SHOCK SYNCHRONICITY BETWEEN THE NEWEST MEMBER STATES AND THE EURO ZONE[1]

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Abstract

In line with the Optimum Currency Area (OCA) theory, the paper analyses the degree of shock synchronicity between the euro area and the two newest member states (NstMS) of the European Union, Bulgaria and Romania. The degree of synchronization between the shocks that affect an economy is seen as a "meta-prerequisite" for entering a common monetary zone with minimum costs, a criterion that includes several others. The empirical literature knows only a few studies that include these two economies, and this was mainly due to the lack of reliable and long enough data series and to the numerous institutional changes inherent to the transition period. Using data from the two national banks, as well as Eurostat, we construct an integrated empirical framework that allows us to analyse the correlation between demand, supply and monetary shocks in Romania and Bulgaria on one side, and the euro zone on the other. We employ the popular Vector Autoregressive (VAR) technique and we identify the specified models using long-run restrictions á la Blanchard and Quah (1989). Using both static and dynamic correlation measures, our findings suggest that the two newest member states don t behave as a homogenous group, Bulgaria being more correlated with the euro area. The results are important in order to establish the position of the newest member states on the road to monetary integration, as this will be the next step after the recent accession.

Keywords: optimum currency area; vector autoregressive (VAR); structural shocks; correlation.

JEL codes: C3; E47; E52.

1. Introduction

The perspective of adopting the euro by the new EU member states has generated a resurgence in the interest in the theory of optimum currency areas (OCA). The theoretical background needed in order to document the decision of giving up the monetary policy independence has been laid down by the pioneer work of Mundell (1961), followed by McKinnon (1963), Kenen (1969) and many others. The recent strand in the literature of optimum currency areas focuses on the more specific case of European Monetary Union, with a special emphasis on the empirical implications of the OCA theory.

Our paper is a contribution to the empirical literature which investigates the extent to which OCA preconditions are satisfied by soon-to-be EMU member states, focusing on the newest members in the European family, namely Romania and Bulgaria. The theory surrounding the OCA properties has evolved since it first came into being (for a comprehensive survey see Mongelli (2002)). The early 1960s, spanning to early 1970s, experienced a pioneering phase, during which fundamental prerequisites have been laid down and these included price and wage flexibility, mobility of factors, financial market integration, economic openness, diversification in production and consumption, similarities in inflation rates, stable inflation rates, fiscal and political integration. What lacked the first framework of the OCA conditions was a unifying view, especially important when a country satisfied a number of criteria, but not the entire set, and there was no generally agreed upon ranking of the prerequisites.

The holistic interpretation of the theoretical OCA criteria led to an emphasis on the similarity of shocks that affect the economies of the common currency area, and this is seen as a comprehensive prerequisite, including several others, a "meta-property", as named by Mongelli (2002), suited for determining the success or failure of a common currency project. It is acknowledged that countries that experience large asymmetric shocks would face severe costs in the case of losing the monetary independence that could have served to react to these shocks.

A recognition of the importance of shock similarity between the countries that form a monetary union is given by the extensive empirical research that investigate this particular property. Frenkel, Nickel and Schmidt (1999), Fidrmuc and Korhonen (2001), Frenkel and Nickel (2002), and Babetskii, Boone and Maurel (2002), Eickmeier and Breitung (2006) follow the structural VAR identification methodology pioneered by Blanchard and Quah

(1989) and developed by Bayoumi and Eichengreen (1993). They use different measures for the symmetry of the identified shocks as indicators of the synchronicity of business cycles between countries in the euro area and the new member states. They also investigate the transmission of disturbances from the euro area to other countries, assessing the sources, internal vs. external, of business cycle fluctuations.

Another direction in the literature of economic similarities within a common currency area analyses the degree of business cycle synchronization. Such studies employ different filtering techniques to isolate the cyclical component from the trend within a time series that reflects the economic activity (GDP, its components, industrial production index, unemployment level). Numerous studies use different measures of correlation between business cycles, ranging from simple correlations in the early research to dynamic spectral correlations as in Eickmeier and Breitung (2006).

