JOINING THE EURO ZONE – AN EXPLORATION OF REAL AND STRUCTURAL CONVERGENCE IN ROMANIA, BULGARIA AND CROATIA

Assist. Prof. Horatiu DAN, PhD[1]
Babeş-Bolyai University, Romania,
Faculty of European Studies

Abstract: Twenty years after the creation of the Euro Zone, the monetary union remains the subject of both academic and political debate, often focusing on non-EZ Member States and their monetary integration aspirations (or lack thereof). In this context, one of the many hurdles in the way of Euro adoption lies in the incomplete character of the sine qua non conditions expressed in the Maastricht Treaty, which, although the only set of convergence conditions expressed in the European acquis, are universally deemed to be insufficient for successful EZ membership. Consequently, these nominal convergence conditions need to be doubled by less transparent real and structural convergence conditions. It is the objective of this paper to analyse some indicators pertaining to real and structural convergence in Romania, Bulgaria and Croatia by focusing on key aspects regarding (1) the capacity to catch up with EU's PPS computed GDP per capita mean, (2) specialization, (3) business cycle synchronization and (4) current account structure. While recognizing that these four elements are not sufficient to ensure successful EZ membership, including them as inputs in the Euro adoption decision making process would have beneficial impact on its efficiency.

Key words: Euro Zone, real convergence, structural convergence.
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[1] *E-mail: horatiu.dan@ubbcluj.ro*

Introduction

I n light of the political (as an obligation stipulated in the Accession Treaties) and cultural imperatives of adopting the Euro, answering the pure economic question regarding the efficiency of such an action must hand in hand with the political opportunity of Euro Zone (EZ) membership, especially in the context of the debate surrounding a potential restructuring of the EU that was initiated by the European Commission (2017) via its White Paper on the Future of Europe.

The economics of Euro adoption proves however to be a highly debated issue, as the European debt crises that debuted in 2009 and sent cold chills throughout the EZ in the following years has revealed deep structural problems of the conditions expressed in the *Maastricht Treaty* in ensuring an efficient EZ functioning. In this context, economists scrambled to devise a more comprehensive approach to new membership by focusing on a better coverage of what we call the convergence trinity, i.e. attaining a sufficient level of convergence from a nominal, real and structural standpoint.

Having this in mind, and since the *sine qua non* conditions for nominal convergence expressed in the *Maastricht Treaty* are to be ascertained rather than analysed, it is the objective of this paper to analyse some indicators pertaining to real and structural convergence in Romania, Bulgaria and Croatia by focusing on key aspects regarding (1) the capacity to catch up with EU's PPS computed GDP per capita mean, (2) specialization, (3) business cycle synchronization and (4) current account structure. While recognizing that these four elements are not sufficient to ensure successful EZ membership, we argue that including them as inputs in the Euro adoption decision making process would have beneficial impact on its efficiency.

Nominal Convergence – Necessary, but not Enough

It is known that consensus among economists can be a rare thing, however the insufficient character of nominal convergence for successful EZ membership represents one of those rare happenings. Consequently, even though the European treaties do not specify any other EZ membership conditions other than these nominal criteria (which remain legally required and non-negotiable), the European Central Bank and other European institutions involved in the process of Euro adoption by new Member States, not to mention national central banks and governments, are scrambling to find additional criteria that would make the Eurozone more efficient.

Regarding the three Member States that are the subject of this analysis and their EZ ambitions, the discussion must depart from the status of nominal convergence, as attaining this kind of convergence is necessary, although not sufficient. More precisely, Romania entirely fulfilled the Maastricht criteria, except that it has not yet applied for ERM II, between 2015 and 2018, with the situation deteriorating in 2018 regarding the long term interest rate, which was 4.1%, well above the maximum admitted level of 3.2%, according to the European Central Bank 2018 Convergence Report. The same report reveals that Croatia fails to fulfil the debt to GDP criterion and is not part of ERM II, while Bulgaria fulfils all criteria with the exception of the ERM II participation, which is however politically determined to join in the near future, as the Bulgarian government has approved an action plan with this goal.

