CENTRAL BANKS CONTRIBUTIONS IN MANAGING THE PANDEMIC CRISIS. A SUMMARY AT THE EU COUNTRIES LEVEL

Adina CRISTE, PhD*

Abstract

The concerns of macroeconomic policymakers regarding the management of the COVID-19 crisis are reflected by the major, unbending, and brisk interventions they have had, including monetary authorities. The present paper aims at identifying central banks' contributions in managing the pandemic crisis. The approach is based on a comparative analysis at the level of some central banks in the European Union, regarding the measures adopted and the instruments used since the outbreak of the crisis. The results reveal that the central bank's policy stance has switched from an accommodative and preventive one, for strengthen the resilience of the financial sector, to an active and dynamic one, centred on maintaining the financial intermediation. Central bank activism is expected to intensify in the near future, especially through "unconventional" monetary policy, given the rise in inflationary pressures worldwide.

Keywords: monetary policy, macroprudential instruments, COVID-19 crisis, European central banks

JEL Classification: E52; E58; F45

1. Introduction

The last two decades have been marked by a succession of crises and major events worldwide, starting with the global financial crisis, which have put pressure on decision-makers to find solutions to counteract the adverse effects generated.

The COVID-19 crisis is an exogenous crisis to the financial system, being induced by the political decision, adopted at country level worldwide, to "lockdown" the economy, due to the pandemic, but it has deep implications in economic, financial, and social terms, which

---

* *Senior Researcher, "Victor Slăvescu" Centre for Financial and Monetary Research, Romanian Academy, Bucharest.*

generated firm, rapid interventions, and major decision-makers at the macroeconomic level.

The central bank is usually the main authority for solving financial crisis (Criste, 2014), but it is also an important agent in managing the pandemic crisis. Although monetary policy is the prerogative of central banks, after the onset of the global financial crisis, macroprudential policy became an important component within these institutions. Monetary policy is essential in terms of ensuring liquidity in the financial system, but also in supporting lending activity. The role of macroprudential policy complements that of monetary policy, pursuing the stability of the financial system through measures to ensure the solvency and smoothness functioning of banks. In addition, it can help in supporting the lending activity.

The article aims to highlight the contribution of EU central banks in the management of the pandemic crisis, by identifying the measures adopted and the tools used since the outbreak of the COVID-19 crisis. Central banks with multiple responsibilities, i.e., those that also have an important role in the field of macroprudential policy, are considered being in close connection with the objective of financial stability.

The remainder of the paper is structured as follows. Section 2 is dedicated to the literature review regarding the measures adopted by authorities. In the next section the methodology is described, and the results are displayed in Section 4. The conclusions of the paper are provided in the final section (Section 5).

2. Literature review

The macroeconomic policy measures applied during the pandemic crisis are analysed under multiple aspects. There is quite a large literature for such a short time. For the interest of this research, the literature in the field can be ranged into three categories: studies that create, develop and update databases regarding policy responses to the COVID-19 crisis, works that address the authorities' response to the pandemic crisis according to certain macroeconomic characteristics, as well as studies that focus on estimating the effects of the adopted measures.

Studies that focus on databases creation and maintenance contribute to the systematization of measures, to the identification of classes of measures according to certain criteria, being at the same time an important source of documentation for applied analysis.

As shown in Table 1, there are studies that take into account a wide range of interventions, both monetary and prudential policy measures, as well as fiscal measures (FMI Policy Tracker, COVID-19 Financial Response Tracker (CFRT), or OCDE Country Policy Tracker), while others focus exclusively on prudential regulatory measures (COVID-19 Regulatory Measures) or on monetary policy measures adopted by central banks such as the one developed by Cantú et al. (2021).