Our paper is a contribution to the first mentioned strand of OCA empirical literature, referring to the analysis of macroeconomic shock similarity, seen as a fundamental prerequisite for entering a monetary union. This shock similarity can be regarded as an indicator of business cycle synchronization, as we would expect that the economies which experience similar shocks to be in a similar stage of development. Moreover, business cycles can be interpreted as a result of different shocks that affect an economy. It is noteworthy that we deal in this paper only with idiosyncratic shocks, and although a small open economy is subject to substantive external influence, we leave the analysis of the shock sources (internal vs. external) to future research.

The empirical investigation conducted in this paper focuses on the case of the two newest EU member states, Romania and Bulgaria. The two countries make an interesting object of study because the transition process, which is itself painful and costly, has been in these two states more prolonged and in numerous aspects not accomplished yet. This is one of the reasons why there are very few studies that include these two economies, knowing that econometric modelling can be irrelevant in the case of numerous institutional changes or administrative control of the key macroeconomic variables. Another explanation for the scarcity of empirical studies on Romania and Bulgaria is the lack of reliable and long enough data series. The review of the business cycle correlation between the euro area and the Central and Eastern European countries written by Fidrmuc and Korhonen (2006) clearly emphasizes the fact that among other European states, Romania and Bulgaria have benefited from the smallest degree of attention.

Several studies analyse the two economies as part of a group (IMF (2000), Afonso and Furceri (2007), Korhonen (2001)). Ciurila and Murarasu (2007) study the trend of the real exchange rates in six Central and Eastern European countries including Romania and Bulgaria. They find that significant factors for the real appreciation are foreign direct investment inflows, the current account balance and the productivity differential.

Our paper adds to the existing literature by presenting statistical evidence of shock similarity between the euro area and Romania and Bulgaria together with a thorough economic analysis. This paper will shed some light on important issues regarding the imminent adoption of the euro of the two newest member states and it can easily lead the way for similar investigations. The present research has two distinct goals: (i) to establish the economic facts that favour or not the similarity of shocks with the euro area; (ii) to determine to what extent the two economies satisfy the OCA prerequisite regarding shock synchronicity.

The rest of the paper is organized as follows: the next section presents a series of economic insights that help us understand the macroeconomic similarities with the countries forming the euro area; section 3 discusses the data set and the methodology employed to isolate the supply and demand shocks, as well as the monetary shocks originating in each analysed country; the next section interprets the result and finally, section 5 offers the conclusions.

2. Stylised Economic Facts

It is generally agreed upon the fact that the NstMS have a lot to catch up in order to become fully integrated in the European Union. We will not go into the economic details that could explain why these two countries are the laggard of the EU. Yet, it is worth mentioning that both experienced during the transition period difficult situations equivalent to crisis. For the case of Romania, the first ten years after the revolution marked an environment of uncertainty, both for home and foreign investors. The prolonged communist period of constraints triggered increasing imports, that weren't sustained by external competitiveness. The constant problems regarding the balance of payments have reached a maximum in 1999, when the default risk appeared to be imminent. External financing needs outran by far the sources available or possible to resort to. A dramatic depreciation of the leu (the national currency), along with restrictive fiscal and income policies, allowed Romania to service the peak of medium- and long-term foreign debt service in amount of USD 2.8 billion. Bulgaria, on the other hand, encountered a major financial crisis in 1996 – 1997, which led to political

and parliamentary instability. Public debt, budget deficit and inflation reached unsustainable levels. The solution found by the government was based on an IMF agreement and implied ambitious fiscal and structural reforms. Moreover, it set up a currency board and the Bulgarian Lev was pegged to the Deutsch Mark.

