The Impact of Financial Crisis Upon the Inflationary Process in Romania

Monica Damian
Ph.D. Student
Al.I.Cuza" University
Faculty of Economics and Business Administration

Abstract

The intensification of financial turmoil in September 2008 has determined a contraction of economic activity in most countries around the Globe. Because the real GDP dynamics influence the evolution of consumer prices, the effects of financial crises have been reflected upon inflation rate. To evaluate the impact of the crisis upon inflation rate, we have used a multifactorial regression model in which we included a dummy variable. The results show a positive impact, but a very low one. The effects of financial crisis have revealed upon inflation rate through international prices, consumer demand, leu currency exchange rate fluctuation. In the context of financial crisis, the financial system has become more vulnerable, and, therefore, the necessity of maintaining financial stability slows down the disinflationary process.

Keywords: financial crisis; inflation rate; financial stability; recession

1. Introduction

Defined by Alan Greenspan as a „tsunami of credits which appears once in a century", the actual crisis, also called subprime crisis, is a financial crisis determined by the sudden decrease of liquidities in the credit global market and in the bank systems, caused by the failure of companies which invested in subprime mortgage. Being considered as the biggest crisis after the Great Depression from 1929, the current financial crisis entered the acute stage in September 2008, having a major impact upon economy, both on international and Romanian economy level. Most of world economies, especially the ones of the United States, European countries and Japan have registered the most severe economic contraction since 1929.

For example, in Malaysia exports and industrial production and, therefore, investments decreased. The result was that GDP increased only with 0,1% in the forth trimester of 2008 compared to an average of 5,9%, registered in the first nine months of the year (Soo Khoon - Lim Mah-Hui, 2010, p.8).

Although the economic growth was of 3,2% in Africa, the impact of financial crisis was seen in all its leading factors: the demand and the prices of commodities decreased, the capital flows, especially the direct foreign investments have registered a significant decrease. As a result of commodities decrease for the year 2009, an inflation rate of 8,7% has been predicted, which signifies a decrease with 2,2% towards the year 2008 (Kasekende et.al., 2009, p.5).

2. The empirical evaluation of the leading factors of inflation in Romania in the 2007-2011 period

In our country, the inflationary process was accelerated in the first trimester of the year 2008, reaching its maximum level, of 9,04%, in July, before it was mitigated to 6,3% in December. In January – July 2008 period the inflationary pressures on the supply side where a leading factor, generated by tensions on the agrifood market (a consequence of production decrease in the year 2007) and on the other hand, by the impact of increasing oil prices upon fuel and natural gases prices. These two factors decreased their influence in the second semester, but pressures from demand persisted, which lead to exceed with 1,5% of the superior margin of inflation target.
The inflation rate changed its decreasing trajectory, registered in the second period of the previous year, reaching the value of 6,71% at the end of the first trimester of the year 2009. The evolution was due to the increase of the oil price on international markets and of pressures posed by volatile prices, the registered variation being of 4,34%, compared with 2,49% at the end of the previous year. Starting with the second semester, the growing rhythm of prices had to slow down until October, the annual inflation rate decreasing with 2,41%. The breakdown of decreasing evolution of inflation rate in the fourth trimester 2009 is due to cigarette producers of bringing forward the inflationist impact of exchange rate, taken into account in excise calculation.

In the first semester of year 2010 we remark a moderation of inflation rate, even if excises increased, so did the administered prices and pressures done by the ascending evolution of oil prices on international markets. The increase of indirect taxes (VAT, excises) has lead to accelerating inflation rate, in July 2010 the increase of consumer prices against the previous month being of 2,58%., the effect disappearing after a year (Figure 1).
To estimate the inflationist impact of international financial crisis, we have used an econometric equation regarding inflation rate and leading factors in which we included a dummy variable:

$$CPI = a + b * gsal + c * rsal + d * CPIext + e * M2 + f * dummy$$ where, (1)

CPI – consumer price index;
gsal – gross average salary;
rsal – real net average salary;
CPIext – external inflation rate;
M2 – monetary aggregate M2;
dummy – dummy variable which takes into account the value 1 in September 2008 – September 2011 period and 0 for other period of the sample.