Table 1

Databases on the COVID-19 policy measures

Database	Institution	Type of policies	Source
FMI Policy Tracker	IMF	monetary, macroprudential, and fiscal policies	https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19.
COVID-19 Financial Response Tracker (CFRT)	Yale School of Management, Program on Financial Stability		https://som.yale.edu/faculty-research-centers/centers-initiatives/program-on-financial-stability/covid-19-tracker.
OCDE Country Policy Tracker	OCDE		https://www.oecd.org/coronavirus/country-policy-tracker
COVID-19 Regulatory Measures	Institute of International Finance	macroprudential policy	https://www.iif.com/Portals/0/Files/Databases/COVID-19_regulatory_measures.pdf?ver=2021-02-05-140736-500
A global database on central banks ' monetary responses to COVID-19	BIS	monetary policy	Cantú et al. (2021).
COVID-19 Finance Sector Related Policy Responses	World Bank	measures taken by authorities for supporting the financial sector	https://datacatalog.worldbank.org/dataset/COVID-19-finance-sector-related-policy-responses

Source: processing by author

These databases give a brief description of the decisions announced or adopted, the date of the policy action and the institution that implemented the measure. Feyen et al. (2021) make some observations on the response of authorities in countries with emerging and developing economies, using the World Bank database (Table 1).

Analysing a large sample of countries, Feyen et al. (2021) showed that macroeconomic policy authorities were much more active in wealthier and larger countries (by population), adopting a greater number of measures. Countries belonging to a currency area have also been faster and more active in introducing new measures. Liquidity and funding measures in the banking sector were adopted earlier in countries with high levels of private debt. The authors also show that fewer measures have been applied in countries with high private debt-to-GDP ratios, as well as in countries that have already adopted Basel III reforms.

Benmelech & Tzur-Ilan (2020) observed that countries with advanced economies announced much larger fiscal measures compared to less developed ones. They also concluded that the level of credit risk (credit rating) is the most important factor regarding fiscal expenses during the pandemic. High-income countries entered the crisis with low levels of interest rates and are more inclined to resort to unconventional monetary policy tools.

Casanova et al. (2021) emphasize that the outbreak of the COVID-19 crisis required the firm intervention of the macroeconomic policy authorities in supporting the banking system through two complementary mechanisms: on the one hand, increasing the banks' ability to grant loans, based on the adoption of measures to increase capital and consolidating their liquidity position, and on the other hand, through measures to stimulate the use of this capacity, improving the ratio between risks and gains with the granting of new credits.

Based on a classification of the measures adopted by central banks during the pandemic, Mosser (2020) notes that those belonging to the macroprudential sphere are much more extensive than those specific to monetary policy. Eller et al. (2021) show that authorities in EU member states in Central, Eastern and South-Eastern Europe quickly adjusted their macroprudential policies in response to the COVID-19 crisis, mostly by relaxing capital buffers and liquidity requirements. Analysing the effects of applying the measures taken Hartley et al. (2021) showed that quantitative easing had a positive effect by reducing government bond yields in both advanced and emerging countries.

Aldasoro et al. (2020) argue that stabilization measures applied to the banking sector favoured banks that already had high levels of profit and healthy balance sheets but did not help the less profitable ones.

Measures to ensure liquidity, financial support for borrowers and monetary easing have moderated the negative impact of the pandemic on bank share prices (Demirgüç-Kunt et al., 2021), but the results differ both between banks and between countries. Banks that were already thinly capitalized or operating in countries where fiscal space is restricted were adversely affected by macroprudential measures.

Although limited to the situation of the Irish banking system, the study by Bergant & Kockero (2020) show that no other macroprudential or monetary measures (suspension of debt payments, extension of loan maturities, lowering of interest rates, etc.) would have significantly reduced the likelihood of long-term debt default, but that the most common measure adopted by banks, namely the reduction of limits on credit lines, had positive results in the short term. However, the results are interpretable, not generally valid, especially when several countries are analysed.

Hardy (2021) shows that the announcement on the restriction of dividend payments, a measure applied in many countries, although it reduced the price of bank shares, had a positive effect on the risk of default - it either decreased or was not affected in the face of the economic recession. Increases in bank capitalization were observed in countries where this measure was applied, supporting institutional and system-wide stability. Muñoz (2020) suggests that the dividend restriction measure can improve the effectiveness of the release of the countercyclical capital buffer, while ensuring the supply of credit to the private sector. Also, the estimates made by Gambacorta et al. (2021) on a sample of 271 listed banks from 30 developed countries show that the complete suspension of dividend payments in the year 2020 would have increased their lending capacity by 800 to 1,100 billion dollars.

By recommending that banks use some of their capital reserves, but also by restricting the payment of dividends and other capital resources, policymakers sent a strong signal about their determination to reduce the economic consequences of the crisis pandemics. But, according to Drehmann et al. (2020), they will have positive effects on lending to the real economy (as a targeted objective), only if banks have the capacity and willingness to respond to the prudential measures. However, such conditions can only be ensured with the support of political decision-makers.

