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Original scientific paper

Klimentina POPOSKA[1])

BANK SPECIFIC DETERMINANTS OF NON-PERFORMING LOANS IN THE REPUBLIC OF MACEDONIA

Abstract

The paper observes the non-performing loans (NPLs) in selected developed and developing countries, with a certain focus on the trend and determinants for NPLs in the banking sector of the Republic of Macedonia. High and rising levels of NPLs in the banking sector in the USA, as well as many countries in the Central and Eastern and South-Eastern Europe (CESEE), continue to put strong pressure on banking performances. The empirical research for NPLs in the banking sector in the Republic of Macedonia has acknowledged explicit bank variables influencing NPLs in the banking sector, such as foreign currency spreads between reference lending and deposit rates, personnel expenses/non-interest expenses, equity and reserves/assets and liquid assets/total assets. Moreover, analysis of the internal variables confirmed the previous finding that liquid assets/total assets and personnel expenses/non-interest expenses represent key factors influencing the level the NPLs in the banking sector in the Republic of Macedonia.

Key words: NPLs, Assets Quality, Banking.

JEL classification: G21

[1]) Ph.D, Institute of Economics-Skopje, University Ss. Cyril and Methodious-Skopje, Republic of Macedonia, E-mail: klimenti@ek-inst.ukim.edu.mk

Introduction

The question of NPL was not the major question in the banking sphere until the crises in 2007-2008. The credit quality of loan portfolios across most countries in the world had remained relatively stable until the financial crises hit the global economy. Moreover, it represented the additional products of the financial crisis, which could severely deepen the crisis.

In theory, NPLs feature assets which do not generate income for the bank. NPLs signify financial assets from which banks no longer receive interest and/or installment payments. NPLs are perceived as products which complicate the bank activities and bank soundness.

NPLs signify a key issue for the investors' expectations, providing negative market signals for further investment and lowering prices on the market. The rate of NPLs represents a proxy for the probability of default of the banking sector's overall credit exposure; hence the factors driving the NPL ratio deserve a lot of interest. Therefore, the trend of NPLs in the banking industry embodies the significant demonstration of the quality of the banking portfolio and soundness of the banking sector. The effects of the NPL are multiplied in order to summarize the broad picture. The influence of the NPLs on the separate banking activities can be divided into separate actions such as:

- decreasing of the total bank profit;
- increasing of the loan loss provisions;
- erosion of the bank capital;
- increasing of the risk premiums on the bank products;
- increasing of the interest rates and prices of loans;
- lowering of the rate of the economic growth.

The above mentioned consequences clearly demonstrate the negative effects of NPLs on the various bank activities. Such effects are enhanced by the fact that in the bank centered economies, in which the financial market perceives the banks as major players, such effects are more centered and effective.

The paper will enrich the existing literature by analyzing the negative trends of the NPLs on the bank activities in the developed countries, developing countries and spotlighting the NPLs in the banking sector of the Republic of Macedonia (RM) by identifying the major determinants influencing NPLs. The study by itself seeks to make clear the role of the latest financial crises in the NPLs movement. Findings