To establish the econometric model we have used monthly data which were collected from the monthly bulletins of the National Bank of Romania (NBR), the official statistics of the National Institute of Statistics and Eurostat regarding the consumer prices index, the gross average salary, the net average salary, the euro/leu exchange rate, the consumer price index from EU, the monetary aggregate M2. The external inflation is calculated as a sum between the inflation rate from EU and leu depreciation against the European currency. The series of data used were expressed in indices with fix basis, December 2006 and then logarithmised. Also, the prime difference operator was applied. We have done the estimation of parameters by using the least square method. The values of parameters are shows in Table 1.

R- squared coefficient shows us that 66,26% from variation of inflation rate is explained by the variation of factors chosen in model. Prob(F-statistic) < 0,05 signifies the validity of the regression model. The regression coefficients are significant in a confidence level lower than 10%. The results of the tests show us that rising the average gross salary with 1 percentual point leads to rising inflation rate with 0,6%. The relatively high influence of gross salaries upon consumer prices is explained by the fact that the rising rhythm of labour productivity in the year 2007-2008 has been low (1,84%, respectively 4,59%), while the gross average salary has incresed with 23%,which means an average rising of unitary salary cost with 19,26%. In the year 2009 the rate of increase of unitary salary cost has decreased at half (10,51%), due mainly to a significant decrease of rhythm of rising salaries, those rising with only 8,45%. The slowdown of economic growth in the year 2010 and the diminishment of budgetary salaries have lead to a reduction of unitary salary cost with 5,10%.

Although in the years 2007-2008 the real net average salary has risen with approximately 15%, the regression coefficient show us a negative relationship between this and inflation rate. But in those years, the consumer demand has been supported by an increase in the aggregate supply and, therefore, it has not created inflationary pressures. The inflation rate has diminished with 0,62%, to 1 percentual point rising of the real salary. The negative relationship between those two variables can be explained by the financial crisis which created uncertainty among population and, therefore, the rising of incomes did not transform into consumer demand. Although in the year 2009 the real net average salary has risen with only 2,01%, the deposits of non-government residential customers have risen in real terms on average with 8,04%, while in the year 2010 there has been a decrease in real terms of the net average salary and an increase of 0,31% of deposits.

The national currency depreciation against the euro in the period July 2007 – January 2008 (17,84%) and August 2008 – February 2009 (21,46%) has lead to an inflation rate increase with 0,04%. Also, the inflation rate variation is explained by the EU inflation rate whose annual values have been between 1% (2009) and 3,7% (2008). The relatively low impact is explained by the share of imports in the consumer basket, of 35% in the analysed period.
According to the quantitative equation of money , the liquidity injection creates deflationary pressures in the moment of rising economic growth in a superior evolution from the money supply. But, the rapport of the rising indices of the two indicators, although it has significantly decreased (compared with the previous years) in the years 2008-2010, it has remained overunitary, the lowest values being registered in the year 2008 (1,09) and in the year 2010 (1,08). The restriction activity explains the decrease of consumer prices with 0,07% to a decrease with 1% of M2 monetary aggregate.

For example, if in the years 2001-2008 the non-government credit has had average annual risings (in real terms) of 42-43%, in the year 2009 the growth rhythm of non-government credit has decreased to 6,76%, so that in the year 2010 the mass of non-government credit would diminish with 3,88% against to the previous year.

The coefficient associated to the dummy variable suggests the *insignificant influence of financial crisis upon consumer prices*. We notice that *the impact was negative*, leading a *decrease with 0,001% of inflation rate*, despite the strong economic contraction in the year 2009.