The information from the literature, especially that provided by the databases, represents a solid basis for conducting research on the role of the monetary authorities in the EU in managing the effects of the COVID-19 crisis.

3. Methodology and data

The research is based on a comparative analysis of central banks in the EU regarding their role in managing the COVID-19 crisis. Those that have an important role in macroprudential policy are also considered, either as a macroprudential authority or as a member of the Financial Stability Committee (Criste & Lupu, 2021). The group of selected central banks includes the European Central Bank (ECB), as the monetary authority of the Euro Area; central banks of the euro area countries, those that have the main involvement in macroprudential policy; the central banks of the eurozone candidate countries (see Table 2, in the Appendix).

The instruments, displayed in Table 3, in the Appendix, are classified according to the type of policy to which they belong - monetary or macroprudential. Those tools announced and dedicated to managing crisis-induced problems were selected.

- Monetary instruments are classified according to the one proposed by Cantú et al. (2021);

- Macroprudential measures are those announced by central banks, as well as those formulated as recommendations by specialized supranational institutions or with powers in this field, namely, European Systemic Risk Board (ESRB), and European Banking Authority (EBA). They are classified by category, grouped based on their nature. In this sense, the grouping used by Eller et al. (2020) is a benchmark for this study. In the category of macroprudential measures are included both classical ones and those that have a macroprudential feature, such as certain instruments specific to the microprudential policy. The inclusion of the latter in the category of macroprudential ones is based on the hypothesis that, in special (crisis) conditions, the measures of a microprudential nature become essential for the functioning of the financial system. Moreover, Restoy (2020) mentions that microprudential actions always also have a systemic dimension, and this connection is all the more relevant in crisis conditions.

The monetary policy of the euro area countries is implemented by the ECB, but for macroprudential policy the national central banks also have an important role, regardless of whether they are designated as single macroprudential authorities or are part of a financial stability committee.

The analysis is carried out for the period March 2020 - November 2021, based on monthly data and according to their availability. The sources of information used are the databases of both international bodies (IMF, World Bank, BIS) and central banks selected.

The comparative analysis at the level of central banks regarding the intensity of the use of instruments is highlighted by summing up measures from a certain category adopted/announced during the selected period.

4. Results and discussion

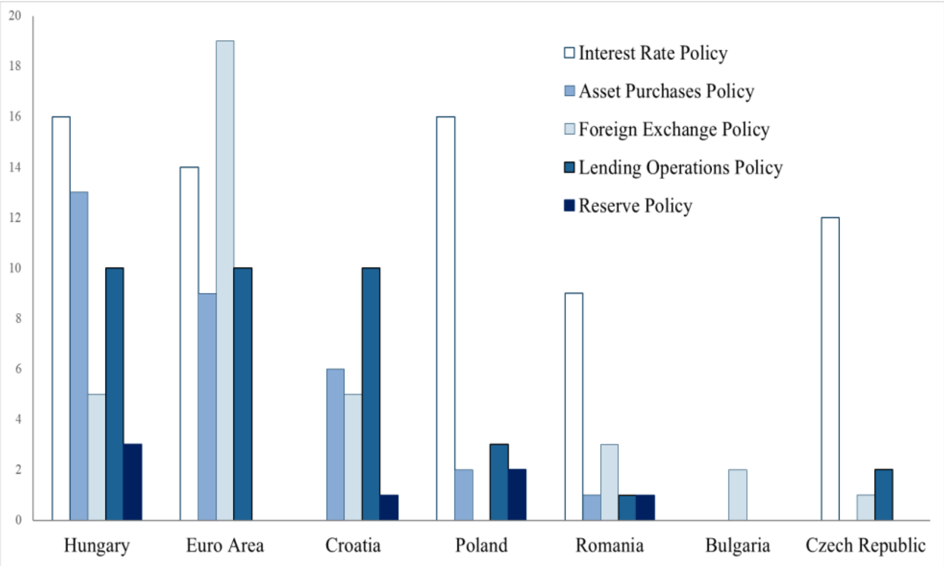
Overall, the reaction of the monetary authorities to the pandemic crisis meant the adoption of easing policies.

