

Kozińska, Magdalena

Article

CEE EU central banks' policy during the first wave of COVID-19

Journal of Central Banking Theory and Practice

Provided in Cooperation with:

Central Bank of Montenegro, Podgorica

Suggested Citation: Kozińska, Magdalena (2022) : CEE EU central banks' policy during the first wave of COVID-19, Journal of Central Banking Theory and Practice, ISSN 2336-9205, Sciendo, Warsaw, Vol. 11, Iss. 3, pp. 5-32,
<https://doi.org/10.2478/jcbtp-2022-0021>

This Version is available at:

<https://hdl.handle.net/10419/299049>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.



<https://creativecommons.org/licenses/by/4.0/>



UDK: 336.711(4-11)

DOI: 10.2478/jcbtp-2022-0021

*Journal of Central Banking Theory and Practice, 2022, 3, pp. 5-32**Received: 13 April 2021; accepted: 26 August 2021***Magdalena Kozieńska** *** Banking Institute, Warsaw
School of Economics,
Warsaw, Poland*

CEE EU Central Banks' Policy during the First Wave of COVID-19

*E-mail:**magdalena.kozinska@sgh.waw.pl*

Abstract: Faced with COVID-19 crisis, central banks have once again become one of the key players in the economies. The aim of this article is to analyse the actions of Central and Eastern European central banks within all their roles (monetary policy, micro- and macroprudential policy, deposit guaranteeing and resolution) during the first coronavirus wave. The analysis shows that they were active in various fields, not only those that were traditionally always assigned to central banks (i.e. monetary policy, although this was the major field of activity). Scope of the intervention naturally depended on the shape of the national financial safety net. At the same time, the use of monetary policy tools depended on the adopted monetary policy strategy. Practice of central banks' actions shows that central banks with a wide range of monetary tools reacted later. It seems that the scope and intensity of the use of monetary policy tools was not influenced by the general role of the central bank in the financial safety net. The monetary toolkit used by banks was based on a standard set of instruments with modified conditions of application (scale, transaction parameters and their type, collaterals and counterparties). Although transactions with specific parameters were sometimes implemented for the first time, they can still be included in the framework of classic monetary policy tools. In areas other than monetary policy, central banks were much less active. The most disturbing seems to be the passivity in the field of macroprudential policy.

Keywords: central banks, COVID-19, monetary policy, microprudential policy, macroprudential policy, financial stability.

JEL classifications: E5, G01, G21.

Introduction

Unexpectedly, 2020 has become the year of the most severe economic crisis since the Great Depression (IMF, 2020), the effects of which will certainly be faced in the coming years. Central banks have once again become one of the key players, which have undertaken extensive measures around the world supporting both the real economy (directly exposed to the effects of the pandemic) and the financial sector (indirectly exposed to the economic downturn, but at the same time constituting the transmission channel of many aid programs (Korzeb & Niedziółka, 2020)).

A similar role was assumed by central banks from the Central and Eastern Europe (CEE) region - they implemented decisive actions aimed at supporting or stimulating the real economy, although the concrete actions or strategies of individual banks differed from each other. Central banks played various roles, depending on the architecture of the financial safety net. Some of the measures were implemented by the above-mentioned central banks for the first time in their history. The aim of this article is to analyse the actions of Central and Eastern European central banks (CEE countries that were members of the European Union but did not belong to the euro area during the first wave of the pandemic – CEE EU – i.e. Bulgaria, Croatia, the Czech Republic, Hungary, Poland and Romania, were taken into account) within all their roles (monetary policy, micro- and macroprudential policy, deposit guaranteeing and resolution) during the first coronavirus wave (the time frame is from March 1, 2020 to July 31, 2020). The conducted analysis aims at verifying the hypothesis that the events of 2020 led to the strengthening of the role of central banks in individual countries through a further expansion of their scope of activity. Verification of the hypothesis will be possible thanks to a detailed empirical analysis of actions implemented by central banks in the analysed time period.

1. Central banks' functions and their activity in the COVID-19 crises – literature review

Originally, central banks were created as issuer banks and, thus, institutions authorized to issue domestic money, which closely related to the funding of the rulers (Vernengo, 2016). Currently, however, central bank financing of states is assessed negatively and sometimes prohibited (e.g. in the European Union, where the so-called monetary financing ban is in force) However, a lively discussion on this topic is usually triggered by the crisis actions of central banks, such as the

purchase of government debts (Siekmann, 2020), and successive economic collapses inspire bolder demands to lift the ban on monetary financing (De Grauwe, 2020; Tober, 2015). At the same time, central banks acted as banks' banks - as depositories of commercial banks' surplus cash. Simultaneously, the central bank is also a source of cash supply for commercial banks, on a standard basis (standing facilities), as well as on non-standard one in the event of a liquidity crisis (as Lender of Last Resort providing banks with emergency support liquidity) (Zaleska & Koleśnik, 2018).

Independence from actions of a direct fiscal nature paved the way for central banks to their next major function - i.e. monetary policy, which before the 2007+ financial crisis was dominated by price stabilization (inflation targeting) (Grostal et al., 2015). Parallel to the evolution of the monetary policy, the communication of the central bank with stakeholders was also developing, which in time became a separate function of the central bank, by means of which it was able to influence the economy - forward guidance (Grostal et al., 2015). The evolution of the monetary policy pursued by central banks resulted in a gradual departure from controlling one indicator, and their interest gradually extended to the entire financial system and its links with the real economy. In this way, financial stability has gradually become the goal of central banks (Moenjak, 2014) and central banks have been assigned a new function - responsibility for exercising supervision and conducting macroprudential policy (Villar, 2017). This is also in line with international recommendations (Schoenmaker, 2014) which, however, were decisively influenced by the central banks themselves (McPhilemy, 2016).

In many countries, central banks also perform microprudential supervision. The literature offers many analyses of the advantages and disadvantages of combining the functions of central bank and microsupervisor (Ampudia et al., 2019; Cassola, Kok & Mongelli, 2019; Colliard, 2020). Often, central banks are involved in the organization of deposit guarantee systems, as well as in the role of a resolution authority. However, research on how the central bank combines the function of deposit guarantor is rare (Kozimińska, 2020). In the context of bank resolution, the literature focuses only on the problem of central banks providing liquidity to banks in resolution (Croitor, Dobler & Molin, 2018).

The literature about central banks' activities during the COVID-19 crisis is modest. Two areas of analysis can be distinguished: descriptions of activities of individual central banks (Mosser, 2020; Vivas & Villar, 2020; Jose, Mishra & Pathak, 2020; Ozili, 2020) and analyses of individual types of tools used by central banks (with particular emphasis on interest rates and quantitative easing) (Wu, 2020; Giese & Haldane, 2020; Bordo, 2021; Garg & Prabheesh, 2021; Congdon, 2021).

2. Central bank tasks in CEE EU countries

Central banks of the CEE countries in the EU operate according to various models. However, in each of the analysed country, the central bank performs almost all three basic functions: an issuer bank¹, a state bank, and a bank of banks.

Table 1: Core functions of central banks in UE CEE countries

Function	Bulgaria	Croatia	Czech Republic	Hungary	Poland	Romania
Bank of issue of national currency	Y	Y	Y	Y	Y	Y
Fiscal agent	Y	Y	Y	N	Y	Y
Bank of banks	Y*	Y	Y	Y	Y	Y**

Y – yes, N – no.

* Countries, where central bank cannot extend any type of credit to banks apart from the situation of liquidity risk threatening the stability of the system.

