

IS BULGARIA READY TO JOIN THE EURO AREA – INCOME CONVERGENCE OR SIMILARITY OF SHOCKS CRITERIA?

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Abstract

This article decomposes AD-AS shocks across EU countries using the traditional B-Q SVAR model. The results provide evidence that fluctuations in the Bulgarian economy have a similar origin and contribution to growth as those in the euro area. Therefore, the slower pace of income convergence to EU/EA levels is determined by domestic (fiscal) policy. This calls into question the causality of the argument that Bulgaria will accrue negatives if it adopts the euro before reaching some “mystical” GDP per capita threshold. The EMU integration is likely to produce more net benefits for a larger group of countries with similarity of shocks and may explain why the euro area now has more members than would have seemed possible since the Great recession.

Keywords: monetary policy, EMU, SVAR, AD-AS shocks

JEL: E52; F33

Introduction

Questions surrounding the readiness of countries to join a monetary union are a central topic in economic theory, and the discussions about their nature and determinants have always attracted research interest. It is known that views on this issue are periodically reevaluated through the prism of new paradigms. The current situation of a series of global and regional disturbances is no exception, which makes this article timely for Bulgaria on its way to joining the euro area.

If we go further back, the political debate for EMU reached its maturity at a specific historical moment. The publication of the main conclusions and recommendations of significant reports (such as the “Delors Report” (1989) and “One Market, One Money Report” (1990)) coincided with the political transformation in the countries of Central and Eastern Europe (CEE) since the late 1980s and 1990s. This served as a signal for the newly opened countries to transition from centrally planned to market oriented economy with a clear horizon – joining the EU and subsequently the euro area. After the domestic

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banking crisis Bulgaria has established a static rule known as the “Currency Board” – a monetary policy regime that limits the autonomy of the central bank in determining the issue of reserve money long before joining to the EU (2007) and ERM2 (2020).

Given its political entanglement, the euro area is not the ideal real-world example of an optimal currency area (OCA), as described by the theoretical framework of Mundell (1961), and this often raises doubts about its functioning (Stiglitz, 2019; Krugman, 2016, and etc.). An extensive literature lists several criteria that are important, but the key is the balance between convergence and insurance (Mongelli, 2002). In this sense, discussions about Bulgaria’s readiness to join the EMU most often wrongly assume the degree of convergence (in the income level) as an initial condition. Weaker real convergence does not necessarily prevent the monetary union from being able to effectively stabilize the economy (Draghi, 2019). Business cycles can synchronize long before income levels. In the US, for example, GDP per capita in the richest state is still about twice that of the poorest state, roughly the same gap as in the euro area today. In theory, it should be ensured that sharing a single monetary policy and exchange rate does not deprive some members of the ability to adjust to shocks. It is important that the dynamics and amplitude of shocks are similar, as this determines the optimality of monetary policy in different countries. A major challenge faced by researchers is to overcome the endogenous nature that determines the shocks as asymmetric, precisely because of the lack of participation in the currency union. To examine Bulgaria’s readiness, the article combines the traditional AD-AS typology of economic shocks and the recent exogenous disturbances to the EU (and the euro area), such as the COVID-19 pandemic and the ‘weaponization’ of energy during the Russian aggression against Ukraine. The idea behind is that aggregate demand (AD) and aggregate supply (AS) shocks have generalized effects in terms of different structural aspects, and if they coincide among the countries, then the common policy will be optimal for all (incl. Bulgaria).

Analytical framework

There are two key properties of OCAs that are essential for evaluating the overall benefits of a currency union: the level of openness, which refers to the extent of trade between partner countries, and the correlation of incomes, which captures various other characteristics over time (Frankel, 1999). Two contrasting paradigms with divergent implications have been proposed – the specialization hypothesis (Krugman, 1993) and the endogeneity hypothesis (Frankel and Rose, 1997). These hypotheses help analyze the factors that determine the suitability and benefits of a currency union.