4.1. Monetary policy

As shown in Figure 1, the National Bank of Hungary played a very active role in the use of monetary policy instruments, both in terms of variety and intensity (frequency) of the measures applied. Only the ECB exceeds it in terms of the frequency of applied measures, but central bank of Hungary used all five categories of monetary instruments (see Figure 1).

Figure 1

Categories of monetary policy measures adopted by the selected central banks, during March 2020 - October 2021 (cumulative measures)



Source: data extracted from Cantú et al. (2021), and from central banks official websites

As a first reaction to the crisis, central banks that had room for manoeuvre on interest rate reduced their monetary policy interest rates. The ECB, which had reduced this level to zero, resorted to unconventional measures, already entered the tradition of the last years, after the global financial crisis, regarding the monetary policy: the forward guidance policy for interest rate and the quantitative easing policy, based on assets purchases programs (government, corporate bonds). Lending refinancing programs were added and expanded to boost lending to the private sector (firms and households) by providing low-cost funds to banks (access conditional on the use of funds), being a support provided by the central bank to the real economy, through the banking system.

The ECB used the forward guidance policy to give a firm signal to the markets, and the persistence of its use compensated for the lack of interest rate change policy. The central banks of the Czech Republic, Hungary, Poland, and Romania were able to further manoeuvre the monetary policy interest rate. In addition, some central banks, except those of the Czech Republic and Bulgaria, have applied reserve requirements to manage liquidity in the banking system.

Unlike the ECB, which through its securities purchase programs has conducted a general policy of quantitative easing, the central banks of the selected non-euro area countries have initiated such programs for specific objectives, to solve local problems, from the national (see Table 4)

Table 4

The central banks' asset purchases policy and objectives pursued

Asset purchases policy	Central bank	Objective(s) pursued
APP (Asset Purchase Programme) PEPP (Pandemic Emergency Purchase Programme)	**European Central Bank**	- easing monetary condition (Cantú et al., 2021)
BFGS (Bond Funding for Growth Scheme) GSPP (Government Security Purchase Programme) MBPP (Mortgage Bond Purchase Programme)	**Hungarian National Bank**	- providing adequate liquidity to ensure price and financial system stability - increasing the flexibility of the money market interest rates - strengthening the central bank's ability to influence the long-term yields
Government Securities purchases	**National Bank of Romania**	- consolidating structural liquidity in the banking system
Government Securities purchases	**National Bank of Poland**	- ensuring liquidity in the secondary market - strengthening the monetary transmission mechanism - structural change in long-term liquidity in the banking system
Government Securities purchases	**Croatian National Bank**	- maintaining exchange rate stability - increasing domestic liquidity to ensure bank lending at low interest rates - supporting the stability of the government securities market

Source: author's compilation based on the Arena et al., (2021) According to the data from Arena et al. (2021), until June 2021, the expenses incurred by the ECB for the purchase of assets, as percent of GDP, represented 12%. At a great distance from this is the central banks of Hungary (7.2%), Poland (5.9%), and Croatia (5.5%). The lowest level is recorded by the National Bank of Romania, with 0.4% of GDP.

Regarding foreign exchange policy, through spot interventions, the central banks of the Czech Republic, Romania and Croatia aimed to prevent excessive exchange rate fluctuations and the stability of the national currency. In addition, in April 2020, central banks from Croatia and Bulgaria each entered into a precautionary foreign exchange agreement (swap lines) with the ECB to provide liquidity in euros to ensure the stability of their national currencies. In June and July 2020, the National Bank of Romania, respectively, National Bank of Hungary entered into repo agreements in euros.

In terms of exchange rate policy, the ECB has a dual role. On the one hand, as the central bank of the euro area countries, the ECB considers the monetary union needs, and on the other hand, as a central bank of global importance, it is involved in the global financial system. From this perspective, its actions during the pandemic were best reflected by the interventions on the foreign exchange market and the cooperation agreements established with the other global central banks or with central banks of some European countries, outside the euro area. During the analysed period, the ECB concluded foreign exchange agreements in euros (swap and repo lines) with central banks of EU countries and outside the euro area (central banks of Romania, Croatia, Bulgaria, Hungary, and Denmark). In December 2020 the ECB decided to extend all these euro supply agreements.

