sciendo

Relationship Between Economic Factors and Non-Performing Loans- the Case of Albania

Valbona Gjini

PhD, Department of Finance and Accounting, Faculty of Economy,

University of Vlora "Ismail Qemali", L. Pavaresia, Vlora, Albania

Luciana Koprencka

PhD, Department of Finance and Accounting, Faculty of Economy,

University of Vlora "Ismail Qemali", L. Pavaresia, Vlora, Albania

Abstract

The financial system in Albania is dominated by the banking system and therefore its performance is of great importance for the financial and economic stability of the country. The share of banking sector assets at the end of 2016 reached 95.8% of Gross Domestic Product (GDP). On the other hand, the banking system does not operate isolated and it is consequently linked to the country's economic cycle, at the same timed affected by economic developments. Credit risk is the biggest risk to which the banking system is exposed because the credit occupies the main weight in the banking system assets. In this paper there is a description of lending activity and credit risks in Albania. The analysis focuses on problem loans and analyzes their performance over the years. This paper analyzes the links between non-performing loans and some economic factors through the statistical program, using the simple and multi-linear regression method. As a function of our working regarding non-performing loans, they are presented as a dependent variable and as independent variables, some economic indicators are thought to have an impact on the level of non-performing loans such as GDP growth rate, unemployment, inflation and rate of interest on the loan.

Keywords: non performing loans, credit risk, GDP, banking system, economic factors

Introduction

The financial system in Albania consists of banks, non-banking financial institutions, savings and loan associations, pension funds and investment funds. The structure of assets of the financial system is dominated by banks, whose assets account for about 89.7% of assets of the entire financial system. Thus, the banking system dominates the financial system in Albania, therefore its development and performance is of great importance for the financial and economic stability of the country. The share of banking sector assets to GDP has been increasing from 60.40% at the end of 2005 to 84.7% in 2011 and it reached 95.8% at the end of 2016. On the other hand, developments in the banking system are affected from the economic development of the country.

Credits constitute the main voice of the banking system assets. As a result, credit risk is one of the biggest risks to which the Albanian banking system is exposed. Credit rating and measurement, and in particular the valuation and forecasting of the non performing loans, have a significant impact on the economic development of the country. For this reason, the analysis of non-performing loans and factors influencing this indicator has been and it already is in the focus of many scholars, academics, supervisory authorities, international institutions etc. In the first years of transition, the causes of non-performing loans were mainly due to the inefficiencies of enterprises and state-owned banks, while attention has now been concentrating in analyzing microeconomic and macroeconomic factors of the environment in which banks operate. Bank

ISSN 2411-9571 (Print)
ISSN 2411-4073 (online)

European Journal of Economics
and Business Studies

April 2018
Vol 4 No 1

credit risk performance depends on internal and external factors. Internal factors are linked to specific characteristics of particular banks and external factors are linked to the economic and financial situation as well as to the institutional environment. Generally, for the purpose of analysis, the factors determining credit risk are grouped into four main categories: macroeconomic factors, factors related to creditors, factors related to creditworthiness and factors related to the structure of assets and liabilities of the banking system. The global financial crisis of 2008 had its impact on the Albanian financial system as well. Starting from this year onwards, the Albanian banking system has experienced a rise in high levels of non-performing loans, reaching the highest value in 2013 with 23.5%. The objective of this paper is to analyze the relationship between the economic factors and the quality of the loan. Through the statistical program "Stata 14" an econometric analysis was conducted. As a function of working non-performing loans, they are presented as a dependent variable, and as independent variables, some economic indicators are thought to have an impact on the level of non-performing loans such as GDP growth rate, unemployment, inflation, rate of interest on the loan. Using the simple and multiplicative linear regression method, the links between these variables for the period 2003-2016 were analyzed and the analysis resulted in important links between them.

2. Literature Review

After the global crisis of 2008, non-performing loans have been at the center of the attention of researchers almost all over the world. We will focus on a quick overview of literature in the last 10 years to analyze mutual relations between economic factors and bad credit.

