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A Comparative Analysis of Macroprudential Policy across Euro Area Candidate Countries

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Abstract

Concerns to setting an appropriate overall macroprudential policy framework have taken shape at local, regional, and global level since the onset of the global financial crisis. At regional level, a particular case is that of the European Union, given the national-supranational relationship specific to this economic region. The article aims to identify the macroprudential policy condition of the Euro Area candidate countries, by using an index built on some criteria that describe on the one hand, the capacity of macroprudential policy governance and the "activism" of macroprudential authority, and, on the other hand, the degree of compliance with the European Systemic Risk Board (ESRB) recommendations for national macroprudential authorities, given that the countries under review are member states of the European Union. Our findings show that the Euro Area candidate countries have quite different macroprudential policy features, both in terms of its governance and in terms of the "convergence" towards ESRB recommendations. Although the analysis should be extended by adding other relevant criteria, we can assert that it offers an overview of the potential role of the national macroprudential policy as a shock-absorber instrument in the perspective of a future accession to the Euro Area.

Keywords: financial stability, macroprudential authority, central bank, monetary union, adjustment tool

1. Introduction

Macroprudential policy is becoming increasingly important due to changes following the global financial crisis, and the concerns to identifying an appropriate framework for this policy are show both at global level and regional/local level. The topic is even more relevant in the context of a currency area, especially if member states have a high degree of heterogeneity and the monetary policy is no longer a national instrument for adjustment local imbalances.

Although many countries, especially those with emerging economies, have used macroprudential instruments before and already are quite experienced, they have not been concerned in setting up an institutional framework of this policy's implementation. The measures were rather quick responses of authorities' adaptation in case of shocks or in the conditions of financial crises, currency crises, etc.

Worldwide, there are various institutional arrangements designed to include the macroprudential policy; the central bank is involved in this policy and in most cases plays the most important role. European Union Regulation no. 1092/2010 states that the European Central Bank and the national central bank should play a leading role in macroprudential oversight. Furthermore, according to the Recommendation of the European Systemic Risk Board on the macroprudential mandate of national authorities (hereinafter, the "ESRB/2011/3"), the member states of the European Union (EU) are advised to ensure that the central bank plays a major role in macroprudential policy. In addition, its application must not affect the independence of the monetary authority, concordantly with Article 130 of the Treaty on the Functioning of the EU.

Macroprudential policy is not only a tool to prevent the accumulation of vulnerable elements in the financial system, but also to correct some imbalances produced in macroeconomic terms. Implementing the national macroprudential policy is of a particular interest for a currency area. The significance of this policy is even greater if member states have a high degree of heterogeneity, as it could be used as macroeconomic instrument for adjusting local imbalances.

Euro Area consists of countries whose business and financial cycles are not synchronized, and whose structural differences are quite large. Hence, the national macroprudential policy should be an important pillar of the local

macroeconomic framework, compensating to some extent for the loss of flexibility previously offered by the national monetary policy.

Based on these remarks, we consider that the analysis of macroprudential policy features is an important research topic, especially in the case of EU countries and the Euro Area, given the national-supranational relationship specific to this economic and monetary region. In this context and under the conditions of preparation for euro adoption, in addition to pursuing a sustainable economic convergence (nominal and real), Euro Area candidate countries are challenged to set up a viable macroprudential policy. Moreover, the Euro Area candidate countries, namely Bulgaria, Croatia, Czechia, Hungary, Poland, and Romania, have certain specific characteristics, with economies integrated into EU structures, vulnerable to capital flows, with foreign-dominated banking systems, with a lower level of intermediation, which require separate treatment from Euro Area countries. For that matter, as Mérő & Piroska (2018) suggested, a reorganization of the Banking Union by reallocating macroprudential mandates as to involve these non-Euro Area countries, would have a positive impact on the financial stability across the EU. Progress has been made in this direction given that Bulgaria and Croatia have already joined the Banking Union on 1 October 2020.

2. Paper Background

There are many studies that address the topic of macroprudential policy, but the theoretical framework is still in its infancy and lags behind the practice, given that since the outbreak of the global financial crisis the world's economies have gone through a series of "crises" that require rapid decisions concerning the application of macroprudential measures.

In recent years, the literature in this field has grown exponentially. Galati & Moessner (2011) review the literature on macroprudential policy, and Claessens (2015) presents an overview of macroprudential policy instruments. Issues such as the relationship between macroprudential policy and economic growth (Boar et al., 2017; Ma, 2020; Sánchez & Röhn, 2016) or the efficiency of using different macroprudential instruments (Lim et al., 2011; Poghosyan, 2019) are analysed. One of the necessary conditions for the application of these measures in an effective way is related to the coordination between macroprudential and monetary policy (Angeloni & Faia, 2013; Beau et al., 2012).