In this context, we will proceed by with the pursuit of the analysis of some indicators pertaining to real and structural convergence in Romania, Bulgaria and Croatia by focusing on key aspects regarding (1) the capacity to catch up with EU's PPS computed GDP per capita mean, (2) specialization, (3) business cycle synchronization and (4) current account structure.

Real Beta Convergence Analysis

As stated before, in addition to the fulfilment of the *sine qua non* conditions expressed in the *Maastricht Treaty*, other economic requirements are also to be met. These requirements are linked, on one hand, with what is known as *real beta convergence*, *i.e.* the capacity of poorer countries to catch up with EU's PPS computed GDP per capita mean, and on the other hand on structural compatibility between the economy of the non-EZ Member State and that of the EZ. Table 1 depicts the GDP per capita (PPS) in Bulgaria, Croatia and Romania relative to EU28 and EZ19.

Table 1
GDP per capita (PPS) relative to EU28 and EZ19

	2017	
	% of EU28	% of EZ19
EU28	100.0	94.1
EZ19	106.3	100.0
Bulgaria	50.5	47.5
Croatia	61.5	57.9
Romania	62.5	58.8

Source: data provided by Eurostat.

An analysis of Romania's *real beta convergence* reveals that, based on Eurostat data observed between 2005-2017, Romania's GDP per capita (PPS) grew with 88.8%, compared with 27.1% increase registered for EU28 and 24.8% increase for the EZ19 economies, leading to a 2017 snapshot revealing a level of convergence of 63% with EU 28 and 59.4% with EZ19, significantly increased from 39% and 36.8% respectively in 2006. The 2017 situation looks similar in the case of Croatia, which exhibited in 2017 a GDP per capita (PPS) of 62% relative to EU 28 (compared to 58% in 2006) and 58,5% relative to EZ19, while in the case of Bulgaria convergence is at a much lower level, with Bulgarian GDP per capita (PPS) being in 2017 only 49% of EU28 (compared to 37% in 2006) and 46.2% of EZ19.

The consequences of the Romanian accelerated pace of convergence and the resulting 2017 level have been widely undermined by scholars opposing Romania's speedy Euro adoption, who argue that a much higher level of convergence is needed to ensure compatibility with the ECB's monetary policy. Such a level has been suggested by Dăianu *et al.* (2016) at 75%, mirroring the threshold determining less developed regions that will receive preferential access to funding under the EU's cohesion policy. In the case of Bulgaria and Croatia, the pace of convergence has been significantly slower.

The sufficient level of real beta convergence is highly debated. As Romanian National Bank governor Mugur Isărescu (2015) noticed in a presentation held at a thematic conference organized by the institution, "even though there are no accurate criteria indicating sufficient real convergence for the successful Euro adoption, a common-sense benchmark would be the minimum real convergence level at which NMS entered the Euro area - 58.3% for Estonia, 59.6% for Latvia, 65% for Slovakia". More recently however, the governor and the institution he heads have abandoned this approach in favour of requiring a higher level of real convergence before Euro adoption. This moderation of fast application for EZ membership can be related to concerns regarding potential drops in the standard of living, correlated with the fact that "markets have never played a salient role in running the Romanian economy" (Croitoru, 2015).

This differs from the approach of Bulgaria, which entails the accelerated pursuit of EZ membership even though its level of real convergence with EZ19 is significantly lower than that of other new EZ members at the time of joining.