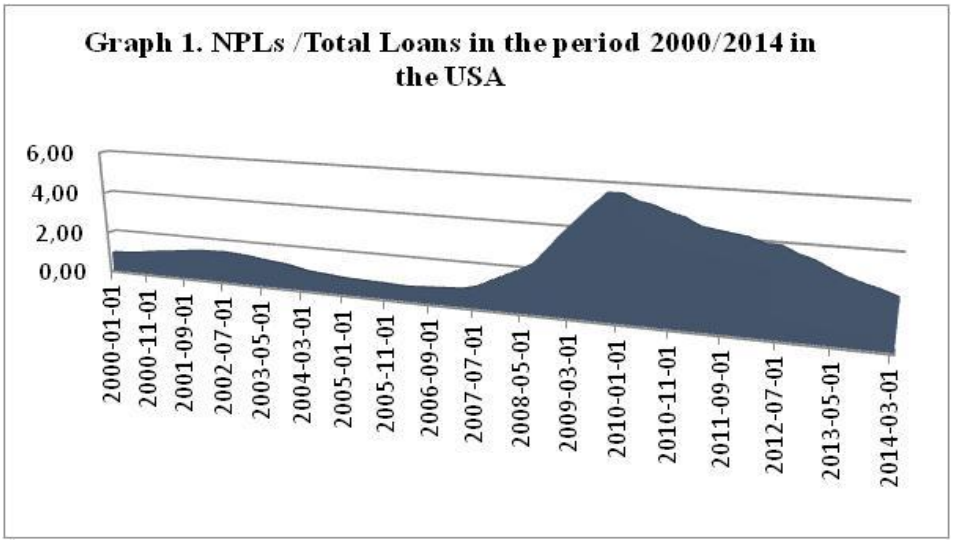
should confirm the hypothesis that financial crises did not have much effect on the NPLs in the banking sector of the Republic of Macedonia due to the traditional and conservative approach of the banks and rapid increase of the loans loss provisions. Moreover, the results of the regression analysis should define the key determinants for the current level of NPL, and to confirm if the trend of NPLs has followed the trend of GDP growth.

The paper is structured in the following approach: section two represents NPLs in the developed countries and developing countries. section three provides insight and analysis of the trend of NPLs in the Republic of Macedonia, whereas section four presents the econometric model by testing the main variables that have influenced the level of NPLs in the last 10 years. The last section provides the main conclusions and policy recommendations.

1. NPLs in the banking sector of the developed and developing countries

The level of NPLs in the developed as well as developing countries depends on various internal factors and macroeconomic measures. The latest financial crisis has left high level of NPLs in various countries. Past financial crises and experience suggest that in recovery period cleaning of the balance sheets of the many financial institutions is required, including the process of bringing down NPLs.

During the financial crisis, the NPLs ratio was of particular interest. Before the crisis, the trend of development of the economy was followed with the decreasing trend of the NPLs ratio. NPLs ratio in developed economies reached the record level of 1.4%, whereas in developing economies their level reached 3-4% (Muntead Radu, 2014:323). Having in mind that the crisis originated from the USA, we can initially demonstrate the trend of NPLs as a share of total loans in the USA in the period 2000-2014 (Graph 1).



Source: Calculated upon https://research.stlouisfed.org/fred2/series/NPTLTL/downloaddata (accessed on 31.01.2015)

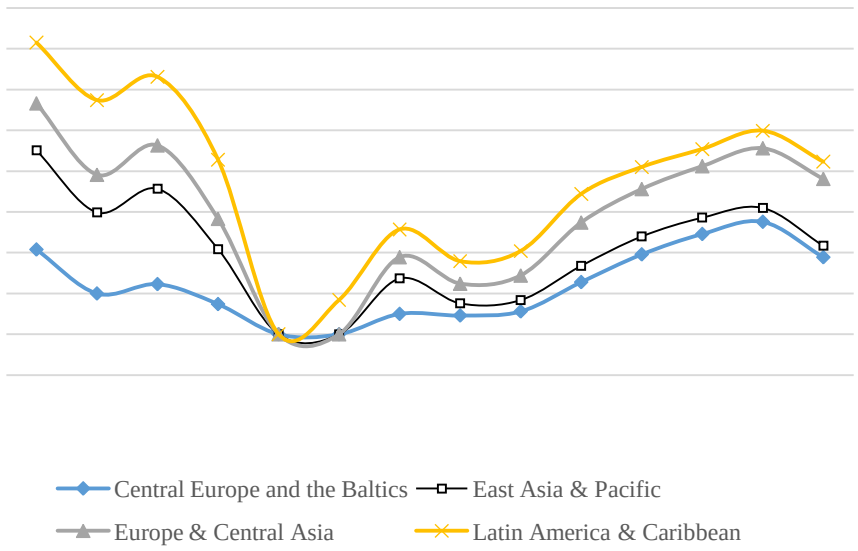
Analysis of the presented data indicates the sharp rise of the NPLs of total loans at the begging of the crisis, and reaching the highest ratios in the year 2009. Since 2009, the level of NPLs shows moderate decline due to the undertaken measures for safer and sound banking activities.

