

AN ECONOMETRIC APPROACH REGARDING ANTICRISIS MEASURES

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Abstract: *It is the purpose of this article to discuss certain econometric elements with a view to perceive the economic crisis signals and especially to reduce recession effects and overcome such a stage of the economic cycle. Together, economic theory, including policy measures and econometric methods provide certain chances to hurry up the end of depression. Thus, a simultaneous equation model adopted to simulate policy targets can be recommended in view to obtain new elements for an impact analysis and also for prognosis of main economic indicators.*

Key words: *economic cycle; depression; industrial output index; reference rate; fiscal policy; monetary policy; economic model; control variable; leader variable; econometric model with simultaneous equations*

1. Introduction

Certain significant indicators concerning Romanian economy and its evolution throughout the last years show positive trends until the second part of 2008. Afterwards the economic activity in many sectors stayed on a significant downward trend (fig.1.1. and 1.2.).

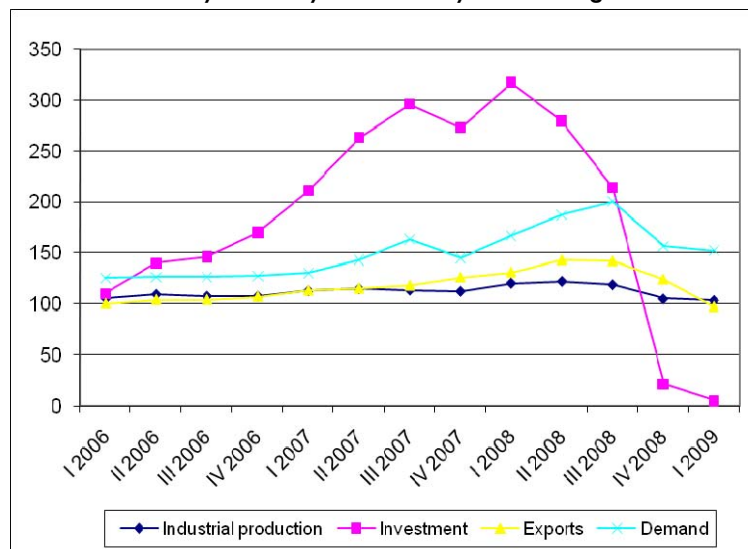


Figure 1.1.

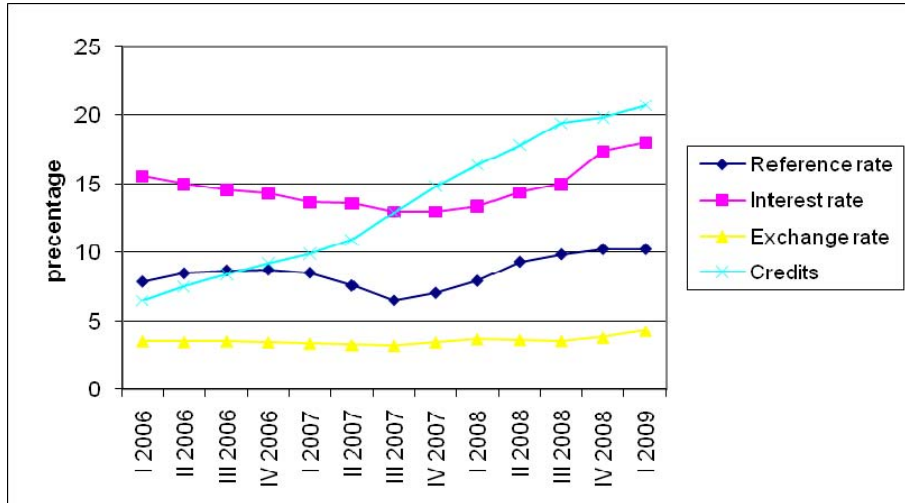


Figure 1.2.

In what follows we refer to certain interesting variables specific to economic cycle analysis².