The upward path of the two economies begun in 1998 for Bulgaria and in 2000 for Romania. The recent period can be described by improved performance in terms of economic expansion, strengthening disinflation, reduction in budget deficit and unemployment. The expansion of the world economy triggered a boost in the foreign trade of Central and Eastern European economies, including Bulgaria and Romania. The area also benefited from a high attractiveness for foreign investors. It can be stated that B&R are increasingly integrating into world markets and more precisely, into European structures. But the question arises to what extent these commercial and financial linkages lead to an increased similarity between the NstMS and the euro area, similarity that would eventually pave the way for monetary integration.

Among the economic indicators that can be regarded as relevant for entering a common currency area, we will constrain our attention to three main categories: (i) bilateral trade intensity; (ii) foreign direct investments (FDI) intensity, and (iii) similarity of production structures.

2.1 Bilateral Trade Intensity

One would expect that the higher the bilateral trade within a group of countries, the lower the cost of entering a monetary union. Frankel and Rose (1998) present empirical evidence that supports this idea. Yet, increased trade as a factor that leads to sectoral specialization. On one hand, trade may trigger higher economic similarity by favoring the transmission of shocks that affect all industries; on the other hand, in the hypothesis that trade leads to specialization, the primary shocks that affect an economy can become sector-specific, and this decreases the shock similarity within a group of countries.

The selected indicator for trade integration (TR) was a variable that corrects for the differences in the size of the economy, according to the following formula:

$$TR_{i,EA} = \frac{EX_{i,EA} + IM_{i,EA}}{GDP_i \times GDP_{EA}} \qquad (1)$$

where $TR_{i,EA}$ reveals the degree of bilateral trade intensity between country i and the euro area, $EX_{i,EA}$ represents the exports of country i to the euro area, $IM_{i,EA}$ are the imports of country i from the euro area, GDP_i is the gross domestic product of country i and GDP_{EA} stands for the gross domestic product of the euro area.

Figure 1 presents the degree of bilateral trade intensity with the euro zone on one hand and Romania and Bulgaria on the other. For comparison reasons, we also computed the average value of the indicator for the countries that entered the EU in 2004.

Figure 1 Bilateral Trade Intensity with the Euro Area
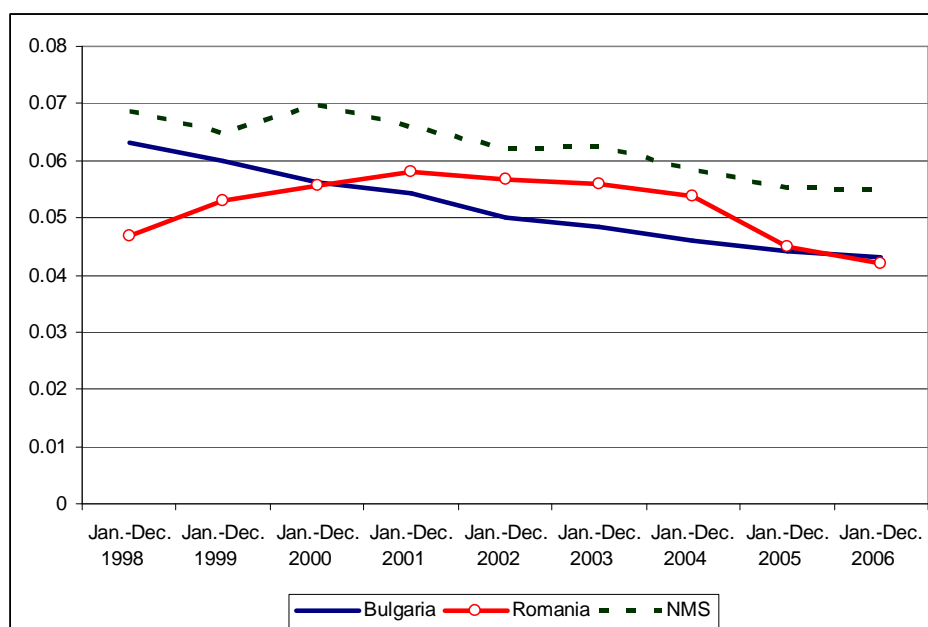
Source: Author's calculation

Figure 1 reveals the fact that Romania exhibits a higher degree of trade integration with the euro area than Bulgaria, but only during the interval 2000 – 2005. Yet, for both states the level of the chosen trade intensity indicator is lower than the average among the new member states[2].