Beck, Jakubik and Piloiu (2013), using a new panel data set studied the macroeconomic determinants of non-performing loans (NPLs) across 75 countries. According to their dynamic panel estimates, the following variables are found to significantly affect NPL ratios: real GDP growth, share prices, exchange rate and the lending interest rate. Louzis, Vouldis and Metaxas (2010) examined the determinants of NPLs in the Greek banking sector and found that credit quality among Greek banks can be explained mainly by macroeconomic fundamentals and management quality. Ričardas Mileris (2012), also studied the effects of macroeconomic conditions, on the credit risk of credit portfolio, measured by non-performing loans and the banking system's income, for the 27 European countries. Jakubik and Reininger (2014) based on the 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.

Jordan and Tucker (2013) examined the impact of non-performing loans on economic growth in Bahamas using a vector correction model. The main findings revealed that growth in macroeconomic activity tends to lead to a reduction in non-performing loans. Espinoza and Prasad (2010), estimated a dynamic panel over 1995-2008 on approximately 80 banks in the Gulf Cooperation Council, lower economic growth and higher interest rates triggered a rise in NPLs. Bucur and Dragomirescu (2014), studying the impact of macroeconomic factors on credit risk. For the Romanian banking system over the years 2008 - 2013. Nkusu (2011), used panel data techniques on a sample of 26 advanced economies that spanned from 1998 to 2009, to quantify the relationship between the quality of banks' loan portfolio and macro-financial vulnerabilities. Klein (2013) extended his analysis of the central, eastern and south-eastern European region, pointing out that specific bank factors played a decisive role in addition to the broader macroeconomic situation. It also used SVAR estimates and reported a negative impact of growth in NPL ratios on credit, growth and employment in emerging Europe in the aftermath of the 2008-09 financial crisis. Nkusu (2011), Klein (2013) directly incorporated unemployment in their models, and also found a strong positive relationship between unemployment and NPLs.

Kjosevski & Petkovski (2017) examined the macroeconomic and bank-specific determinants of NPLs for a panel of 27 banks from the Baltics using annual data for the period 2005-2014. They investigated the feedback between NPLs and its macroeconomic determinants. The results suggested that the real economy responded to NPLs and that there are strong feedback effects from macroeconomic conditions such as domestic credit to private sector, GDP growth, unemployment and inflation to NPLs. Beaton, Myrvoda, and Thompson (2016) in their paper assessed the determinants of NPLs in the Eastern Caribbean Currency Union (ECCU) and whether a deterioration in asset quality might result in negative feedback effects from the banking system to economic activity. The results suggested that the deterioration of asset quality could be attributed to both macroeconomic and bank-specific factors. Balgova, Nies and Plekhanov (2016) used their newly-collected data on non-performing loans (NPL) reduction episodes and policies, their paper analyzed the problem of NPLs and the burden they imposed on the economy. Many scholars and academics in Albania have also analyzed the relationship between economic factors and NPLs. Shingjergji in (2013) analyzed the impact of macroeconomic variables on the non-performing loans level in the Albanian banking system, using quarterly data from 2005 to 2012. Gabesh (2016) employing data over the period 2005-2014, concluded that the banking credit is significantly affected by macroeconomic environment. In the same line are Gremi (2017) and Kurti (2016).

3. An overview on the situation of non-performing loans in Albania.

A loan is assessed as a non-performing loan when the borrower is unable to settle the obligations to the bank or when it delays the repayment of the loan for more than 90 days from the deadline. According to Albanian legislation, credits by date are classified in 5 categories: standards, pursuits, sub-standards, suspicious and lost. Loans with problems are assessed only the last 3 categories.

3.1. Non-performing loans dynamics for the period 2003-2016

Over the last years NPLs have marked a significant increase both in value and percentage of total loans. Figure 1 shows the dynamics of NPL values over the period 2003-2016 (in%).