Furthermore, central banks have provided support to the banking system in order to increase lending activity, based on repo operations (Czech National Bank, Croatian National Bank, National Bank of Romania, and National Bank of Poland), and some central banks have adopted credit programs aimed at certain segments of the real economy (companies). Namely, the Hungarian National Bank initiated several special programs for financing of the companies, expanded eligible collaterals, and the National Bank of Poland introduced discount loans to allow the refinancing of credit granted to companies, a measure similar to that introduced by the ECB (i.e., Targeted Longer-Term Refinancing Operation).

4.2. Macroprudential policy

Regarding the macroprudential policy, the authorities sought, on the one hand, to maintain lending capacity by adopting measures to ease the prudential requirements and recommending the release of capital and liquidity reserves, and on the other hand, improving the expectations of economic agents and mitigating macroeconomic uncertainty, through a firm and proactive conduct, intensifying the communication policy with the market and the public, and also the recommendations made by EU authorities (ESRB and EBA).

Macroprudential instruments quickly implemented since the beginning of the crisis have provided banks with capital and liquidity to strengthen their ability to absorb losses and maintain credit flow, thus supporting the easing of monetary conditions.

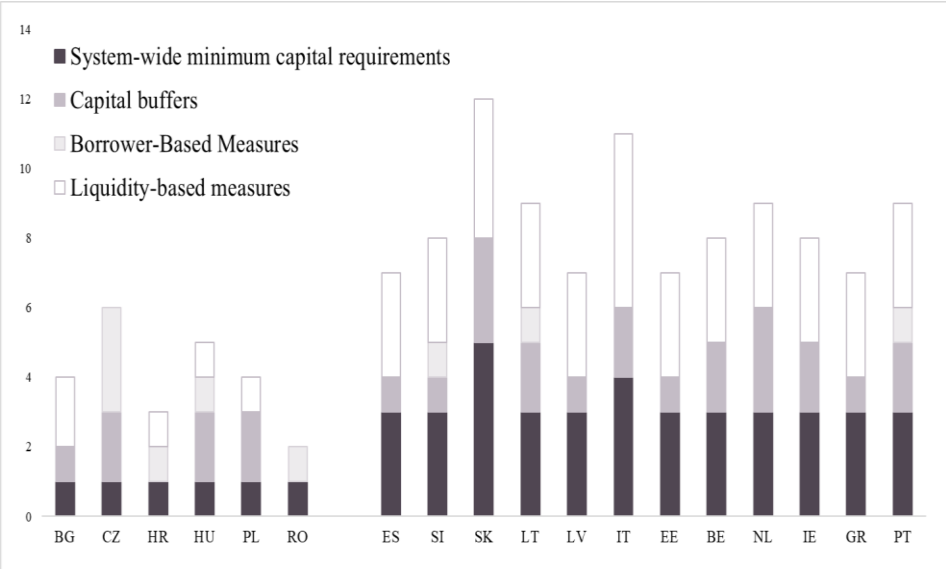
The ECB, as a regulatory authority, has carried not only in supporting the euro area countries, but also the EU countries outside the euro area (Feyen et al., 2020). It allowed banks to temporarily operate below the level and quality of capital required under "Pillar 2" and to make credit classification and loan provision more flexible. The intensity of the macroprudential policy used by ECB is reflected by the increased number and wide range of recommendations, formulated in close collaboration with national central banks, the European Systemic Risk Board and the European Banking Authority.

Figure 2 confirms that the national central banks of the euro area countries, supported by the ECB and the prudential authorities at the EU level, have been intensively involved in the management of the COVID-19 crisis by adopting macroprudential measures. In this regard, Slovakia, Italy, and Portugal stand out by applying the most measures in the category of minimum requirements, capital buffers and liquidity requirements.

Easing the borrower-based measures due to the COVID-19 crisis is taken into account especially by central banks in the Central and Eastern Europe countries, i.e., Czech Republic, Hungary, Croatia, Slovenia, and Romania. Among all analysed central banks, only those of Hungary, Slovenia, Lithuania, and Portugal apply prudential instruments from all four categories of standard instruments (see Figure 2).

