A regional analysis of the effects generated by the economic crisis and its impact on the outstanding loan portfolio in Romania

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Abstract. *Known as the biggest crises since the Great Depression, the actual global crisis has modified the economical structures of many countries and a vicious circle of tightening credit, has reduced demand and rapid job cuts occurred. In Romania, the situation evolved with rapidity based on a series of snow-ball effects and the economy suffered severe damages in terms of intensive growth and sustainability. The lending activity was seriously damaged and many people got in a difficult situation with no jobs and with higher interest rates on loans.*

For a better understanding of the economic crisis phenomena consequences in Romania, we will try to emphasize the main implications of the influences of unemployment and medium net wages on the banking activity using a regional econometric model for panel data.

Keywords: regional economy; banking sector; unemployment; loans arrears; wages.

JEL Codes: R15, R23.
REL Codes: 8J, 11C.

1. Introduction

At the beginning of 2007 there were some rumors supporting a negative scenario, having as main actors the holders of loans secured by mortgages. It was assumed the hypothesis that loan holders will no longer reimburse monthly obligations to banks thus determining the global financial system failure.

This potential systemic crisis seems to have had its genesis long time ago, since 1930. Unfortunately, the prediction came true and in early 2008 triggered the financial crisis in the USA and spread its effects worldwide.

The tensions exacerbated by losses following international financial institutions to subprime mortgage-backed securities have been amplified in 2008 and the Euro area banks were facing difficulties caused by the depreciation of assets, increasing expenses and credit costs and reduced income from trading.

Given the uncertainty and risk aversion**s** the prices of financial assets fall. Many major financial institutions have lost investors confidence and some of them were forced to resort to state aid or shareholders, and others simply could not avoid bankruptcy.

According to the European Central Bank reports, in 2008, the return of banks capital in the Euro area decreased a lot under the impact of the losses in the market evaluation. Harmonization costs on loans and securities increased considerably, while fees and commissions income fell[1].

A number of initiatives have been taken by the member states of the European Union so as to ensure that national measures taken to manage the financial crisis will have no negative effects.

Anyway, the dimensions of the new phenomena created under the financial derivatives label in conjunction with the mortgage bubble were underestimated and in the years to come the global economic system faced a long and devastating recession.

The analysis on stability and financial integration made European Central Bank show that the banking system (including the Romanian) faces major risks due to the following[2]:

- deterioration of bank credit losses and prospects of amplification;
- interdependence between financial stability and the prospects for fiscal sustainability, fiscal stimulus packages and moderate growth;
- vulnerability of net interest income to the attenuation of the yield curve.

2. Romania's economy

Despite the efforts for a stabile and sustained economic growth the external effects and the fragile internal economy of Romania followed the descending trend of almost all the countries in the EU area.
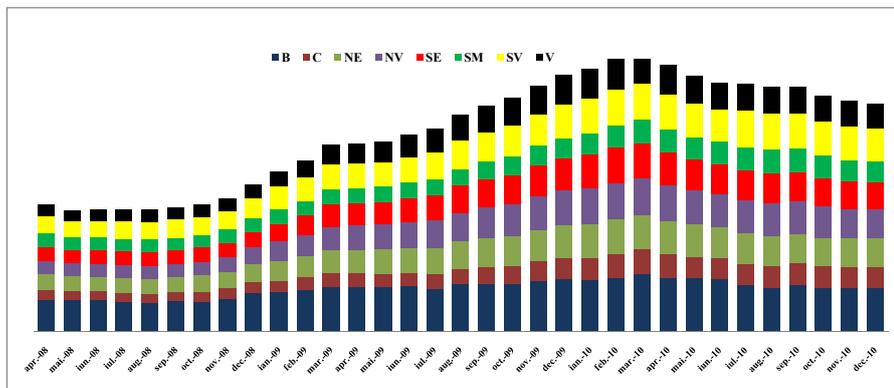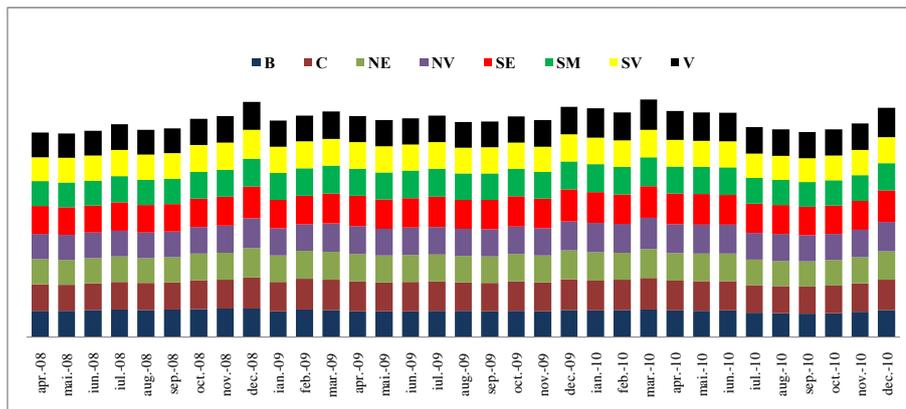
Source: www.anofm.ro; all calculations and representations were made by the authors.