In contrast with developed countries, which experienced high NPLs ratios at the start of financial crisis, the developing counties have had immense experience with the high rates of NPLs prior to the crisis. The process of transition in the majority of them was followed by cleaning the balance sheet portfolio from the so cold "bad loans". From the analysis of the selected countries it is evident that the trend of NPLs to total gross loans is almost the same, in pace with the differences in the size. Such result signifies that the trend in the world economy has been reflected in the developing countries as well.

Unlike the economy of USA, which shows steady decrease since 2009, in the case of the developing economies, the recovery represented by the decreased trend of NPLs to total loans has shifted since 2012. One of the mechanisms represents the sale of problem loan portfolios. Hence, countries such as Latvia, Romania, Serbia, Moldova, Russia, Estonia, and Poland have undertaken to overhaul their corporate or household insolvency rgimes or encouraged out-of-court restructurings (Vienna initiative, 2012). Other countries introduced direct intervention in dealing

with the NPL problem, even though this approach might have incurred large losses. Observation of the general trend of the last decade in the selected region in the world clearly indicates that the trend of ratio of NPLs to total gross loans was quite high in 2000, with a steady decline[2] in the period before the crisis (Graph 2).

Graph 2. NPLs to total loans in selected regions in period 200/2014



Source: http://data.worldbank.org/indicator/FB.AST.NPER.ZS accessed 15.01.2015

The regional analysis indicates that since the beginning of the crisis, a sharp increase in the share of NPLs to total gross loans has been evident since 2007-2008, which has a direct link to the commencing of the financial crisis. Moreover, the trend of increasing was evident until 2012, when we perceived a decrease in the share of the NPLs to total gross loans.

The study in several countries in Central, Eastern and Southeastern Europe (CESEE), such as Bulgaria, Croatia, the Czech

[2] Most of the data from World Bank database in the year 2004 for the region are missing; hence the general impression about decline in 2004 should be taken with reserve.

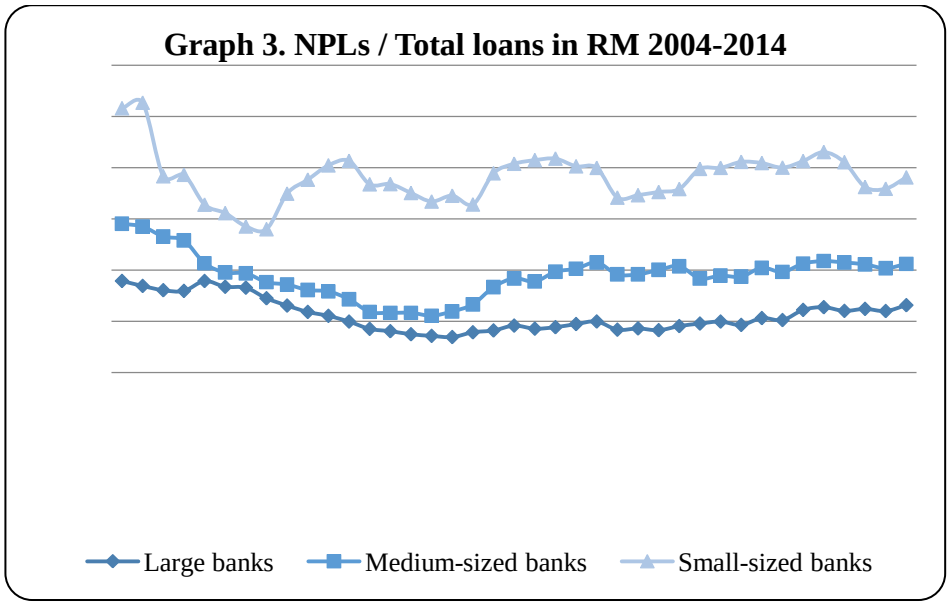
Republic, Hungary, Poland, Romania, Russia, Slovakia and Ukraine indicates that when credit growth is high, relative to GDP growth, high credit growth rates tend to initially lower the NPL ratio, but to increase it later on, with the latter effect still persisting after the period of high credit growth has come to an end (Petr Jakubík, Thomas Reininger. 2013: 48-66). NPL problems increased rapidly in those countries where the economic slump was particularly deep and where the pre-crisis credit boom had been the most extreme. NPL ratios reached some 20% in Latvia, Lithuania, and Montenegro.[3] NPLs created asset quality problems in the loans to households and loans to companies, opposite to earlier crises where NPL problems afflicted mostly the corporate sector. Hence, the major efforts should be focused on addressing excessive credit growth and paying special attention on alleviating negative consequences of excessive credit expansion on quality of the banking portfolio.

