EXTRAORDINARY ACTIONS OF THE ECB IN RESPONSE TO THE CORONAVIRUS PANDEMIC

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"Extraordinary times require extraordinary action.
There are no limits to our commitment to the euro."

Christine Lagarde, President of the ECB[1]

Abstract

The main objective of the paper is to analyze the extraordinary actions implemented by the European Central Bank (ECB) in response to the coronavirus pandemic in 2020-2021. These actions are mainly aimed at helping the eurozone economy absorb the shock of the pandemic, maintaining easier lending conditions, facilitating access to credit for individuals and businesses, and increasing banks' capacity to lend. The paper is focused on the new unconventional monetary policy programme of the ECB implemented during the coronavirus pandemic – the Pandemic Emergency Purchase Programme (PEPP), as well as on the enhanced Targeted Longer-term Refinancing Operations (TLTROs), the introduced new non-targeted Pandemic Emergency Longer-term Refinancing Operations (PELTROs), the implemented comprehensive set of collateral easing measures, the increased banks' lending capacity and the extended swap and repo lines. The research methodology includes theoretical and methodological analysis, comparative study, inductive and deductive approach, descriptive study, systematic approach, empirical analysis and critical analysis. The paper concludes with summarizing the results from the study.

Keywords: *European Central Bank, Extraordinary actions, Unconventional monetary policy measures, Coronavirus pandemic*

1. INTRODUCTION

The main objective of the paper is to analyze the extraordinary actions implemented by the European Central Bank (ECB) in response to the coronavirus pandemic in 2020-2021. These measures and actions are aimed at helping the eurozone economy absorb the shock of the pandemic, maintaining easier lending conditions, facilitating access to credit for individuals and businesses, and increasing banks' capacity to lend. The ECB considers the COVID-19 pandemic to be a shock of unprecedented intensity and severity, with the outbreak and escalation of the pandemic putting Europe in a health emergency (Schnabel, 2020b). As Lagarde (2020b) argues, the deliberate shutdown of the economy triggered by the coronavirus pandemic has produced a highly unusual recession. COVID-19 has produced an extreme economic shock that required an ambitious, coordinated and urgent reaction on all policy fronts to support businesses and workers at risk (Decision (EU) 2020/440 of the ECB). Therefore, in this paper we are interested in how the ECB contributes to overcoming the negative effects of the pandemic through its unconventional monetary policy instruments and extraordinary actions. The subject of research in the paper is the ECB, and the object of research – the extraordinary actions and measures implemented by the ECB in response to the coronavirus crisis.

The remainder of the paper is organised as follows. The second section represents a brief literature review on the ECB's unconventional monetary policy measures and actions. In the third section the databases and methodology used in the study are explained. In the fourth section the results from the

[1] Lagarde, C 2020a, "Our response to the coronavirus pandemic", The ECB Blog, Frankfurt am Main.

study are presented and discussed. This section looks deeply at the extraordinary actions and measures implemented by the ECB in response to the coronavirus crisis in 2020-2021. The paper is focused on the new unconventional monetary policy programme of the ECB implemented during the coronavirus pandemic – the Pandemic Emergency Purchase Programme (PEPP), as well as on the enhanced Targeted Longer-term Refinancing Operations (TLTROs), the introduced new non-targeted Pandemic Emergency Longer-term Refinancing Operations (PELTROs), the implemented comprehensive set of collateral easing measures, the increased banks' lending capacity and the extended swap and repo lines. The paper concludes with summarizing the results from the study.

2. BRIEF LITERATURE REVIEW

The global financial crisis 2008-2009 has called into question the conventional course of the monetary policy (Adrian and Shin, 2009). The increased vulnerability during the global financial crisis has pushed some segments of financial markets to 'freeze', for example, the interbank money market. The severity of the recession and the threat of a prolonged period with too low inflation has forced the ECB to lower nominal interest rates close to zero, and even introduce negative interest rates.

According to Bini Smaghi (2009), unconventional monetary policy is a type of policy that directly targets the price and availability of and access to external financing for banks, households and corporations. These sources of financing can be in the form of liquidity provided by the central bank, loans, fixed income securities or equity. According to Trifonova, Atanasov & Kolev (2017), the main types of monetary policy in terms of the characteristics of the monetary policy instruments are the following: (a) standard (traditional, conventional) monetary policy, and (b) unconventional (non-traditional, non-standard) monetary policy.