The economic literature provides different results for the influence of macroprudential policies on economic growth. While it is sure enough that their implementation reduces the frequency of crises episodes or helps to make them less serious, it may come with an attenuation of growth in good times. Although they recognize that the macroprudential policy is rather a new instrument and its effects need more time to be correctly evaluated, Sánchez & Röhn (2016) suggested that making use of it allows avoiding extreme increases and in average is coupled with lower growth. Recently, after applying a calibrated model, Ma (2020) concludes that when using macroprudential policies to strengthen financial stability, the associated effect is only a marginal loss for the economic growth, recommending as pertinent these policies. Boar et al. (2017) sussed out that a beneficial effect on economic growth (considering both the growth rate and its volatility) appear only when the macroprudential tools are currently used; this effect is also dependent on financial development and economic openness. The role of foreign direct investment for the economic growth is well known in the literature (Alfaro et al., 2010). This relation depends on income levels (Baiashvili & Gattini, 2020) or is more evident in the long run in developing countries (Dinh et al., 2019) but also the increasing financial interconnections and capital flows (especially in Central and Eastern European countries) give rise to new challenges for macroprudential authorities. The peculiarities of some new European Union member states (members and non-members of the Euro Area) regarding macroeconomic indicators, sentiment, confidence and investor perception and foreign direct investment are discussed in Badea et al. (2018).

There are also studies that address regional features of macroprudential policy. In this regard, Dumičić (2018) analyses the effectiveness of macroprudential measures applied in countries from Central and Eastern Europe, while Dimova et al. (2016) focus their analysis on countries from South-Eastern Europe. Recently, Budnik & Kleibl (2018) created an extensive database for EU countries (for the period 1995-2014) on macroprudential policy, applied instruments, objectives pursued, etc.

Among the representative studies on the quantitative evaluation of macroprudential policy based on the construction of specific indicators are Lim et al. (2013), which quantifies the role of central banks and governments in the size and complexity of economies, and Cerutti et al. (2017), which analyses the evolution of credit growth in relation to macroprudential measures applied in 119 countries. Lombardi & Siklos (2016) develop the topic by proposing a broader assessment of the capacity to implement macroprudential policy. In this regard, the authors project a wider indicator addressing the issue based on two criteria: one on how to configure the framework of macroprudential policy, and another on the degree of convergence with the objectives set by the Group of 20 economies and the Financial Stability Board.

Brzoza-Brzezina et al. (2015) discuss the desirability of using macroprudential policy as an adjustment tool in a

monetary union, concluding that its application by Euro Area periphery countries can help reduce their macroeconomic imbalances, but that its effectiveness depends on decentralization. In other words, the macroprudential policy available to the member states is an adjustment tool in a monetary union. Therefore, increasing the capacity of national macroprudential policy, especially in countries belonging to supranational structures, such as the Euro Area, is a necessity and thus a topic of interest for research.

Starting from these observations, the present article aims to identify condition of the national macroprudential policy for Euro Area candidate countries, achieving a ranking in terms of some features of the macroprudential policy. The research is motivated by the fact that with the accession to the Euro Area, an important instrument of macroeconomic adjustment, i.e. monetary policy, is lost, making it necessary to activate and strengthen national macroeconomic instruments, capable of restoring the balance of power.

3. Area Descriptions

Identifying the condition of macroprudential policy for a comparative analysis across countries is a complex task, including several areas, such as: the institutional profile given by the type of management, the sphere of responsibility of the authority, as well as by its decision-making power in this field; the operational profile for implementing macroprudential policy; the organizational profile of the central bank regarding the financial stability, etc.

In practice, there are two types of macroprudential policy management: on the one hand, based on inter-institutional coordination, which involves pursuing the objective of financial stability through the use of the instruments and expertise of each authority involved, and on the other hand, a single management, entrusted to a single authority (either committee or central bank). The governance by an inter-institutional coordination can generate conflicting opinions and strategies (Ingves, 2011) and in addition can dilute accountability at the institution level, by relieving them of responsibility, shortcomings that can lead to inaction (Knot, 2014) or reaction delays in critical situations. Such leadership is associated with the risk of rivalry between conflicting institutions or conflicting mandates (Lim et al., 2013) that ultimately affects the process of ensuring the stability of the financial system. In the case of macroprudential policy management by a single institution, the regulatory arbitrage is reduced (Pan, 2010), the responsibility for risk identification and implementation of measures is more precise, the costs are lower (Anand et al., 2014), and the administrative organization is simpler. However, as Bengtsson (2019) mentions, an inter-institutional committee ensures the distribution of information between authorities and has a larger pool of human resources, and implicitly more specialists.

Although there is no consensus on the optimal type of institutional arrangement for macroprudential policy, the resources, and the way in which the objectives involved are aligned are important in choosing the type of governance. In principle it is considered that, regardless of the option, the central bank should play a key role in driving macroprudential policy. The arguments in favour of this statement refer both to the synergy of the role of this authority in monetary and macroprudential policy (Bengtsson, 2019) and to the existence of a higher level of independence from other authorities over political influence, and to the availability of resources in systemic risk assessment. The central bank is qualified in the field of analysis and information on economic and financial activity; it is also well informed about the structures and developments of the financial market through the market operations it carries out and by monitoring the payment system. Besides, the central bank benefits from the technical apparatus for performing specific analyses.

Based on these findings, we believe that a greater responsibility of the central bank than that of other institutions in the macroprudential field, with greater autonomy and a greater number of available macroprudential instruments, increases the capacity of this policy to act at national level. At the same time, macroprudential policy within the central bank can be a tool to compensate for the lack of national monetary policy that becomes supranational by joining the monetary union. Moreover, this is in line with the ESRB/2011/3 Recommendation that emphasize the fact that central banks should have a leading role in macroprudential policymaking.