Figure 1. Non-performing loans to total loans
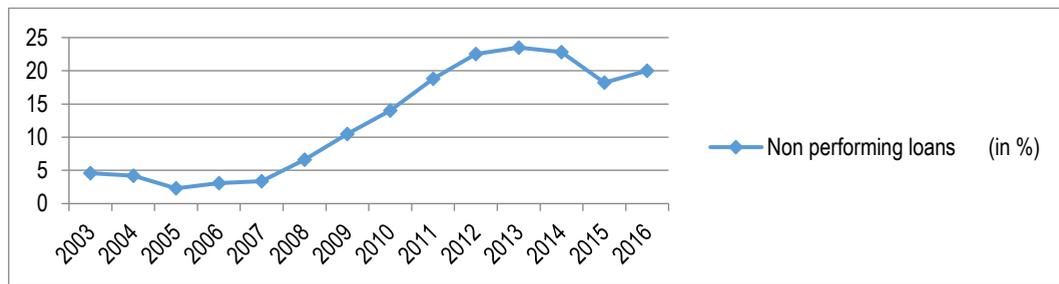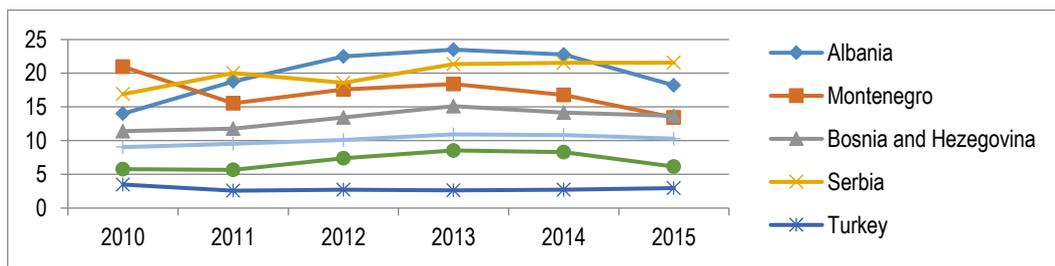

Source: World Bank database

As seen from the chart for the period 2003-2007, the level of NPLs has been low. This period is characterized by favorable macroeconomic conditions, relatively high and stable rates of economic growth, inflation within the limits set by the monetary authority, relatively high interest rates on credits. This situation has positively impacted the crediting process and the growth of the intermediary role of the banking sector by generating high return rates on equity and assets. Starting from 2008 we have a very high growth trend of NPL reaching the highest value in 2013 with 23.5%. The deterioration of this indicator influenced a number of micro and macroeconomic factors, such as the effects of the global financial crisis, the sharp decline in economic growth which led to the insolvency of individuals and businesses, the lack of credit records, problems with the execution of collateral, in some cases the non-qualitative work of banks in the management of loan portfolio, lower lending in recent years etc. Starting from 2015 bad credit has begun to decline, but still remain at very high levels. This decline was due to credit cancellations under the Bank of Albania's relevant regulatory framework, effective restructuring by banks or other measures taken by them.

3.2. Non-performing loans in Albania compared to other countries candidate and potential candidate to enter EU.

One of the main challenges of the financial stability of countries preparing for EU membership is related to credit risk, which remains high for most countries despite some progress in reducing the level of non-performing loans. In Figure 2, NPL rates for the period 2010-2015 in EU candidate and potential candidate countries are presented, ie. Albania, Bosnia and Herzegovina, Kosovo, the former Yugoslav Republic of Macedonia, Montenegro, Serbia and Turkey.

Figure 2. NPLs to total loans (EU candidate and potential candidate countries)

Source: World Bank database

Non-performing loans are at high levels and progress in reducing their levels remains unchanged, they are slow despite the introduction of comprehensive settlement strategies in Albania and Serbia. As we can observe in this graph (Fig 2), Albania compared to the other countries is characterized by high levels of NPLs, to emphasize is the fact that in the years 2012, 2013, 2014 it has had the highest levels of NPLs in the group. For the period 2014-2016 the private sector credit growth remained positive in most EU candidate and potential candidate countries. In particular, credit growth was high in Turkey and the former Yugoslav Republic of Macedonia and Kosovo. In other countries, credit dynamics were more subdued, with even negative nominal growth rates recorded in Albania (due to the negative developments in corporate sector loans in 2015, 2016)