In June 2014 the ECB became the first major central bank to lower its deposit facility rate below zero, faced the challenging macroeconomic environment in the aftermath of the global financial crisis. By introducing a negative interest rate on its deposit facility the ECB aimed to "underpin the firm anchoring of medium to long-term inflation expectations" (Draghi, 2014). Negative interest rates of the ECB complemented other unconventional monetary policy measures – the ECB started buying assets from commercial banks in March 2015. These asset purchases, also known as Quantitative Easing (QE) support economic growth across the euro area and help us return to inflation levels below, but close to 2%. As part of its non-standard monetary policy measures the ECB resumed its purchases of covered bonds, expanded its asset purchase programme to include government bonds and asset-backed securities, and also provided additional term funding to banks through Targeted Longer-term Refinancing Operations (TLTROs) (Bech and Malkhozov, 2016).

The effects of the ECB's zero interest rate policy (ZIRP) or negative interest rate policy (NIRP) has been studied in numerous publications like those of Maddaloni and Peydró (2011), Al-Eyd and Berkmen (2013), Cour-Thimann and Winkler (2013), Jiménez et al. (2014), Dell'Ariccia et al. (2014), Draghi (2016), Gros (2016b), Jobst and Lin (2016), Agarwal et al. (2017), Lilley and Rogoff (2019), Heider et al. (2019), Schnabel (2020a), Schnabel (2020b) and others.

As regards the ECB's extraordinary actions and non-standard monetary policy measures, the majority of research focuses on the impact of large-scale asset purchase programmes and the provision of extraordinary liquidity. The effectiveness of the ECB's programmes of asset purchases is analyzed by Borio and Disyatat (2009), Altavilla et al. (2015), Altavilla and Giannone (2016), Gros (2016a), Andrade et al. (2016), Bernoth et al. (2016), Borio and Zabai (2016), Constancio (2016), Cœuré (2017), Zhou (2019) and others.

Carpinelli and Crosignani (2017), Carpinelli and Crosignani (2021) and others examine the effects of the ECB's Long-term Refinancing Operations (LTROs), which provide liquidity to euro area banks. Acharya et al. (2015), Ferrando, Popov and Udell (2017), Altavilla et al. (2014) and others analyze the implications of the ECB's Outright Monetary Transactions (OMT) Programme.

Although the COVID-19 pandemic has erupted since the beginning of 2020, significant publications examining the effects of monetary policy measures and actions are already available. For example,

Hutchinson and Mee (2020), Panetta (2020), Schnabel (2020a, 2020b), De Guindos & Schnabel (2020), De Guindos (2021), Lane (2020a, 2020b), Grund (2020), ECB (2021a, 2021b), Tamele et al. (2021), Lagarde & De Guinos (2021), Lagarde (2020a, 2020b, 2021) and others study the impact of the ECB's monetary policy measures and actions taken in response to the COVID-19 crisis. Special attention is drawn on the effects from the implemented ECB's Pandemic Emergency Purchase Programme (PEPP) for the euro area economy.

3. DATA AND METHODOLOGY

3.1. Data

Databases of the ECB and the European Statistical Office Eurostat are mainly used in the paper. This data concern mainly the new unconventional monetary policy programme of the ECB implemented in response to the coronavirus crisis – the Pandemic Emergency Purchase Programme (PEPP), the enhanced Targeted Longer-term Refinancing Operations (TLTROs) and the introduced a new series of non-targeted Pandemic Emergency Longer-term Refinancing Operations (PELTROs). Moreover, additional market empirical information, as well as the author's own calculations are used in the study.

The study covers the period of the COVID-19 pandemic: March 2020 – June 2021. In particular, the empirical analysis of monthly and cumulative net purchases under the PEPP has been made. This analysis is based on available public data.

Three indicators for the PEPP are examinied in the paper:

1) History of monthly net purchases under the PEPP;
2) Breakdown of public sector securities under the PEPP (net purchases);
3) History of private sector primary/secondary market breakdown under the PEPP.

The data for the breakdown of public sector securities under the PEPP (net purchases) are presented mainly bimonthly and cumulatively as follows: March – May 2020, June – July 2020, August – September 2020, October – November 2020, December 2020 – January 2021, February 2021 – March 2021, April 2021 – May 2021.