The direct impact of financial crisis was minor, because the Romanian bank system has not been exposed to toxic assets, and because the National Bank of Romania has taken action upon time over economic directions. But, indirectly, the international financial crisis, and especially its consequence – the recession – spreads out over the Romanian economy on many channels (Isărescu, 2009, p.4). On the trade channel, the growing rhythm of rising exports slows down or even reduces. On the financial channel, it limits access to external financing and, therefore, it decreases the crediting volume. On the exchange rate channel, reducing the external financing has reflected the national currency depreciation. On the confidence channel, it has registered a diminishment of investments in the East – European countries. On the wealth and balance channel, it has been a deterioration of the net assets of population and companies, as a result of high share of currency credits and a decrease of assets prices from speculative values.

On one hand, reducing exports and, on the other hand, diminishing credit volume have influence up aggregate demand and, consequently, upon consumer prices.

The intensification and development of crisis have generated a reduction demand on world wide scale, reflected in a sharp decrease of economic activity. The recession registered in most of EU state members was seen also in the Romanian economy in the fourth trimester of the year 2008, Romania having an economic growth of only 3,15%. Starting with the year 2009 the financial crisis impact upon national economy has considerably increased.
The massive reduction of internal demand has determined a contraction of economic activity, the negative dynamics of real GDP being of 7,1%. The demand compression was due to the diminishment of financing resources of population and corporations, and also due to diminishment of tendency of consumption (with an increase of tendency to save, in the same time), based on uncertainty regarding the negative effects of financial crisis upon future income flows. The modification of consumption – savings relation has a positive influence upon consumer prices.

If in the first three trimesters of the year 2008 the final consumption (seen as an annual percentual variation) has registered a positive trend, on average rising with 15% against the previous year, in the fourth trimester the final consumption decreases with 3,9%. In the year 2009 a significant reduction of the final consumption, over 10%, is registered, in the first three trimesters, followed by a slowdown of decrease in the final trimester. In the period 2010:T2 – 2011:T2 the final consumption reduced with less than 2 percentual points, coming to a positive step in the third trimester of the year 2011.

The decrease of the final consumption can be explained on the basis of wealth and balance. Because the foreign currency denominated credit has an important share in household wealth and company value, the national currency depreciation has had influence upon consumer and investments, by diminishing them.

The worldwide economic downfall from the second half of the year 2008 has lead to a rapid decrease of commodities price, those registering negative values during October 2008 – October 2009. The annual variation of oil price has had a strong downfalling evolution in the period August – December 2008 (from 47,11% to -48,89%), maintaining until July 2009 to over -40% values. Unlike this, the non-energy commodity prices have registered a lower decrease, with the most important one registering in March 2009 (-24,9%).

Therefore, the decrease of commodities prices on the international market has had a positive impact upon inflation rate from Romania in the fourth trimester of the year 2008 and during 2009. Figure 2 shows the inflation rate superior to those of non-energy commodity, when these have positive values and oil inflation rate inferior to those of non-energy commodity when these register negative values. Consequently, the impact upon inflation rate is stronger in the case of oil prices oscillation. But the impact depends on the volume of imported commodities and the share of goods and services, whose prices are influenced by the commodities price, in the Romanian consumer basket.

The positive impact of economic activity contraction upon inflation rate was counterbalanced by the negative influence developed by the leu currency depreciation, explaining, thus, the almost null value of the coefficient associated with the dummy variable.

In this context (of economic recession and leu currency depreciation), the financial system has become more vulnerable, with effect upon the disinflationary trend.

3. The analysis of relation between price stability and financial stability

According with the opinion of the National Bank of Romania governor, financial stability has a great importance for price stability, the incapacity of maintaining financial stability leading to an reinflamation of inflation. In order to avoid a conflict with financial stability it is necessary an appropriate rhythm of disinflationary process. Therefore, there is a double relation between price stability and financial stability: price stability is a necessary condition for financial stability, which in its turn, is essential for the efficiency of monetary transmission mechanism.

In Romania the financial sector is dominated by the bank sector, in the year 2008 this had 82,76% from the total financial assets. Therefore, the impact of the other financial institutions upon financial stability is low.