** Countries, where bank of banks function is limited to standing facilities (lack of Emergency Liquidity Assistance tool)

Source: own work based on (Bulgarian National Bank, 2009; Czech National Bank, 2021a, 2021b; Hallenberg & Lastra, 2017; Hrvatska Narodna Banka, 2015a; International Monetary Fund, 2004; Korencsi i in., 2013; Magyar Nemzeti Bank, 2021a; National Bank of Poland, 2020b, 2020a; National Bank of Romania, 2021b; Pessoa & Williams, 2013)

However, greater diversity in the way the central banks operate is visible within the framework of the monetary policy strategy. Although all of them declare that the ultimate goal of monetary policy is the price stability (in some countries together with supporting the government's economic policy), the manner of achieving this goal is different. The Bulgarian and Croatian central banks focus on influencing the foreign exchange rate, while other countries focus on influencing the inflation rate.

¹ With the proviso that two of the analyzed countries - Bulgaria and Croatia - intend to join the euro area in 2022 (from July 2020 they joined the ERMII mechanism), as a result of which their central banks will cease to act as an issuing bank (European Commission, 2020).

Table 2: Monetary policies' characteristics

	Bulgaria	Croatia	Czech Republic	Hungary	Poland	Romania
Monetary policy's strategy	currency board	strategy of exchange rate anchor	inflation targeting	inflation targeting	inflation targeting	inflation targeting
Objective of the monetary policy	price stability	price stability	price stability (supporting economic growth)	price stability	price stability (supporting economic growth and stability of the financial system)	price stability (supporting general economic policy of the government)
Main channel of achieving the goal	ensuring the sufficient level of foreign exchange rate reserves	ensuring the stability of the exchange rate of the kuna against the euro	conducting transactions with banks on terms dependent on the interest rates to influence inflation	conducting transactions with banks on terms dependent on the interest rates to influence inflation	conducting transactions with banks on terms dependent on the interest rates to influence inflation	conducting transactions with banks on terms dependent on the interest rates to influence inflation
Main tool	foreign exchange rate reserve	foreign exchange rate interventions	interest rates	interest rates	interest rates	interest rates
Tools at the disposal	exchange rate reserve, minimum reserve requirement,	interest rates, minimum reserve requirement, standing facilities, emergency liquidity assistance, open market operations, foreign currency market interventions	interest rates, minimum reserve requirement, standing facilities, emergency liquidity assistance, open market operations, foreign currency market interventions	interest rates, minimum reserve requirement, standing facilities, emergency liquidity assistance, open market operations, foreign currency market interventions	interest rates, minimum reserve requirement, standing facilities, emergency liquidity assistance, open market operations, foreign currency market interventions	interest rates, minimum reserve requirement, standing facilities, open market operations, foreign currency market interventions

Source: own work based on (Bulgarian National Bank, 2009; Coric, 2015; Czech National Bank, 2021b; Hrvatska Narodna Banka, 2015b, 2015c; Magyar Nemzeti Bank, 2021a; National Bank of Poland, 2020b; National Bank of Romania, 2021a).

The role of central banks in the national financial safety nets seems to be even more diversified. In this aspect, two extreme approaches can be found in the CEE EU countries. On the one hand, there are central banks whose role in the financial safety net is strongly limited and perform only functions characteristic for a central bank, mainly related to the monetary policy (e.g. National Bank of Poland). However, in the CEE EU countries there are also such central banks which have taken over almost all functions of the financial safety net, i.e. supervision, deposit guarantee and resolution (e.g. Czech National Bank).

Table 3: Central banks' role in the national financial safety net.

	Bulgaria	Croatia	Czech Republic	Hungary	Poland	Romania
Bank supervision	Assigned	Assigned	Assigned	Assigned	Participation in the supervisory committee (not as a chair)	Assigned
Capital market supervision	No engagement	No engagement	Assigned	Assigned	No engagement	No engagement
Insurance market supervision	No engagement	No engagement	Assigned	Assigned	No engagement	No engagement
Macroprudential supervision	Participation in macroprudential committee (not as a chair)	Participation in macroprudential committee (as a chair)	Assigned	Assigned	Participation in macroprudential committee (as a chair)	Participation in macroprudential committee (as a chair)
Deposit insurance	Participation in the management board (not as a chair)	No engagement	Participation in the management board (not as a chair)	Participation in the board of directors (not as a chair)	Participation in the supervisory board (not as a chair)	No engagement
Crisis management (resolution)	Assigned (only for banks)	Assigned (planning, for credit institutions)	Assigned	Assigned	Participation in the supervisory board (not as a chair)	Assigned (only for banks)

Source: own work based on (Bank Deposit Guarantee Fund, 2021; Bankowy Fundusz Gwarancyjny, 2021; Bulgarian Deposit Insurance Fund, 2020; Bulgarian National Bank, 2009; Croatian Financial Services Supervisory Agency, 2018; Czech National Bank, 2021a; Dobrzańska, 2018; Financial Market Guarantee System, 2021; Financial Supervision Commission, 2021; Financial Supervisory Authority, 2021; Hrvatska Narodna Banka, 2015a; Komisja Nadzoru Finansowego, 2017; Magyar Nemzeti Bank, 2021b; National Bank of Poland, 2020a; National Bank of Romania, 2021c; National Deposit Insurance Fund, 2013; State Agency for Deposit Insurance and Bank Resolution, 2021).

3. CEE EU central banks during the COVID-19 – empirical analysis

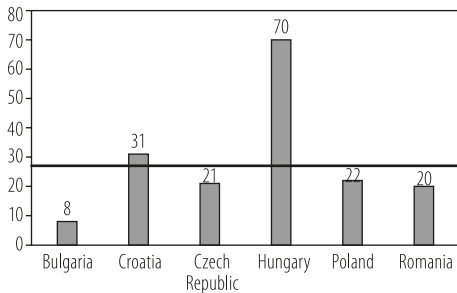
3.1. Speed of central banks' reaction

On average, 2 weeks elapsed between the first case of the infection in a given country and the actions taken by the central bank (extreme examples are Bulgaria and Romania). However, it should be emphasized that in the first days of the pandemic it was not certain to what extent it would affect the economic life. For this reason, the lack of automatism in the activities of central banks does not have to be assessed negatively. Too quick action could lead to an exacerbation of panic among economic entities.

3.2. Overall direction of central banks' activities

As time passed and the pandemic turned out to have more far-reaching consequences, the scope of central bank activities expanded. Overall, during the first wave of the pandemic, CEE EU central banks implemented 172 different measures. The leader of the activity among central banks was the Hungarian central bank, which in the period from March 1, to July 31, 2020, undertook 70 actions. The next most active Croatian central bank implemented only 31 ones. The least active central bank was the Bulgarian central bank (8 measures), which results

Graph 2: Number of implemented measures by each central bank



Black line shows the average number of implemented measures in the analysed group of central banks.

Source: own calculation

from its specific monetary policy strategy (currency board²), in which most of the instruments typical for other central banks are not used.

The analysis of the activities of central banks shows that - despite the growing scope of their activities indicated in the literature and taking over further areas specific to other financial safety net institutions - their activity in a crisis situation focused on their primary area of interest, i.e. on the area of monetary policy. Most measures were implemented in this area - 122 out of 172 measures. Once again, the Hungarian Central Bank was the most active central bank (52 measures).

Another area of activity of central banks was micro-prudential supervision (38 out of 172 measures). It should be emphasized, however, that the activity of central banks depended on their role in the financial system. Thus, in this context the least active bank was the National Bank of Poland. The other analysed central banks are fully responsible for banking supervision. In this group, the Hungarian central bank was once again the most active central bank. Central banks implemented measures that could be attributed to the macroprudential policy area much less frequently. Central banks implemented a total of 8 measures of this type. It was the central bank of the Czech Republic (3 actions), Hungary (2 actions), Romania (2 actions) and Bulgaria (1 actions). One quasi-action was taken

² More about its specificity in Pazardjiev & Vasilev (2021).

by the National Bank of Poland to recommend lowering the systemic risk buffer, which was implemented by the Ministry of Finance.

