Macroeconomic Factors That Affect the Quality of Lending in Albania

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Abstract

The credit risk is one of the main risks in commercial banks and the ability to manage it meanly affects banks' stability. In this paper, is analyzed the link between the macroeconomic developments especially GDP growth and interest loan rate and the banking credit risk measure by NPLR. This paper analyzes the data of commercial banks in Albania over the time period from 2005Q1 to 2013Q1. This study includes 36 observations from banking system. Besides bank many specific characteristics, in this study is included a set of macroeconomic and industry-specific variables into our regression analyses. Our results show that there exist significant differences in profitability between commercial banks in Switzerland and that these differences can to a large extent be explained by the factors included in our analysis. Also, this model specification, which includes several variables that have not been considered before, generates new insights for a better understanding of banking performance. Employing dynamic panel data approaches we conclude that the banking credit risk is significantly affected by the macroeconomic environment: the credit risk increases when GDP growth and is also negatively affected by an arise of the interest loan rate. The set of 2 independent variables as factors determining the changes in amount of doubtful and non-performing loans was created. These variables were calculated from data imported by Central Bank and annual reports the research has confirmed that the amount of doubtful and non-performing loans in banks highly depends on macroeconomic changes.

Keywords: Credit risk; macroeconomic factors; banking system; GDP growth, interest rate

JEL Classification: G21, E01, E24, E31

1. INTRODUCTION

The main purpose of this study is to analyze the relationship between macroeconomic factors and credit quality. From this analysis it appears that the effect of the macroeconomic situation plays an important role in Albania for the level of non-performing loans. The empirical evidence from the available data shows that macroeconomic factors make a substantial contribution credit. The treatment of a variety of indicators such as interest rates on loans, inflation rate, unemployment rate, the percentage change in quarterly GDP and exchange rates Euro and USD-ALL-ALL demonstrate the potential role of credit factors.

Credit growth is seen by many economists as a positive process, because it indicates a healthy banking system and a stable macroeconomic environment. On the other hand, excessive credit growth can affect loan portfolio quality. For this reason it is necessary to reflect the performance of lending in our country, analyzing the credit boom period in the years 2005 -2008 and after the crisis period of 2008 (the period of "credit growth" in "its contraction"). This is accomplished by analyzing the structure of the loan portfolio by sectors, maturities, currency, loans to deposits ratio, etc.

But of course after a lending boom period with negative consequences come, that our country is caused by poor quality lending, a low level of supervision, the crisis of 2008, and because there is a space of time between lending and problems occur. Will look at the level of bad loans (NPL,) after the period of crisis is a growing trend and in the first quarter of 2013 this rate is 24 percent. Indeed our banking concern for the system.

The crisis has affected the overall economic system but with greater impacts on particular sectors. But in this paper are only dealt with macroeconomic factors that affect the quality of lending.

To see how these factors have affected the level of non-performing loans are analyzed as they walked from the period 2005-2013. Therefore one of the basic ideas that will permeate this paper is to analyze the macroeconomic factors affecting the quality of lending. Macroeconomic factors to consider in this study are material, GDP growth, interest rates, unemployment rates, inflation and the exchange rate of exchanging $ / € and ALL / ALL.

- METHODOLOGY OF THE STUDY

Our country is characterized by an environment not very conducive economic might increase the risk of default on the loan currently. Therefore, it becomes necessary to study how macroeconomic variables affect the quality of lending. Researchers dealing with the examination of the impact of these factors have been using different methods. In this paper will be used, ordinary least squares (OLS) based on the Gauss-Markov theorem. The program is used MICROFIT 4.0 to analyze the relationship between macroeconomic variables and credit quality,

will follow several steps in order to identify the nature of the relationship.

Initially applied diagnostic tests, then classical linear regression to track multiple causality tests, these tests will be completed by the impulse response analysis and variance decomposition of forecast errors. The time period begins just after the privatization of state-owned bank and the Albanian banking system takes a greater development. The data are time series for periods from the first quarter of 2005 to the first quarter of 2013.

The dependent variable is credit quality, which is measured by ratio of Non Performing Loans (NPL). Independent variables which are macroeconomic variables of interest rate currency, unemployment rate, inflation rate, GDP growth, exchange rate € / ALL and $ / ALL.