Structural Convergence Analysis

As a consequence of the requirements of fulfilling the *convergence trinity* (nominal, real, structural), the next step is to analyse elements pertaining to structural convergence, *i.e.* the increase in bilateral sector similarity associated with convergence in *per capita* income (Wacziarg, 2014). In order to determine the degree of structural convergence we will take into account key variables that influence either monetary policy decisions, the unemployment rate or the ability to successfully benefit from the EZ membership, namely specialization, business cycle synchronization and the current account structure. Such an analysis, ignored by many previous studies on the topic, is crucial for any Euro adoption decision, especially because, as Buti and Turrini (2015) notice, the first years of the EZ's functioning reveal that structural convergence is not an automatic effect of nominal and real convergence, thus obstructing monetary policy efficiency. Bearing this in mind, our research devotes special attention to the issue of Bulgaria's, Croatia's and Romania's structural convergence with EZ, analysing four main components: unemployment rate, current account, business cycle and economic specialization.

The first structural component that we focus on revolves around the unemployment rate, where Romania's much better situation compared with that of EZ19 (3.9% compared to 7.9% in November 2018, according to Eurostat) could at a first glance indicate an element of divergence. However, a closer look reveals that if we are to remove outliers from the statistics, namely Greece and Spain (unemployment rates 18.6% and 14.7% respectively) the difference between Romania's unemployment rate and that of the adjusted EZ17 diminishes considerably. Moreover, Romania's rate is closer to both the median of the series (5.35%) and the first quartile (4%), diverging less from the unadjusted mean than those of EZ members like Germany, Netherlands or Italy. These results are endorsed also by the longitudinal perspective, as the average difference between Romania's unemployment rate and that of the EZ for the period 2008-2018 is 2.72%, a level that is manageable for the purpose of formulating common monetary policy decisions. In the cases of Bulgaria and Croatia, variation to EZ19 is even lower, as it can be seen from Table 2.

The relative situation of the current account is another element that influences structural convergence, as large deviations can negatively influence the efficiency of EZ monetary policy. However, any discussion regarding an EZ candidate's current account needs to be contextualized with the high degree of divergence that already exists within the EZ. As several scholars notice (Rusek, 2015; Brinke, Henrik & Fritz-Vannahme, 2015; Stiglitz, 2016), the EZ is split into two groups: one accumulating large current account surpluses (generally referred to as the Northern group), while the other

(generally referred to as the Southern group) after exhibiting sizable deficits before 2011 has managed, mainly as a result of the post-crisis fiscal contraction, to reach positive territory on average. Table 3 below summarizes the current account to GDP ratio in the three analysed countries.

Table 2
Unemployment in EZ 19, Bulgaria, Croatia and Romania

	Euro area (19 countries)	Bulgaria	Croatia	Romania
2008	4.7	3.4	5.0	3.4
2009	6.0	4.0	5.4	4.0
2010	6.4	6.0	6.7	4.2
2011	6.4	6.5	7.8	4.2
2012	7.2	7.2	9.1	4.1
2013	7.6	7.7	9.8	4.2
2014	7.4	6.9	10.1	4.1
2015	6.9	5.5	9.5	4.1
2016	6.4	4.5	7.5	3.5
2017	5.8	3.8	6.5	3.0
2018 (Nov)	7.9	5.4	7.8	3.9

Source: Eurostat

Table 3
Current account to GDP ratio in Bulgaria, Croatia and Romania
 (% of GDP)

	Bulgaria	Croatia	Romania
2016Q2	4.0	1.0	-5.1
2016Q3	10.4	25.5	-1.5
2016Q4	-3.3	-5.6	-1.2
2017	6.7	3.9	-3.2
2017Q1	2.5	-13.7	-2.1
2017Q2	5.8	0.9	-6.3
2017Q3	19.1	28.0	-2.6
2017Q4	-1.6	-4.4	-2.1
2018Q1	-1.2	-17.8	-2.9
2018Q2	0.9	1.6	-5.6