Figure 1. *The evolution of the monthly regional unemployment rate in Romania*

In the above figure you can find the upward trend in unemployment coincides with the intensification of global economic crisis effects on all economic sectors in Romania. However, since June 2010 you can see a slight economic recovery, evolution explained by several local economic phenomenons.

As for the lending activity, given the fact that the majority of the Romanian banks have foreign capital, in a short period of time after the triggered of the financial crisis in the USA it was registered a change of trend. Until 2008 the economic growth was based on mass consumption (Figure 2) maintained with the support of banks relaxed lending conditions.

Source: www.insse.ro; all calculations and representations were made by the authors.

Figure 2. *The evolution of the monthly regional medium wage in Romania*

If until 2008 financial institutions strategy was to increase market share and to expand regional network, in the years that followed the aggressive lending behavior was replaced with collection activities and focused on savings and deposits[3]. Also, we mention that the percentage of overdue and doubtful loans in the total credit portfolio increased from 22% (in 2007) to 32% next year.

In 2009 there were no signs of changes in the economy, as the uncertainty in the banking system was bigger, a phenomenon accompanied by the credit cycle downturn and weak investors trust in banks liquidity[4]. On the other hand, the favorable evolution of revenues was partially offset by the increase in loan loss provisions.

Table 1

The evolution of arrears to loans, wages and unemployment (apr. 08-dec. 10)

Region	Arrears to loans ratio growth rate (%)	Medium wage growth rate (%)	Unemployment growth rate (%)
North West	20	10	106
Bucharest	19	20	44
West	18	21	81
Center	18	22	65
North East	17	10	61
South East	17	13	93
South Muntenia	12	10	85
South West	9	16	78
Total	17	16	77

Source: www.bnr.ro; all calculations and representations were made by the authors.

The table above shows exactly what happened to the lending activity in Romania in the years that followed after the USA financial crisis. It seems like the loan market has frozen, the fluctuations of population loans are minor in all regions.

In the mean time overdue and doubtful loans had an upward trend starting with 2009. Almost all regions followed the same ascending, worrying trend (Table 2). Due to the financial crisis, the banking system in Romania was characterized by a slowdown in business, registering a modest profit given the stagnation of credit.

Specifically, banks have had a more selective involvement and perhaps reluctance on credit market and macroeconomic climate caused especially by the uncertain prospects on the labor market.

Table 2

Top 5 versus bottom 5 counties based on the level of arrears to loans ratio

	Top 5 versus Bottom 5 based on the monthly arreas to loans ration (apr 08)			Top 5 versus Bottom 5 based on the monthly arreas to loans ration (apr 08)	
	apr.-08	dec.-10		apr.-08	dec.-10
TULCEA	0,56%	9,63%	GORJ	1,25%	6,02%
COVASNA	0,64%	11,85%	TELEORMAN	3,86%	7,75%
VRANCEA	0,96%	15,40%	MEHEDINȚI	1,49%	9,40%
DÂMBOVIȚA	1,06%	10,28%	TULCEA	0,56%	9,63%
ARGEȘ	1,07%	17,95%	CARAȘ- SEVERIN	1,75%	9,75%
BIHOR	3,12%	25,11%	BIHOR	3,12%	25,11%
ARAD	3,17%	25,24%	ARAD	3,17%	25,24%
BISTRIȚA- NĂSĂUD	3,30%	28,55%	BISTRIȚA- NĂSĂUD	3,30%	28,55%
TELEORMAN	3,86%	7,75%	ALBA	2,28%	28,72%
IALOMIȚA	4,80%	17,37%	GALAȚI	1,18%	29,73%

Source: www.anofm.ro; all calculations and representation were made by the authors.