Data are collected only for the period Q1 2005 to Q1 2013. Data were collected from secondary sources, published by the Bank of Albania, quarterly publication from the reporting of the Bank of Albania and INSTAT. The GDP growth and inflation rate are taken from INSTAT, while unemployment rate, interest rate loans, NPL and exchange rates are taken from the Bank of Albania. The study is to find the macro factors affecting the quality of lending. The study is taking all the Albanian banking system, as there are no restrictions and other factors affecting small but that comprise the margin of error.

Hypotheses:

H0: $\beta1 = \beta2 = \beta3 = \beta4 = \beta5 = \beta6 = 0$ (None of macroeconomic variables does not affect the credit quality) Rejection of either will lead us to the alternative hypothesis)

Ha: $\beta1 = \beta2 = \beta3 = \beta4 = \beta5 = \beta6 \neq 0$ (At least one macroeconomic variables affecting the quality of credit)

2. Literature Review

This section analyzes the strategies used for modeling the impact of macroeconomic factors on the quality of lending. Having critically reviewed the various stages of the analysis, we identify the advantages and disadvantages of each of the solutions made, in order to select a strategy for our model and to recognize the possible limitations.

Numerous studies have modeled the default options as linear functions of macro variables. The main advantage in using macroeconomic models lies in the fact that they impose consistency across scenarios predicted values. The scenarios cover a whole macro variables such as GDP, interest rates on loans, unemployment rates, inflation rates, etc.. In some cases, as reported by William F. Bassett and others (2010), including variables such as GDP, inflation, credit index, the federal funds rate, the lending capital growth, etc...

Vector auto regression models (VAR) or vector error correction (already) jointly combine the effects of exogenous shocks on various macroeconomic variables which are then used in the scenarios. Also, they can be expanded to include some financial variables and to consider the retroactive effects (Babouček and Jančar 2005, Chan-Lau 2006). Usually, these models are used as an alternative to macroeconomic models, but are replacing them, they are relatively flexible and provide a general strikes in mutually consistent, although not include economic structure that is incorporated in macroeconomic modeling method.

Macroeconomic scenarios presented in the financial variables approximating credit quality or the possibility of default. Specifically, this variable is the rate of HMP-s or-s PHH. These regression models include loan performance measurements, such as non-performing loans (HMP) or provision for loan losses (PHH) as dependent variables; explanatory variables include a set of macroeconomic indicators. Variables such as economic growth, unemployment, interest rates, inflation rates, equity prices and corporate bond variables contribute to explaining the risk of default.

Alfred Hamersley and others (2011) modeled unexpected credit losses from strikes out, evaluate empirically, the link between loans with a variety of macroeconomic variables, including nominal interest rate, inflation, GDP growth and the difference in terms of market share.

Hogarth, Sorensen and Zicchino (2005) use a VAR system to analyze the impact of macroeconomic factors on bank loans written off in the UK economy and sector level. Economic variables included in the model are: the output gap, the annual rate of retail price inflation and nominal interest rates.

Castren and others (2009) study the effects of macroeconomic shocks to the VAR for various banks through two steps. First, they estimate a GVAR model (Global Autoregresion vector) to obtain the impulse responses of Gross Domestic Product (GDP), real stock prices, inflation, interest rates and short-term exchange rate euro-dollar.

Van den End and others (2006) develop models to reduce the balance to assess the impact of macro variables to PHHve, using data for the five largest Dutch banks. In credit risk modeling, they use two basic equations.

Vitor Castro (2012) estimate a panel data model for five countries (gypsum) Greece, Italy, Portugal, Spain, Ireland. NPL study which links a number of macroeconomic factors. The set of macroeconomic variables including economic growth and inflation, and financial variables include lending interest rates, GDP growth, unemployment rate, inflation rate. To test whether macroeconomic variables have the same impact on all banks operating in these states.

A Beatrice human Warue (2013) studies the effects of macroeconomic variables and variables specific to the

NPL in Kenya. The model includes the construction of two macroeconomic models of credit risk, each consisting of a multiple regression model and a set of auto regression models, which take into account the retroactive effect of the rate of defaults on bank loans to various macroeconomic values, estimated by methods seemingly unrelated regression.