The latest available data for the private sector primary/secondary market breakdown under the PEPP are as of May 31, 2021. The data for the private sector primary/secondary market breakdown under the PEPP are presented at three specific dates as follows – November 30, 2020, March 31, 2021 and May 31, 2021.

3.2. Methodology

The research methodology of the study includes theoretical and methodological analysis, comparative study, inductive and deductive approach, descriptive study, empirical analysis, systematic approach, critical analysis.

An empirical analysis of the dynamics of net purchases under the PEPP during the period March 2020 – June 2021 has been made. Moreover, the empirical study covers the breakdown of public sector securities under the PEPP and the breakdown of private sector primary/secondary market securities under this programme. Private sector primary/secondary market securities are classified according to the asset classes as follows: Asset Backed Securities, Covered Bonds, Corporate bonds and Commercial Papers.

4. EXTRAORDINARY ACTIONS AND MEASURES IMPLEMENTED BY THE ECB IN RESPONSE TO THE CORONAVIRUS CRISIS IN 2020-2021

Since March 2020 the severity of the economic and financial implications stemming from the coronavirus crisis has become increasingly apparent. The ECB has taken a timely response to the COVID-19 pandemic with a decisive policy package, aimed firstly, at restoring normal functioning of

the euro area financial markets, which have suffered from extremely high levels of instability and low liquidity conditions, and secondly, at ensuring that the ECB's accommodative monetary policy continues to be transmitted in all parts of the single currency area, thereby supporting businesses and households in shouldering the significant economic and social costs of the crisis (Schnabel, 2020b).

In pursuing its mandate for price stability, the ECB's policy response to the COVID-19 crisis has three specific objectives (Panetta, 2020):

1) To counter the downward impact of the pandemic on the projected path of inflation.
2) To ensure that all parts of the euro area have access to liquidity which is crucial for weathering the lockdown.
3) To avoid damaging feedback loops between financial markets and the real economy, ensuring that other policies could play their full role in addressing the effects of the pandemic, in turn making the ECB's monetary policy more effective.

According to Schnabel (2020b), in achieving these goals and in calibrating the ECB's response to the COVID-19 crisis, the ECB has an invaluable asset: its large and tested set of monetary policy instruments. This means that, compared to previous crises, the starting point for the ECB's discussion on its measures as a response to the pandemic is the widely shared perception of the benefits and costs of the various instruments that the Eurosystem has implemented in the recent past (Schnabel, 2020b).

Based on extensive discussion and analysis, in 2020 the ECB has taken a wide range of monetary and banking supervision measures to mitigate the impact of the coronavirus pandemic on the euro area economy and to support all European citizens (Lagarde, 2020a). These measures are presented at Figure 1. Their classification and systematization is based on the study of Christine Lagarde, President of the ECB (Lagarde, 2020a).

The paper is focused on the new unconventional monetary policy programme of the ECB implemented during the coronavirus crisis – the Pandemic Emergency Purchase Programme (PEPP), as well as on the enhanced Targeted Longer-term Refinancing Operations (TLTROs), the introduced a new series of non-targeted Pandemic Emergency Longer-term Refinancing Operations (PELTROs), the implemented comprehensive set of collateral easing measures, the increased banks' lending capacity and the extended swap and repo lines.