In line with credit developments, the level of financial intermediation grew only in Turkey and more moderately, in Kosovo. Meanwhile the latter and Albania have the lowest level of financial intermediation. The situation of banks in Albania and Serbia (where the ratio of NPLs to total loans stood at around 20% and was concentrated predominantly in the corporate sector) is a particular source of concern. In this context, authorities in both countries have come up with comprehensive NPL resolution strategies aimed at tackling the high NPL burden in their respective jurisdictions.[13]

4. Date and methodology

Analysis of the factors affecting credit risk to the banking system is an important analysis of credit risk management. Table 1 shows annual data on the NPL rate as well as on some economic indicators such as GDP growth rate, inflation, lending interest rates and unemployment for a period of 14 years (2003-2016). The data source for table 1 has been a World Bank database. We think these indicators have a significant impact on the value of NPLs.

Table 1. Economic indicators affecting NPLs

Years	Non performing loans (in %)	Unemployment (in %)	Inflation (in %)	Rate of interest on the loan (in %)	GDP growth (in %)
2003	4.6	14	0.49	14.27	5.77
2004	4.2	13.9	2.28	11.76	5.71
2005	2.3	13.8	2.36	13.08	5.72
2006	3.1	13	2.37	12.94	5.43
2007	3.4	13.5	2.93	14.1	5.9
2008	6.6	13	3.35	13.02	3.76
2009	10.5	13.8	2.28	12.66	3.35
2010	14	14.2	3.55	12.82	3.71
2011	18.8	14	3.45	12.43	2.55
2012	22.5	13.4	2.03	10.88	1.42
2013	23.5	15.6	1.94	9.83	1
2014	22.8	17.5	1.63	8.66	1.78
2015	18.2	17.1	1.91	8.73	2.23
2016	20	15.2	1.28	9.65	3.37

The hypothesis that we aim to substantiate in this paper is: *There is an important link between economic and non-performing loans.* To validate this hypothesis, an econometric analysis was carried out through the statistical program Stata 14. Using the simple and multiplicative linear regression method, the links between these variables were analyzed for the period 2003-2016. Non-performing loans are presented as dependent variables, and as independent variables are evidenced GDP growth rate, unemployment, inflation and interest rate on loan.

5. Analysis and discussion

The results from the regression analysis are summarized in Table 2. Initially, 5 regression models were implemented.

Table 2.Regression results

Models	Variable of interest	Control variable(s)	Estimated cofficients	P values	R squared
1	bad_loans	gdp_g_rate	-4.48	0.000*	0.8934
2	bad_loans	loan_int_rate	-3.52	0.000*	0.6399
3	bad_loans	unemp_rate	3.76	0.002*	0.4082
4	bad_loans	inflrate	-1.36	0.629	0.0197
5	bad_loans	gdp_g_rate	-3.74	0.000*	0.9128
		loan_int_rate	-0.93	0.006*	

*Note: Significant at 0.05

Model 1. Regression analysis: NPL (bad loans) versus GDP growth

The effect of GDP growth (b =−4.48, p = 0.000) is significant and its coefficient is negative. This shows that there is a negative relationship between GDP and NPLs. Thus, an increase of 1 unit in GDP yields a decrease of 4.48 NPL units. The 89.34% of the "squared R" value indicates that 89.34% of the variation of the NPL variable is explained by the model created, the rest is explained by mistakes. This result is in line with our theoretical expectations, so GDP is a significant indicator of NPLs**.**

Model 2. Regression analysis: NPL (bad loans) versus lending interest rate.

The independent variable of the interest rate of the loan results in this model statistically significant because the value p = 0.000. From the regression data analysis, this variable explains 63.99% of the NPL value variation. The beta coefficient is −3.52, so we have a tight link between the interest rate on the loan and the NPL. This means that an increase in a single interest rate unit will result in a decrease of 3.52 units of NPL. So there is an important link between the loan interest rate and the NPL's values. This is in line with our theoretical expectations, while regarding the sign of this connection (positive or negative) the results of the studies conducted in this field are mixed.