Studies conducted in our country ot the impact of macroeconomic factors affecting the level of non-performing loans are few in number but very important. Here we mention the study conducted by the research department of the Bank of Albania, the study conducted by Dr.. Steel and Dr. Evelina. Luci Erion (2003). In this study includes only dummy variables are as dangerous moral effectiveness of law, mismanagement, etc. and macro variables. And from this study resulted in the same period the main risk was dangerous moral and macroeconomic situation. Anila Mançka According to several studies conducted in Albania to see the relationship that exists between macroeconomic factors and credit quality is statistically significant draw conclusions about the impact of several macroeconomic factors in lending. The study included the unemployment rate, inflation rate, export-imports, the exchange rate with the dollar, the euro exchange rate, GDP growth rate of lending. According to these studies Mançka comes to the conclusion that the factors that affect only the GDP growth, currency depreciation against the euro aggravate credit quality.

3. Non performing Loans

This chapter deals specifically with macroeconomic factors that have significant influence on the level of non-performing loans in the banking system.

According to the rules of the Bank of Albania "On credit risk management", banks classify their loans into one of the following five categories:

1. Standard, 2. Loans in pursuit, 3. Substandard, 4. Doubtful 5. Lost

Category 1 represents the highest quality of credit, while Category 5 represents the lowest quality to it. Loans classified in categories 1 and 2, constitute the credit quality. Loans classified in categories 3, 4 and 5 constitute the "bad loans". Gross amount is "total non-performing loans" (NPL). Consequently, loans indicator is measured as the ratio of nonperforming loans to total outstanding loans. This indicator has shown different features over the years.

Gaps in the evaluation and management of credit profuse banks contributed to the creation of large non-performing loans in recent years.

3.1 The NPL and Macroeconomic factors progress

The Non Performing Loans may be caused by the impact of the macroeconomic environment, or micro level, based on economic activity through which the borrower provides his monthly income. Macroeconomic indicators in a given period have their impact, given that negative performances of their borrowers to have its impact on the credit return and therefore the quality of assets and the banking system indicators. Thus, years of economic growth have had a positive impact on repayment have played a positive effect stable inflation rates averaged about 3 percent. Meanwhile, significant changes are observed indicators of bad loans after the crisis of 2008.

One should note that there is a gap between getting a loan and default presentation of its problems. This may be one of the factors which indicate an increase of the rate in recent years, after a period during which the indicator is kept well under control.

In early 2013, an indication of the quality of the loan portfolio is measured as the ratio of non-performing loans to total loans amounted to 23.99 percent of, showing a continuing upward trend. The growing trend of this ratio is influenced mainly due to: macroeconomic factors, economic slowdown and the depreciation of the exchange rate, slow pace of growth of outstanding loans in declining volume accumulation (meetings) of the loan granted by banking sector. This has led to higher provisions for credit risk coping, which has consistently influenced the financial result of the banking sector. The deterioration of the loan portfolio of the banking system eroded capital, adequacy report which recorded 16.2 percent in 2012 from 18.6 percent in 2005 (Table 4). A level loan at the end of 2012 was at 260 million dollars.
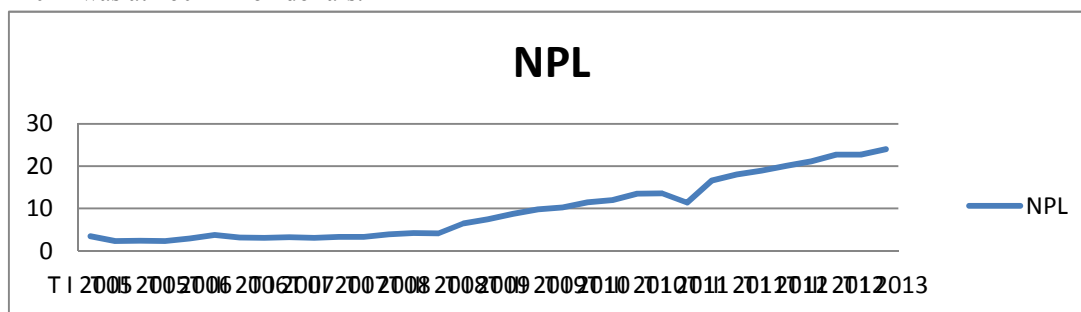
3.1.1 Unemployment Rate

Unemployment rate from 2005 to 2008 has decreased, it shows that the paying ability for loan installment has been improved. But after the crisis of 2008 will have an increase in the unemployment rate and this worsens the economic situation of individuals to pay.