The endogeneity hypothesis focuses on the idea that the characteristics required for an optimal currency area can emerge or develop over time within a currency union. Key aspects of the endogeneity hypothesis suggest that the process of joining a currency union can foster economic convergence among member countries. Through increased trade, investment, and policy coordination, countries can align their economic structures, institutions, and policies, leading to greater similarity and convergence in terms of inflation rates, business cycles, and other relevant factors. Proponents of the endogeneity hypothesis believe that through this convergence, member countries in a currency union become more resilient to asymmetric shocks. The alignment of economic structures and policies facilitates the adjustment and absorption of shocks. As member countries become more integrated and coordinated, they are better equipped to respond collectively to shocks, minimizing the adverse effects on individual economies.

The specialization hypothesis, in the context of an OCA, presumes that member countries within a currency union are characterized by a high degree of economic integration and specialization. When countries specialize their production within a currency area, they tend to allocate their resources and focus on industries or sectors in which they have a comparative advantage. This specialization can enhance efficiency and productivity, leading to economic gains and increased trade within the currency union. However, the downside of specialization is that it can make member countries more susceptible to supply shocks that affect their specialized sectors. If a supply shock, such as a natural disaster, significant changes in input prices, or disruptions in the supply chain, occurs in a specialized sector, it can have a disproportionate impact on the affected country or countries. As a result, the incomes of member countries may become less correlated due to the divergent effects of supply shocks on their specialized sectors. In other words, the economic performance and income levels of countries within the currency area may start to vary significantly.

This issue highlights a trade-off between the benefits of specialization and the vulnerability to supply shocks. While specialization can boost efficiency and trade, it also introduces a certain degree of risk if countries heavily rely on specific industries or sectors. Managing and mitigating the risks associated with supply shocks becomes crucial in ensuring the stability and resilience of a currency area. It should also be pointed out that the specialization theory focuses on the impossibility of making adjustments through the exchange rate (which is not possible for Bulgaria under the current regime of the Currency Board).

Few anticipated back in the 90s the rapid emergence of global value chains (GVCs) and the profound impact they would have on shock transmission. There is evidence that trade within value chains generates greater synchronization compared to trade in final goods (di Giovanni and Levchenko, 2010). GVCs

increase both specialization and synchronization (Duval et al., 2016), as AD shocks transmit throughout the supply chain. This challenges the dichotomy of the two paradigms (specialization vs endogeneity). However, agglomeration effects may occur when companies want to be located close to their customers, workers, and suppliers. People and financial capital want to do business where companies have their factories and offices. Taken together, these effects provide a compelling reason for economic activity to cluster in certain countries. This highlights the importance of further deepening and expanding the Single Market, ensuring that all Member States are fully integrated into the European value chain and actively participate in the common business cycle (Draghi, 2019).

The similarity of economic shocks can be seen as a “catch-all” property of OCA (Mongelli, 2002) as it captures the interaction between listed above OCA properties. On an empirical basis, recent empirical studies (Deskar-Škrbić et al., 2020; and Deskar-Škrbić and Kunovac, 2020) find that the decisions of Croatia, Bulgaria, Romania, Sweden, the Czech Republic, Hungary and Poland whether to actively join the euro area or follow a wait-and-see approach and remain outside the euro area cannot be explained by purely economic reasons - most countries show a fairly substantial similarity.

Data and methods

The extensive empirical analyses are based on Blanchard and Quah’s (1989) interpretation of GDP fluctuations as result of two distinct types of shocks: supply shocks that have a permanent impact on output, and demand shocks that only have a transitory effect on output. Many empirical studies utilize this framework to investigate the implications of these shocks on economic fluctuations and behavior. An application of this decomposition can be found in the OCA literature, including works by Bayoumi and Eichengreen (1992, 1997), Peersman (2011), Deskar-Škrbić et al. (2020) and Pekanov (forthcoming). They all explore a SVAR framework as part of the OCA theory, identifying demand and supply shocks for several European countries. Kunovac, Palenzuela, and Sun (2022) also measure, in addition to correlation, the relative importance of symmetric shocks using a historical decomposition.

Instead, the ECB typically employs a data-driven approach that is formulated after a vote by eligible voters, resulting in a gradual and staggered reaction. Therefore, the conventional decomposition of shocks is more suitable for analyzing the effects of recently experienced disturbances in European economies. This research focuses on the historical decomposition of the deterministic trend and supply and demand specific shocks.