Model 3. Regression analysis: NPL (bad loans) versus unemployment

Analyzing the regression data above, unemployment appears to be an important factor because p <0.05 (p = 0.02). The model explains 40.82% of the NPL value variation. The coefficient value is positive (b = 3.76), which means that the 1 unit increase in the unemployment rate will bring 3.76 increase in NPL. This conclusion is in line with our theoretical expectations and previous studies.

Model 4. Regression analysis: NPL (bad loans) versus inflation

In this model the coefficient is negative (b = −1.36). So there is a negative relationship between the variables. This sign of connection was even expected theoretically. But in our model, inflation is not statistically significant, because p> 0.05 (p = 0.629) and "R squared" = 1.97%. So in our country the changes in inflation did not affect the values of NPL. This can be explained by the fact that the level of inflation has fluctuated within the Bank of Albania's objectives.

Model 5. Regression analysis: NPL versus GDP growth and lending interest rate

The variation of two independent variables in this model explains 91.28% of the non-performing loans variation (R squared = 0.9128). In this model, the two independent variables are statistically significant and have a negative correlation with the dependent variables. For the GDP growth variable, p = 0.000 and b = −3.74 and for the loan interest rate p = 0.006 and b = −0.93.

An analysis of multiple regression was also carried out.

Model 6. NPLs versus GDP growth, lending interest rate, unemployment and inflation

In this model, the combined effect of all factors (independent variables) in the NPL (dependent variables) is considered. This model explains 91.8% of the NPL value variation. In the multiple regression model, only GDP growth is statistically significant, while other variables are not significant, while in simple linear regression unemployment and interest rates on loans resulted statistically significant. The result of multiple regression analysis is presented below:

```
Linear regression                              Number of obs    =          14
                                               F(4, 9)          =       78.67
                                               Prob > F         =      0.0000
                                               R-squared        =      0.9180
                                               Root MSE         =      2.8679

-------------------------------------------------------------------------------
              |              Robust
    bad_loans |     Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
--------------+----------------------------------------------------------------
   unemp_rate |   .3698418   .9084334     0.41   0.693    -1.685177    2.424861
      inflrate |  -.6442042   .9364744    -0.69   0.509    -2.762656    1.474248
loan_int_rate |  -.4535912   .9647596    -0.47   0.649    -2.636029    1.728847
    gdp_g_rate |   -3.94513   .5648083    -6.98   0.000    -5.222815   -2.667445
         _cons |   28.50359  23.28466     1.22   0.252    -24.16996    81.17715
-------------------------------------------------------------------------------
```

In order to study multicolinearity problems and to explain this model, VIF test for multicolinearity was performed (the value of VIF> 4 was acceptable) and also calculated the covariance matrix between the estimated regression coefficients (VCE test). Correlation between them is above 0.5, so there is a strong link between the variables. We can consider GDP as a complex variable that carries the effect or influence of a number of other economic variables.

6. Conclusion

Credit risk is one of the biggest risks to which the banking system is exposed in Albania. The valuation and management of NPLs plays an important role in the economic and financial stability of the country, region and beyond. After 2008, as a consequence of the global financial crisis, the Albanian banking system experienced a rise in high levels of non-performing loans, reaching the highest level in 2013 by 23.5%. Compared with other candidate countries and potential candidates for EU, during the period 2013-2015 Albania has had the highest level of NPLs. Meanwhile, along with Kosovo, both are rated at the lowest level of financial intermediation in this group.

The objective of this paper is to analyze the relationship between economic factors and loan quality. Through the statistical program Stata 14, an econometric analysis was performed, depicting as dependent variables NPLs (bad credit) and as independent variables were identified some economic indicators such as: GDP growth rate, unemployment, inflation and interest rate of the loan. At the end of the analysis it can be said that the models built for the period 2003-2016 clearly show that there are strong links between the economic indicators and the rate of NPLs in Albania.

So from this analysis we came to the conclusion that:

There is a direct negative, statistically significant relationship between GDP growth and the level of NPLs. A GDP growth will lead to a significant decrease in NPLs. The model was constructed well in 89.34% of it.