Remittances are another factor affecting the credit. Remittances in Albania occupy approximately 10 percent of GDP, and represent a source of income for families. But about 70% of Albanian immigrants are in neighboring countries such as Greece and Italy saw the economic development of these states, remittances are reduced to very high levels.

 "Theoretically expected to increase in remittances will reduce the level of non-performing loans, as borrowers have more money and this will help them in paying the loan installments and vice versa" Two other variables are: the index of housing prices and rental price index, which affect loans.
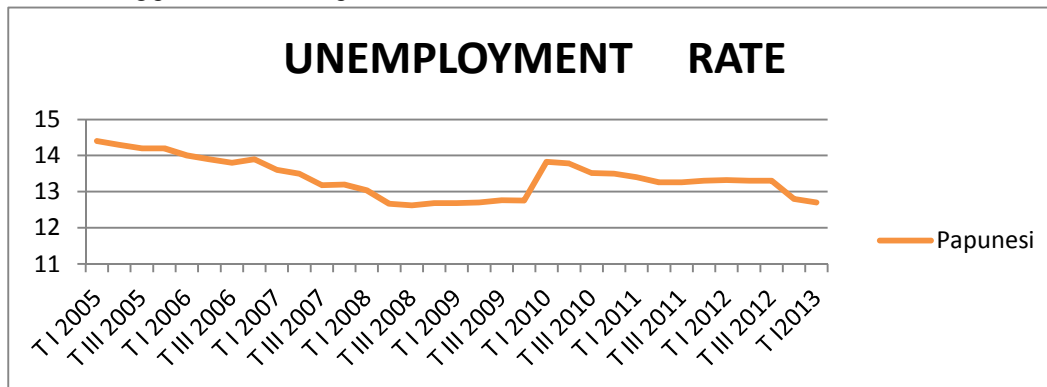
Source: Bank of Albania, the author's estimate

3.1.2 Inflation

Inflation as an indicator of price stability affects the solvency of credit. For long periods of high inflation the real value of the payments of borrowers begins to decrease, which helps them to pay duties. This is associated with improved quality of the loan portfolio. In the case of Albania, during this period the inflation rate has been almost stable within the limits set by the bank, but with considerable variation for each quarter. We see from the graph No. 8 from the period 2013 IT 2005 IT variability is close to 2-4 percent levels, set by the Central Bank.
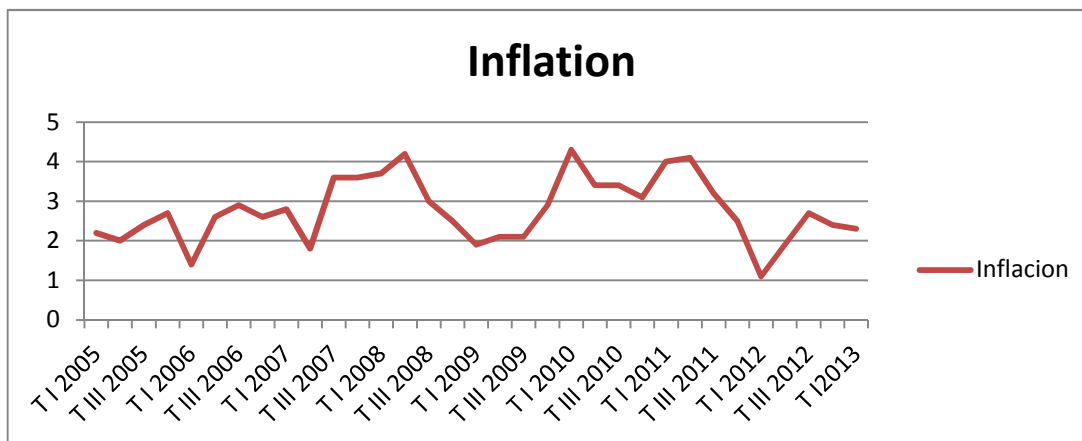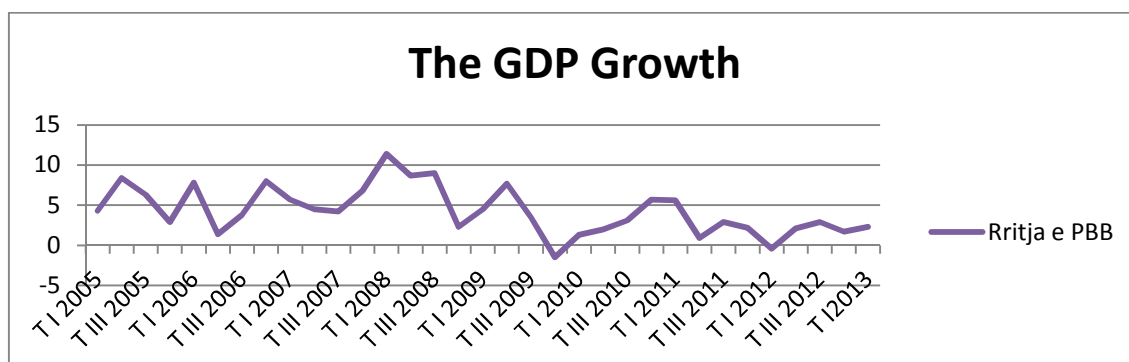