The methodology consists in extracting from the prices and GDP data. For this purpose, a vector autoregression model (VAR) is first estimated, and then

restrictions are imposed on the behavior of the endogenous variables (Structural VAR). The methodological framework only allows us to identify the origin and size as well as the pace of adjustment.

Formally, this type of model can be represented by the following system of equations:

$$Ay_t = C(L)y_t + Bu_t \quad (1)$$

As y_t is a vector of n endogenous variables u_t are independent random variables with a normal distribution that perform the function of structural shocks driving the fluctuations.

Equation 1 can be represented as a weighted average sum of the structural shocks in the model:

$$y_t = \Gamma_0 u_t + \Gamma_1 u_{t-1} + \Gamma_2 u_{t-2} + \Gamma_3 u_{t-3} + \dots = \sum_{\tau=0}^{\infty} L^\tau \Gamma_\tau u_t \quad (2)$$

Γ_i represent the impulse responses of the endogenous variables. More specifically, in the article, the vector y_t consists of the change in GDP and prices, and the vector u_t contains the demand and supply shocks. Therefore, the model can be represented as:

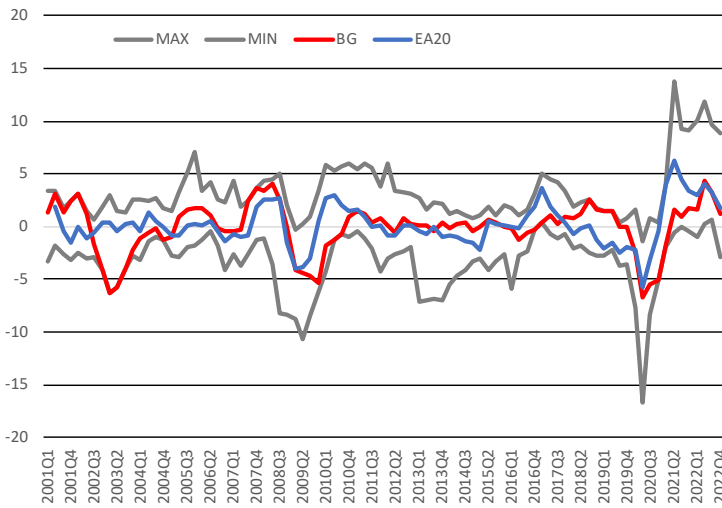
$$\begin{matrix} \Delta Y \\ \Delta P \end{matrix} = \sum_{\tau=0}^{\infty} L^\tau \begin{matrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{matrix} \begin{matrix} \text{Supply shock} \\ \text{Demand shock} \end{matrix} \quad (3)$$

ΔY and ΔP are the growth rates of GDP and consumer price index (HICP) measured on a y-o-y basis from 1997Q1 to 2022Q4 (based on Eurostat data) for all EU countries. The theoretical framework suggests that while supply shocks have lasting effects on the level of output, demand shocks have only temporary effects, so $a_{12}=0$ in the long run. However, both shocks affect the price level.

Empirical analyses

The results present an overall picture of the synchronization of shocks occurring across the EU over the last two decades. In terms of the dynamics of AD shocks Bulgaria is one of the countries that cover Min-Max level for the EU and is close to EA average, but there are larger deviations, especially at the beginning of the period. The 5-year moving average correlation indicates that by 2007, the country has a very weak correlation, but adjusts as a result of the common negative shock caused by the Great recession. Although the crisis in Bulgaria occurs with a significant delay, the shock on the demand side is further intensified and prolonged compared to the euro area. One of the reasons for this was the pro-cyclical austerity policy introduced by the government at the end of 2009.