Practice recognizes several obstacles for handling NPLs in developing countries. Enforcement of collateral tends to take relatively long period and encompasses heavily high costs. Juridical system is not well developed regarding fast solution of the cases related to NPLs. On another hand, out-of-court restructurings as a speedy and cost-efficient tool to achieve debt settlement are not widely utilized in these countries. Furthermore, tax deductibility of loan loss-provisions and write-downs of loans is often limited, and tax systems can highly contribute against NPL resolution (Vienna initiative, 2012). Banking supervision can create serious disincentives for NPL resolution if loan classification and provisioning is not properly enforced. Overcoming these obstacles can widely decrease the level of NPLs, particularly in the countries where provision levels are low.

2. Non-performing loans in the banking sector of the Republic of Macedonia

The banking sector in the Republic of Macedonia has the attributes of traditional banking industry with predominance of the credit activities. Such position provides clear evidence that the NPLs represent a significant key indicator of the quality of the banking portfolio. The trends of NPLs according to the size of the bank are presented in Graph 3.

[3] http://data.worldbank.org/indicator/FB.AST.NPER.ZS accessed 14.11.2014.



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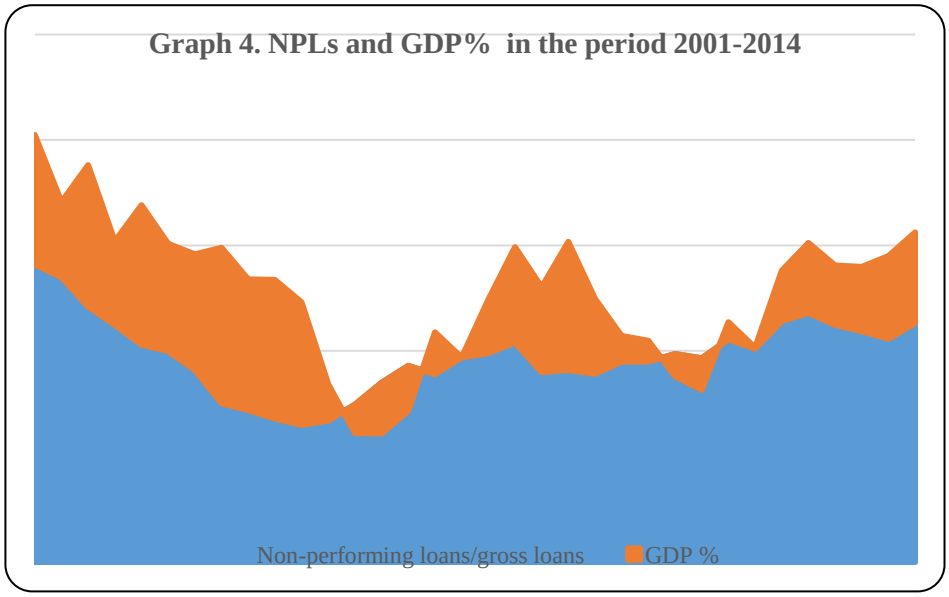
accessed 04.01.2015