Source: Bank of Albania, the author's estimate

3.1.3 The GDP Growth

This indicator is related to a country's economic activity. Credit quality is affected by a country's economic development for example a worsening economic growth will reduce the level of income and as a result individuals will have difficulty in paying the loan installments.

GDP growth in 2008 to remain at satisfactory levels annually, but after 2008 the GDP growth was much lower rates. Annual growth for 2012 was 1.58%, indicating percent margin deterioration ability. Even had on several periods and a decrease below zero, such as fourth quarterly of 2009 and first quartely of 2012. This factor has a significant impact on solvency.

Source: Bank of Albania, the author's estimate

3.1.4 Interest Rate

Interest rates and direct costs of borrowing are key factors that impact on the solvency of individuals, and constitute direct cost of borrowing. An increase in interest rates means higher loan installments to be paid and more opportunities for borrowers to have difficulty in paying their loans. Central Bank has taken measures to reduce the lending interest rate several times, by 0.25 percent. And the interest rate from the 14:51 percent in 2005 went near the 10 percent in 2012. But lowering the interest rate on money has little impact since most of the loans are in foreign currency.

3.1.5 Exchange Rates

During the period under review domestic currency depreciated against the euro. The one side effect will increase exports and businesses will have more opportunities to pay the loan. But if the loans are in foreign currency and income of borrowers are in ALL, a depreciation of the domestic currency will result in a larger amount to be paid in money, leading to a deterioration of the loan portfolio.

It should be mentioned that 66.6 percent of loans are in foreign currency and most of the Euro currency. Solvency margin for loans in Euro hampered due to the depreciation of the local currency after 2008. Has little impact on dollar loans as they occupy a smaller percentage.

4. Data and methodology

One way to measure risk and credit quality is through rate loans. This rate in recent years has increased in line with increased borrowing. This relates to the financial crisis, which has led to the deterioration of macroeconomic indicators. Because there are different macroeconomic factors affecting the quality of the loan portfolio have thought to examine each of these factors and their impact on non-performing loans in the case of Albania, assessed through econometric model. Favorable macroeconomic situation which has characterized the Albanian economy in the period before the global crisis has impacted positively on lending activity, indicating a low level of non-performing loans. Meanwhile, the situation changed in 2008 when credit began to decrease, whereas the growth rate of non-performing loans rose. In this situation, the ratio of nonperforming loans to total loans has increased, due to the growth in faster-performing loans. In this section we will identify the variables that are statistically significant in determining credit risk.