The achievement of the proposed objective is limited to some specific elements of macroprudential policy framework for the Euro Area candidate countries, namely: the capacity of macroprudential policy governance, the “activism” of macroprudential authority in using or assuming the ESRB instruments, and the degree of compliance with the ESRB/2011/3 Recommendation.

4. Methods and Techniques

The analysis is performed using an index on characteristics of macroprudential policy, built on the criteria mentioned in Section 3, in order to assess, on the one hand, the capacity of macroprudential policy governance, and the availability of instruments applied/assumed by the macroprudential authority, and, on the other hand, the degree of compliance with the ESRB's recommendations for national macroprudential authorities, given that the countries under review are member states of the European Union, and the “pattern” of national macroprudential policy should be as close as possible to that

resulting from the ESRB's recommendations.

The capacity of macroprudential policy governance is defined here by two elements: the institutional arrangement, with or without a coordinating body, and the role of central bank in this governance; and the decision-making power ("hard", "semi-hard" and "soft" power).

The "activism" of macroprudential authority regarding the application or assumption of the ESRB instruments is reflected by the number of macroprudential instruments (according to the ESRB classification) used and/or assumed by the national authorities. There are nineteen instruments classified according to ESRB, excluding reciprocation measures: five capital buffers, five borrower-based measures, and nine other measures (see Table 5, in the Appendix).

Details of the methods and technical aspects for these criteria are presented in Table 1 and Table 2.

We start from the premise that a higher value of the index means a greater capacity of macroprudential policy to be used as a macroeconomic tool for managing financial crises.

We consider that, in case of a coordinating body for conducting macroprudential policy, the governance capacity is affected if the central bank does not have a major role. On the other hand, in the absence of such a coordinating body, if central bank is the single institution responsible for macroprudential policy, the governance capacity is also affected. These specifications are found in the way of assigning values for sub-criteria of institutional arrangement (Table 1).

Table 1. Procedure for evaluating the capacity of macroprudential policy governance

I_1 - Capacity of macroprudential policy governance	**Yes**	**No**
I_{11} - Institutional arrangement (coordinating body/no coordinating body) /		
▪ $(I_{11})_1$ - Is there a financial stability/macroprudential coordinating body?	1	0
▪ $(I_{11})_2$ - Is the central bank a member?	1	0
▪ $(I_{11})_3$ - Does central bank chair coordination body?	1	0
▪ $(I_{11})_4$ - If no body - Does central bank share financial stability/macroprudential mandate?	1	0
▪ $(I_{11})_5$ - If no body - Is central bank sole owner of the mandate?	0	1
▪ $(I_{11})_6$ - If no body - is there implicit coordination through memorandum of understanding?	0.5	0
▪ $(I_{11})_7$ - Is central bank the explicitly mentioned macroprudential authority?	1	0
Value for institutional arrangement	$V(I_{11}) = (I_{11})_1+(I_{11})_2+(I_{11})_3+\ldots+(I_{11})_7$	
I_{12} - Decision power		
▪ $(I_{12})_1$ - Has the macroprudential authority a "hard" power, i.e. the direct control over the calibration of specific macroprudential tools?	1	0
▪ $(I_{12})_2$ - Has the macroprudential authority a "semi-hard" power, that to make formal recommendations, coupled with a 'comply or explain' mechanism?	0.5	0
▪ $(I_{12})_3$ - Has the macroprudential authority a "soft" power, that to express an opinion, or a recommendation that is not subject to 'comply or explain'?	0.25	0
Value for decision power	$V(I_{12}) = (I_{12})_1+(I_{12})_2+(I_{12})_3$	
Value for capacity of macroprudential policy governance	$V(I_1) = V(I_{11}) + V(I_{12})$	

Source: authors' conception, following the methodology developed by Lombardi & Siklos (2016).

According to the methodology used in ESRB (2014), the evaluation of the degree of compliance with the ESRB/2011/3 is performed by scoring each sub-criterion included in the five recommendations, *R*, described in Table 2. The value for each recommendation R is average of the corresponding sub-criteria, and each sub-criterion is scored as follows: 1 (fully compliant); 0,75 (largely compliant); 0,50 (partially compliant, i.e. actions taken only implement a part of the recommendation); 0,25 (materially non-compliant, i.e. actions taken only implement a small part of the recommendation); 0 (actions taken are not in line with the nature of the recommendation, or the inaction are insufficiently explained).