Central banks, which act as resolution authorities, also undertook activities in this area. The Romanian central bank took the most far-reaching steps here. In order to ease the regulatory burden on banks to focus their efforts on maintaining financing for the economy, it postponed the payment of contributions to the resolution fund, reduced the reporting requirements for resolution purposes and eased the requirements for meeting the requirement MREL. Another central bank that also relaxed the MREL requirements was the Hungarian central bank.

Central banks were the least active in the area of deposit guarantee. None of the central banks implemented measures in this area because not all of them are responsible for running the deposit guarantee scheme, and the influence of central banks on these institutions is limited. The limited role of deposit guarantors³ in preventing the effects of a pandemic is also a result of their nature of operation.

Table 5: Number of implemented measures in each activity area by country.

	Monetary Policy	Macroprudential Supervision	Microprudential Supervision	Deposit Insurance	Resolution	Total
Bulgaria	2	1	5	0	0	8
Croatia	24	0	7	0	0	31
Czech Republic	10	3	8	0	0	21
Hungary	52	2	15	0	1	70
Poland	22	0*	0	0	0	22
Romania	12	2	3	0	3	20
Total	122	8	38	0	4	172

* National Bank of Poland, as a chair of macroprudential supervisory committee, recommended the lowering of countercyclical buffer, what was implemented by the Ministry of Finance.

Source: own calculation

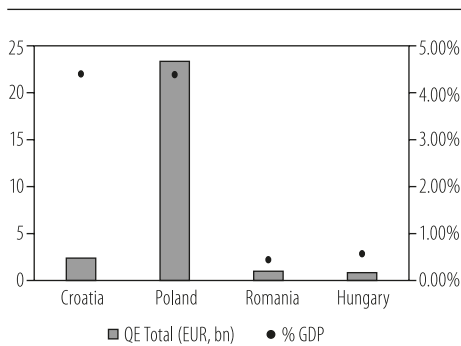
Due to the fact that the actions of central banks during the first wave of the pandemic focused on three areas (monetary policy, micro- and macroprudential supervision), they will be presented in more detail below.

³ More detailed data on the operating models of deposit guarantors are presented in (Koziońska, 2020).

3.3. Central banks' activities in the field of monetary policy

The actions of central banks in the field of monetary policy of the CEE EU countries focused primarily on providing liquidity to the financial markets. The undertaken activities mainly took the form of quantitative easing programs (55 out of 122 examples of monetary policy actions; actions taken in spite of legal considerations about QE in a global perspective (Michael & Osaulenko, 2021)). Once again, the most active central bank was the Hungarian central bank, which intervened 30 times. In addition, quantitative easing has been introduced in Croatia, Poland and Romania. Bulgaria's central bank did not consider quantitative easing due to its monetary policy. The Czech central bank signalled its intention to introduce such measures at the beginning of the pandemic, but the applicable legal framework did not allow it to do so. For all CEE EU countries, quantitative easing was introduced by central banks for the first time in history. However, in terms of the scale of implemented measures in absolute terms, the Polish central bank definitely stood out. Analysing the size of QE programs in relation to GDP, Poland's activities were comparable to those of Croatia - both countries stood out in terms of the size of QE programs in relative terms, where it amounted

Graph 3: Scale of quantitative easing during the first wave of the pandemic



Right axis: absolute amount of bought securities in bn EUR

Left axis: relative amount of bought securities as percentage of GDP in 2019 in a given country

Source: own work based on the data available on central banks' websites and Eurostat

to approximately 4.5% of GDP. Taking into account the scope of the purchase, the Hungarian central bank could be distinguished as it purchased Treasury securities on the secondary market and mortgage backed securities on the primary and secondary markets. The National Bank of Poland purchased on the secondary market both securities issued by the state treasury and those guaranteed by it. The remaining central banks only purchased Treasury bonds on the secondary market.

Activities carried out by the central banks of Croatia and Poland in the field of asset purchases were implemented less frequently, but on a larger scale. The Hungarian central bank, which most frequently executed purchase transactions, was characterized by a much smaller scale.

The next most frequent action of central banks was the modification of the terms of use of open market operations (22 actions out of 122 undertaken in the area of monetary policy).

Table 6: Modifications in the field of open market operations

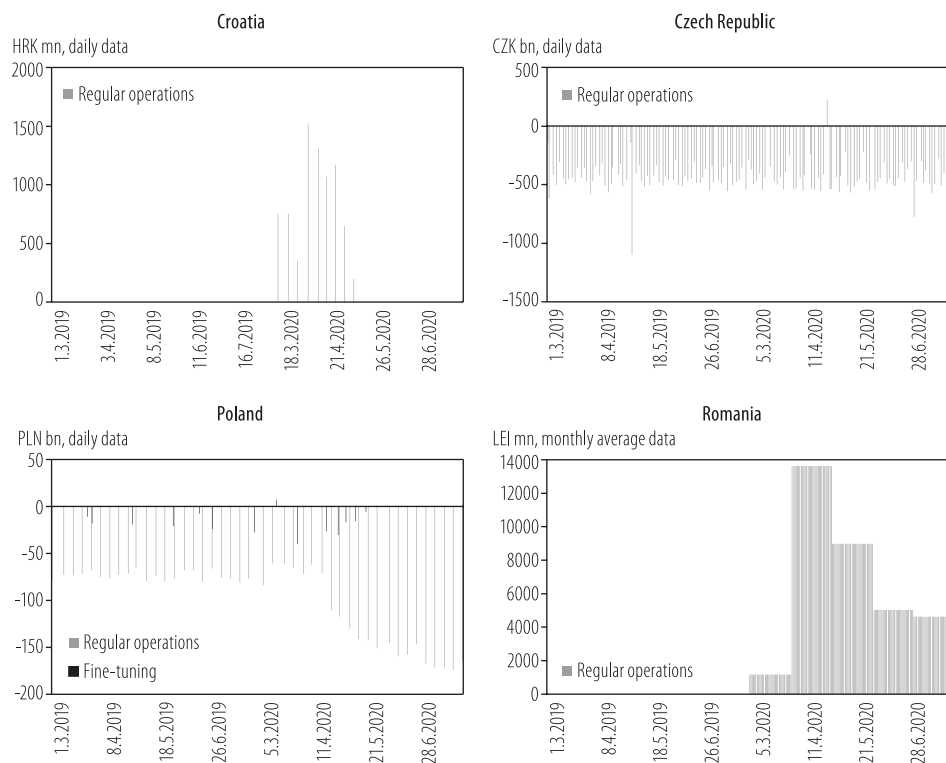
	Bulgaria	Croatia	Czech Republic	Hungary	Poland	Romania
Extension of the amount of regular operations (or implementation of liquidity boosting operations)		X	X		X	X
Increased frequency of open market operations			X			
Additional operations of increased maturity		X	X			
Extension of the scope of entities entitled to the participation in the open market operations		X	X			
Extension of the acceptable collateral			X	X		

Source: own work

The analysis of the intensity of use of open market operations indicates that they were used to the greatest extent by the Czech central bank, i.e. the bank that could not (due to the legal obstacles) implement asset purchase programs. Thus, in the case of the Czech Republic, the expansion (in terms of scale, the group of entities with access to transactions, maturity and collateral) of open market operations can be treated as an attempt to replace the inability to use quantitative easing with other available tools.