Starting with 1991 the unemployment rate in Romania registered constant changes due to frequent economic instability. Processes as privatization and restructuring of the economy had significantly influenced on the labor market, by determining massive dismissals and higher unemployment rates. The situation affected the social life of the Romanian citizen until the end of 2003.

Table 3

Top 5 versus bottom 5 counties based on the unemployment level

	Top5 versus Bottom 5 counties based on the monthly unemployment rate (apr08)			Top5 versus Bottom 5 counties based on the monthly unemployment rate (dec10)	
Judet	apr.-08	dec.-10	Judet	apr.-08	dec.-10
ILFOV	1,2	2,8	BUCURESTI	1,7	2,3
TIMIS	1,3	3,7	ILFOV	1,2	2,8
BUCURESTI	1,7	2,3	TIMIS	1,3	3,7
BIHOR	2,1	5,8	CLUJ	3,1	4,9
BISTRITA	2,4	6,3	ARAD	2,6	5,2
IALOMITA	5,9	9,6	DOLJ	4,6	9,8
TELEORMAN	7,2	10,8	GALATI	5,6	9,8
COVASNA	7,5	9,6	MEHEDINTI	8,5	9,8
MEHEDINTI	8,5	9,8	TELEORMAN	7,2	10,8
VASLUI	8,8	11,4	VASLUI	8,8	11,4

Source: www.anofm.ro; all graphic representation were made by the authors.

In the following years the unemployment decreased considerably amid consecutively economic growth. Unfortunately the global financial crisis stopped the improvement of the employment rate and changed the trend of unemployment in a positive one (Table 3).

The contagion effects of the external crisis revealed many of the unresolved internal problems of the Romanian economy and produced many changes in the labor market, not only at national level but at regional level, modifying the existing patterns. The majority of the counties in the same region seems to equalize their unemployment levels and grew the gaps between them regarding the level of the medium wages (Table 4).

Table 4

Top 5 versus bottom 5 counties based on the level of the medium wage

	Top 5 versus Bottom 5 counties bases on the monthly net wage (apr08)			Top 5 versus Bottom 5 counties bases on the monthly net wage (dec10)	
	apr.-08	dec.-10			
BUCURESTI	1796	2145	BUCURESTI	1796	2145
ILFOV	1614	2010	ILFOV	1614	2010
CLUJ	1339	1492	GORJ	1321	1669
GORJ	1321	1669	SIBIU	1260	1599
ARGES	1319	1445	TIMIS	1220	1533
BIHOR	949	1063	COVASNA	975	1016
VASLUI	924	991	VRANCEA	985	1011
TELEORMAN	914	1116	VASLUI	924	991
MARAMURES	904	987	MARAMURES	904	987
HARGHITA	811	1029	CALARASI	1010	963

Source: www.insse.ro; all graphic representation were made by the authors.

3. Credit consumer's behavior and the influence of unemployment rate and net average wage over banking activity

Among the main consequences of the economic recession we can find unemployment. Unfortunately, this phenomenon is very complex and its effects on the economic and social life of the population are sometimes practically impossible to prevent.

In that matter our empirical analysis of the effects of regional unemployment on the banking sector activity will try to discover and also to explain the correlation between loans arrears and unemployed population in the past three years.

a) Econometric model description

The equation used in the model was: $NPL\_LOA\_ = 0.735794 \times RS\_(-1) + 0.000282 \times SMN\_(-2)$

The variables used in the model were:
- NPL_LOA as the ratio of loans arrears in total loans outstanding (by loans arrears we mean all loans with minimum 1 day of delay);
- RS_ as the ratio of unemployed population;
- SMN_ as net average wage.

The period for the panel data has a monthly frequency and it starts with March 2008 until December 2010. The panel was build using data for all the 41 counties in Romania but because of the used method, only 40 were included in the final results. The total number of observations in this model was 1,240.

We've made use of data from three different sources:
- for the unemployment rate we have used The National Agency of labor employment statistics (www.anofm.ro);
- for the territorial profile of loans we have used the National Bank of Romania sets of data (www.bnr.ro);
- for the net average wage we have used the National Statistics Institute database (www.insse.ro).