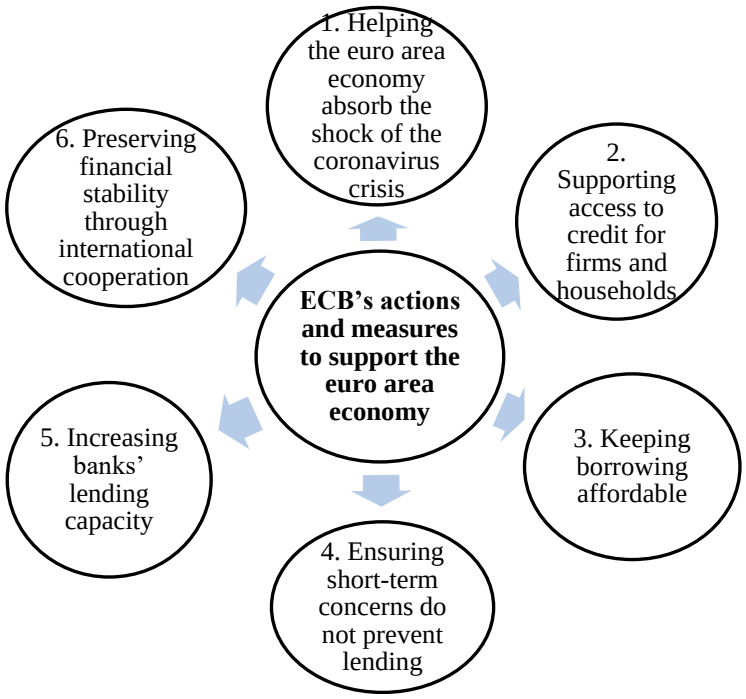


Fig. 1. The ECB's actions and measures to support the euro area economy

4.1. Helping the euro area economy absorb the shock of the coronavirus crisis

The new unconventional monetary policy programme of the ECB implemented in response to the COVID-19 crisis is the Pandemic emergency purchase programme (PEPP). On March 18, 2020, the ECB's Governing Council decided to launch a new temporary asset purchase programme of private and public sector securities to counter the serious risks to the monetary policy transmission mechanism and the outlook for the euro area posed by the outbreak and escalating diffusion of the coronavirus (ECB, 2020a).

The PEPP is launched with an initial envelope of €750 billion (ECB, 2020a). Later, the ECB's Governing Council decided to increase the initial €750 billion envelope for the PEPP by €600 billion on June 4, 2020 and by €500 billion on December 10, 2020, for a new total of €1,850 billion (ECB, 2021a).

All asset categories eligible under the existing Asset purchase programme (APP) of the ECB are also eligible under the PEPP, as well as a waiver of the eligibility requirements has been granted for securities issued by the Greek Government (ECB, 2021a). For the purchases of public sector securities the benchmark allocation across jurisdictions is the capital key of the national central banks (NCBs) (ECB, 2020a). Non-financial commercial paper is eligible for purchases both under the PEPP and the Corporate Sector Purchase Programme (CSPP) of the ECB. All purchases under the PEPP are being carried out in a flexible manner over time, across asset classes and among jurisdictions.

The residual maturity of public sector securities eligible for purchase under the PEPP ranges from 70 days up to a maximum of 30 years and 364 days (ECB, 2021a). The reinvestment of principal payments from maturing securities purchased under the PEPP is also extended until at least the end of 2023 (ECB, 2021a). These purchases are aimed to prevent a tightening of financing conditions in the euro area.

The ECB's Governing Council will terminate net asset purchases under the PEPP once it judges that the COVID-19 crisis phase is over, but in any case not before the end of March 2022 (ECB, 2021a).

The expected effect of the €1,850 billion PEPP is to lower borrowing costs and increase lending in the euro area and thus help citizens, firms and governments have access to funds they may need to weather the crisis.

The effects of the PEPP have been analyzed by a number of authors. For example, Hutchinson & Mee (2020), argue that the announcement of PEPP in March 2020 has acted as a powerful stabilizing market force – the tightening in financial conditions in the euro area has been halted. According to Grund (2020), the PEPP's design entails some important safeguards: bond purchases are restricted to a certain limit and to periods of malfunctioning monetary policy transmission channels. They are also limited to securities with strict eligibility criteria and are subject to a limited loss-sharing arrangement. Moreover, the PEPP does not breach the monetary financing prohibition because it has no equivalent effect to bond purchases on the primary markets and does not incentivize euro area Member States pursue unsound budgetary policies. According to Lane (2020a), the PEPP has a dual role: first, alongside the ECB's other monetary policy instruments, asset purchases are the most important mechanism for delivering the additional monetary accommodation required to support the economic recovery and safeguard price stability in the medium term; second, the flexibility embedded in the PEPP – across time, asset classes and jurisdictions – is essential in enabling the ECB to stabilise financial markets in an efficient and effective manner.

Figure 2 presents the dynamics of monthly and cumulative net purchases under the programme during the period March 2020 – June 2021. It can be said that the functioning of the programme began modestly. For the first month of the PEPP, i.e. by the end of March 2020, the monthly net purchases under the programme amounted of €15.4 billion. But only in the next month of the programme – April 2020, the monthly net purchases increased significantly – they exceeded €103.3 billion. In May 2020 the monthly net purchases under the PEPP exceeded €115.8 billion. The same trend continued in June 2020, when monthly net purchases under the PEPP increased even more – they exceeded €120 billion.