NPLs in large, medium-sized and small-sized banks illustrate that higher and most variable ratios of NPLs are indicated in the case of small-sized banks, whereas medium-sized banks have minor increase in the ratio in the post-crisis period. In the case of large banks, Graph 3 specifies rapid decrease up to the begging of the crises, followed by the minor and stable increase in the years after 2008. Since the majority of papers investigate the relationship between the NPLs and GDP growth, Graph 4 indicates their development in the period of nearly 15 years.



Source: http://www.nbrm.mk/?ItemID=BF9EB19BE82C6F4288BBE28DE2C18163 accessed 04.01.2015

The presented Graph 4 clearly demonstrates that financial crises discontinue the decreasing trend leading to its steady increase starting from 2008. Regardinh the rate of GDP growth, it exhibits quite higher volatility than the rate of NPLs. Moreover, there is no quite similar movement in their trend, for instance, in the period before 2008 when NPLs were decreasing; GDP is showing quite volatile movement. In the period after the crises, rapid and volatile decrease of GDP is followed by steady increase of NPLs. Data observation confirms that the complete picture of the trend of these two categories does not present the mirror-image in the opposite direction. Hence, from the analysis we can conclude that rapid drop on GDP growth immediately after the crisis was followed by an increasing trend of NPLs. However, closer look at years 2009/10 indicates that despite the increasing trend of GDP growth, such increase was not followed by adequate decrease of the NPLs, which, on the contrary, continued it growth.

Further analysis specifies that the banking sector in the Republic of Macedonia is characterized with traditional approach to credit activities, with high provisions for securing stability, and generally conservative banking approach. The high percent of the total provisions

to NPLs, from 80-120%[4], undoubtedly demonstrates the traditional approach and the high level of security which is sought by the banking sector in order to achieve a healthy and sound banking sector.

3. Emprical research: Case of NPLs in the Republic of Macedonia

In search to identify the major elements influencing the NPLs in the banking sector in the Republic of Macedonia, we have observed data on the banking sector in RM in the period Q1/2006 – Q2/2014. The individual impact of the identified independent variables on NPLs of the Macedonian banking sector would be confirmed through the application of regression analysis. The dependent variable is NPLs, whereas independent variables are tested as follows: 1) Foreign currency spreads between reference lending and deposit rate; 2) Local currency spreads between reference lending and deposit rates; 3) Personnel expenses/Non-interest expenses; 4) Equity and reserves/Assets; 5) GDP Total and 6) Liquid Assets/Total Assets.

[4] http://www.nbrm.mk/?ItemID=BF9EB19BE82C6F4288BBE28DE2C18163 accessed 04.11.2014

Table 1: Variables influencing NPLs

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Foreign currency spreads between reference lending and deposit rates	-0.705272	0.315664	-2.234252	0.0339
Local currency spreads between reference lending and deposit rates	-0.082576	0.348004	-0.237284	0.8142
Personnel expenses/Non-interest expenses	0.363244	0.094614	3.839213	0.0007
Equity and reserves/Assets	1.921613	0.289471	6.638357	0.0000
GDP Total	1.83E-05	1.43E-05	1.275606	0.2130
Liquid Assets/Total Assets	0.487691	0.036274	13.44460	0.0000
C	-34.64703	4.912582	-7.052712	0.0000
R-squared	0.934536	Mean dependent var		9.998112
Adjusted R-squared	0.919989	S.D. dependent var		1.852476
S.E. of regression	0.523996	Akaike info criterion		1.726575
Sum squared resid	7.413430	Schwarz criterion		2.040825
Log likelihood	-22.35177	Hannan-Quinn criter.		1.833743
F-statistic	64.24042	Durbin-Watson stat		1.832488
Prob (F-statistic)	0.000000			