Source: Eurostat

Analysing the evolution of the three considered non-EZ Member States current account to GDP ratios between 2006 and 2017, one easily identifies a common pattern with many EZ members that fall within the Southern group, showing that in a bipolar environment mainly Romania, but also Bulgaria and Croatia, do indeed converge with one of the groups, thus not adding overall extra divergence. This situation is depicted in Figure 1 below. It is true that this convergence comes in the context of a floating exchange rate and the subsequent exchange rate variation, with the exception of the Bulgarian lev, which is pegged to the Euro. However, it can be argued that the floating exchange rates induce a limited effect on the current account adjustment.
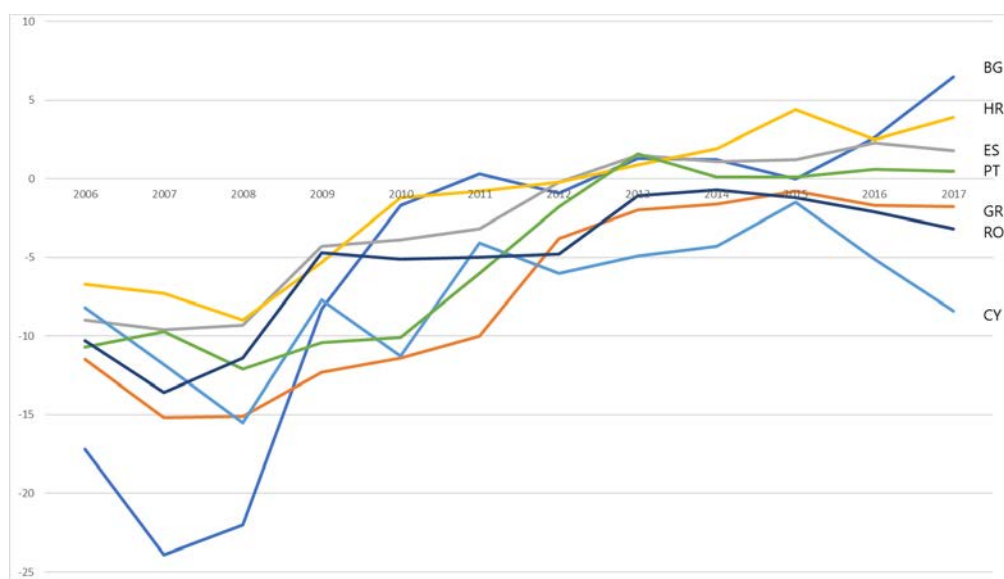
Source: Own plotting based on Eurostat data.
*Figure 1. **Current account to GDP ratio - selected countries***

Focusing on the business cycle as a component of structural convergence, we have first proceeded to analyse business cycle synchronization in the EZ and the three considered non-EZ Member States, as graphically depicted in Figure 2 below.
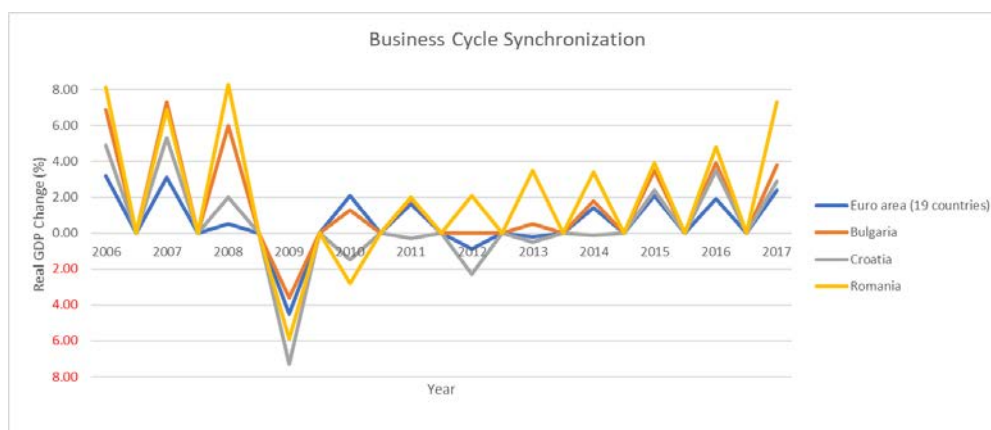
Source: Own plotting based on Eurostat data