Table 2. Procedure for evaluating the criteria based on the ESRB/2011/3 Recommendation

ESRB Criteria	Formula	Value*)
R_1 - Objective	$V(R_1) = [V(R_1)_1 + V(R_1)_2]/2$	$V(R_1)$
$(R_1)_1$ - The ultimate objective of macroprudential policy is specified as the safeguarding the stability of the financial system as a whole.		$V(R_1)_1$
$(R_1)_2$ - The macroprudential policies pursued upon the initiative of the national MA		$V(R_1)_2$
R_2 - Institutional framework for macroprudential supervision	$V(R_2) = [V(R_2)_1 + V(R_2)_2 + V(R_2)_3 + V(R_2)_4]/4$	$V(R_2)$
$(R_2)_1$ - The conduct of macroprudential policy is entrusted to a designated authority in the national legislation.		$V(R_2)_1$
$(R_2)_2$ - The single macroprudential authority has mechanisms for cooperation among all authorities whose actions have a material impact on financial stability, without prejudice to their respective mandates.		$V(R_2)_2$
$(R_2)_3$ - The CB plays a leading role in the macroprudential policy.		$V(R_2)_3$
$(R_2)_4$ - The MA has the mandate to cooperate and to exchange information cross-border, in particular by informing the ESRB of the actions taken to address systemic risks at the national level.		$V(R_2)_4$
R_3 - Tasks, powers, instruments	$V(R_3) = [V(R_3)_1 + V(R_3)_2 + V(R_3)_3 + V(R_3)_4]/4$	$V(R_3)$
$(R_3)_1$ - The macroprudential authority has tasks of identifying, monitoring, and assessing risks to financial stability and of implementing policies to achieve its objective by preventing and mitigating those risks.		$V(R_3)_1$
$(R_3)_2$ - The macroprudential authority has the power to require and obtain in a timely fashion all national data and information relevant for the exercise of its tasks.		$V(R_3)_2$
$(R_3)_3$ - The macroprudential authority has the power to designate and develop the surveillance approaches for identifying the financial institutions and structures that are systemically relevant at national level.		$V(R_3)_3$
$(R_3)_4$ - The macroprudential authority has the control over appropriate instruments for achieving its objectives.		$V(R_3)_4$
R_4 - Transparency and accountability	$V(R_4) = [V(R_4)_1 + V(R_4)_2 + V(R_4)_3 + V(R_4)_4]/4$	$V(R_4)$
$(R_4)_1$ - The macroprudential policy decisions and their motivations are made public in a timely manner. The macroprudential policy strategies are set out and published by the macroprudential authority.		$V(R_4)_1$
$(R_4)_2$ - The macroprudential authority has the power to make public and private statements on systemic risk.		$V(R_4)_2$
$(R_4)_3$ - The macroprudential authority is ultimately accountable to the national parliament.		$V(R_4)_3$
$(R_4)_4$ - The macroprudential authority has legal protection when it acts in good faith.		$V(R_4)_4$
R_5 - Independence	$V(R_5) = [V(R_5)_1 + V(R_5)_2]/2$	$V(R_5)$
$(R_5)_1$ - The macroprudential authority is operationally independent from political bodies and from the financial industry in pursuing its objectives.		$V(R_5)_1$
$(R_5)_2$ - The organizational and financial arrangements do not jeopardize the conduct of macroprudential policy.		$V(R_5)_2$
Average Score	$V(I_3) = [V(R_1) + V(R_2) + V(R_3) + V(R_4) + V(R_5)]/5$	$V(I_3)$

Source: processing based on the methodology described in ESRB (2014).

Finally, the index for the macroprudential policy (*MPI*) is obtained as the sum of the three criteria, as follows:

$$MPI = V(I_1) + V(I_2) + V(I_3) \quad (1)$$

Where: $V(I_1)$ is the value of the capacity for macroprudential policy governance; $V(I_2)$ is the value of the "activism" of macroprudential authority in applying ESRB Recommendation; $V(I_3)$ as the average score of the five ESRB criteria.

The values for I_1 and I_2 are obtained by cumulating the values of each sub-criterion mentioned in Table 1.

For the interinstitutional coordination mechanism at the level of a macroprudential policy committee - the maximum score (4.00) is given to the situation in which the central bank has the main role, as the sum of $(I_{11})_1$, $(I_{11})_2$, $(I_{11})_3$ and $(I_{11})_4$. The minimum (theoretical) value is registered if there is no coordinating body for macroprudential policy, and central bank is single institution that has this responsibility (1.00). For the decision power, the maximum score is 1.75 points, if the macroprudential authority has all three types of decision-making powers. The minimum score for this sub-criterion is 0.25, when the macroprudential authority has only the power to express an opinion, or a recommendation that is not subject to 'comply or explain'. It follows that for the capacity for macroprudential policy governance, the maximum score is 5.75,

and the minimum one is 1.25.

For the criterion referred to the "activism" of the macroprudential authority, the maximum value is 1.00, when all nineteen types of macroprudential instruments classified according to ESRB are applied or assumed by the authority. The maximum score for the degree of complying with ESRB/2011/3 Recommendation is 1.00, when all the five criteria are met (recommendations A, B, C, D, E). The minimum values for these two criteria are considered 0. Therefore, the maximum and minimum theoretical value for all criteria is 7.75, and 1.25, respectively.

5. Results and Discussion

The values of macroprudential policy index for Euro Area candidate countries are displayed in Table 3, and the details on the values calculated for each criterion and sub-criterion are presented in the Appendix (Table 4, Table 5 and Table 6).

As a general overview, Hungary and Croatia register the highest scores of MPI, above 6.5, whereas Poland has the lowest value, less than 4.00. Looking at the values for each criterion that compose the macroprudential index, there are noticed differences across the analysed countries, and thus it is important to analyse each criterion, separately.