It is worth noting that open market operations as a tool to support / provide liquidity, albeit being a standard element of monetary policy, were rarely used by CEE EU central banks in practice in the years preceding the crisis outbreak. Typically, these banks had to focus on absorbing excess liquidity from the market. Examples of such central banks include those from the Czech Republic and Poland. The former, both before and during the pandemic, performed liquidity-absorbing function. The latter, in addition to standard absorbing operations, also carried out one liquidity-providing operation during the first wave of the pandemic. However, it was incidental, and over the course of the pandemic, the scale of liquidity-absorbing operations grew. In turn, the central banks of Croatia and Romania, although they had open market operations in their instruments, in practice did not use it before the pandemic, while during the first wave they supported the markets with liquidity. Thus, despite the generally standard nature of regular open market operations, for Croatia and Romania their use was extraordinary as they had not been used before. Hungary's central bank does not publish information on the use of open market operations, and Bulgaria does not use this tool at all.

Graph 4: Scale of central banks' open market operations in CEE UE countries between March and July in 2019 and 2020 (first wave of pandemic and the analogous period in the previous year)



Positive numbers mean that the central bank provided liquidity. Negative numbers mean that the central banks absorbed liquidity.

Source: own work based on the information available on the central banks' websites.

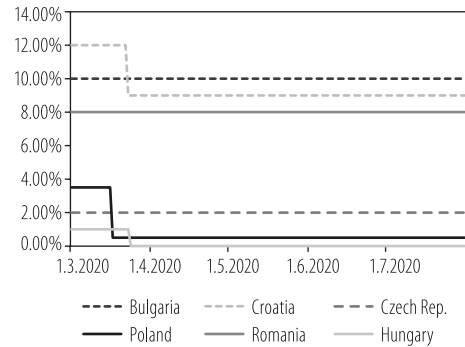
The central banks of Croatia and the Czech Republic extended the scope of entities authorized to enter the open market operations – at least by insurers and pension funds. Hungarian central bank extended the scope of acceptable collateral several times, including bank credit claims against enterprises.

Another action by which central banks tried to support the liquidity of banks was lowering the reserve requirement ratio. Hungarian central bank was the most far-reaching central bank, which completely released banks from the obligation to maintain reserve requirements although the exemption meant a decrease in the reserve requirement ratio by only 100 bp (from 1% to 0%). In terms of the

scale of the reduction in the reserve, the most decisive steps were taken by the central banks in Croatia and Poland, where the required reserve ratio was cut by 300 bp (from 12% to 9% and from 3.5% to 0.5%, respectively). It is worth adding that lowering the reserve requirement ratio was one of the first measures implemented by central banks (along with lowering the level of interest rates).

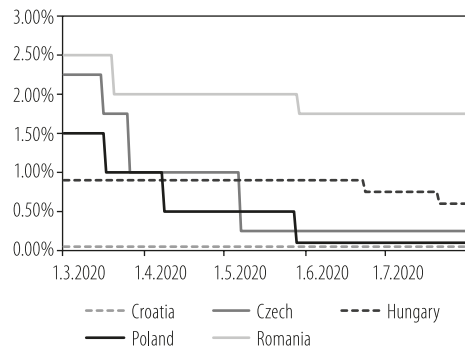
The analysis of the tools used by central banks shows that they focused on supporting the liquidity of financial markets and financial entities, mainly banks, in order to maintain their ability to finance the economy. In order to stimulate the propensity to invest by economic entities, central banks also lowered interest rates, which was usually introduced at the beginning of the fight against the crisis. The interest rates were most often lowered by the central bank of Poland and Romania (4 times in both cases). In addition, the central bank of the Czech Republic and Hungary (3 times each) also decided to cut interest rates. The scale of the interest rate cuts was the higher the lower the initial level of interest rates. Thus, the central bank of Croatia, whose base interest rate was already low at 0.05% when it entered the pandemic crisis, no longer lowered interest rates. This shows that central banks used those tools whose scope of application was still usable. Lowering interest rates to a level close to zero makes this tool useless for central banks. Thus, the catalogue of tools that central banks are able to use to influence the economy is diminished.

Graph 5: Changes in the level of reserve requirement ratio



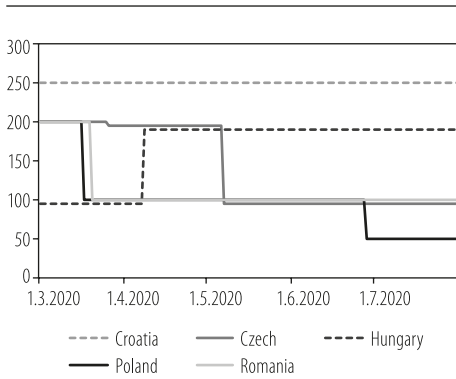
Source: own work based on the data available on central banks' websites

Graph 6: Base interest rate in CEE countries during the first wave of the pandemic



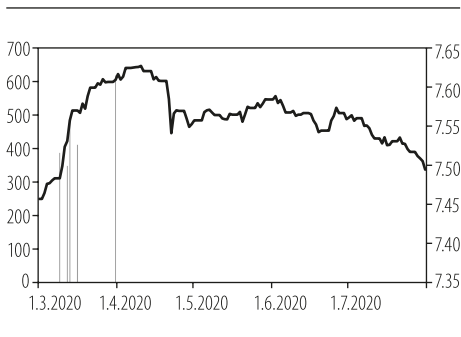
Source: own work based on the data available on central banks' websites

Graph 7: Central banks' rate corridor



Source: own work based on the data available on central banks' websites

Graph 8: Croatian central bank's foreign market interventions and central bank exchange rate EUR to HRK



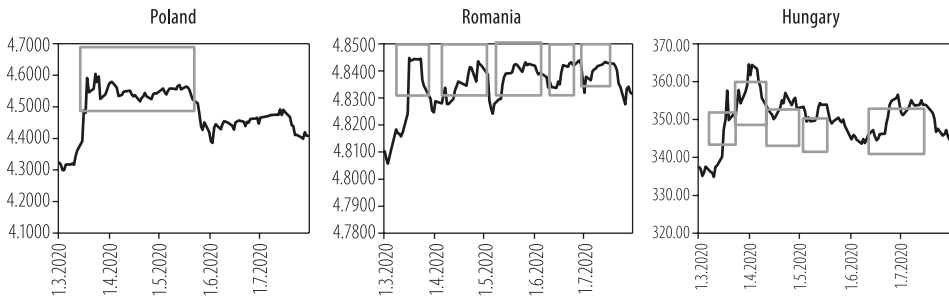
Left-hand axis: amount of EUR sold to banks (mn EUR)
 Right-hand axis: central bank exchange rate EUR/HRK

Source: own work based on the data available on central banks' websites.

The central banks which made changes to the interest rate levels most often also narrowed the corridor of interest rate fluctuations.

One of the less frequently implemented measures by central banks was intervention in the foreign exchange market, although the assessment of such measures is very limited. Most central banks (Bulgaria, Hungary, Poland, Romania) do not provide data on actions taken in the currency market. Information on currency transactions with banks is available only from the central bank of Croatia and the Czech Republic, where the latter did not make any transactions during the first wave of the pandemic. Data on the intervention in the foreign exchange market and the level of the exchange rate show that the Croatian central bank has successfully defended the exchange rate against depreciation.

Although other central banks do not provide data on currency interventions, the charts showing the average exchange rate of national currencies against the euro suggest that other central banks may also intervene. The inclination of central banks to use exchange rate mechanism might be especially high in emerging markets due to its verified impact on the economies (Fabris & Lazić, 2022)

Graph 9: Central banks' average foreign exchange rates of national currencies to euro

Grey rectangles mark the periods of probable influence on the foreign exchange rate.

Source: own work based on the information available on the central banks' websites.

It is also worth paying attention to the method of central banks' communication of actions, in which the central banks of Croatia, the Czech Republic, and Hungary stood out - their messages were very extensive, justifying the actions taken in great detail, as well as contained information about the current state of the economy. In this respect, they should be treated as a kind of step towards forward guidance, although these messages did not contain any suggestions as to the date in which the parameters of a given tool would be modified. This, however, was dictated primarily by the high dynamics of activities and a high degree of uncertainty as to the future economic conditions. Nevertheless, all central banks declared their willingness to act to protect domestic economies from the effects of the pandemic.