- BET index, which registered 6586 points in 2005, 8050 points in 2006, 9825 points in 2007, reached approximately 5000 points in 2008 Q3, 2900 points in 2008 Q4, 2100 points in 2009 Q1;
- a significant decline of turnover from approximately 2000 (lei mill.) in 2008 Q2 to 1570 of 2008 Q3, 1000 of 2008 Q4 and 680 in 2009 Q1;
- credit risk ratio, kept stationary around 3.5 - 4.5 until August 2008, began a monthly increase as follows: 5.29; 5.38; 5.8; 6.52 in the interval Sept.- Dec., 2008, respectively 7.6 ; 8.42 in the interval Jan. – Feb., 2009;
- overdue and doubtful loans (net value), also placed at stationary levels (around 0.25) along the time, began an increase in the final part of 2008 and the first part of 2009 (from 0.35 in August 2008 to 0.63 in February 2009).

Similarly it comes out that the past-due debts;

- discount treasury certificates (nominal value- lei mill.), registered an accelerated increase (from 1769 in September, 2008 until 7480 in March, 2009);

All these changes in the last succession of time periods, pointed out that an economic recession has been emerging.

2. Economic reasons

The economic crisis, a phase of the economic cycle, has its issue, according to the monetarist hypothesis, in the expansion of money supply and credit (Hartley-1198, Friedman-1963) but also in the overestimating of expectations regarding demand and unlimited profit, that generate supply surplus (Beveridge-1981). Politics and electoral cycle can also influence the electors' expectations regarding income increases, thus generating some disturbances of market mechanism.

We can recognize certain reasons mentioned above if we take into account the preliminary period of the current crisis as follows: a large expanding of credit (however, such a phenomenon was slowing down in Romania due to NBR measures), a significant increase in profit rate especially on the real market, a macroeconomic government policy aiming to maintain optimistic expectations. The latter grew in importance in Romania on the background of Nov, 2008 elections, with negative consequences for the budget deficit, and at the same time due to quiet news about the possibility to appear an internal economic crisis.

If we refer to forecasting signals of recession, interesting especially from with a view to avoid in advance similar situations, according to economic theory, there are certain conspicuous trends such as: a major increase in house and house-lot prices associated to a decrease in interest rates; an raise in people naivety regarding the permanence of big incomes together with the pleasure of taking certain risks and luxury temptations (Juglar, 1862).

In Romania house prices and house-lot prices have increased in certain areas of economic importance especially in 2007-2008 interval. Another emergency signal was given by NBR as a preventive measure, namely the increase in the reference rate on the basis of a limited growth of credits. Other main macroeconomic indicators (inflation, interest rate of credit institutions, exports, industrial output and, partially, monthly average wage and exchange rate) have continued their positive trends throughout 2006, 2007 and 2008 (except for the last quarter of 2008), in spite of bad news about the economic crisis in the USA and many EU countries.

The recession in progress is described in economic theory by decreases in main economic indicators as: industrial output index, capital market indicators, investment, income, etc. along two or three successive periods ("three months rule" or more successive quarters) and simultaneous increases in unemployment, interest rate etc. It is easy to establish such evolutions (trends) if we follow all these indicators for Romanian economy beginning with 2008, Q4 (fig.1.1, 1.2).

An approach to crisis typology shows us an interesting opinion about the interval 2008-2010 according to which it is considered a final interval of a decreasing phase of a Kondratiev cycle. Moreover, in economic theory it is mentioned that "no cycle is exactly the same as another cycle". This is valid especially for the beginning of the recession in Romania as the graphical representation shows (fig.1.1, 1.2) and, as well, as signals from other sources (media channels) point out.

Both sources suggest that the major deficiencies in Romanian economy have appeared due to a significant fall in the demand on external market with immediate consequences on national industrial output, together with the liquidity retreat by mother banks having visible effects on credit interest rate as well as on crediting conditions in Romanian money market.

So, a crisis through contamination (somewhat natural in a globalized economy) overlapping a local structural crisis in the final phase, both marked by conducts specific to an election year. It can be said that misfortune hard to avoid appeared at the wrong time and in the wrong place.