Figure 2

Categories of standard macroprudential policy measures adopted during March 2020 - October 2021 (cumulative measures)



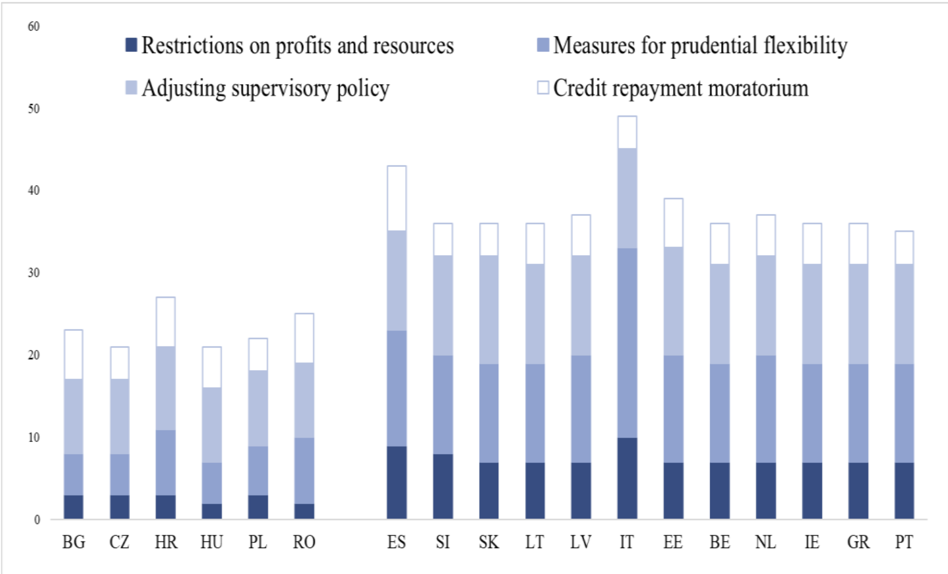
Notes BG - Bulgaria; CZ - Czech Republic HR - Croatia; HU - Hungary; PL - Poland; RO - Romania; ES - Spain; SI - Slovenia; SK - Slovakia; LT - Lithuania; LV - Latvia; IT - Italy; EE - Estonia; BE - Belgium; NL - Netherlands; IE - Ireland; GR - Greece; PT - Portugal.
Source: data extracted from World Bank (2022)

In addition to the standard prudential measures adopted following the outbreak of the pandemic crisis, the national central banks initiated a series of measures to supplement the usual ones. They have a temporary nature and are intended to ensure operational continuity in the banking system, during the pandemic crisis, allowing a more flexible interpretation of the prudential regulations and a relaxation of the supervisory policy (see Table 3, in the Appendix). In this regard, restrictions on the payment of dividends and measures to relax prudential and supervisory regulations are applied with the aim of maintaining the flow of credits and strengthening the banks' ability to absorb losses.

As illustrated in Figure 3, all analysed central banks, supported by EU regulatory and supervisory authorities, have applied such special measures extensively, but again a more intensive use of them is observed across the area euro countries.

Figure 3

Categories of special macroprudential policy measures adopted during March 2020 - October 2021 (cumulative measures)



Notes: BG - Bulgaria; CZ - Czech Republic HR - Croatia; HU - Hungary; PL - Poland; RO - Romania; ES - Spain; SI - Slovenia; SK - Slovakia; LT - Lithuania; LV - Latvia; IT - Italy; EE - Estonia; BE - Belgium; NL - Netherlands; IE - Ireland; GR - Greece; PT - Portugal.
Source: data extracted from World Bank (2022)

The macroprudential policy measures adopted as a result of the COVID-19 crisis unfolding were contrary to the usual pattern, not being intended to encourage banks to strengthen their balance sheets, as in a crisis situation, but to induce them to partially reduce the capital reserves accumulated after financial crisis to maintain the flow of credit. Macroprudential authorities have used the available flexibility both to loosen certain requirements (those regarding capital, liquidity, classification of non-performing loans, regulation of provisions, etc.) and to impose restrictions on the distribution of profits and resources (dividends).

Overall, the results show a more intensive use of prudential measures, including those of a special nature, at the level of the central banks of the euro area countries, considering not only the high number of common measures implemented at the recommendation of the ECB and supranational institutions in the field macroprudential regulations and supervision (ESRB and EBA), but especially the application of locally adjusted macroprudential measures.

Considering the monetary integration process, this observation makes plausible the hypothesis of an increase in the role of the national macroprudential policy at the local (national) level, with the accession to a monetary union, especially one formed by countries with heterogeneous economies, such as the euro area. It becomes, together with the fiscal policy, an essential additional tool of the local (national) macroeconomic mechanism, compensating to some extent the loss of flexibility previously offered by the national monetary policy.