2.2 Foreign Direct Investment Intensity

Foreign direct investments are an important factor that creates linkages and interdependencies between economies. They are a channel through which external shocks are propagated, but can also lead to a catch up process and an increased similarity in the nature of

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[2] Malta and Cyprus have been excluded from the analysis.

shocks that affect a group of countries. The measure chosen for FDI intensity between country i and the euro area ($FDI_{i,EA}$) is similar to the trade intensity indicator, in the sense that it accounts for the difference in the size of economies that are compared.

$$FDI_{i,EA} = \frac{FDI^{out}_{i,EA} + FDI^{in}_{i,EA}}{GDP_i \times GDP_{EA}} \tag{2}$$

Where $FDI^{out}_{i,EA}$ stands for the foreign direct investment made by country i in the euro area and $FDI^{in}_{i,EA}$ are the foreign direct investments that enter country i from the euro area.

Figure 2 FDI Intensity with the Euro Area
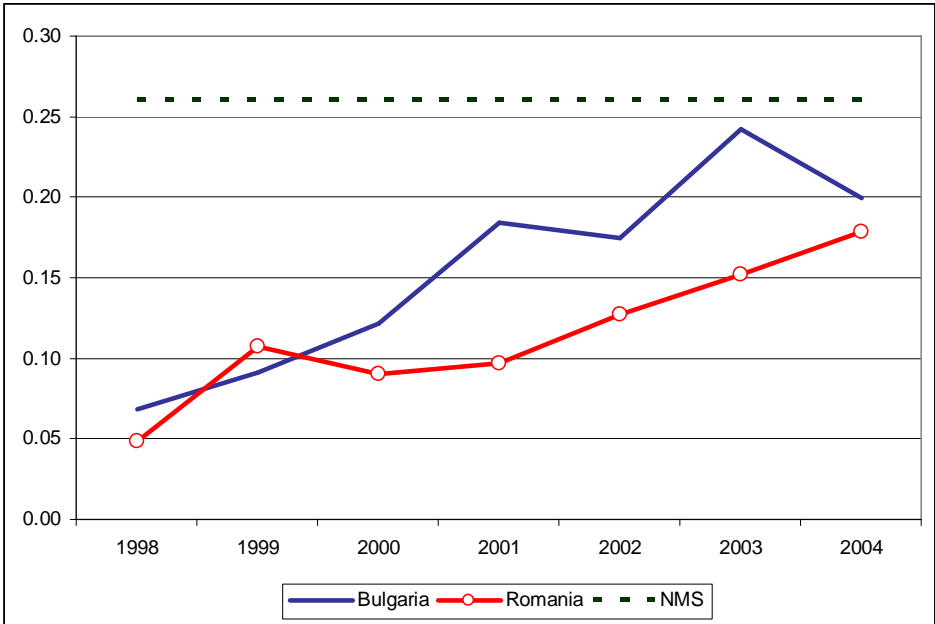
Source: Author's calculation

Due to data availability, the average for the new member states is the one computed by Eickmeier and Breitung (2006) for the year 2003 and it is presented as a constant only to have a grasp of where the NstMs find themselves as compared to the other non-euro countries. It is obvious from Figure 2 that Bulgaria is more financially integrated with the euro area, although the trend for Romania is promisingly upward.

2.3 Similarity in Production Structures

The criteria surrounding the entrance into a monetary union focus on the probability that candidate countries face similar shocks that will enable a common monetary policy to adjust successfully after these disturbances. According to economic theory, the synchronicity

other non-euro countries; the macroeconomic shocks can be isolated following alternative methods to identify VAR models; external sources for shocks can be included in the VAR models.

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