3.4. Central banks' activities in the field of microprudential policy

Among the analysed central banks, only the central bank in Poland does not act directly as a banking supervisor, and its indirect influence on the activities of the local supervisor is limited (it is one of as many as 12 members of the financial supervisory commission). For this reason, due to the specifically shaped financial safety net, only the Polish central bank has been unable to implement microprudential tools in the fight against the crisis.

In the case of other countries, central banks perform the functions of microprudential supervisors. As part of this function, central banks implemented 38 measures in response to the crisis caused by the first wave of the coronavirus pandemic. This is a much wider use of microprudential tools than the macroprudential ones (38 v. 8). The wider use of micro-prudential measures may be justified by the fact

that by applying typical supervisory tools in a comprehensive and simultaneous manner to all banks, they are similar in nature to macroprudential tools (they achieve a systemic effect, so not only for a selected institution). At the same time, central banks have a much longer tradition in exercising microprudential supervision, so their experience in using microprudential tools is deeper, and their effects seem to be more reliable for central banks than macroprudential tools.

An analysis of the microprudential measures implemented by central banks shows that these measures were aimed at strengthening the capital base and accumulating additional liquidity. They mainly included recommendations to refrain from paying out funds from the bank, the payment of which is not necessary (i.e. payment of dividends, payments under share buyout or payments concerning additional, variable remuneration components). However, such bank's capital and liquidity strengthening was aimed at ensuring the possibility to implement further measures, i.e. introduce by individual banks, under the oversight of supervisors, the possibility to postpone the repayment of liabilities by borrowers (the so-called moratorium). The last most frequently undertaken activity was the issuance of interpretations or recommendations regarding the accounting and prudential treatment of moratoria in such a way that, as a result of their application, it would not be necessary to create mass write-downs on the value of banks' assets, which would consequently lead to a massive reduction in the capital of individual banks. At the same time - by taking measures aimed at strengthening capital and liquidity, central banks allowed banks to temporarily fail to meet certain binding supervisory standards.

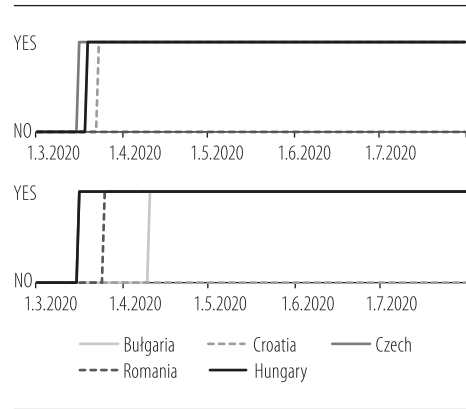
Table 7: Main microprudential measures implemented by central banks

	Bulgaria	Croatia	Czech Republic	Hungary	Romania
Payout ban (dividends, share buybacks, part of remuneration)	X	X	X	X	
Moratorium	X		X	X	
Guidelines for the treatment of moratorium (no automatic reclassification exposures to NPLs)	X	X			X
Waiver for fulfilment of banks' binding requirements		X		X	X
Waiver for loan provision rules			X		
Postponement of stress-tests or supervisory reviews and examinations		X		X	
Postponement of publications requirements			X		
Recommendation to lower or waive fees on selected bank operations		X		X	
Recommendation to provide specific services		X			
Statements on banks' financial position	X				

Source: own work based on the information available on the central banks' websites

The fastest-responding central bank in the implementation of microprudential measures were the central banks of the Czech Republic and Hungary, which implemented the first micro-policy measures on March 16, 2020. These actions concerned the prohibition of dividends and implementation of moratoria. These were at the same time the two central banks that implemented the most measures in the field of micro-prudential policy.

Graph 10: Timing of the payout bans and moratoria implemented by central banks



Source: own work based on the information available on the central banks' websites.

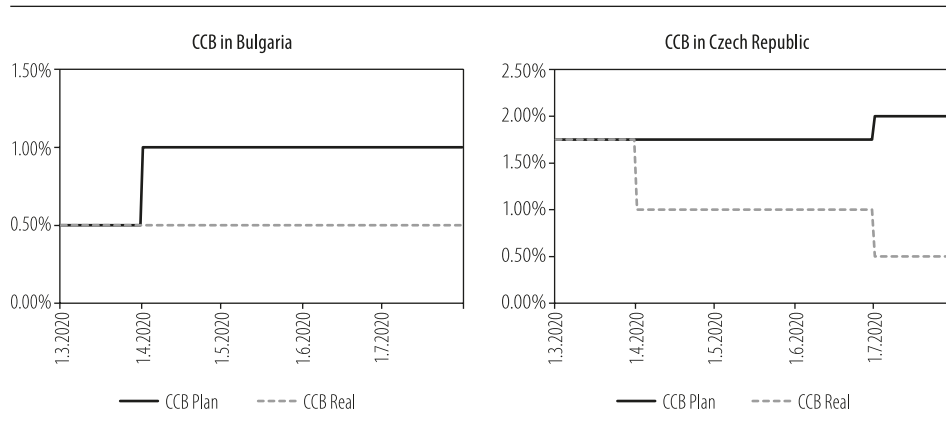
3.5. Central banks' activities in the field of macroprudential policy

In recent years, a commonly noticed trend has been the expansion of the central bank's operational goal from the narrowly understood monetary stability to the broadly understood financial stability. The proof of this tendency was the involvement of central banks in macroprudential supervision. Among the analysed banks, two act directly as macro supervisors (the Czech Republic and Hungary). The others are members of macroprudential committees as chairs (Croatia, Poland, Romania) or ordinary members (Bulgaria). As a result, the central bank is not always the body that directly decides on the application of a given macroprudential tool, but their role is decisive.

In total, central banks implemented 8 macroprudential policy measures and often they were also implemented in the final phase of the first wave of the coronavirus crisis. Therefore, the scale of macroprudential policy measures implemented by central banks seems low. One should look for at least two reasons for this state of affairs. First, most of the analysed central banks do not exercise macroprudential supervision on their own - central banks are usually members of committees in which they play a leading role, but formally these activities are undertaken by a committee or member of a committee with legislative powers. Second, macroprudential supervision focuses on preventing the materialization of systemic risk (Fahr & Fell, 2017). Systemic risk is defined by emphasizing the fact of interconnections between financial market participants (Kaufman, 1995), which may lead to the shock occurring in one part of the financial system being

transferred to other participants (Foglia & Angelini, 2019) or to the real economy (Hoffmann, 2020). However, in the case of the coronavirus crisis, the situation was different - it was not the financial system but the health crisis that became a threat to the real economies of individual countries. At the same time, one of the basic tools of macro supervision is the countercyclical buffer (CCB), the purpose of which is to minimize the pro-cyclicality in the functioning of the financial system. It is established in a situation of dynamic development of the banking system (this buffer applies only to banks and represents the requirement to put aside additional core capital), and it should be released in a crisis situation in order to maintain the banks' lending capacity. However, only Bulgaria and the Czech Republic actively used it, increasing its level before the crisis and lowering it in the crisis situation. In the remaining countries, the level of the countercyclical buffer was zero both before and during the pandemic crisis.

Graph 11: Level of countercyclical buffer in Bulgaria and Czech Republic



Source: own work based on (European Systemic Risk Board, 2021).