After a period of stagnant aggregate demand and a significant internal correction of prices, the Bulgarian economy was gradually supported by impulses in demand related to the end of the program period for the absorption of funds from the EU cohesion policy, growth in lending, and real wages. Thus, for a short time in the pre-pandemic period of 2018 – 2019, there is already a positive divergence from the trend of AD shocks compared to the euro area. Due to the COVID-19 pandemic that hit Europe at the beginning of 2020 all economies were synchronously affected as the measures taken to reduce the spread of the virus (particularly during the second and third waves in Bulgaria) had a more pronounced impact on contact-intensive sectors. The more moderate fiscal support response of the Bulgarian government compared to that of most euro area countries is the most likely reason for some deviation in the correlation of the aggregate demand shock until the onset of another significant energy price crisis. It is noteworthy that after the onset of the energy crisis, the AD shock in Bulgaria moves in sync with that in the euro area, indicating that the economy as a whole reacts similarly to exogenous changes, and the differences primarily stem from variations in the fiscal policies of the respective governments.



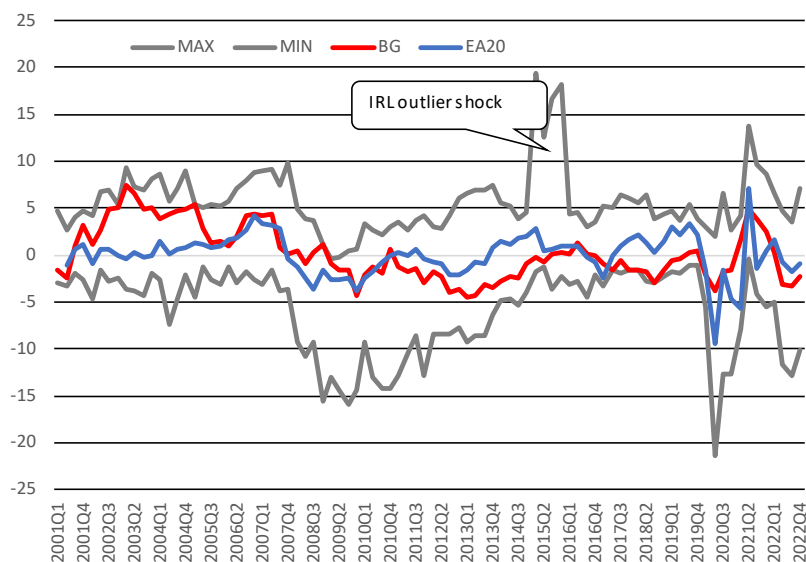
* Min minimum value in EU countries, Max maximum value in EU countries, EA20 values for euro area, BG – values for Bulgaria

Source: Own calculations

Figure 1: Aggregate demand shock dynamic across EU 2001Q1 – 2022Q4

Regarding shocks in AS the time period being considered also affects the capital stock transformation in Bulgaria. Starting from a low base and high

unemployment, there is a stronger impulse in supply at the beginning, which overlapped in 2005 with the overall regional and even global investment expansion until the onset of the Great Recession in 2008. It is characteristic of Bulgaria that the initial restriction on the supply side (mainly a decrease in capital investment and a reduction in the employed workforce) is fully synchronized with that in the euro area. However, since 2012, supply has lagged behind due to low investment activity and the lack of adequate government policies regarding public investment or private incentives.



* Min minimum value in EU countries, Max maximum value in EU countries, EA20 values for euro area, BG – values for Bulgaria

Source: Own calculations

Figure 2: Aggregate supply shock dynamic across EU 2001Q1 – 2022Q4

The shock from the pandemic and the constraints on the value chain supply similarly affected AS in Bulgaria and the euro area. It is worth noting that the negative shock of 2020 recovered in a similar to euro area manner in 2021, indicating a sufficient level of supply diversification in our country. The subsequent shock in energy sources since the end of 2021 and Russia’s war in Ukraine in early 2022 brought new supply uncertainties and immediate disruptions to electricity and gas markets across Europe. The lack of action from businesses and the Bulgarian government to reduce energy needs and dependencies in our country led to a widespread supply shock, despite the relatively low gas consumption share and

compensations scheme for electricity bills of business units. Data shows that demand has recovered by the end of 2022 compared to 2019, but the weak supply is what ensures a positive production gap and, consequently, inflationary pressure.

