends to lead to a reduction in non-performing loans.

In the case of Albania, Mancka [10] estimated that exchange rate Euro/All and Euro/$, as well as a variable that measures the global financial crisis are factors that affect the severity of non-performing loans. The analysis was based on data from 2002 to 2010. In another study, Shingjergji [13] analysed the impact of the macroeconomic variables on the non-performing loans level in the Albanian banking system, using quarterly data from 2005 to 2012. From the regression analysis is noticed a positive correlation between NPLs ratio and GDP growth, interest rate of four quarters lag and foreign exchange rate Euro/All. In the same year, the author [12] wrote a paper in which he analysed the relationship between the NPLs ratio and several bank specific variables in order to understand at what extent the banking variables will be able to explain the NPLs ratio. By testing the model resulted a positive correlation of the loan's level and net interest margin with NPLs ratio and a negative one between NPLs ratio and the loan to asset ratio, ROE and capital adequacy ratio (CAR). In a more recent study, Kurti [9] studied the determinants of non-performing loans in Albania during 2000-2013, with the purpose to give recommendations of what actions should be taken to reduce the level on these problematic loans. The results were in the same line with those of Shingjergji.

There are a lot of studies on these issues from different authors around the world. Despite the fact that the authors have found different ways to explain the level of non-performing loans depending on macroeconomic and banking variables, the results obtained from their studies tend to converge to these key correlations:

Table 2. Correlation between NPLs ratio and other variables

Positive Correlation with NPL	**Negative Correlation with NPL**
Unemployment	GDP Growth Rate
Interest Rate	Inflation
Credit Growth Rate	ROE
Fluctuating Exchange Rate	Capital Adequacy Ratio (CAR)
Loans to Assets Ratio	
The margin of intermediation	

[1] Klejda Gabeshi, *The Structure of the Romanian Banking System and Its Influence on the Prospect of Banking Products and Services,* Bachelor thesis, Bucharest 2011.

2.2 Econometric Framework and Model Specification

Analysis of factors affecting the credit risk for the banking system is an important analysis and can be seen as the key for credit risk management. This starts by the identification of direct and indirect determinants which exhibit an impact on credit risk, followed by the assessment of the impact (negative or positive impact).

The econometric model used is that of multiple linear regression where as the dependent variable is obtained the indicator of non-performing loans of the Albanian banking system and as independent variables are chosen a number of macroeconomic indicators and indicators of assets and liabilities of the system itself. The method applied is the method of least squares and the model is tested in advance via EViews software for basic assumptions of the method. Different reports of the Bank of Albania [16] and published data of the Institute of Statistics [17] are used for quantitative data collection. All the independent variables, such as the dependent variable are considered for a period of ten years with quarterly data, starting from the first quarter of 2005 to the fourth quarter of 2014. This period has been considered as starting from 2005 the data for the banking system have been more complete and more accurate.

As mentioned above, the dependent variable of the econometric model is NPL, which represents the ratio of bank non-performing loans to total gross loans (%). Instead, the independent variables are classified into two groups: macroeconomic factors and bank specific factors. After an analysis of research in this field as macroeconomic factors, are selected indicators of interest to the context in which our country is. These factors are:

- ✓ *Return on Equity (ROE).* ROE is expressed as a percentage and calculated as the ratio of net income to shareholder's equity. ROE is the amount of net income returned as a percentage of shareholders equity. Return on equity measures a corporation's profitability by revealing how much profit a company generates with the money shareholders have invested.
- ✓ *Gross Domestic Product Growth Rate (GDP). Gross domestic product* is the monetary value of all the finished goods and services produced within a country's borders in a specific time period. Though *GDP* is usually calculated on an annual basis, it can be calculated on a quarterly basis as well.
- ✓ *Inflation Rate (INF), consumer prices (%).* Inflation is the rate at which the general level of prices for goods and services is rising and, consequently, the purchasing power of currency is falling.
- ✓ *Fluctuating Exchange Rate Euro/Leke (Eur_Lek).* A floating exchange rate is a type of exchange rate regime in which a currency's value is allowed to fluctuate in response to foreign exchange market mechanisms.

Banking group of factors includes many indicators, but by detailed review of the literature and in the current context will be used the following banking indicators:

- ✓ *Credit Growth Rate (Cred_Grow).* Credit Growth refers to the growth/increase in the amount of credit that banks lend to the companies, business man, individuals, institutions, etc. either in the form of retail loans or institutional loans or any other form of loan or credit.
- ✓ *Bank Size (SIZE).* It is an indicator that is measured by the natural logarithm of total assets, which is expected to have a positive impact on the profitability of banks, as it shows the level of banking activity in the country.
- ✓ *Loan to Deposit Ratio (LTD).* The loan to deposit ratio is used to calculate a lending institution's ability to cover withdrawals made by its customers.

