Chapter 43
Analysis of the Monetary Policy Dynamics in Romania Using a Structural Vector Autoregressive Model

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ABSTRACT

This chapter aims to provide an elaborate empirical analysis of the monetary policy dynamics in Romania using a structural vector autoregressive model. This chapter contributes to literature based on an empirical framework regarding the implications of exchange rate channel within the monetary policy, and the impact of the monetary aggregates channels in order to explain the evolution of the prices level in Romania.

INTRODUCTION

The efficient functioning of the enlarged future euro zone still needs some answers to a set of essential questions. One of these questions is related to the pertinence of the inflation target of 2% established by the European Central Bank (ECB). Indeed, despite of a considerable deceleration of the prices growth rhythm in the Central and Eastern Europe countries after the difficult period of transition, an inflation growth is possible after the euro adoption. According to Benassy-Quere and Lahreche-Revil (2001), this phenomenon could lead to the medium inflation growth of the euro zone of 0.25% and of 0.75%. In order to accomplish its mandate, ECB will be constraint to implement a restrictive monetary policy, whose deflationary incidents could compromise the real convergence process of the new members of the euro zone.

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In these conditions, the exact knowledge of the monetary policy transmission mechanisms in the Central and Eastern Europe countries is extremely important for the correct application of the European Central Bank's monetary policy strategy and for limiting the disadvantages of a unique monetary policy in the countries that will adopt the single currency.

In this paper we intend to study empirically the relative importance of each monetary policy transmission channel, the prices dynamics as well as the way in which each macroeconomic variable response to the different shocks from the economy in Romania.

Our empirical study is based on the estimation of a model based on the structural vector autoregressive methodology, imposing some restrictions on short term. The auto-regressive vector is formed of the following variables: the real industrial production, the real effective exchange rate, the consumer prices index, the M2 monetary aggregate, the exchange rate between the national currency and euro and the interest rate on the interbank market. The data are monthly, being extracted from the International Monetary Fund's data base (International Financial Statistics) and from the European Central Bank data base (Statistical Data Warehouse) and they are presented in synthesis in Table 1. The period of the study comprises data from 2001 to 2009. Our Structural VAR model comes as a continuation of other similar studies from the Romanian empirical literature of specialty, such as Boţel (2002), Cozmâncă (2008), Aristide (2007). These authors' models were estimated by including different macroeconomic variables in the model and by imposing some restrictions on short term or on long term for surprising as better as possible the economy's evolutions.

Our choice of appealing to an approach based on Structural VAR model is based on the fact that these models remain, irrefutably, a reference in what concerns the shocks. These allow the illustration of the dynamics of a set of variables starting from a restraint number of hypotheses.

However, the main limit of the Structural VAR approach when it deals with the monetary shocks is the fact that these models don't take into account the unanticipated part of the monetary shock.

METHODOLOGY AND DATA

The formalization of the VAR modelling is presented in multiple sources among which we distinguish Hamilton (1994) and Enders (1995). The following approach (Favero, 2001) has for unique object the presentation of the Choleski identification, adopted in this model.

We consider the following system with n variables:

$$AX_t = C(L)X_{t-1} + Bv_t \qquad (1)$$

where: A is a matrix (nxn) that describes the contemporaneous, structural relations between the variables from the system; X_t is the vector (nx1) of the macroeconomic variables, C(L) is a matrix lag polynomial; v_t is the vector of innovations, B is a matrix (nxn), which in the great majority of applications (as well as in the present one) is diagonal.

This equation can be rewritten, through pre-multiplication with A^{-1}, such as:

$$X_t = A^{-1}C(L)X_{t-1} + u_t \qquad (2)$$

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