The countercyclical buffer may therefore be an underestimated element of the set of instruments that central banks may use directly or indirectly. The lack of experience with its application may have been a deterrent to macroprudential policy authorities from introducing it before the crisis caused by the pandemic. However, such a situation (i.e. a zero level of the buffer) made it impossible to actually use the countercyclical buffer as a tool in the fight against declining economic activity. In this way, central banks - being inactive in the use of macroprudential tools - deprived themselves of the possibility of using it during the crisis. From the point of view of the availability of instruments in the event of a crisis, the existing state of affairs should be assessed negatively. Nevertheless, the mere fact of not using such a tool in a crisis does not necessarily have to be assessed in the

same way. By releasing the countercyclical buffer, banks release capital that they can spend on lending. However, a condition for an increase in lending is also the existence of demand for credit, which, in the conditions of high uncertainty and mass support of entrepreneurs under fiscal programs to combat the crisis, was volatile (Falagiarda, Köhler-Ulbrich & Maqui, 2020). Therefore, it cannot be ruled out that even if central banks were able to apply exemptions from the countercyclical buffer on a larger scale, it would not translate into a stimulation of economic activity by increasing lending.

Other measures taken in the CEE EU countries in the field of macroprudential policy were changes in the level of the systemic risk buffer. Such measures were taken by the Hungarian central bank (which also released domestic banks from maintaining the O-SII buffer) with regard to commercial real estate financing exposures. Poland also lowered the systemic risk buffer, but this action was introduced by the Minister of Finance. The central bank of Romania has allowed banks (as part of its micro- and macro-prudential supervision) to use the capital and liquidity buffers accumulated by banks in the fight against the pandemic.

A different measure used by the Romanian central bank as part of its mandate as a macroprudential supervisor was to recommend micro-prudential supervisors (which in the banking sector is the Romanian central bank) to demand that financial institutions under their competence refrain from paying dividends, redeeming shares and payments of variable remuneration components to their staff.

Overall, the macroprudential policy response by central banks to the crisis triggered by the coronavirus pandemic has been limited. Central banks, although generally responsible for promoting financial stability, are much more willing to use monetary policy tools. This may result from the fact that the scope of these tools is wider and the scale of implementation and potential impact on the economy is greater. Certainly, there is also much greater experience in the use of monetary policy tools, compared to macroprudential policy tools, the effectiveness of which has not been universally and unequivocally positively verified. The time of crisis also turns out not to be an occasion for such verification when the key is to quickly implement high-performance tools, and not to experiment with the effectiveness of other tools.

4. Conclusions – new picture of central banks in CEE EU countries?

An analysis of the activities of central banks during the first wave of the coronavirus pandemic shows that they were active in various fields, not only those that were traditionally always assigned to central banks. The scope of the intervention depended, however, on the shape of the national financial safety net - the wider the central bank's participation in it, the wider the spectrum of actions it could undertake - however, it did not always use such an option. Central banks focused on acting primarily as entities responsible for monetary policy - it was this type of activity (i.e. changing the frameworks for monetary policy) that constituted the majority of interventions. The possibilities to intervene as other players of financial safety net were definitely utilized more rarely. This could suggest that the central banks concentrate on their traditional functions (therefore, even crises do not change their activity profile – the borders of their role in financial safety net remains relatively unchanged).

It is worth noting that the scope of the use of monetary policy tools depended on the adopted monetary policy strategy. Central banks, whose monetary policy strategy focuses on stabilizing the price level, had the broadest spectrum of activities by far. Bulgaria, as a central bank with a currency board strategy, intervened decisively the least frequently, but in turn (having the broadest set of tools at the disposal) was the fastest-reacting central bank. Nevertheless, the contribution of the Bulgarian central bank to mitigating the coronavirus crisis was very limited. Other monetary policy strategies used by central banks, which are associated with the availability of a wide range of tools, prove to be much better in times of crisis - they give the central bank a wider range of possible actions, central bank interventions may be more comprehensive and better suited to the economic situation. On the other hand, the practice of central banks' actions shows that central banks with a wide range of tools reacted later - the availability of many tools requires a deeper rethinking of the tactics used, which in turn translates into a delay in their implementation. It seems that the scope and intensity of the use of monetary policy tools was not influenced by the general role of the central bank in the financial safety net - the Czech and Hungarian central banks, which represent a model of operation that brings together various functions from the financial system in the central bank (monetary policy, banking, capital and insurance supervision, macroprudential supervision, resolution and participation in the management of the deposit guarantor) significantly differed in terms of their crisis activity (Hungary was the leader of the implemented measures, while the Czech Republic was a much less active central bank).

When analysing the monetary policy applied by central banks, it should be noted that the most extensive measures taken by central banks were to ensure liquidity to banks (and then also to other financial institutions) and to the Treasury debt markets. The toolkit used by banks, however, was based on a standard set of instruments, i.e. the actions taken by central banks were not innovative, nor were they pioneering examples. Central banks used standard tools available under the monetary policy, modifying the conditions of application (scale, transaction parameters and their type, collaterals and counterparties). Although transactions with specific parameters were sometimes implemented for the first time, they can still be included in the framework of classic monetary policy tools, e.g. quantitative easing applied by banks in the form of purchasing Treasury debt securities is an example of unconditional open market operations, which constitute the canon of central bank instruments (in particular in the face of central banking experiences after the recent global financial crisis of 2007+). In this respect, one correlation should also be noted - the most far-reaching modifications to the parameters of monetary policy tools (i.e. outright open market operations involving Treasury debt securities) were much more often used by central banks that had experience in implementing "extended" solutions. The largest number of such actions was taken by the Hungarian central bank, which had already introduced mortgage backed securities purchase programs and programs motivating banks to increase lending (Funding for Growth) before the pandemic crisis.

The directions of the activities of the CEE EU central banks in shaping monetary policy in the face of the crisis indicate that these banks followed the example of actions of other central banks (e.g. the European Central Bank, the FED, the Bank of England or the Bank of Japan). CEE EU central banks were not very innovative in this respect. The modifications to the monetary policy instruments implemented by them seem quite far-reaching from their point of view, and the experiences of central banks in other areas (where such modifications were implemented earlier, i.e. during the previous financial crisis) indicate that their withdrawal from them, i.e. going back to normality is difficult. This, in turn, calls into question what actions will be possible to take and at the same time to have a real impact on the markets and the economy in the event of another crisis.

In areas other than monetary policy, central banks were much less active. The second most frequently used area was the area of microprudential supervision. Its nature allows for the shaping of such regulatory conditions for banks' operations that motivate them to take actions that increase lending. The central bank of Hungary, the Czech Republic and Croatia were characterized by the widest scale of such activities. Nevertheless, when comparing these measures with those

of central banks in the field of monetary policy, they were usually much more modest.

The most disturbing seems to be the passivity in the field of macroprudential policy, in which central banks should play the most important role due to their influence. However, in the face of the crisis, the use of macroprudential policy tools was very rare. This proves either the negligence of central banks in shaping macroprudential policy in the period before the crisis outbreak, their too narrow a set of instruments preventing it from being actively used in the economic crisis of reasons other than those resulting from the financial system or the general inadequacy of macroprudential policy in supporting the economy during crises other than on a financial basis.

Although low frequency of implementing micro- and macroprudential measures by central banks might (on a standalone basis) be disturbing, it should be noted that taking into account the character and the scale of implemented tools they performed a complementary role for monetary policy tools enhancing their effectiveness (especially in terms of reducing the risk of contagion in liquidity channel⁴).

To conclude, the analysis of the actions of central banks shows that during the crisis, central banks became an important element of anti-crisis measures (implemented scope of actions was extensive). This implies the growing significance of central banks, but mainly due to the high effectiveness of their toolkit in influencing financial markets and economy (not as a result of extending its activity to the new areas). Definitely, the instruments at the disposal of central banks allow for a far-reaching impact on the economy during the crisis, which justifies assigning central banks the role of an institution responsible for financial stability⁵. The role of central banks has certainly been strengthened due to the implemented measures in the field of monetary policy. However, these actions mainly consisted in modifying the parameters of the tools that are already at the disposal of central banks. The analysis of the actions of central banks does not confirm that the broader role of central banks in the financial safety net (apart from the traditional responsibility for conducting monetary policy) would have significantly increased the possibility of influencing the economy during the crisis.