The aim of this study is to determine and analyze the relationship between the dependent variable (NPL) and independent macroeconomic and bank variables in the banking system. This study is based on establishing some hypotheses that are expected to be certified through the regression model to be used.

- ➢ Null Hypothesis ($\mathbf{H_0}$): None of the independent variables has any impact on the level of non- performing loans.
- ➢ Alternative Hypothesis ($\mathbf{H_a}$): At least one of the independent variables has an impact on the level of non-performing loans.

Theoretically it is expected an inverse relation between the level of ROE and the level of non-performing loans. An increase of the non-performing loans would lead banks to a reduction in the level of ROE. Banks have difficulty in recovering these loans and as a result it would lead to a deterioration of their performance, which ultimately will be translated into a lower ROE indicator. There is significant empirical evidence of a negative relationship between the growth in GDP and the level on non-performing loans. Indeed a strong positive growth in GDP is usually translated into an increase of the income of a country in general. Revenue growth means that both businesses and individuals have more income available, which means that now they are able to repay their loans and as a result is expected to be a decline in the level of non-performing loans. This means that strong performance in the real economy results in lower non-performing loans. Furthermore, it is expected an inverse relation between the inflation rate and the level of non-performing loans and in fact an increase in inflation would lead to a decrease in the real value of the principal remained unpaid, so the borrower will have more opportunities to pay their loan repayments, which would lead into a lower level of non-performing loans. There is also evidence in the literature of a positive association between the level of non-performing loans and real effective

exchange rate. This connection is explained by the fact that if the other conditions are kept unchanged and if there is an increase of the exchange rate Euro/All for loans granted in euro, the payment of instalments will be more difficult because borrowers will pay higher instalments due to the increase in the exchange rate. Excessive lending by commercial banks is often identified as an important determinant of NPLs. We expect Credit Growth Rate to have a significant positive relationship with NPLs since the literature shows that rapid credit growth is often associated with higher non-performing loans. The empirical evidence relating to the impact of bank size on NPLs appears to be mixed. For instance, some studies report a negative association between NPLs and bank size. According to these studies, the inverse relationship means that large banks have better risk management strategies that are usually translated into more superior loan portfolios vis-à-vis their smaller counterparts. There are also studies which provide evidence of a positive association between NPL and bank size. Moreover, it is expected a strong positive relationship between NPL and the loan to deposit ratio. The supporting argument is that banks that value profitability more than the cost of higher risk (represented by a high loan to deposit ratio) are likely to incur higher levels of NPLs during periods of economic downturn.

3. RESULTS AND DISCUSSION

To test the level of statistical importance of the independent variables, is analysed the critical probability (P-value or Prob). If the probability is below the level of importance, which we choose to work with (1%, 5% or 10%), the null hypothesis is rejected and the coefficient is considered statistically significant. While F test measures how well the independent variables explain the dependent variable performance. Another indicator used to analyse whether the model is good or not is determined R^2. This indicator takes values from 0 to 1 and shows the percentage of variation of the dependent variable explained by the considered independent variables. Durbin Watson statistics also, must have a value between 1.8 and 2.2 in order not to have autocorrelation of errors. After running the regression analysis with the EViews program is obtained this equation:

NPL = -1.122033488 - 0.481702279*ROE - 0.1649856551*GDP + 0.6555248997*INF + 0.02690422082*EUR_LEK - 0.8618194031*CRED_GROW + 0.2281798887*SIZE + 0.4340209706*LTD (1)

As seen from the above equation, an increase in INF, Eur_Lek, SIZE and LTD, will increase the NPL ratio and an increase in ROE, GDP and CRED_GROW will decrease the NPL ratio. The empirical results, however, reveals that Inflation Rate and GDP Rate are not important determinants of NPL in the Albanian Banking System. This result is related to the fact that during the study period inflation rate has been very stable, fluctuating within the objectives of the Bank of Albania, whereas the level of non-performing loans has increased progressively from 2008 until 2014. Hence, for more relevant results, these two independent variables will be excluded from the model and the other variables will be tested again. The final equation of the econometric model has the following form:

NPL = -1.067434138 - 0.4648956634*ROE + 0.03024846568*EUR_LEK - 0.9006674825*CRED_GROW + 0.2192877302*SIZE + 0.4203013116*LTD (2)

While the output of the regression model is given in the following figure:

Dependent Variable: NPL
Method: Least Squares
Date: 06/04/16 Time: 19:29
Sample: 1 40
Included observations: 40

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.067434	0.216415	-4.932344	0.0000
ROE	-0.464896	0.147689	-3.147802	0.0034
EUR_LEK	0.030248	0.028124	3.075546	0.0497
CRED_GROW	-0.900667	0.242412	-3.715438	0.0007
SIZE	0.219288	0.031155	7.038540	0.0000
LTD	0.420301	0.085048	4.941905	0.0000
R-squared	0.915826	Mean dependent var		0.122220
Adjusted R-squared	0.903447	S.D. dependent var		0.084387
S.E. of regression	0.026222	Akaike info criterion		-4.306991
Sum squared resid	0.023377	Schwarz criterion		-4.053659
Log likelihood	92.13982	F-statistic		73.98476
Durbin-Watson stat	1.866302	Prob(F-statistic)		0.000000