According with *The Report of financial stability* for the year 2005, Romania had a high financial stability, without imminent risks, because the risk of credit was noticed and kept under control by the supervising authorities and the sector of nonbanking financial institutions which have credit activity and could not be a source of systemic risk due to the low volume of this market.

In the year 2009 the bank system has dealt with a major vulnerability, that is the credit risk, as a result of the financial crisis. The impact of financial crisis upon financial stability in Romania was an indirect one, on the channel of real economy and the one of bank liquidity (National Bank of Romania, 2008, p.7).

The gradual approach of the disinflationary process is justified by the necessity of avoiding sudden evolutions of the interest rate, this playing an essential role in maintaining financial stability. Increasing the interest rate on short term implies increasing passive interest rate. Although credits are given on long term with a fix rate, the return of assets cannot be adjusted fast and, therefore, banks register a diminishment of profit ,even losses.
Tabak et.al. (2010) analyses the role of monetary policy in assuring financial stability in Brazil in the period 2003-2009. The results show that the increase of interest rate reduces the credits activity and also, increases the volume of non-performing credits.

Calculating the correlation coefficient for the period January 2002 – August 2008 in Romania between the *share of overdue and doubtful loans in the total credits portfolio* and *interest rate on the interbanking market in the three months*, we notice a *strong and positive relationship* between the two indicators (the correlation coefficient being 0.75). Therefore, the slowdown of inflationary process though the increase of interest rate leads to deterioration of quality of credits portfolio, threatening the stability of the financial sector.

On the other hand, rising the interest rate can encourage the foreign currency denominated credit, risking to destabilize the financial system in case of national currency depreciation. Because the interest rate on the national market was relatively high, a level justified by the high rates of inflation, it has stimulated the foreign currency denominated credit.

In the period 2002-2004 the volume of overdue and doubtful loans, calculated as a share in the total credit portfolio, has been between 0,28 and 1, having periods of rises and downfalls. The quality of credit portfolio improves in the following period, registering also a relatively low volatility. This evolution is justified by the national currency appreciation against to the European currency.

We can notice from Figure 3 an acceleration of the indicator in the same time with the financial crisis beginning, in September 2008 due to national currency depreciation. Because approximately 60% from the non-government credit total is represented by foreign currency denominated credit, the leu depreciation has determined a deterioration to the portfolio of receivable having by the banking sector over the nonbanking clients.

Therefore, between the *leu depreciation and the overdue and doubtful loans there is a positive and medium intensity relationship*, the correlation coefficient between the two indicators being of 0,57%.

Consequently, the National Bank of Romania measures of avoiding leu depreciation in order to assure financial stability are in concordance with price stability, the leu depreciation being an essential factor of price increase. In this case, there is no *compromise between the price stability and financial stability.*

Also, the volume increase of overdue and doubtful loans is justified, on one hand, by the increase of unemployment up to 7,8% in the year 2009 and, on the other hand, by slowdown rhythm of increasing real salary in the year 2009 (2,01), respective its decrease in the year 2010 (-3,96%).

Although in the period 2001-2003 the leu currency has registered a significant depreciation against the dollar and the euro, the share of foreign currency denominated credit was between 57,97% and 62,34%. The option for foreign currency denominated credit is justified by the presence of interest differential between the leu and foreign currency denominated credit. For example, in this period, the average difference between ROBOR – 3 L and EURIBOR – 3 L was 25,51%.

On one hand, the significant decrease of interest differential and, on the other hand, the significant appreciation of the national currency (approximately with 11% against the dollar and the euro in the year 2005) have lead to a rising of 0,5% percentual points of foreign currency denominated credit share in the year 2004, the structure of non-government credit being approximately constant also in the year 2005.