Figure 2. ***Business Cycle Synchronization (EZ 19, Croatia, Bulgaria Romania)***

This data leads to the conclusion that, despite the differences in GDP levels and the presence of steeper expansion and contraction periods (especially in the case of Romania), the pairs of business cycles are fairly synchronized (BG– EZ19, RO– EZ19 and, to a lesser extent HR–EZ19) and thus accommodating a common monetary policy does not raise a problem from this perspective. This conclusion is backed by the findings of Frankel and Rose (1998) pointing out the existence of a strong positive relation between the increased trade intensity resulting from the participation in the monetary union and the correlation of business cycles across its members and therefore a country is more likely to satisfy the entry criteria *ex post* than *ex ante*.

The results of the analysis are corroborated by data regarding output gap (i.e. the difference between the actual and the potential output of the economy) synchronization. According to the European Commission (EC, 2018), all three considered Member States closed their output gap in 2017 (which turned positive), with positive expected future dynamics in the cases of Croatia and Bulgaria and an expectation of output gap narrowing in the case of Romania, which indicates that the increased demand shifts the economy from unallocated potential to overworking of resources, thus creating inflationary pressures. This phenomenon is consistent with the EZ dynamic, as, with the exception of Romania's predicted evolution, the output gap evolutions mirror that of EZ, a trend that is visible by looking at the data presented in Table 4 (EC, 2018).

Table 4

Gap between actual and potential gross domestic product at 2010 reference levels (% of GDP)

	Euro area	Bulgaria	Croatia	Romania
2020 (est.)	0.76	0.97	2.52	-0.32
2019 (est.)	0.63	0.62	2.33	0.17
2018 (est.)	0.31	0.29	1.62	0.51
2017	-0.18	0.13	0.57	1.49
2016	-1.15	-0.49	-0.66	-1.09
2015	-1.96	-1.53	-2.54	-2.20
2014	-2.63	-1.81	-4.15	-2.69
2013	-3.17	-1.18	-3.80	-3.51
2012	-2.33	-0.38	-3.64	-4.81
2011	-1.21	0.36	-1.98	-4.60
2010	-2.15	-0.90	-2.11	-4.95

Source: European Commission (AMECO)

Moreover, Frankel and Rose (1998) point out the existence of a strong positive relation between the increased trade intensity resulting from the participation in the monetary union and the correlation of business cycles across its members and therefore a country is more likely to satisfy the entry criteria *ex post* than *ex ante*, thus strengthening the argument for a speedy Euro adoption. Indeed, after analysing EZ business cycle synchronization since 2000, Gomez *et al.* (2017) conclude that the stable synchronization observed at the beginning of the analysed period has risen after the financial crisis as a consequence to a sharp rise in co-movements. Such a conclusion is also stemming from the research of Beck (2016), who finds a high degree of business cycle synchronization between EZ members, especially at regional level, thus dismissing Krugman's argument that the elimination of economic barriers would lead to specialization and subsequently to region-specific shocks affecting output (Krugman, 2001).

However, it must be noted that the classical OCA theory on the topic of business cycle synchronization is subject to intense academic debate, as other research finds evidence that contradicts it by arguing that differences in wage setting behaviour within the EZ contributes to divergent business cycle co-movement, thus making a common monetary policy approach less efficient (Gächter, Gruber & Riedl, 2017). This type of interaction between business cycle synchronization and changes in real unit labour cost differentials is confirmed by Lukmanova & Tondl (2017), who find that the relationship is bi-directional. This is a fact of high importance in the context in which, according to Eurostat data, during the last fifteen years wages have increased in Bulgaria, Croatia and Romania at a faster rate than in the EZ. Nonetheless,

it is our view that, even if this argument highlights yet another shortcoming in the functioning of the Euro Zone as a whole, the discussion regarding Euro adoption goes beyond the OCA academic debate and the above mentioned criticism to the EZ's structure does not constitute a decisive element for abandoning Euro adoption provided that the new member exhibits a sufficient level of business cycle synchronization when joining EMU, despite a faster pace of labour cost increase, which seems to be the case of the three considered Member States.