4.1 Econometric Model

$Y = \alpha + \beta 1 X1 + \beta 2 X2 + \beta 3 X3 + \beta 4 X4 + \beta 5 X5 + \mu i$

-Where βi are coefficients

-μi represents standard error.

-Y, is the dependent variable, and represents the level of nonperforming loans to total loans

-Xi are independent variables (explanatory)

H0: $\beta 1 = \beta 2 = \beta 3 = \beta 4 = \beta 5 = \beta 6 = 0$: None of macroeconomic variables has no impact on credit quality.

Ha: $\beta 1 = \beta 2 = \beta 3 = \beta 4 = \beta 5 = \beta 6 \neq 0$: At least one macroeconomic variables have an impact on credit quality.

Hypothesis testing will be conducted by criteria F, t and probabilities. H0 will be rejected if the resulting probability less than $\alpha = 0.05$, or F statistic will result in higher than critical according to the degree of freedom

It should be noted that in order to approach the test results in a high degree of reality is also important to test the involvement of appropriate indicators in the correct form

4.2 Testing of statistical data

The results of regression autput model are

```
          Ordinary Least Squares Estimation
*********************************************************************
 Dependent variable is NPL
 33 observations used for estimation from 2005Q1 to 2013Q1
*********************************************************************
 Regressor      Coefficient      Standard Error      T-Ratio[Prob]
 CONST           -.11687           .14872            -.78582[.439]
 PAPUNESI        1.8317            .85773             2.1355[.042]
 INFLACION       -.77138           .48043             2.6056[.020]
 RRITJAPB        .023433           .14100             .16619[.869]
 NINTERESI       2.4378            .44919             5.4270[.000]
 KURSIEUR        .0051851          .7999E-3           6.4822[.000]
 KURSIUSD        .0011577          .8367E-3           1.3837[.178]
*********************************************************************
 R-Squared          .95065    R-Bar-Squared              .93926
 S.E. of Regression    .017820  F-stat.  F( 6, 26)  83.4717[.000]
 Mean of Dependent Variable .096279  S.D. of Dependent Variable  .072304
 Residual Sum of Squares  .0082562  Equation Log-likelihood     90.0145
 Akaike Info. Criterion    83.0145  Schwarz Bayesian Criterion    77.7767
 DW-statistic          1.7656
*********************************************************************
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Model:
$Y=-0.11687-1.11687X_1-0.77138X_2 + 0.023433X_3+2.4378X_4+0.0051851X_5+0.0011577X_6$
F-critical degrees of freedom is 6-26 is 2,47 . F-real is 83.47 greater than the critical F to say that the model is globally significant and prove that the statistical probability is many times is smaller than $\alpha = 5\%$ (0.05).
DW (Durbin Watson) should theoretically be 2 really is nevertheless very close to 1.7656 units 2 and shows there is no multicolinearity.
- Regression Model of macroeconomic factors affecting the credit quality measure expressed in R2 = 0.95065, a value is very high given that R2 can be a maximum of 1.

4.3 Explanation of the significance of macroeconomic factors in the model.

a. The impact of unemployment on the credit quality
H0: $\beta1 = 0$: Unemployment does not affect the quality of credit
Ha: $\beta1 \neq 0$: Unemployment affects the quality of credit
Coefficient = -1.8317, $\beta1 \neq 0$ and therefore it rejects H0 and accept the alternative hypothesis.
Theoretically expected a positive correlation between the unemployment rate and the level of non-performing loans, but because the data do not represent reality as to the level of unemployment in our country is at higher levels. It results from a model that shows that negative association for every one unit decrease in the level of unemployment rate loans increased by 1.8317 units. But it did not come as a statistically significant factor.

b. Impact of Inflation on the credit quality
H0: $\beta2 = 0$: Inflation does not affect the quality of credit
Ha: $\beta2 \neq 0$: Inflation affects the quality of credit
Coefficient = -0.77138, $\beta1 \neq 0$ and therefore it rejects H0 and accept the alternative hypothesis.
From the equation above show that the relationship between NPL and inflation is negative. This result confirmed the theory. During periods of high inflation, the real value of the payments to borrowers begins to decrease, which helps them to pay back the loans. In Albania during this period inflation rate has been stable within the limits set by the bank. For every one unit increase in the inflation rate, the level of non-performing loans will decrease by 0.77138 units. It is statistically significant.

c. The impact of GDP growth in the credit quality
H0: $\beta3 = 0$: GDP growth has no impact on the quality of credit