It is also important to mention that all the data suffered modifications given the econometric model requirements.

b) Econometric regression and estimation:

Dependent Variable: NPL_LOA_				
Method: Panel EGLS (Period weights)				
Date: 10/18/11 Time: 19:55				
Sample (adjusted): 2008M06 2010M12				
Cross-sections included: 40				
Total panel (balanced) observations: 1240				
Linear estimation after one-step weighting matrix				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
RS_(-1)	0.735794	0.025951	28.35342	0.0000
SMN_(-2)	0.000282	2.20E-05	12.81821	0.0000
	Weighted Statistics			

R-squared	0.851883	Mean dependent var	1.450335
Adjusted R-squared	0.851764	S.D. dependent var	0.498251
S.E. of regression	0.191834	Sum squared resid	45.55863
F-statistic	7120.279	Durbin-Watson stat	1.920703
Prob(F-statistic)	0.000000		

c) Interpretation of the results

The population with loans has a specific behavior influenced by their economic situation, more precisely influenced by their wages. Therefore, in a period of economic depression, with reduction of wages and unemployment growth, the Romanian banks activity is damaged because of unperformed loans growth and also by the increased days of delay for the loan payments.

The econometric regression shows that there is a strong determination between the chosen variables and therefore a strong correlation among them, determined by the value of R-squared (85.1%).

Also, the coefficients of the explanatory variables obtained in this model show a specific modification of the dependent variable. This interpretation is very important in matter of the reasons that may explain the real situation on the lending market with unperformed loans.

In this matter, we have obtained that unemployment rate (noted here RS_) has a positive influence on the ratio of loans arrears.

We have analyzed the impact of the previous month unemployed rate and the results show that people whom are in this situation will not pay their credit rates in time. This is also a sign that Romanian people don't have savings for difficult periods and they have no alternative resources in order to pay their debts.

The same positive influence is also seen in the relation between net average wage and loan arrears with the difference that the coefficient value is very small in this particular case. An explanation could be that net average salary variable is a balance between social living levels from every county. So, maybe in one county there are a few people with big wages that have no loans and this influence the average. Therefore, the correlation between average wages and loans arrears is low because the ratio of the people with bigger wages might influence the average per county much more than the ratio of the people with loans. On the other hand, the SMN_ variable is considered with two months lag and NPL_LOA_ is analyzed in the current period. In this case, the explanation could be based on the growth rate (credit costs increase more than the wage increase).

Final remarks

In this paper we have determined and analyzed the impact of unemployment on the banking activity and using panel data we have demonstrated that unemployment rate from previous month and the net salary affects a lot the lending market in Romania.

The observations due to their county structure provided us at a temporal and cross-section dimensions a unique opportunity to study the relation between our chosen variables.

Our econometric model supports the recently results presented by The National Bank of Romania according to which the overlapping of austerity measures corroborated with the income reduction and unemployment rising, led to an increase of the loan delays payments.

The behavior of the loans consumers may be a sign of the inability to cope holder's monthly expenditure, a condition caused by the low degree of activity in companies, increased fees or job losses. Also, the results obtained in this econometric model show a specific behavior of Romanian people and their use to borrow without taking in consideration their actual wage, savings, etc.

Unfortunately, if the current economic situation persists, both the unemployment rate and unperformed loans will register bigger and bigger values and the consequences on the banking activity especially on the lending market will be very difficult to bear and many of the banks agencies will disappear all over the country. This will lead to a concentration of the banking activity, a phenomenon witch contradicts with many of the values promoted by the European Union.

On the other hand, we must pay attention to the political environment that has an important impact on the economic perspectives. Next period will be a challenging one from this point of view because many social measures are expected to be taken. To support the economic recovery, political decedents probably will act in order to sustain small and medium enterprises and they will try to reduce fees for this category. Social actions are also expected to occur, reinforced by taxes reductions, growth of budgetary wages and the decrease of unemployment rate.

Notes

[1] See Annual Report 2008, European Central Bank, pg. 169. (http://www.ecb.int/pub/pdf/annrep/ar2008ro.pdf).

[2] See Annual Report 2010, European Central Bank, (http://www.ecb.int/pub/pdf/annrep/ar2010ro.pdf).

[3] According to Annual Report 2008, National Bank of Romania (http://bnr.ro).

[4] See Annual Report 2009, National Bank of Romania (http://www.bnro.ro/Publicatii-periodice-204.aspx).

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