Finally, our analysis of structural convergence focuses on the degree of similarity in the specialization patterns of the three pairs of economies (*i.e.* Bulgaria and EZ, Croatia and EZ, Romanian and EZ), as according to Marelli (2007) the asymmetry of shocks under a common monetary policy concerns primarily the sector structure. To measure Bulgaria's, Croatia's and Romania's relative level of specialization compared with EZ19, we have used Eurostat data to calculate the *Krugman Specialization Index* (KSI), an instrument that uses data regarding the gross value added share of each economic sector (Mongelli, Reinhold & Papadopoulos, 2016). Its values range from zero, when the two economies have exactly the same production structure, to two when the production structures are completely different (Krugman, 1991, p. 76).

The results shown in Table 5 indicate that KSI (Romania, EZ19) = 0.246, KSI (Bulgaria, EZ19) = 0.247 and KSI (Croatia, EZ19) = 0.194 illustrating, in the case of the first two, a better degree of convergence than EZ19 member states like Luxembourg, Germany, Italy, France, Spain, Ireland, Slovakia, Lithuania, Greece, Cyprus or Malta and a similar one with that of Netherlands or Latvia, while KSI (Croatia, EZ19), although lower than in the cases of Romania and Bulgaria, still reflects better convergence than in the cases of France, Italy or Germany (Figure 3). Moreover, according to Wacziarg (2014), specialization is due to converge as *per capita* income does, a dynamic that is confirmed by the development of the considered economies relative to EZ19 in the last two decades, thus indicating that the sector differences will become even smaller in time.

Table 5.

Specialization structure relative to EZ19 (gross added value, % of total), KSI

	EZ19	RO	BG	HR	Absolute distance EZ/RO	Absolute distance EZ/BG	Absolute distance EZ/HR
Agriculture, forestry and fishing	1.5	4.4	4.1	3	2.9	2.6	1.5
Industry (except construction)	18.1	24	21	17	6.1	3	0.8
Construction	4.6	5.9	3.6	4.3	1.3	1	0.3
Manufacturing	15.5	NA	15	13	NA	0.8	3
Wholesale and retail trade, transport, accommodation and food service activities	17.1	19	19	19	1.5	2.1	1.6
Information and communication	4.2	5.1	5.3	3.8	0.9	1.1	0.4
Financial and insurance activities	4.1	2.8	5.8	5.1	1.3	1.7	1
Real estate activities	10.1	7.7	8.7	7.1	2.4	1.4	3
Professional, scientific and technical activities; administrative and support service activities	10	6.9	5.3	6.9	3.1	4.7	3.1
Public administration, defense, education, human health and social work activities	16.9	12	12	13	5	5.1	4.3
Arts, entertainment and recreation; other service activities; activities of household and extra-territorial organizations and bodies	3.1	3.2	1.9	2.7	0.1	1.2	0.4

KSI (Romania, EZ19)	**0.246**
KSI (Bulgaria, EZ19)	**0.247**
KSI (Croatia, EZ19)	**0.194**