5. Conclusion

The pandemic crisis caused a major change in the macroeconomic and financial system, from a relatively stable state, with low inflation, moderate economic growth, and less risk-averse financial markets, to one of deep uncertainty. Therefore, the central bank's policy has also changed profoundly. Its stance has switched from an accommodative (regarding the monetary policy), and preventive one, for strengthen the resilience of the financial sector (regarding the macroprudential policy), to an active and crisis one, centred on maintaining the financial intermediation.

It is important to note that, according to the processed data, the ECB's response to the pandemic crisis was quick and dynamic, in contrast to its behaviour during the global financial crisis or that of sovereign debt. This disproves the hypothesis that, under uncertainty conditions, the central bank of a monetary union answers more slowly than a national central bank if the monetary union is composed by fiscally sovereign states. It is supposed that the learning process after experiencing a major shock is more complex for the central bank of a monetary union and therefore the reaction to shocks would be slower.

Making a comparative analysis between the global financial crisis, with its occurrence in Europe, and the COVID-19 crisis, Morelli & Seghezza (2021) argue that for the ECB, the financial crisis was a learning exercise in this respect because it gave it the opportunity to adapt to shock by increasing reaction speed. In other words, the central bank of a monetary union can also react quickly if it experiences a series of shocks from which, through the learning process, it acquires knowledge and increases its arsenal of tools. This is fall out from the second half of 2021, against the background of several factors action (the increase in the price of raw materials, including the oil price, the increase in international transport costs, the disruptions on the part of the supply generated by pandemic), and is further maintained and aggravated by the global geopolitical crisis (induced by the war in Ukraine, by the crisis of energy resources).

Such a circumstance augments the challenges that central banks have in terms of conducting monetary policy, and the problem of finding a balance between measures to ease monetary conditions and stimulate lending, and those to keep inflation under control is becoming more and more critical.

References

1. Aldasoro, I., Fender, I., Hardy, B., & Tarashev, N. (2020). Effects of Covid-19 on the Banking Sector: the Market's Assessment. *BIS Bulletin*, *12*(May).
2. Arena, M., Bems, R., Ilahi, N., Lee, J., Lindquist, W., & Lybek, T. (2021). Asset Purchase Programs in European Emerging Markets. *IMF Departmental Papers*, *DP/2021/021*. https://www.elibrary.imf.org/view/journals/087/2021/021/article-A001-en.xml
3. Benmelech, E., & Tzur-Ilan, N. (2020). The Determinants of Fiscal and Monetary Policies During the Covid-19 Crisis. *NBER Working Paper Series*, *27461*(July), 1–42.
4. Bergant, K., & Kockerols, T. (2020). Forbearance Patterns in the Post-Crisis Period. *IMF Working Papers*, *20/140*(July). https://doi.org/10.5089/9781513550817.001
5. Cantú, C., Cavallino, P., de Fiore, F., & Yetman, J. (2021). A global database on central banks ' monetary responses to Covid-19. *BIS Working Papers*, *934*(March).
6. Casanova, C., Hardy, B., & Onen, M. (2021). Covid-19 policy measures to support bank lending. *BIS Quarterly Review*, *September*, 45–59.
7. Criste, A. (2014). Monetary Policy Adjustment at the Global Financial Crisis Constraints. *Hyperion Economic Journal*, *Year II, 4(2)*(December), 3–11.
8. Criste, A., & Lupu, I. (2021). An Overview of Macroprudential Policy in the European Union Countries in the Last Decade. *"Ovidius" University Annals, Economic Sciences Series*, *XXI*(1), 76–81.