Table 3. The macroprudential policy index values for Euro Area candidate countries

Criteria	Bulgaria	Croatia	Czechia	Hungary	Poland	Romania
I_1 - Capacity for macroprudential policy governance	4.25	5.25	3.00	5.25	2.75	4.50
I_2 - The "activism" of authority in using/assuming the ESRB instruments	0.63	0.32	0.47	0.42	0.47	0.53
I_3 - Complying with the ESRB/2011/3 Recommendation	0.67	1.00	0.96	0.96	0.45	0.75
MPI	5.55	6.57	4.43	6.63	3.67	5.78

Source: Authors' calculation based on methodology presented in Table 1, Table 2, ESRB (2014), and IMF (n.d.).

A more suggestive picture for comparison between countries is rendered by normalizing the data, as shown in Figure 1. Data are normalized considering, as references, the maximum and minimum (theoretical) values for each criterion, as it is described above. The general score is the sum of values for each criterion.

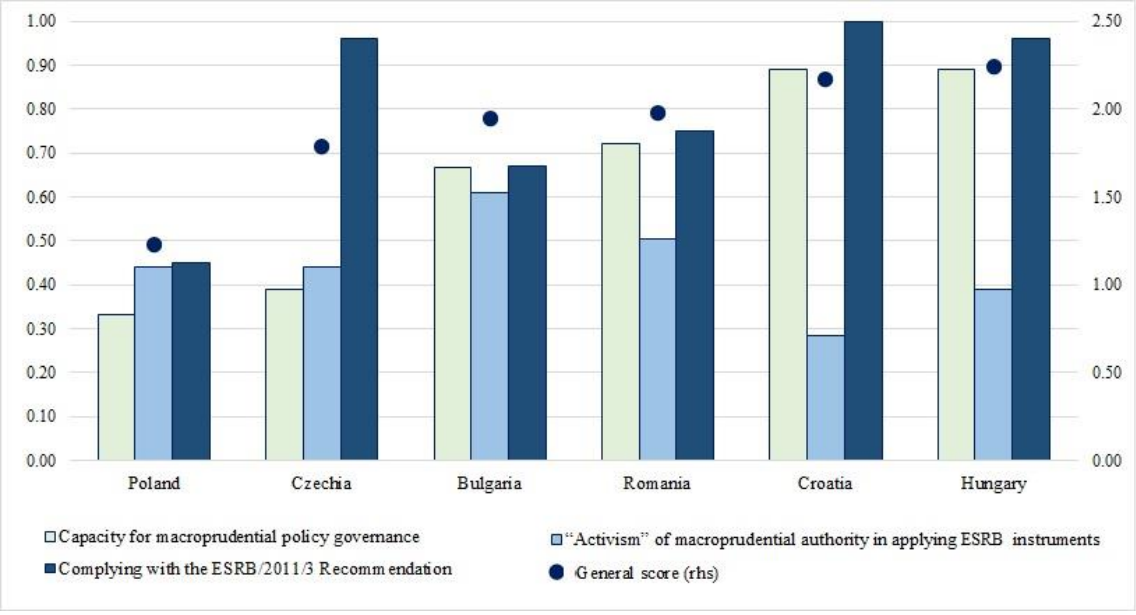

Figure 1. The macroprudential policy index for the Euro Area candidate countries (normalized data)

Source: data on Table 3

It can be observed that Poland has the lowest values for all three criteria, while Czechia, but also Croatia and Hungary, have greater differences between criteria.

4.1 Capacity for Macroprudential Policy Governance

The values of the capacity for macroprudential governance indicator range from 2.75 for Poland, to 5.25 for Croatia and Hungary (see Table 3 and Figure 2). The contribution of the two elements that define this indicator also varies across countries.

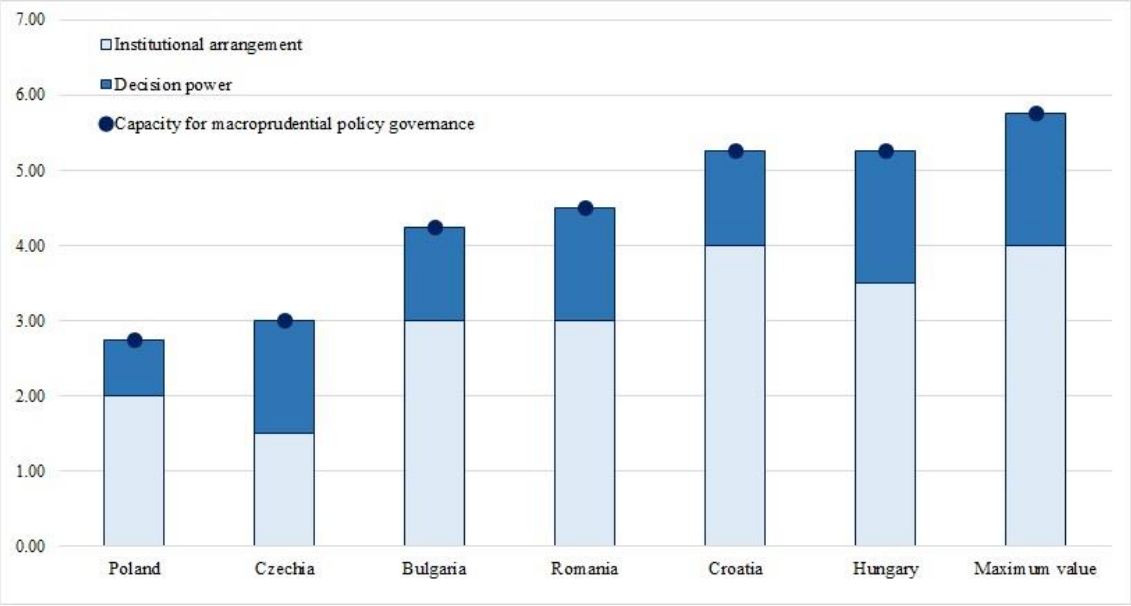

Figure 2. Capacity for macroprudential governance in the Euro Area candidate countries