Although we cannot say that there is a time and a place for the emergence of economic recession, the overcoming of recession is easier in an economy relying on significant reserves, able to support a fiscal relaxation policy in a regular time (non election year) in which the government is less interested in populist measures.

Mitigating the effects of recession and its overcoming are done through anti cyclical policies consisting of:

- public expenditure policy characterized by increasing this kind of expenditure in order to raise aggregate demand (socio-cultural investment, high social protection) and by stimulating production through fixed capital renewal;
- monetary and credit policy reflected in the reduction of key interest rate, of commercial banks obligatory reserves, incentives aimed to encourage lending, all these with a view to stimulate investment, production revival, employment, consumption;
- fiscal policy oriented towards reducing economic agents' taxation and towards encouraging demand.

Whatever the dilemma which economic theory is dealing with on the effectiveness of these policies, the important issue is the option for those measures which, considering the specificity of crisis evolution in a certain country, manage to reduce the disaster and hurry economic recovery.

In 2009 Romania measures related to both public spending (investment in infrastructure, reinitiating the car park renewal facilities) as well as to monetary policy (cutting key interest rate, diminishing obligatory reserves, State guarantees for housing loans) have been put forward and partially applied. But less emphasis was placed on the tax relaxation. The effect of such measures can be topics of study for Econometrics.

A summary of the above may be represented as an economic model. In a graphic expression, such a model looks like this:

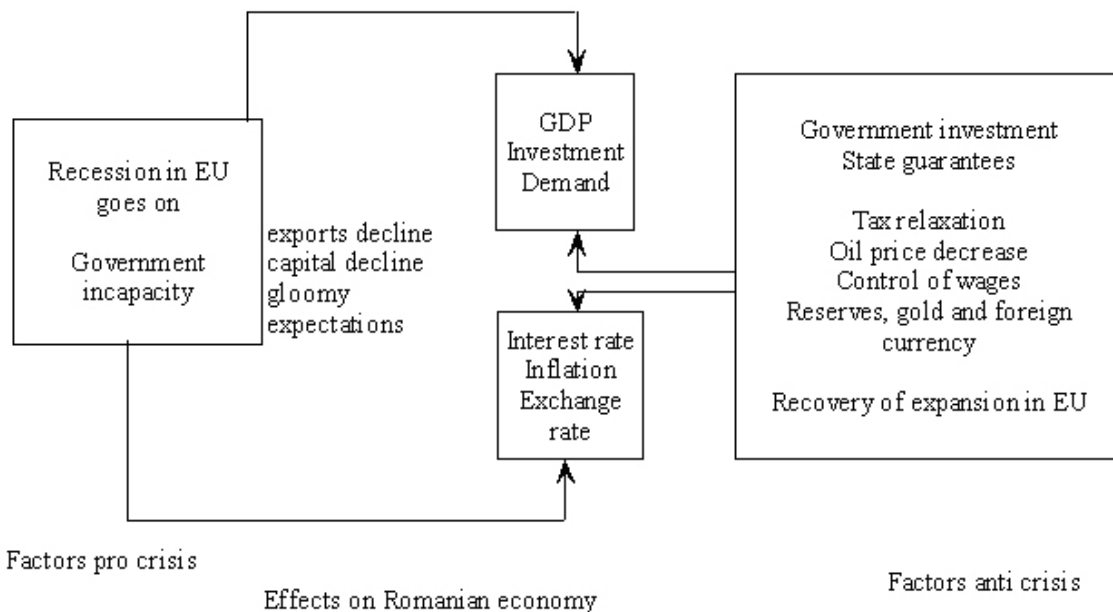


Figure 2.1.

The economic model is represented by an ensemble of cause-effect relationships including a low number of exogenous variables, recognized as determinant for certain economic sectors, but also control variables corresponding to the kind of economic policy preferred by government³.