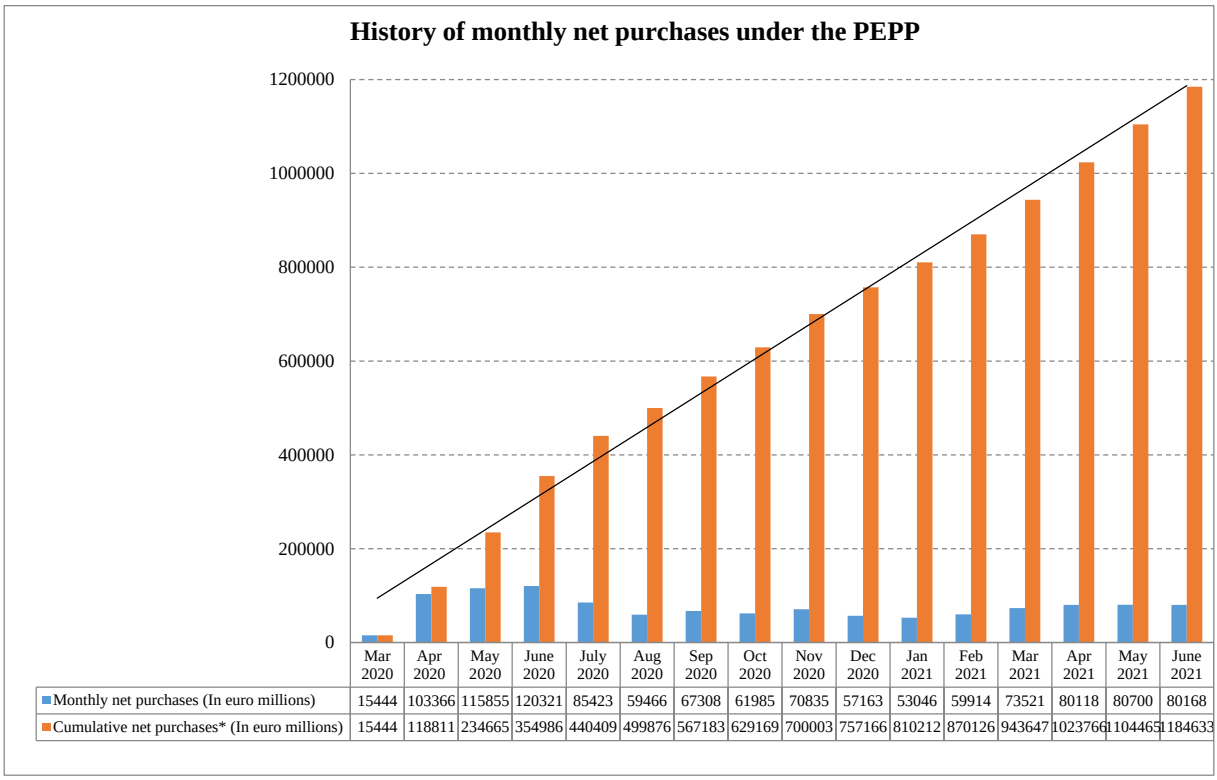
As a result, at the end of June 2020, the highest value of cumulative net purchases under the PEPP was reported.

In the coming months until the end of 2020 there were more moderate values of monthly net purchases under the PEPP. They were in the range of €57-70 billion. Cumulatively, however, the value of net purchases under this programme increased significantly.

As of December 31, 2020, the monthly net purchases under the PEPP exceeded €57 billion and the cumulative net purchases under the PEPP exceeded €757 billion. During the period from the introduction of the programme until the end of 2020, the largest monthly net purchases under the PEPP were reported in June 2020 – over €120 billion. Obviously, the lowest monthly net purchases under the PEPP were observed during the first month of the programme – March 2020 – €15.4 billion.

According to the latest data published by the ECB, at the end of June 2021 the monthly net purchases under the PEPP exceeded €80 billion and the cumulative net purchases under the PEPP exceeded €1,184 billion. During the period January – June 2021, the largest monthly net purchases under the PEPP were reported in May 2021 – over €80.7 billion (Figure 1). In contrast, the lowest monthly net purchases under the PEPP were marked in January 2021 – around €53 billion. However, during the period January – June 2021, the maximum value of monthly net purchases (reported in June 2020) has not been exceeded.

There is a clear linear trend of increasing the cumulative net purchases under the PEPP during the whole period from the start of the programme to the end of June 2021 (Figure 2).