Through the values of coefficients of determination R^2 presented in Table 1, it can be concluded that the dependent variable is 94% determined by the presented independent variables. Variables identified as significant for the NPLs are foreign currency spreads between reference lending and deposit rates, Personnel expenses/Non-interest expenses, Equity and Reserves/Assets and Liquid Assets/Total Assets. One of the major research questions in our analysis is whether the trend of NPLs is connected with GDP growth; the result of the empirical analysis did not show any significance between NPLs and GDP growth. The result indicates that banks with higher Personnel expenses/Non-interest expenses, Equity and Reserves/Assets and Liquid Assets/Total Assets have higher ratio of NPLs. Contrary, banks with higher foreign currency spreads between reference lending and deposit rates have lower rate of NPLs. Statistical relevance is provided in the Annex 1.

Table 2 is focused on testing internal variables influencing NPLs in the Banking Sector of the Republic of Macedonia in the period 2006-2014.

Table 2: Internal variables influencing NPLS

Dependent Variable: NPLs
Sample: 2006Q1 2014Q2

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Liquid Assets/Total Assets	0.246611	0.048410	5.094265	0.0000
Noninterest Expenses/Gross Income	-0.007127	0.039233	-0.181668	0.8572
Personnel expenses/Noninterest expenses	0.383012	0.128008	2.992093	0.0057
Capital Adequacy	1.241632	0.158785	7.819568	0.0000
Net interest Income/Gross Income	0.253587	0.062745	4.041550	0.0004
C	-45.82896	6.946947	-6.596993	0.0000

R-squared	0.895537	Mean dependent var	9.998112
Adjusted R-squared	0.876882	S.D. dependent var	1.852476
S.E. of regression	0.649999	Akaike info criterion	2.135093
Sum squared resid	11.82996	Schwarz criterion	2.404451
Log likelihood	-30.29659	Hannan-Quinn criter.	2.226952
F-statistic	48.00725	Durbin-Watson stat	2.149370
Prob(F-statistic)	0.000000		

Through the values of coefficients of determination R^2 presented in Table 2, it can be concluded that the dependent variable is 89% determined by the presented independent variables. The results confirmed previous variables such as Liquid Assets/Total Assets, Personnel expenses/Noninterest expenses, Capital Adequacy, Net interest Income/Gross Income represent the key factors influencing the level of the NPLs in banking sector in the Republic of Macedonia in the period 2006-2014. Statistical relevance is provided in the Annex 2.

Conclusion

The study confirms the previous findings that developed countries feature increasing trend of NPLs, particularly during the crisis, whereas developing countries have already had valuable experience in high rates of NPLs. The recent financial crisis has clearly demonstrated that regulations and supervision at an individual level is not enough to prevent the negative consequences of the financial crisis. The evidence clearly confirm that the banks with high implementation for the Basel standards, particularly regarding the credit risks, did not experience dominantly low level of NPLs. The paper shows that the level of NPLs has been widely decreasing prior to the crisis. The analysis indicates rapid upward shift of NPLs during the period of crisis in developed and developing countries with major influence in the banking sectors, characterized by the pre-crisis credit boom.

Our primarily results indicate no support for any relation between NPLs and GDP growth. This adds to the growing evidence from the developed countries stressing that NPLs and GDP growth are highly related. Unlike such results, the empirical analysis in the banking sector of the Republic of Macedonia did not identify any significance between NPLs and GDP growth in the Republic of Macedonia in the period 2004-2014. The econometric analysis of the empirical determinants of NPLs in the banking sector of the Republic of Macedonia presented in the paper, suggests that real GDP growth was not the main driver of NPLs during the analyzed period. Examining the trend of NPLs and GDP growth, we could witness a volatile GDP growth, prior and after the crisis, unlike the NPLs trend, indicating steady decrease and increase. Findings confirm the hypothesis that financial crises did not have much effect on the NPLs in the banking sector of the Republic of Macedonia due to the traditional and conservative approach of the banks.