From the analysis, the variable of the interest rate on the loan results a determinant factor. An important negative link has been found between it and NPLs. The model explains 63.99% of the variation of the dependent variables values.

From the analysis as an important element that affects the level of NPLs has resulted unemployment. There is a significant positive relationship between unemployment and the level of NPLs.

In relation to inflation there is a negative correlation between it and the NPLs, but it results from model a non statistically significant indicator (p = 0.629).

From the analysis of the combined impact of GDP growth and the loan interest rate, the two variables were statistically significant. The variation of the two independent variables in this model explains 91.28% of the variation of non-performing loans.

The combined impact analysis model of all independent variables in the dependent variables (multiple regression) explains 91.8% of the NPL variation but in this model only GDP growth results statistically significant. This is because of the strong correlation between independent variables and it does not violate our conclusions. We can consider GDP as a complex variable that carries the effect or influence of a number of other economic variables and reflects this impact directly on the NPL rate.

References

[1] Ali Shingjergji (2013). The Impact of Macroeconomic Variables on the Non Performing Loans in the Albanian Banking System During 2015-2012. Academic Journal of Interdisciplinary Studies MCSER Publishing-Rome, Italy, Vol. 2, No 9, 335-339

[2] Alwyn Jordan, Carisma Tucker(2013) Assessing the Impact of Nonperforming Loans on Economic Growth in The Bahamas, Monetaria, Volume 1,Number 2 (pp 372-400)

[3] Dimitrios P.Louzis, Angelos T. Vouldis, Vasilios L. Metaxas (2010). Macroeconomic and bank-specific determinants of non- performing loans in Greece: a comparative study of mortgage, business and consumer loan portfolios. Bank of Greece, Working Papers 118.

[4] Eliona Gremi (2013). Macroeconomic Factors That Affect the Quality of Lending in Albania. Research Journal of Finance and Accounting, Vol.4,No.9, 2013, 50-57.

[5] Iulia Andreea Bucur, Simona Elena Dragomirescu (2014). The influence of macroeconomic conditions on credit risk: case of Romanian banking system. Studies and Scientific Researches. Economics Edition, No 19, 84-95

[6] Jakubík, Petr; Reininger, Thomas (2014): What are the key determinants of nonperforming loans in CESEE?. IES Working Paper, No. 26/2014

[7] Jordan Kjosevski & Mihail Petkovski (2017). Non-performing loans in Baltic States: determinants and macroeconomic effects, Baltic Journal of Economics, 17:1, 25-44, DOI:10.1080/1406099X.2016.1246234

[8] Kimberly Beaton, Alla Myrvoda, and Shernnel Thompson (2016). Non-Performing Loans in the ECCU: Determinants and Macroeconomic Impact. IMF Working Paper

[9] Klejda Gabeshi (2016). The Impact of Macroeconomic and Bank Specific Factors on Albanian Non- Performing Loans. European Journal of Sustainable Development Research, 95-102

[10] Lorena Kurti, (2016). Determinants of Non-Performing Loans in Albania. The Macrotheme Review 5(1), 60-72

[11] M. Nkusu (2011). Nonperforming Loans and Macrofinancial Vulnerabilities in Advanced Economies, IMF Working Paper 11/161

[12] Maria Balgova, Michel Niesand, Alexander Plekhanov (2016). The economic impact of reducing non- performing loans. European Bank for Reconstruction and Development, Working Paper No.193.

[13] Martin Gächter, Piotr Macki, Isabella Moder, Éva Katalin Polgár, Li Savelin, Piotr Żuk (2017). Financial stability assessment of EU candidate and potential candidate countries Developments since 2014 . European Central Bank Occasional Paper Series , No 190

[14] Nir Klein (2013). Non-Performing Loans in CESEE: Determinants and Macroeconomic Performance. IMF Working Paper, No 13/72

[15] Raphael Espinoza and Ananthakrishnan Prasad (2010). Nonperforming Loans in the GCC Banking System and their Macroeconomic Effects. IMF Working Paper 10/224

[16] Ricardas Mileris (2012). Macroeconomic Determinants of Loan Portofolio Credit Risk in Banks. Engineering Economics, 2012, 23(5), 496-504.