Source: data on Table 4 (Appendix).

All countries, excepting Czechia, have a coordinating body for macroprudential policy (Table 4, in the Appendix). This feature is reflected by a lower value for institutional arrangement (1.5, the lowest value across these countries) given that the Czech National Bank is the sole owner for financial stability and macroprudential mandate. In Czechia, the central bank is designated as a macroprudential authority, but there are no committee within or outside the central bank, and there is no interagency coordination mechanism. Instead, Croatia gains a maximum score for the institutional arrangement, followed by Hungary (see Figure 2).

In terms of decision-making power, in Hungary, the macroprudential authority has the highest score covering "hard", "semi-hard" and "soft" levels of power, followed by Czechia and Romania. It is noticed that all countries, except Poland, have the direct control over the calibration of specific macroprudential tools ("hard" power). Moreover, in Croatia and Bulgaria, the macroprudential authority has no power in making formal recommendations coupled with a 'comply or explain' mechanism.

Poland gets the lowest score, the macroprudential authority having only the power to make formal recommendations, coupled with a 'comply or explain' mechanism (Table 4, in the Appendix).

4.2 Activism of Macroprudential Authority in Using or Assuming the ESRB Instruments

According to data for this criterion (I_2), Bulgaria has the highest score (see Table 3), as the number of macroprudential instruments reflects not only those already applied, but also some instruments declared by Bulgarian National Bank to be activated when necessary. All countries have activated capital buffers, as it can be seen in Table 5, in the Appendix. The borrower-based measures are already used in Czechia, Romania, and Poland, and in Bulgaria they are currently only assumed by the Bulgarian National Bank as it is mentioned in IMF (n.d.). Although Croatia has a long history in using macroprudential instruments (see Dumičić, 2018 and Dimova et al., 2016), it has a narrow range of active macroprudential tools, because it has not activated yet the borrower-based measures.

Beyond these observations, the macroprudential policy "activism" can be viewed as an indicator that reflects the extent to which macroprudential policy becomes a key instrument for managing national macroeconomic equilibrium. This activism should be analysed together with the decision-making capacity of macroprudential authorities. In this context,

although Poland has an active position in using macroprudential instruments, the decision-making power is limited, as we already mentioned above.

4.3 Complying with the ESRB Recommendation on the Macroprudential Mandate of National Authorities

Croatia has the highest score concerning the degree of complying with the ESRB/2011/3 Recommendation, followed close by Czechia and Hungary. A lower level has Bulgaria and Romania, but the minimum level is registered by Poland (see Figure 3 and Table 3).

Differences between countries concerning the general degree of complying with ESRB Recommendation are also maintained at the level of each five criteria included in this ESRB Recommendation (see Table 6, in the Appendix).

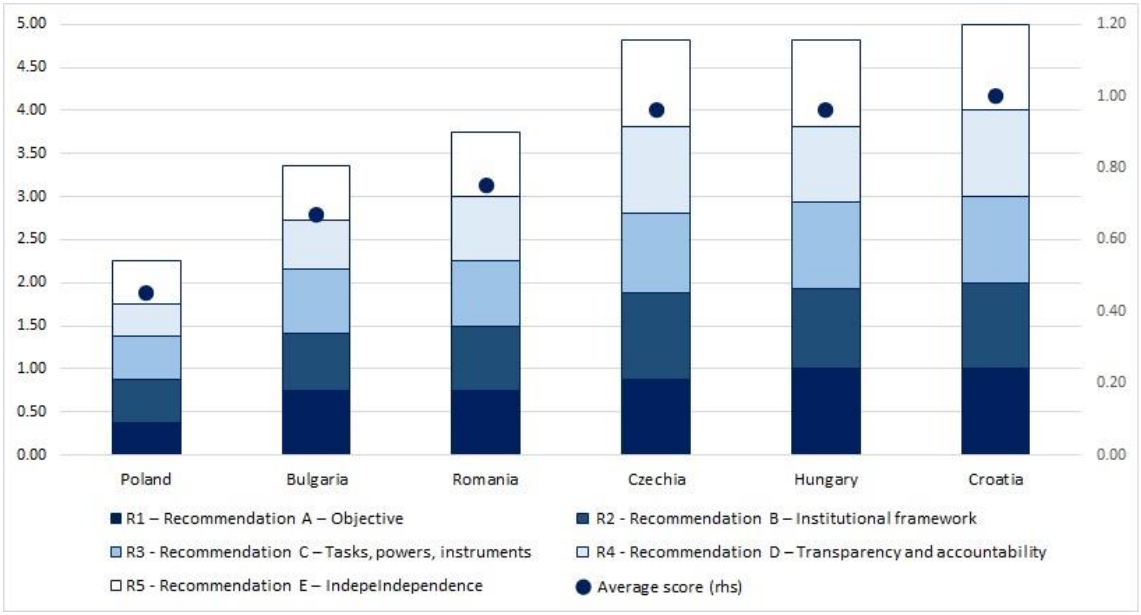

Figure 3. Complying the Euro Area candidate countries with the ESRB/2011//3 Recommendation

Source: data on Table 6 (Appendix).