Although the leu has appreciated in the year 2006-2007, the lei denominated credit became preponderant in the year 2006 and in the year 2007 the structure of leu/foreign currency denominated credit was approximately the same (49,8 – lei denominated credit and 50,2 - foreign currency denominated credit). The rising in lei denominated credit is due to the reduction of interest differential, in the year 2007 being of almost 3%, but also due to the measures adopted by the NBR regarding the increase of rate of minimum reserve requirement on the foreign currency denominated deposits and the decrease of those in lei. For example, in the year 2006, the rate of minimum reserves requirement on the lei denominated deposits was of 16% (January – June) and 20% (July – December), being registered a reduction with 14 percentual points, respective 10 percentual points from the year 2001. In the case of minimum reserves requirement in the foreign currency denominated deposits there has been an increase with 20% in the period 2001-2006 (from 20% to 40%).

Starting from the year 2008 the share of foreign currency denominated credit has registered an ascending evolution, in the year 2010 this being of 61,76%. We consider that dynamics is given by the rising of interest differential, because in this period the national currency depreciated. Also, the rate of minimum reserves requirement on the foreign currency denominated deposits has diminished with 15 percentual points, while the rate of minimum reserves requirement on the lei denominated deposits has decreased with 5 percentual points.

4. Conclusions

Analyzing the causes of inflation rate in 2007-20011 period, we had found gross average salary being the principal cause of inflation, because its increasing had not been accompanied by the increasing of labour productivity. The growth of the real net salary had been accompanied by the production growth (2007-2008) and on the other hand, by the uncertainty regarding the future evolution of incomes (2009-2010) and, therefore, did not create inflationary pressures upon consumer demand.

The relatively low influence of the imported inflation and of monetary factor upon inflation rate is explained by the low share of volumes of imports in consumer basket, respective by the restriction of the crediting.

The effects of financial crisis upon inflation rate have been positive (decreasing commodities prices, economic activity contraction), but also negative (leu currency depreciation). Because the impact of sharp reduction of internal and external demand and significant decrease of commodities prices has been counterbalanced by the leu depreciation against the European currency and dollar, the effect was almost null.

The necessity of maintaining financial stability and reassessing the crediting involves avoiding strong increase of interest rate in the case of inflationary pressures manifestation.

Calculating the correlation coefficient between the share of overdue and doubtful loans in the total credit portfolio and interest rate on the interbanking market at the three months, we identified a positive and strong relationship between the two indicators, which means that increasing the interest rate destabilizes the financial system.

Because the overdue and doubtful loans is preponderant, the national currency depreciation represents another factor with negative impact upon the quality of credit portfolio and, implicitly, upon financial stability in Romania.

Therefore, the rising of risks regarding financial stability in the context of financial crisis and the measures adopted by NBR slow down the disinflationary trend. From this point of view, we can state that the financial sector is another channel through which financial crisis influences the inflation rate in Romania.

References

Daianu, D., Lungu, L. (2009). The Monetary Union: The Decade Ahead. The Case of Non-Member States. The William Davidson Institute at University of Michigan, WP 947

Isărescu, M. (2009). International Financial Crisis and Challenges for Monetary Policy from Romania, National Bank of Romania. [Online] Available: www.bnr.ro/DocumentInformation.aspx?idInfoClass=6885...1

Kasekende, L., Ndikumana, N., Rajhi, T (2009). Impact of the Global Financial and Economic Crisis on Africa. African Development Bank Group, Working Paper, .96

Lin, J. Y. (2008). The Impact of Financial Crisis upon Developing Countries. [Online] Available: siteresources.worldbank.org/.../Oct_31_JustinLin_KDI_remarks_RO....

Popa, A. (2009). Financial Crisis Effects on Romanian Economy. [Online] Available: www.asecib.ase.ro/simpozion/2009/full_papers/.../47_Popa_A_ro.pd...