Ha: $\beta3 \neq 0$: GDP growth has an impact on the quality of credit
Coefficient = -0.023433, $\beta1 \neq 0$ and therefore it rejects H0 and accept the alternative hypothesis. As theoretically expected and the connection between the growth of gross domestic product and the level of non-performing loans is negative. Ot a unit of GDP have increased with a decrease in unit-level 0.023433 loans. It is statistically significant.

d. The impact of the interest rate (in ALL) in credit quality

H0: $\beta 4 = 0$: ALL interest rate does not affect the credit quality

Ha: $\beta 4 \neq 0$: ALL interest rate has an impact on the credit quality

Coefficient = 2.4378, $\beta 1 \neq 0$ and therefore it rejects H0 and accept the alternative hypothesis. Another important factor which affects loans is the interest rate. In the analysis, the case of Albania has taken the average three-month loans. From the results above show that the three-month rate of interest we have a positive relationship with each one unit increase in interest rates have increased the level 2.4378 units of non-performing loans. It is statistically significant.

e. The impact of exchange rate € / ALL the credit quality

H0: $\beta 5 = 0$: Exchange rate € / ALL does not affect the credit quality

Ha: $\beta 5 \neq 0$: Exchange rate € / ALL affects credit quality

Coefficient = 0.0051851, then $\beta 1 \neq 0$ and it rejects H0 and accept the alternative hypothesis. The equation shows that the link between loans and exchange rate EUR_ALL is positive. This result confirmed the theory. Given that the majority of Albanians loans are in foreign currency, local currency depreciation will result in a larger amount to be paid in money, and as a result this will lead to a deterioration of the loan portfolio. For a unit increase in the exchange rate have increased loans to 0.0051851. It is important statistically.

5. Conclusion of the study

Conclusions and recommendations

-When assessing the rapid growth of credit level, it is necessary to consider the potential impacts on macroeconomic and financial stability, since there is a close relationship between them.

-Rapid credit growth, a widespread phenomenon in transition economies is accompanied by macroeconomic stability, robust growth, and appropriate economic environment, restructuring and increasing confidence in the banking system.

-The global economic crisis led to the deterioration of the macroeconomic situation in the country. This caused lower credit quality, from one quarter to another in early 2013 where the level of nonperforming loans was 23.99 percent level.

- Macroeconomic factors such as interest rate, exchange rate, unemployment rate, inflation rate, inflation, GDP growth, exchange rates empirically tested on the local economy for their connection with the credit quality results in accordance with the conclusions theoretical.

- In periods of economic growth have high levels of lending and low levels of nonperforming loans, while in periods of decline of GDP growth we have GDP growth of loans, this relationship was inversely and empirically verified.

- In recent years, the impact of inflation on the level of problem loans is that a small impact as inflation levels have been set by the Bank of Albania, and this is confirmed by econometric model that there is a negative relationship between credit quality.

-The impact of interest rate is the main factor in the payment of loans, the level of interest not rate has been relatively high and it brings quality and reducing lending, this positive correlation between interest rates and credit quality is confirmed by model consider.

The exchange rate-all / euro impact on the level of non-performing loans as at the period under consideration most of the loans are in European currency. The depreciation of the domestic currency has become more expensive loan payment. Albanians have a mismatch between loans and income inflows. Therefore, we conclude that the banking system is exposed to the volatility of the exchange rate € / ALL.

-Based on the portfolio of loans banks must identify clients with problems of temporary and surmountable, creating policies to restructure loans.

-Bank should increase the levels of provisions as the level of non-performing loans continues to be a growing trend.

-Prevention of risks arising as a result of the credit boom, achieved through a combination of macroeconomic policy, regulatory and supervisory policies with each other.

- Lending in the country should focus on those sectors which have a strong connection with the country's GDP, contributing positively to it. The focus should be on those sectors which support the development of the country.

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