Of interest to the research are not only the specific shocks in supply and demand but also the deterministic trend, which is formed as a “no-change scenario”. In the monetary union, the absolute value of interest rates, in addition to the monetary policy reaction, is also of importance. A deviation of the interest rate from its natural rate can trigger an expansionary or restrictive stance. Despite the fact that the AS and AD shocks between Bulgaria and the euro area appear to have the same root and a similar terms of correlation and contribution to economic growth and inflation, the deterministic trend in Bulgaria is higher by about 1 percentage point compared to the euro area average.

This higher value of deterministic trend can be interpreted as a catch-up effect to technological frontier, similar to a gradual catch-up in price level. However, it should be clarified that there is still no consensus on how the higher rate of such catch-up (based mostly on total factor productivity) affects the natural interest rate. According to neoclassical theory, a higher rate of technology growth rate affects the natural interest rate depending on the inverse elasticity of intertemporal substitution. If people are “savers”, most of the new income will be directed towards savings, resulting in a lower natural rate, and vice versa. Given the longer life expectancy and the aspiration of households to be “savers” until the age of 70-75, it is currently challenging to draw a definitive conclusion about the effect of the deterministic trend on the absolute value of the natural interest rate and, consequently, the possible position of monetary policy. It is important to note that the ECB has presented its new instrument for protection transmission mechanisms (TPI). TPI and specific macroprudential measures may be more necessary in the future when natural interest deviates from ECB interest rates.

The data allows us to consider another specific aspect of the criticism regarding the adoption of the euro. In the “European Core” countries exhibit at least 70-80% similarity in the aggregate demand shocks they experience. Spain and Italy, often considered “peripheral” countries, are not only significantly behind but also exhibit important regions of high correlation with the European core in terms of aggregate demand shocks. However, it should be noted that Italy has been severely affected by both COVID-19 and the energy crisis. This serves as a signal that countries with certain specializations may experience asymmetric impacts within the monetary union. The uncertainty inherent in economic phenomena necessitates an increase in the public administration’s ability to handle shocks and enduring structural changes. A notable manifestation of this direction at the EU level is the implementation of the first centralized mechanism in the EU, known as the Recovery and Resilience Mechanism, which is financed through

common EU debt instruments. Such precedents provide confidence that future economic policies will consider the need for common financing for a permanent stabilization fund.

Conclusion

The current article presents evidence that the fluctuations in the Bulgarian economy are similar in origin and impulse effect to those of the euro area. The experience after exogenous shocks, such as the Covid-19 pandemic and Russia's war in Ukraine, gives us new data that the slower rates of income convergence in our country are rather the result of heterogeneous domestic (fiscal) policies. This calls into question claims that Bulgaria would accumulate negatives and become poorer if it joined the euro area below some "mystical" threshold of per capita income relative to the EMU average. There is similarity in Bulgaria and the euro area's shocks even at the current lower level of Bulgaria's GDP per capita compared to EU/EA. Part of the explanation is that the Bulgarian economy engages a large part of its international trade with the euro area, and the binding of the monetary regime partially transmits the effects from ECB policy decision to the domestic sectors. This leads us to the conclusion that euro adoption would not bring significant costs in terms of stabilization policies and economic development. It remains valid with the requirement that the Bulgarian authorities, in case of possible specialization of the economy, take care of the resilience to AS shocks through the appropriate policies.

In the wake of the pandemic, Russia's unjustified war on Ukraine, energy "weaponization" and the growing rivalry between the United States and China, the tectonic plates of geopolitics are shifting faster. We have an elevated level of regional and global uncertainty. Rules are usually fixed and constrain governments to adhere to discretion actions, while institutions achieve targeted goals depending on their instruments. Therefore, rules cannot be updated quickly when unforeseen circumstances arise, while institutions can be dynamic and use flexibility in their approaches. This distinction is of great importance in economic discussions about the extent to which Bulgaria is losing or gaining discretion. What the euro area offers against this uncertainty is an institution armed with a clear mandate and the discretion to use whatever tools are necessary to fulfill it.

After all, citizens are more often interested in the results of economic policy than in actions. The monetary integration is likely to produce more net benefits for a larger group of countries scoring highly under most OCA properties (mostly similarity of shocks): this may explain why the euro area now has more members than would have seemed possible since Great recession.

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