⁴ This effect was also indicated by (Koleśnik, 2021).

⁵ There are also similar conclusions (Restoy, 2020).

References

1. Ampudia, M., Beck, T., Beyer, A., Colliard, J.-E., Leonello, A., Maddaloni, A., & Marques-Ibanez, D. (2019). The Architecture of Supervision. *ECB Working Paper*, 2287.
2. Bank Deposit Guarantee Fund. (2021). *About FGDB*. <http://www.fgdb.ro/en/pages/despre-fgdb>
3. Bankowy Fundusz Gwarancyjny. (2021). *About us*. <https://www.bfg.pl/en/about-us/>
4. Bordo, M. D. (2021). Monetary Policy Cooperation/Coordination and Global Financial Crises in Historical Perspective. *Open Economies Review*. <https://doi.org/10.1007/s11079-020-09611-5>
5. Bulgarian Deposit Insurance Fund. (2020). *General Information*. <https://www.dif.bg/en/about-bdif/about-us>
6. Bulgarian National Bank. (2009). *About BNB*. <https://www.bnb.bg/AboutUs/AUMission/index.htm>
7. Cassola, N., Kok, C., & Mongelli, F. P. (2019). The ECB After the Crisis: Existing Synergies Among Monetary Policy, Macroprudential Policies and Banking Supervision. *ECB Occasional Paper Series*, 237. <https://doi.org/10.2139/ssrn.3502715>
8. Colliard, J. E. (2020). Optimal supervisory architecture and financial integration in a banking union. *Review of Finance*, 24(1), 129–161. <https://doi.org/10.1093/rof/rfz004>
9. Congdon, T. (2021). Can central banks run out of ammunition? The role of the money-equities-interaction channel in monetary policy. *Economic Affairs*, 41(1), 21–37. <https://doi.org/10.1111/ecaf.12444>
10. Coric, T. (2015). Terms and conditions for the implementation of inflation targeting in Croatia. *Faculty of Economics and Business Zagreb-Croatia Working Paper Series*, 07–10, 1–10.
11. Croatian Financial Services Supervisory Agency. (2018). *About us*. <https://www.hanfa.hr/about-us/>
12. Croitoru, O., Dobler, M., & Molin, J. (2018). Resolution Funding : Who Pays When Financial Institutions Fail? *IMF Technical Notes and Manuals*, 18/01. <http://www.imf.org/en/Publications/TNM/Issues/2018/08/16/Resolution-Funding-Who-Pays-When-Financial-Institutions-Fail-46124>
13. Czech National Bank. (2021a). *About CNB*. <https://www.cnb.cz/en/about/cnb/>
14. Czech National Bank. (2021b). *Monetary Policy*. <https://www.cnb.cz/en/monetary-policy/>

15. De Grauwe, P. (2020). The Need for Monetary Financing of Corona Budget Deficits. *Intereconomics*, 55(3), 133–134. <https://doi.org/10.1007/s10272-020-0885-1>
16. Dobrzańska, A. (2018). Kolegialne organy makroostrożnościowe w UE - analiza rozwiązań instytucjonalnych. *Safe Bank*, 1, 52–68.
17. Dziennik Urzędowy Unii Europejskiej. (2009). *Traktat o funkcjonowaniu Unii Europejskiej*. 47–200.
18. European Commission. (2020). *Commission welcomes Bulgaria and Croatia's entry into the Exchange Rate Mechanism II*. https://ec.europa.eu/commission/presscorner/detail/en/IP_20_1321
19. European Systemic Risk Board. (2021). *Countercyclical capital buffer*. https://www.esrb.europa.eu/national_policy/ccb/html/index.en.html
20. Fabris, N., & Lazić, M. (2022). Evaluating the Role of the Exchange Rate in Monetary Policy Reaction Function of Advanced and Emerging Market Economies. *Journal of Central Banking Theory and Practice*, Volume 11, Issue 2, 77–96.
21. Fahr, S., & Fell, J. (2017). Macroprudential policy - closing the financial stability gap. *Journal of Financial Regulation and Compliance*, 25(4), 337.
22. Falagiarda, M., Köhler-Ulbrich, P., & Maqui, E. (2020). Drivers of firms' loan demand in the euro area – what has changed during the COVID-19 pandemic? *ECB Economic Bulletin*, 5. https://www.ecb.europa.eu/pub/economic-bulletin/focus/2020/html/ecb.ebbox202005_08~ce5f790f76.en.html
23. Filardo, A., Hubert, P., & Rungcharoenkitkul, P. (2019). The reaction function channel of monetary policy and the financial cycle. *BIS Working Papers*, 4(4), 1–42. <http://www.tandfonline.com/doi/abs/10.1080/00405846509541970>
24. Financial Market Guarantee System. (2021). *About the Guarantee System*. <https://www.garancnisystem.cz/en/about-the-guarantee-system>
25. Financial Supervision Commission. (2021). *FSC Board*. <https://www.fsc.bg/en/fsc-board/>
26. Financial Supervisory Authority. (2021). *About Financial Supervisory Authority*. <https://asfromania.ro/en/about-asf/about-us>
27. Foglia, M., & Angelini, E. (2019). The Time-Spatial Dimension of Eurozone Banking Systemic Risk. *Risks*, 7(3), 75.
28. Garg, B., & Prabheesh, K. P. (2021). The nexus between the exchange rates and interest rates: evidence from BRIICS economies during the COVID-19 pandemic. *Studies in Economics and Finance*. <https://doi.org/10.1108/SEF-09-2020-0387>

29. Giese, J., & Haldane, A. (2020). COVID-19 and the financial system: a tale of two crises. *Oxford Review of Economic Policy*, 36(Supplement 1), S200–S214. <https://doi.org/10.1093/oxrep/graa035>
30. Goodhart, C. (2013). *The changing role of central banks*. 1–272. <https://doi.org/10.1057/9781137332288>
31. Grostal, W., Ciżkowicz-Pękała, M., Niedźwiedzińska, J., Skrzyszewska-Paczek, E., Stawasz, E., Wesołowski, G., & Żuk, P. (2015). *Ewolucja strategii celu inflacyjnego w wybranych krajach Ewolucja strategii celu inflacyjnego w wybranych krajach*. Narodowy Bank Polski.
32. Hallenberg, M., & Lastra, R. M. (2017). *The Single Monetary Policy and Decentralisation: An Assessment*. https://www.europarl.europa.eu/cmsdata/126961/MD_DIW_BERLIN_final.pdf
33. Hoffmann, C. H. (2020). Unpacking the black box of systemic risks in banking. *Kybernetes*, 49(6), 1677–1678.
34. Hrvatska Narodna Banka. (2015a). *Core functions*. <https://www.hnb.hr/en/core-functions>
35. Hrvatska Narodna Banka. (2015b). *Monetary policy framework*. <https://www.hnb.hr/en/core-functions/monetary-policy/monetary-policy-framework>
36. Hrvatska Narodna Banka. (2015c). *Monetary policy implementation*. <https://www.hnb.hr/en/core-functions/monetary-policy/monetary-policy-implementation>
37. IMF. (2020). *The Great Lockdown: Worst Economic Downturn Since the Great Depression*. <https://www.imf.org/en/News/Articles/2020/03/23/pr2098-imf-managing-director-statement-following-a-g20-ministerial-call-on-the-coronavirus-emergency>
38. International Monetary Fund. (2004). *Republic of Croatia : Report on Observance of Standards and Codes-Fiscal Transparency Module*. <https://doi.org/http://dx.doi.org/10.5089/9781451817409.002>
39. Jose, J., Mishra, P., & Pathak, R. (2020). Fiscal and monetary response to the COVID-19 pandemic in India. *Journal of Public Budgeting, Accounting & Financial Management*, 33(1), 56–68.
40. Kaufman, G. (1995). Comment on systemic risk. W *Research in Financial Services: Banking, Financial Markets, and Systemic Risk* (ss. 47–52). JAI Press.
41. Komisja Nadzoru Finansowego. (2017). *The Polish Financial Supervision Authority*. https://www.knf.gov.pl/en/ABOUT_US/The_Polish_Financial_Supervision_Authority_UKNF
42. Koleśnik, J. (2021). The Contagion Effect and its Mitigation in the Modern Banking System. *European Research Studies Journal*, XXIV(1), 1009–1024