$GNP = f(\text{Investment, Demand, Exports})$
 $\text{Income (budget)} = f(\text{GNP, Fiscal policy, Debt (external)})$
 $\text{Investments} = f(\text{Interest } r., \text{ Monetary policy, Public expenditure policy})$
 $\text{Employment} = f(\text{GNP, Public expenditure policy})$
 $\text{Demand (aggregate)} = f(\text{Employment, Public expenditure policy, Monetary policy, Fiscal policy, Inflation})$
 $\text{Inflation} = f(\text{Money (narrow), Exchange rate, Fuel price, Demand (aggreg.)})$
 $\text{Interest } r. = f(\text{Reference } r., \text{ GNP, Monetary policy})$
 $\text{Exchange } r. = f(\text{Inflation, Investment (direct)})$

3. Statistical and econometric reasons

At least two aspects of recession can be considered suitable targets for econometric studies: (a) establishing leader variables whose evolutions can point out depression approaching, including the interval between the signal and the recession materialization; (b) selecting and promoting such processes (policy measures) in view to diminish effects and shorten duration of economic crisis.

For the first target (a), we consider certain elements of economic theory but also practical aspects regarding recent Romanian economy evolution. We can consider house price index and investment index as leader variable. The economic situations (represented by industrial output index) in certain EU countries (especially external business partners) can also represent significant signal-variables for the Romanian government.

The second target (b) is more important, and in view to analyze economic cycle, several macroeconomic models were created such as Samuelson's accelerator, and as well Metzler's, Hicks' or Frisch's.

We consider suitable for the present situation, at least for Romanian economy, a simultaneous equations model in which control variables are predominant.

There are some preliminary stages necessary to be solved out, in view to get our representation closer to reality by practical utilization. Thus the economic policy usually implies certain "new" variables (considered useful for diminishing crisis effects but for which there is no previous statistical data). For example new taxes or new government guarantees. Possible solutions: including expected values of some of the variables that describe similar situations in the past; choosing certain proxy variables with continuity along the entire interval in focus.

Another problem is represented by qualitative characteristics. For example, in the case in which fiscal relaxation for economic agents and state-guarantees for a limited period are considered as being determinant. Possible solutions: including adequate proxy variables, introduce binary variables, measuring on a numerical scale.

The structural form of economic model:

$$GNP_t = a_0 + a_1 INVEST_{t-1} + a_2 DEMAND_{t-1} + a_3 EXPORT_t^{(expected)} + u_1$$

$$INCOME_t = b_0 + b_1 GNP_t + b_2 FISC.POL._t + b_3 DEBT.EXT._t + u_2$$

$$INVEST_t = c_0 + c_1 INTEREST.R._t + c_2 PUBLIC.EXPEND.POL._t + u_3$$

$$EMPLOYMENT_t = d_0 + d_1 GNP_t + d_2 PUBLIC.EXPEND.POL._t + u_4$$

$$DEMAND_t = e_0 + e_1 INFLATION_t + e_2 EMPLOYMENT_t + e_3 FISC.POL._t +$$

$$\begin{aligned}
 &+e_4 \text{ MONETARY POL.} + u_5 \\
 \text{INFLATION}_t &= f_0 + f_1 \text{ MONEY(narrow)}_t + f_2 \text{ EXCHANGE R.}_t + f_3 \text{ PRICE(oil)}_t + \\
 &+f_4 \text{ WAGE(adm.)}_{t-1} + u_6 \\
 \text{INTEREST R.}_t &= g_0 + g_1 \text{ REF.rate}_t + g_2 \text{ GNP}_{t-1} + g_3 \text{ MONETARY POL.}_t + u_7 \\
 \text{EXCHANGE R.}_t &= h_0 + h_1 \text{ INFLATION}_{t-1} + h_2 \text{ INVEST(direct)}_t + u_8
 \end{aligned}$$

The reduced form of such model would be a suitable representation intended to simulate economic policies in view to reduce and eliminate economic crisis effects.

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² Source: *** **National Bank of Romania - Monthly Bulletin**, Feb., 2009, Year XVII, No.184

³ Control variables are not specified in a concretely form so that it is possible to choice from each categorical, an adequate variable.