Overall, the Euro Area candidate countries have quite different levels of macroprudential policy index: the highest values are registered for Hungary and Croatia, and the weakest are in the case of Poland. Considering these results in terms of preparing for accession to the Euro Area, Hungary and Croatia are the best prepared countries in terms of using macroprudential policy as a possible shock-management instrument in the event of joining the Euro Area. They have not only a greater capacity to lead and use the macroprudential policy, as a tool for managing macroeconomic imbalances, but also a higher degree of complying with ESRB Recommendation on the macroprudential mandate of national authorities.

We must observe that, although the general score for Czechia is lower than those obtained by Hungary or Croatia, following the lack of a coordinating body in terms of macroprudential policy and financial stability, its national macroprudential policy becomes a relevant tool in macroeconomic decision making. This is reflected by both the decision power, the activism in using macroprudential instruments, and the higher degree of complying with ESRB/2011/3 Recommendation concerning the institutional framework for macroprudential supervision.

Romania, Bulgaria, and Poland are in the lower position concerning both the overall capacity for macroprudential policy and the degree of complying with ESRB Recommendation on the macroprudential mandate of national authorities. Nevertheless, Romania has the best score among those three countries, and thus it can be more prepared to use macroprudential policy as an adjustment tool in case of asymmetric shocks or imbalances.

It is important to notice that although Bulgaria is closer to the Euro Area, from the perspective of the monetary policy regime, it does not have a high level regarding the capacity of macroprudential policy governance, or the "convergence" degree for ESRB/2011/3 Recommendation. However, Poland has the lowest score for both these criteria and thus it should strengthen its position on the macroprudential authority, in order to adapt to future challenges, especially in the context of preparing for accession to the Euro Area.

The macroprudential policy index provides an overview of how the countries analysed have set up their governing in this area and how active the macroprudential authorities are. Nevertheless, a more detailed analysis would be needed to capture the specific objectives stated or the intensity of the application of macroprudential measures, as well as the

conduct of the policy, as a direction of action (easing measure or restrictive measures). Such elements, integrated into a more complex indicator, could show a new dimension of macroprudential policy, but it remains a possible research topic in the future.

5. Concluding Remarks

Implementing the national macroprudential policy is challenging for a currency area, but its significance is even greater for Euro Area, given the high degree of heterogeneity of its member states, as it could be used as macroeconomic instrument for adjusting local imbalances. In this regard, the national macroprudential policy should be an important pillar of the local macroeconomic framework, compensating to some extent for the loss of flexibility previously offered by the national monetary policy.

Considering this, Euro Area candidate countries should include in their national macroeconomic strategies the objective of strengthening the role and capacity of macroprudential policy in managing local disequilibrium. Thereby, this policy serves as a tool to compensate monetary instruments, which will be lost once the country joined the Euro Area. This capacity improvement concerns both the organization of the management of the national macroprudential policy and the distribution of responsibility between the authorities, as well as the use of specific tools in order to manage macroeconomic shocks.

The analysis is based on a general framework for assessing the capacity of macroprudential policy, taking into account several criteria relevant to these countries, integrated into an index of macroprudential policy. Our findings show that the Euro Area candidate countries have quite different levels of macroprudential policy capacity - the highest values are in the case of Hungary and Croatia, and the weakest are in the case of Poland. Interpreted in terms of preparing for accession to the Euro Area, these results show that Hungary and Croatia are the best prepared countries for using and managing macroprudential policy as a possible shock-absorber instrument, while Poland with the lowest values of criteria should strengthen its position on the macroprudential authority. Moreover, although Bulgaria is closer to the Euro Area, by its monetary policy regime, it has a lower level regarding the index of macroprudential policy.

Nevertheless, this approach is only an initiation in analysis of the capacity of macroprudential policy, an area necessary to be extended by adding and refining criteria that reflect as accurately as possible the nature of macroprudential policy in these countries.

The issue of assessing the capacity of macroprudential policy should be included in the field dedicated to the analysis of preparing an economy for accession to a monetary union, along with other established criteria, including those of the theory of optimum currency areas or the theory of European integration.