[17] Roland Beck, Petr Jakubik and Anamaria Piloi (2013). Non-Performing loans. What matters in addition to the economic cycle? EuropeanCentral Bank(ECB), Working paper, No 1515

[18] Bank of Albania www.bankofalbania.org

[19] World Bank www.worldbank.org

Appendixes:

```
Linear regression                         Number of obs   =          14
                                          F(1, 12)        =      501.20
                                          Prob > F        =      0.0000
                                          R-squared       =      0.8934
                                          Root MSE        =      2.8328

------------------------------------------------------------------------
             |               Robust
    bad_loans |    Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
------------------------------------------------------------------------
   gdp_g_rate | -4.483012   .2002465   -22.39   0.000    -4.919312   -4.046713
        _cons |  29.02037   1.140339    25.45   0.000     26.53579    31.50496
------------------------------------------------------------------------
```

```
Linear regression                          Number of obs    =        14
                                           F(1, 12)         =     45.63
                                           Prob > F         =    0.0000
                                           R-squared        =    0.6399
                                           Root MSE         =     5.206

-------------------------------------------------------------------------
             |               Robust
   bad_loans |     Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+-----------------------------------------------------------
loan_int_rate|  -3.52031   .5211317    -6.76   0.000    -4.655759   -2.384862
       _cons |  53.91091   6.280074     8.58   0.000     40.2278    67.59401
-------------------------------------------------------------------------


Linear regression                          Number of obs    =        14
                                           F(1, 12)         =     15.27
                                           Prob > F         =    0.0021
                                           R-squared        =    0.4082
                                           Root MSE         =     6.6736

-------------------------------------------------------------------------
             |               Robust
   bad_loans |     Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+-----------------------------------------------------------
  unemp_rate |  3.763337   .9631326     3.91   0.002     1.664851    5.861823
       _cons | -41.83529  14.75782     -2.83   0.015    -73.98982   -9.680766
-------------------------------------------------------------------------


Linear regression                          Number of obs    =        14
                                           F(1, 12)         =      0.25
                                           Prob > F         =    0.6294
                                           R-squared        =    0.0197
                                           Root MSE         =     8.5889

-------------------------------------------------------------------------
             |               Robust
   bad_loans |     Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+-----------------------------------------------------------
    inflrate |  -1.36976      2.766    -0.50   0.629    -7.396356    4.656836
       _cons |  15.58049   7.232085     2.15   0.052    -.1768692   31.33785
-------------------------------------------------------------------------


Linear regression                          Number of obs    =        14
                                           F(2, 11)         =    153.73
                                           Prob > F         =    0.0000
                                           R-squared        =    0.9128
                                           Root MSE         =     2.6758

-------------------------------------------------------------------------
             |               Robust
   bad_loans |     Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+-----------------------------------------------------------
loan_int_rate| -.9248257   .6875113    -1.35   0.006    -2.438028    .5883765
  gdp_g_rate | -3.736915   .5677466    -6.58   0.000    -4.986517   -2.487313
       _cons |  37.15348   6.305069     5.89   0.000     23.27612   51.03084
-------------------------------------------------------------------------


    Variable |       VIF       1/VIF
-------------+----------------------
 loan_int_r~e|       5.77    0.173164
  unemp_rate |       3.66    0.272900
  gdp_g_rate |       2.65    0.377618
    inflrate |       1.33    0.753822
-------------+----------------------
    Mean VIF |       3.35


Correlation matrix of coefficients of regress model

        e(V) |  unemp_~e   inflrate  loan_i~e  gdp_g_~e      _cons
-------------+-------------------------------------------------------
  unemp_rate |    1.0000
    inflrate |    0.5767     1.0000
 loan_int_r~e|    0.7699     0.5615     1.0000
  gdp_g_rate |   -0.3836    -0.3895    -0.8119    1.0000
       _cons |   -0.9629    -0.6449    -0.9065    0.5582     1.0000
```