Soo Khoon, G., Lim Mah-Hui, M. (2010). The Impact of the Global Financial Crisis: The Case of Malaysia**.** TWN Global Economy Series, 26

Tabak, B.M. et.al. (2010). Financial Stability and Monetary Policy – The case of Brazil. Banco Central do Brasil, Working Paper Series, 217

*** Financial Stability Report. National Bank of Romania 2006-2009

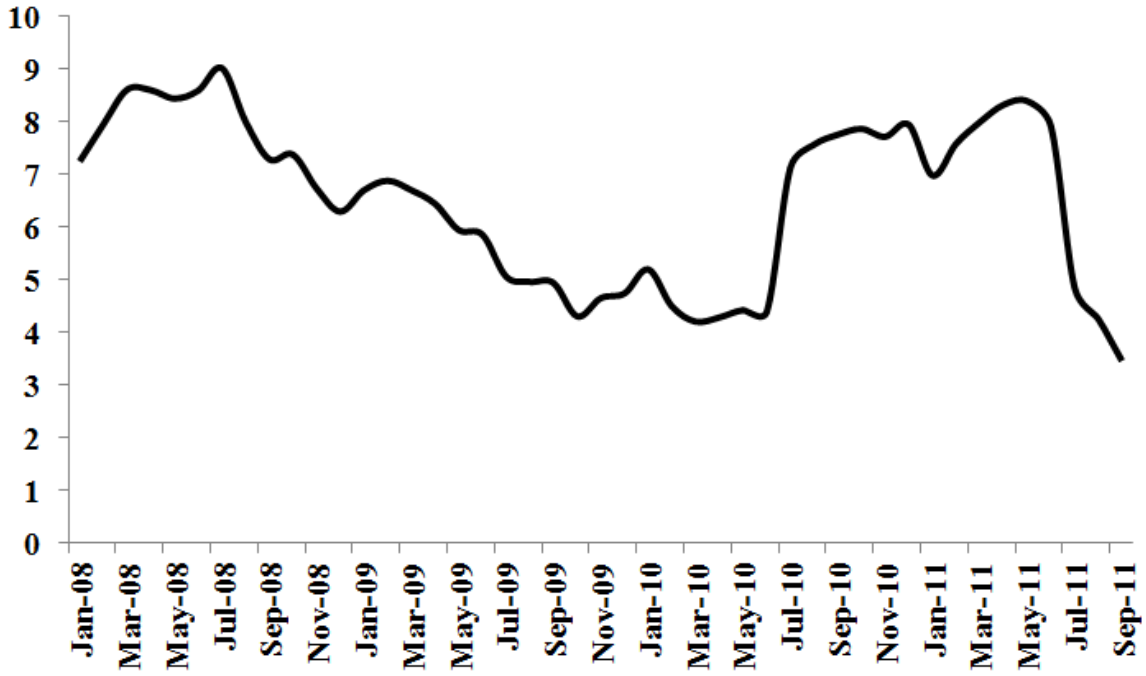
*** Monetary Stability. Financial Stability and the Business Cycle: Five Views (2003): BIS Papers, No. 18