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Appendix

Table 4. Data on the capacity for macroprudential policy governance in Euro Area candidate countries

	Bulgaria	Croatia	Czechia	Hungary	Poland	Romania
I_{11} Institutional arrangement	*3.00*	*4.00*	*1.5*	*3.5*	*2.0*	*3.00*
$(I_{11})_1$ – Is there a financial stability/macroprudential coordinating body?	1	1	0	1	1	1
$(I_{11})_2$ – Is the central bank a member?	1	1	n.a.	1	1	1
$(I_{11})_3$ - Does central bank chair coordination body?	0	1	n.a.	0.5	0	1
$(I_{11})_4$ – If no body - Does central bank share financial stability/macroprudential mandate?	n.a.	n.a.	0	n.a.	n.a.	n.a.
$(I_{11})_5$ - If no body - Is central bank sole owner of the mandate?	n.a.	n.a.	0	n.a.	n.a.	n.a.
$(I_{11})_6$ - If no body - is there implicit coordination through memorandum of understanding?	n.a.	n.a.	0.5	n.a.	n.a.	n.a.
$(I_{11})_7$ - Is central bank the explicitly mentioned macroprudential authority?	1	1	1	1	0	0
I_{12} Decision power of macroprudential authority	*1.25*	*1.25*	*1.5*	*1.75*	*0.75*	*1.5*
$(I_{13})_1$ - "hard power"	1	1	1	1	0	1
$(I_{13})_2$ - "semi-hard" power	0	0	0.5	0.5	0.5	0.5
$(I_{13})_3$ – "soft" power	0.25	0.25	0	0.25	0.25	n.a.

Source: Authors' calculation based on methodology presented in Table 1, and IMF (n.d.) available at https://www.elibrary-areaer.imf.org/Macroprudential/Pages/Reports.aspx (data accessed: 10 November 2020).

Table 5. Macroprudential instruments available to the national macroprudential authority, according to ESRB classification

		Bulgaria	Croatia	Czechia	Hungary	Poland	Romania
Capital Buffers	• Capital Conservation Buffer	x	x	x	x	x	x
	• Countercyclical Capital Buffer	x	x	x	x	x	x
	• Global Systemically Important Institution Buffer						
	• Other Systemically Important Institution Buffer	x	x	x	x	x	x
	• Systemic Risk Buffer	x	x	x	x		x
Borrower-based measures*)	• Debt-service-to-income	x		x	x	x	x
	• Loan-to-income	x					
	• Loan-to-value	x		x	x	x	x
	• Debt-to-income	x		x			
	• Loan maturity	x		x		x	x
Other measures	• Leverage ratio						
	• Liquidity ratio	x			x	x	
	• Loan amortisation						
	• Loss-given-default						
	• Loan-to-deposit						

	Bulgaria	Croatia	Czechia	Hungary	Poland	Romania
• Pillar II						
• Risk weights		x			x	x
• Stress test	x		x			x
• Other	x	x		x	x	x
Total instruments	**12**	**6**	**9**	**8**	**9**	**10**

Source: Based on data available at: https://www.esrb.europa.eu/national_policy/html/index.en.html, last updated, 16 October 2020, and IMF (n.d.) available at https://www.elibrary-areaer.imf.org/Macroprudential/Pages/Reports.aspx (data accessed: 19 November 2020).

Table 6. The degree of compliance with ESRB/2011/3 Recommendation in Euro Area candidate countries

	Bulgaria	Czechia	Croatia	Hungary	Poland	Romania
R_1 – Objective	**0.75**	**0.88**	**1.00**	**1.00**	**0.38**	**0.75**
$(R_1)_1$	0.50	0.75	1.00	1.00	0.25	0.75
$(R_1)_2$	1.00	1.00	1.00	1.00	0.50	0.75
R_2 - Institutional framework for macroprudential supervision	**0.67**	**1.00**	**1.00**	**0.94**	**0.50**	**0.75**
$(R_2)_1$	1.00	1.00	1.00	1.00	0.50	0.75
$(R_2)_2$	n.a.	1.00	n.a.	1.00	n.a.	n.a.
$(R_2)_3$	0.50	1.00	1.00	1.00	0.50	0.75
$(R_2)_4$	0.50	1.00	1.00	0.75	0.50	0.75
R_3 - Tasks. powers. instruments	**0.75**	**0.94**	**1.00**	**1.00**	**0.50**	**0.75**
$(R_3)_1$	1.00	1.00	1.00	1.00	0.50	0.75
$(R_3)_2$	1.00	1.00	1.00	1.00	0.50	0.75
$(I_{63})_3$	0.50	0.75	1.00	1.00	0.50	0.75
$(I_{63})_4$	0.50	1.00	1.00	1.00	0.50	0.75
R_4 - Transparency and accountability	**0.56**	**1.00**	**1.00**	**0.88**	**0.38**	**0.75**
$(R_4)_1$	0.75	1.00	1.00	0.75	0.00	0.75
$(R_4)_2$	0.50	1.00	1.00	0.75	0.50	0.75
$(R_4)_3$	0.00	1.00	1.00	1.00	0.50	0.75
$(R_4)_4$	1.00	1.00	1.00	1.00	0.50	0.75
R_5 - Independence	**0.63**	**1.00**	**1.00**	**1.00**	**0.50**	**0.75**
$(R_5)_1$	0.50	1.00	1.00	1.00	0.50	0.75
$(R_5)_2$	0.75	1.00	1.00	1.00	0.50	0.75
Average Score	**0.67**	**0.96**	**1.00**	**0.96**	**0.45**	**0.75**

Source: Authors' calculation based on the procedure displayed in Table 2 and information from ESRB (2014).