Empirical analysis indicated the variables identified as significant for the NPLs, such as foreign currency spreads between reference lending and deposit rates, personnel expenses/non-interest expenses, equity and reserves/assets and liquid assets/total assets. The second regression pointed out liquid assets/total assets, personnel expenses/noninterest expenses, capital adequacy; net interest income/gross income represents the key factors influencing the level the NPLs in the banking sector in the Republic of Macedonia. Further analysis should focus on macroeconomic

variables influencing NPLs in order to identify the key driver for the increasing trend of NPLs.

The paper proposes several methods for further decreasing of the NPLs and setting their ratio on the level prior to the crisis such as: 1) Tightening supervision accompanied with adequate valuation of collateral and asset classification; 2) Enforcement should be strengthened in order to have adequate procedures for speeding the process of bad credit resolving; 3) Increasing the institutional capacity of the juridical system and speeding the process in solving the NPLs as well as improving out-of-court restructuring frameworks; 4) Encouraging personal finance in order to moderate over debt in case of household financing by the banks. Educated clients in personal finance can lead to lowering the NPLs by encouraging loans only for adequate and justified financial aims. Hence the "Incorrect borrowing" should be replaced by the "Smart borrowing"; 5) Local banking associations should be highly involved in diminishing the trend of NPLs since their impact on the banking portfolio and economy as a whole is immense. The tools and instruments for facing the NPLs are still under hot debate, and the contribution of each financial institution to the overall level of risk is still an issue under discussion.

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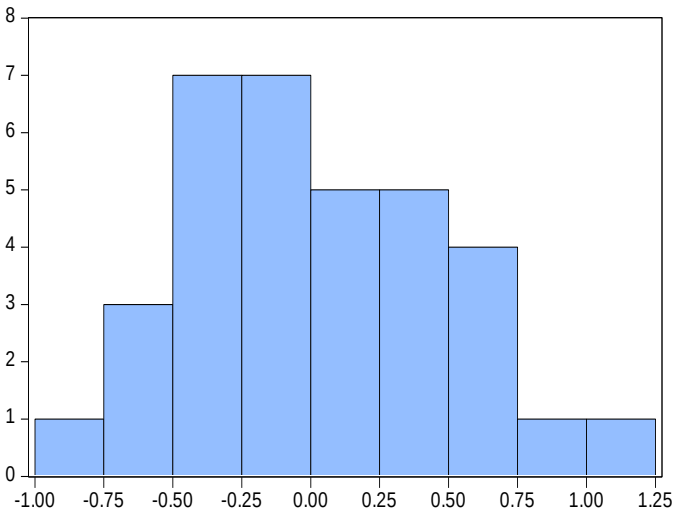
Annex1:

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.041491	Prob. F(2,25)	0.9594
Obs*R-squared	0.112482	Prob. Chi-Square(2)	0.9453

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.368999	Prob. F(6,27)	0.2626
Obs*R-squared	7.930821	Prob. Chi-Square(6)	0.2432
Scaled explained SS	3.604968	Prob. Chi-Square(6)	0.7300



Series: Residuals
Sample 2006Q1 2014Q2
Observations 34

Mean	-5.21e-15
Median	-0.052175
Maximum	1.047714
Minimum	-0.959392
Std. Dev.	0.473972
Skewness	0.224699
Kurtosis	2.441596
Jarque-Bera	0.727845
Probability	0.694945

Annex 2:

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.647201	Prob. F(2,26)	0.5317
Obs*R-squared	1.612405	Prob. Chi-Square(2)	0.4466

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.087355	Prob. F(5,28)	0.9936
Obs*R-squared	0.522221	Prob. Chi-Square(5)	0.9913
Scaled explained SS	0.450616	Prob. Chi-Square(5)	0.9938