*** Monthly Bulletins. European Central Bank, 2008-2009

*** Monthly Bulletins. National Bank of Romania, 2001-2011

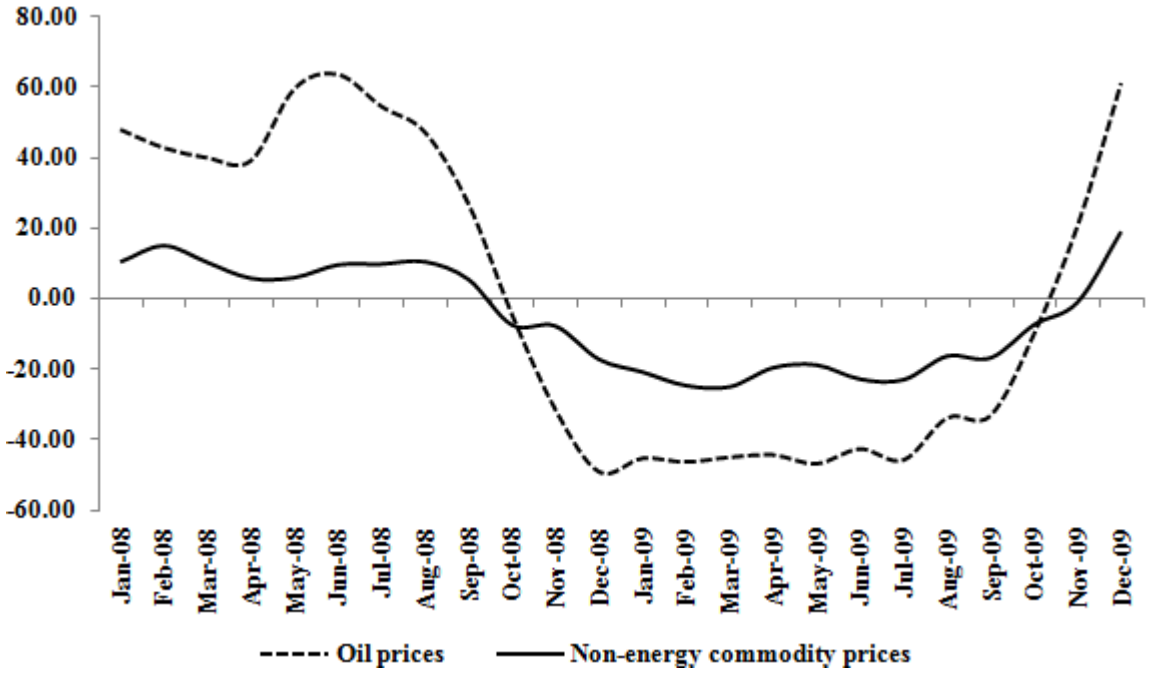
Appendix

Figure 1: The evolution of the annual inflation rate in Romania (January 2008 – September 2009)



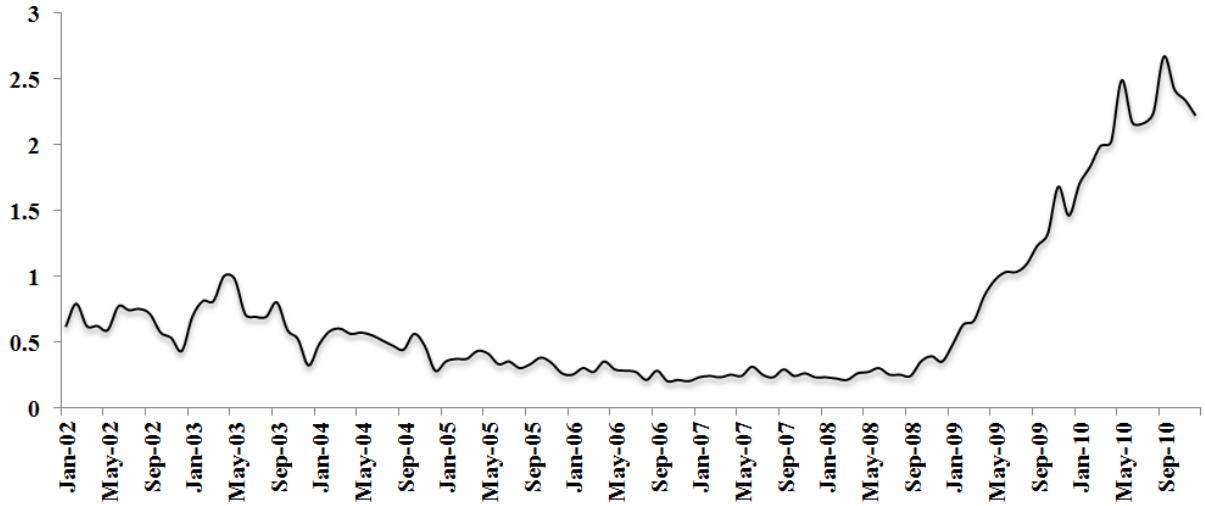
Source: National Bank of Romania, Monthly Bulletins 2008-2011

Figure 2: The evolution of the oil prices and non-energy commodity prices (2008-2009) -percentual annual variation