Fig 2. Output evaluation in EViews

The determination coefficient ($R^2 = 0.9158$) shows that independent variables in regression explain 91.58% of the variation of the dependent variable, i.e. the level of non-performing loans. Adjusted R^2 is 0.9034. About the statistical significance of the econometric model we reviewed indicated F-statistic, which has a value F = 73.98 with a level of probability p = 0.000, which confirms that the model is statistically significant because of the high value of F-test and the probability is below the level of importance α =0.05. Durbin Watson statistics is equal to 1.866, which means that residuals are not correlated, pointing their independence as a completion of one of the conditions of the least squares method.

C coefficient is the intercept that represents the NPL ration when all the independent variables are equal to zero. The other coefficients are the expected slopes of how much the NPL ratio will change, for one percent of change of each independent variable. Thus, an increase in ROE with one percent will decrease the NPL ratio with 46.49%. This result is in line with the studies conducted in this area, as an increase of the non-performing loans would lead banks to a reduction in the level of ROE. Also, the data from the Albanian Banking System show that profitability measured by ROE, has suffered a major decline especially after 2008 global financial crisis. On the other hand, an increase of the exchange rate with one percent will increase the NPL ration with 3.02%, suggesting that the international competitiveness of the local economy is an important determinant of credit risk. This result is based on the performance of the exchange rate during the study period, noted that from 2002 to 2014 the exchange rate has increased by nearly 15%. This is a very important fact considering that in the banking system almost 60% of total credit is in euro and this affects the proliferation and accumulation of non-performing loans in this currency. Regarding the specific bank factors, growth in loans exhibits a fairly strong negative relationship with non-performing loans. An increase in Credit Growth rate with one percent will decrease the NPL ration with 90.07%. While the literature suggest a positive correlation, my peculiar results probably reflects the conservative lending stance adopted by the Albanian commercial banks in the last years, due to their bad lending experience with the increase of non-performing loans. The variable SIZE, which represents the Bank Size, is positive, meaning that an increase of it by one percent will increase the NPL ratio with 21-93%. The major banks of Albania, even if they have greater profitability, face a higher level of non-performing loans. This evidence which is inconsistent with previous studies can mean that large banks are not necessarily more effective in screening loan customers when compared to their smaller counterparts. Finally, an increase in Loan to Deposit rate with one percent will increase the NPL ratio with 42.03%. This result for Albania is consistent with previous studies, meaning that banks with a bigger risk "appetite", are likely to face higher levels of NPLs.

4. CONCLUSIONS

The increase of non-performing loans in the Albanian banking system has made many banking field researchers try to find the key factors that have brought this progressive and disturbing augmentation. Based on a detailed literature review on loans and factors influencing their level, it's observed that most researchers distinguish two categories of factors: external factors and internal factors. The external factors are generally associated with the country's macroeconomic indicators, such as GDP, unemployment rate, inflation rate, etc. whereas the internal factors are related to specific banking factors, such as credit growth, loan interest rate, loans to assets ratio, the quality of credit monitoring service, etc.

The results of the econometric model showed a direct, statistically significant link between the level of non-performing loans and factors such as fluctuating exchange rate, bank size and loan to deposit ration. This means that a unit growth of each of these variables will increase with β (corresponding coefficient for each variable) units the level on non-performing loans. The exchange rate has increased by nearly 15% from 2002 to 2014. This is a very important fact considering that in the banking system almost 60% of total credit is in euro and this affects the proliferation and accumulation of non-performing loans in this currency. The major banks of Albania, even if they have greater profitability, face a higher level of non-performing loans. This evidence which is inconsistent with previous studies can be interpreted by the fact that large banks are not necessarily more effective in screening loan customers when compared to their smaller counterparts.

On the other hand, the results of the econometric model showed an indirect, statistically significant link between the level of non-performing loans and factors such as ROE and credit growth rate. This means that a unit growth of each of these variables will decrease with β units the level on non-performing loans. The data from the Albanian Banking System show that profitability measured by ROE, has suffered a major decline especially after 2008 global financial crisis. This result is in line with the studies conducted in this area, as an increase of the non-performing loans would lead banks to a reduction in the level of ROE. While the literature suggest a positive correlation, my peculiar results probably reflects the conservative lending stance adopted by the Albanian commercial banks in the last years, due to their bad lending experience with the increase of non-performing loans.

Buying financial products with high risk, strengthening banking supervision and screening of banks, taking decision based on a strong analysis of the cost-benefit, etc. are the suggestions provided by some economic experts in order to decrease the level of non-performing loans in the Albanian banking system, which remains among the highest in the region, at about 19%.

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