43. Korencsi, A., Lakatos, M., & Pulai, G. (2013). Regulation on the prohibition on monetary financing – obligations and opportunities *. *MNB Bulletin*. Special Issue, October, 91–97. <https://www.mnb.hu/letoltes/korencsi-lakatos-pulai.pdf>
44. Korzeb, Z., & Niedziółka, P. (2020). Resistance of commercial banks to the crisis caused by the COVID-19 pandemic: the case of Poland. *Equilibrium. Quarterly Journal of Economics and Economic Policy*, 15(2), 205–234. <https://doi.org/10.24136/eq.2020.010>
45. Kozińska, M. (2020). The non-payout functions of deposit insurance schemes. *International Journal of Finance and Economics*. <https://doi.org/10.1002/ijfe.2240>
46. Magyar Nemzeti Bank. (2021a). *Monetary Policy*. <https://www.mnb.hu/en/monetary-policy>
47. Magyar Nemzeti Bank. (2021b). *The Central Bank*. <https://www.mnb.hu/en/the-central-bank>
48. McPhilemy, S. (2016). Integrating macro-prudential policy: central banks as the ‘third force’ in EU financial reform. *West European Politics*, 39(3), 526–544. <https://doi.org/10.1080/01402382.2016.1143243>
49. Michael, B., & Osualenko, A. (2021). Toward a new comparative public law of central bank legislation: Designing Legislative Mandates for Central Bank Private Securities Asset Purchases and Nominal GDP Targeting. *Journal of Central Banking Theory and Practice*, Volume 10, Issue 1, 5–38.
50. Moenjok, T. (2014). A Brief Review of Modern Central Banking Mandates. W T Moenjok (Red.), *Central Banking: Theory and Practice in Sustaining Monetary and Financial Stability* (ss. 59–74). John Wiley & Sons, Inc. Singapore.
51. Mosser, P. C. (2020). Central bank responses to COVID-19. *Business Economics*, 55, 191–201. <https://doi.org/10.1057/s11369-020-00189-x>
52. National Bank of Poland. (2020a). *Activities of Narodowy Bank Polski*. https://www.nbp.pl/homen.aspx?f=/en/onbp/informacje/dzialalnosc_nbp.html
53. National Bank of Poland. (2020b). *Monetary Policy*. https://www.nbp.pl/homen.aspx?f=/en/onbp/polityka_pieniezna.html
54. National Bank of Romania. (2021a). *Monetary Policy*. <https://www.bnr.ro/Monetary-Policy-1864.aspx>
55. National Bank of Romania. (2021b). *Monetary Policy Instruments*. <https://www.bnr.ro/Monetary-Policy-Instruments-3647.aspx>
56. National Bank of Romania. (2021c). *National Bank of Romania*. Objective and role. <https://www.bnr.ro/National-Bank-of-Romania-1144.aspx>
57. National Deposit Insurance Fund. (2013). NDIF. <https://www.oba.hu/en/ndif>

58. Ozili, P. K. (2020). COVID-19 pandemic and economic crisis: the Nigerian experience and structural causes. *Journal of Economic and Administrative Sciences*. <https://www.emerald.com/insight/content/doi/10.1108/JEAS-05-2020-0074/full/html>
59. Pazardjiev, M., & Vasilev, A. (2021). Specificities on the Monetary Transmission Mechanism within the Bulgarian Currency Board Framework: The First five years. *Journal of Central Banking Theory and Practice*, Volume 10, Issue 2, 57–86.
60. Pessoa, M., & Williams, M. (2013). Government Cash Management: Relationship between the Treasury and the Central Bank. *Technical Notes and Manuals*, 12(02), 1. <https://doi.org/10.5089/9781616355487.005>
61. Restoy, F. (2020). Central banks and financial stability: A reflection after the Covid-19 outbreak. *FSI Occasional Paper*, 16. <https://www.bis.org/fsi/fsipapers16.pdf>
62. Reuters. (2020a). *Bulgaria confirms first four cases of coronavirus: health officials*. <https://www.reuters.com/article/us-health-coronavirus-bulgaria-idUKKBN20V09S>
63. Reuters. (2020b). *Croatia confirms its first case of coronavirus infection*. <https://www.reuters.com/article/us-croatia-coronavirus/croatia-confirms-its-first-case-of-coronavirus-infection-idUSKBN20J1OB>
64. Reuters. (2020c). *Czech Republic reports first cases of coronavirus*. <https://www.reuters.com/article/us-china-health-czech-idUSKBN20O1XK>
65. Reuters. (2020d). *Hungary confirms first two coronavirus cases*. <https://www.reuters.com/article/us-health-coronavirus-hungary-idUSKBN20R2RA>
66. Reuters. (2020e). *Poland reports first coronavirus case - health minister*. <https://www.reuters.com/article/us-health-coronavirus-poland/poland-reports-first-coronavirus-case-health-minister-idUSKBN20R0U7>
67. Reuters. (2020f). *Romania confirms first case of coronavirus: health minister*. <https://www.reuters.com/article/us-china-virus-romania/romania-confirms-first-case-of-coronavirus-health-minister-idUKKCN20K370>
68. Rungcharoenkitkul, P., Borio, C., & Disyatat, P. (2020). Monetary Policy Hysteresis and the Financial Cycle. *BIS Working Papers*, 817. <https://doi.org/10.1093/restud/rdaa019>
69. Schoenmaker, D. (2014). *Allocating macro-prudential powers*.
70. Siekmann, H. (2020). The Asset Purchase Programmes of the ESCB in the Courts. W F. Rövekamp, M. Bälz, & H. G. Hilpert (Red.), *Monetary Policy Implementation in East Asia* (ss. 87–142). Springer, Cham.
71. State Agency for Deposit Insurance and Bank Resolution. (2021). *About us*. <https://dab.hr/en/about-us>
72. Tober, S. (2015). Monetary Financing in the Euro Area: A Free Lunch? *Intereconomics*, 50(4), 214–220. <https://doi.org/10.1007/s10272-015-0545-z>

73. Vernengo, M. (2016). Kicking Away the Ladder, Too: Inside Central Banks. *Journal of Economic Issues*, 50(2), 452–460. <https://doi.org/10.1080/00213624.2016.1176509>
74. Villar, A. (2017). Macroprudential frameworks: objectives, decisions and policy interactions. *BIS Papers*, 94, 7–24. https://www.bis.org/publ/bppdf/bispap94a_rh.pdf
75. Vivas, V., & Villar, M. (2020). Strategic responses to the COVID-19 pandemic in Pacific Alliance countries. *Management Research*, 18(4), 345–356. <https://doi.org/10.1108/MRJIAM-07-2020-1067>
76. Zaleska, M., & Koleśnik, J. (2018). Central Bank. In *World of banking* (ss. 30–49). Difin
77. Wu, Y. (2020). The causes and challenges of low interest rates: insights from basic principles and recent literature. *China Finance Review International*. <https://doi.org/10.1108/CFRI-06-2020-0071>