9. Drehmann, M., Farag, M., Tarashev, N., & Tsatsaronis, K. (2020). Buffering Covid-19 losses – the role of prudential policy. *BIS Bulletin*, *9*(April). www.bis.org
10. Eller, M., Martin, R., Schuberth, H., & Vashold, L. (2020). Macroprudential policies in CESEE – an intensity-adjusted approach. *Focus on European Economic Integration*, *Q2*, 65–81.
11. Eller, M., Martin, R., & Vashold, L. (2021). CESEE's Macroprudential Policy Response in the Wake of the COVID-19 Crisis. *Focus on European Economic Integration*, *1*(Q1), 55–69.
12. Feyen, E., Gispert, T. A., Kliatskova, T., & Mare, D. S. (2020). Taking Stock of the Financial Sector Policy Response to COVID-19 around the World. *World Bank Policy Research Working Paper*, *9497*(December). http://www.worldbank.org/prwp.
13. Gambacorta, L., Oliviero, T., & Shin, H. S. (2021). Low Price-To-Book Ratios and Bank Dividend Payout Policies. *SSRN Electronic Journal*, *907*(December). https://doi.org/10.2139/ssrn.3761864
14. Hardy, B. (2021). Covid-19 bank dividend payout restrictions: effects and trade-offs. *BIS Bulletin*, *38*(March). https://www.bis.org/publ/bisbull38.pdf
15. Hartley, J., Rebucci, A., & Jiménez, D. (2021). An Event Study of COVID-19 Central Bank Quantitative Easing in Advanced and Emerging Economies. *NBER Working Paper Series*, *27339*(February). https://doi.org/10.2139/ssrn.3607645
16. Morelli, P., & Seghezza, E. (2021). Why was the ECB's reaction to Covid-19 crisis faster than after the 2008 financial crash? *Journal of Policy Modeling*, 106192. https://doi.org/10.1016/j.jpolmod.2020.12.002
17. Mosser, P. C. (2020). Central bank responses to COVID-19. *Business Economics*, *55*(4), 191–201. https://doi.org/10.1057/s11369-020-00189-x
18. Muñoz, M. A. (2020). Rethinking capital regulation: The case for a dividend prudential target. *International Journal of Central Banking*, *2433*(July). https://doi.org/10.2139/ssrn.3401686
19. Restoy, F. (2020). Central banks and financial stability: A reflection after the Covid-19 outbreak. *Occasional Paper*, *16*(August).
20. World Bank. (2022). COVID-19 Finance Sector Related Policy Responses. *Data Catalog World Bank*, *June*. COVID-19 Finance Sector Related Policy Responses | Data Catalog (worldbank.org)

Appendix

Table 2

The sample of central banks considered for the analysis

Jurisdiction	Abbreviation	Central Bank
Euro Area	EA	European Central Bank (ECB)
Euro area countries		
Belgium	BE	National Bank of Belgium
Netherlands	NL	De Nederlandsche Bank
Spain	ES	Bank of Spain
Italy	IT	Bank of Italy
Portugal	PT	Banco de Portugal
Greece	GR	Central Bank of Greece
Ireland	IE	Central Bank of Ireland
Lithuania	LT	Bank of Lithuania
Latvia	LV	Bank of Latvia
Estonia	EE	Bank of Estonia
Slovakia	SK	National Bank of Slovakia
Slovenia	SI	Bank of Slovenia
Euro area candidate countries		
Bulgaria	BG	Bulgarian National Bank
Czech Republic	CZ	Czech National Bank
Croatia	HR	Croatian National Bank
Poland	PL	National Bank of Poland
Romania	RO	National Bank of Romania
Hungary	HU	Hungarian National Bank

Source: processing by author

Table 3

Central banks' policy instruments

Monetary policy				
Asset purchases policy	**Interest rate policy**	**Exchange rate policy**	**Lending operations policy**	**Reserve policy**
- Asset purchases programmes	- Changes in the interest rate level - Forward guidance	- FX interventions - FX swaps - Swap lines - Repo lines (EUR)	- Liquidity provisions - Targeted refinancing (lending)	- Requirement ratio - Remuneration
Macroprudential policy				
System-wide minimum capital requirements	**Capital-based measures**	**Borrower-based measures**	**Liquidity-based measures**	**Special macroprudential measures**
- Capital adequacy ratio - Tier 1	- Capital buffers (conservation, counter-cyclical, systemic) - Risk weights	- Loan-to-value ratio - Loan-to-income ratio - Debt-service-to-income ratio - Loan maturity	- Liquidity requirements - Exposure limits - Foreign currency mismatch limits	- Prudential flexibility - Adjusting supervisory policy - Ensure public risk disclosures by banks - Mandatory credit repayment moratorium - Restrictions on use of profits and resources

Source: author's compilation after Cantú et al. (2021), Eller et al. (2020), and World Bank (2021)