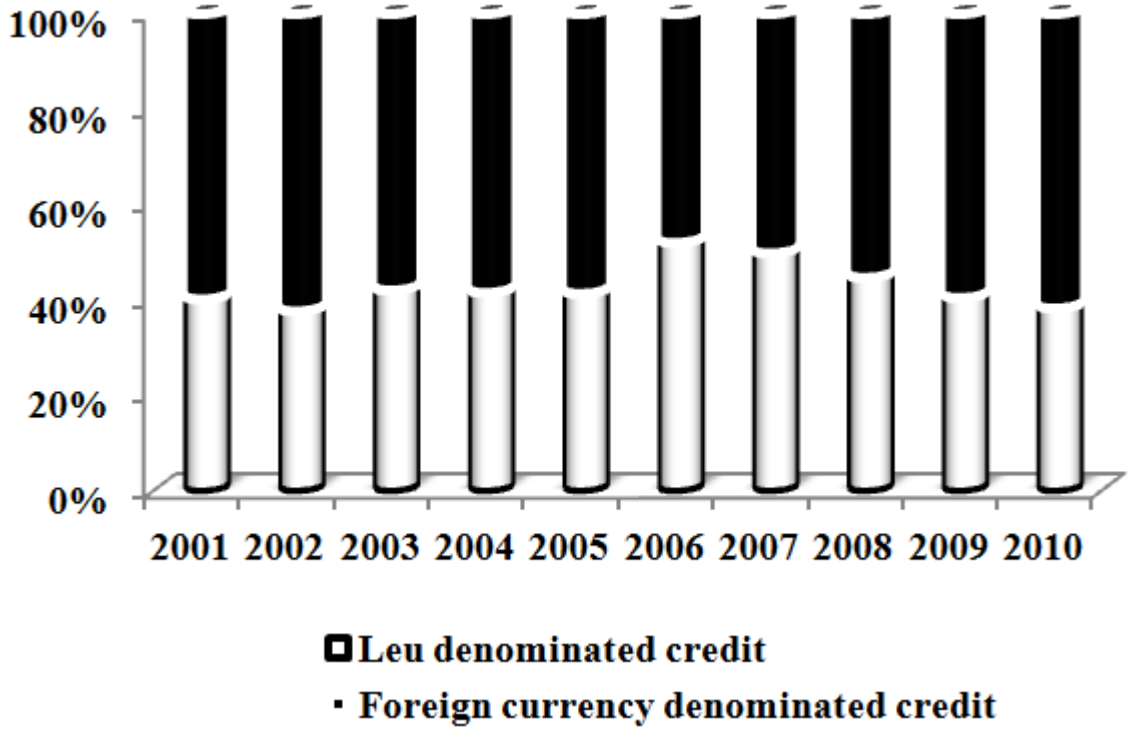
Source: European Central Bank, Monthly Bulletins 2008-2009

Figure 3: The evolution of overdue and doubtful loans in Romania (2002-2010)*



Note: share in total credit portfolio, net value
Source: National Bank of Romania, Monthly Bulletins 2002-2010

Figure 4: The structure of non-government in Romania (2001-2010)



Source: National Bank of Romania, Monthly Bulletins 2001-2010, author's calculations

Table 1: The statistics of regression equation regarding inflation and its leading factors

Dependent Variable: DL_IPC
Method: Least Squares
Date: 12/25/11 Time: 15:27
Sample(adjusted): 2007:02 2011:09
Included observations: 56 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DL_SALB	0.602247	0.075544	7.972146	0.0000
DL_SALR	-0.623610	0.073322	-8.505062	0.0000
DL_IPCEXT	0.045395	0.023138	1.961922	0.0554
DL_M2	-0.078568	0.025802	-3.045009	0.0037
DUMMY	-0.001692	0.000984	-1.719000	0.0918
C	0.003304	0.001063	3.106746	0.0031

R-squared	0.662613	Mean dependent var	0.004711
Adjusted R-squared	0.628874	S.D. dependent var	0.004924
S.E. of regression	0.002999	Akaike info criterion	-8.679839
Sum squared resid	0.000450	Schwarz criterion	-8.462837
Log likelihood	249.0355	F-statistic	19.63952
Durbin-Watson stat	1.805808	Prob(F-statistic)	0.000000