Source: Eurostat data and own calculations

KSI relative to EZ19
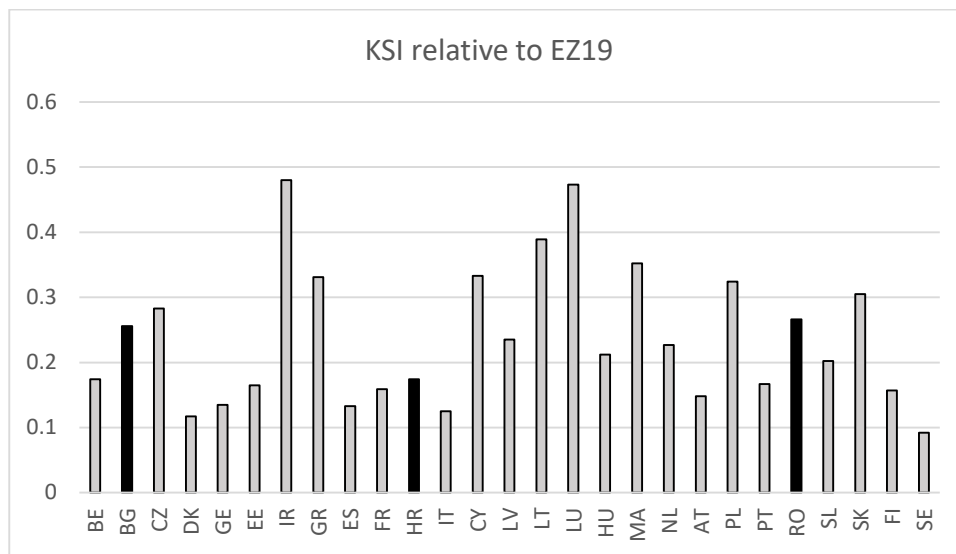
Source: Own calculations and plotting based on Eurostat data.

*Figure 3. **Krugman Specialization Index (KSI) relative to EZ19***

Conclusions

The Euro decision (or, more precisely, the discussion regarding the moment of the adoption) is clearly a complex one, with both economic and political elements shaping it. From a strictly econometric perspective, our findings indicate that the process of Euro adoption in Bulgaria, Croatia and Romania is sustainable, although not lacking economic variables that could induce considerable unbalances if the post-joining period is not managed in an efficient manner by governments, who must fully understand how the loss of monetary policy instruments affects their fiscal policy space. From this perspective, Bulgaria is in a better position since its currency is already pegged to the Euro, but this could be counterbalanced by the fact that, out of the three considered countries, Bulgaria has the weakest convergence position. However, the question regarding the exact moment that would maximize the macroeconomic outcome of this shift, ranging from the next two or three years to the next ten, remains a complicated one due to the unpredictable political climate currently shaping the European Union and its future. As Dăianu *et al.* (2016) argue in their comprehensive analysis, looking at the matter at hand from the economic perspective would demand waiting until a higher level of convergence is met, a situation that is valid in the cases of all three countries analyzed in our paper. This pure economic approach is

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nuanced by other researches, like the case of Maniu (2018), that argue that other factors of political, social and cultural nature should also be taken into consideration.

To sum things up, our analysis indicates that the three economies fulfil, up to certain degrees, the main conditions of real and structural convergence, without this necessarily meaning that immediate EZ membership should be pursued.

More precisely, GDP per capita figures indicate that Romania and Croatia are in a better real beta convergence position than Bulgaria, as Romania's GDP per capita (PPS) grew with 88.8%, compared with 24.8% increase registered for EZ19, leading to a 2017 snapshot revealing a level of convergence of 59.4% with EZ19 (significantly increased from 36.8% in 2006), while outlook is similar in the case of Croatia, which exhibited in 2017 a GDP per capita (PPS) of 58,5% relative to EZ19. In Bulgaria's case on the other hand, real convergence is at a significantly lower level, as GDP per capita (PPS) was in 2017 only 46.2% of EZ19, this being, in our opinion, the biggest threat to a successful Bulgarian EZ membership if this were to take place in the near future, as the Bulgarian government aims.

From a structural perspective the analysis shows that an adequate degree of convergence is present when it comes to the current account to GDP ratio, business cycle synchronization and economic specialization, thus indicating that the three considered economies economy could potentially successfully accommodate ECB's monetary policy.

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