	Mar 2020	Apr 2020	May 2020	June 2020	July 2020	Aug 2020	Sep 2020	Oct 2020	Nov 2020	Dec 2020	Jan 2021	Feb 2021	Mar 2021	Apr 2021	May 2021	June 2021
Monthly net purchases (In euro millions)	15444	103366	115855	120321	85423	59466	67308	61985	70835	57163	53046	59914	73521	80118	80700	80168
Cumulative net purchases* (In euro millions)	15444	118811	234665	354986	440409	499876	567183	629169	700003	757166	810212	870126	943647	1023766	1104465	1184633

* Cumulative monthly net purchases figures represent the difference between the acquisition cost of all purchase operations and the redeemed nominal amounts. Figures are preliminary and may be subject to revision. The monthly purchase volumes are reported on a settlement basis and net of redemptions.

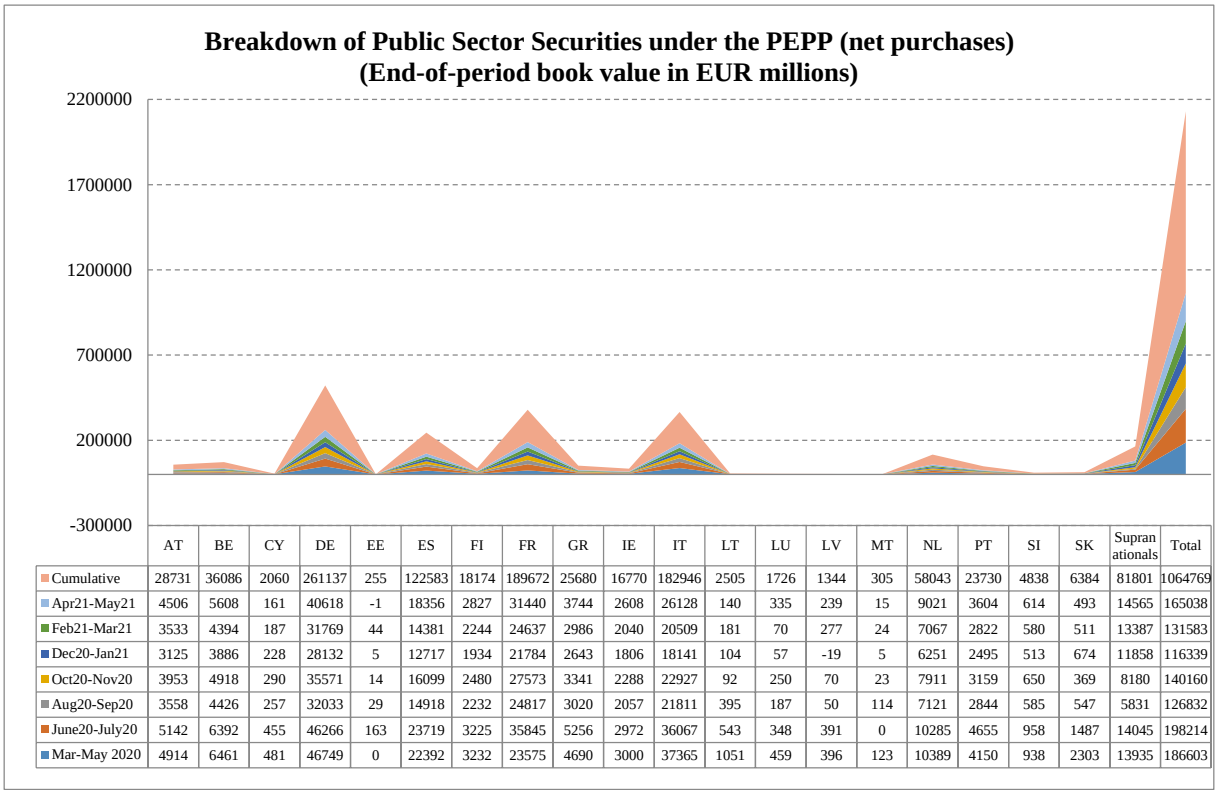
Fig. 2. History of monthly net purchases under the PEPP

Source: ECB; authors' calculations

Figure 3 presents the breakdown of public sector securities under the PEPP (net purchases) during the period March 2020 – May 2021. The net purchases of public sector securities under the PEPP are showed bimonthly (mainly) and cumulatively. Cumulatively for the entire period under review, total net purchases of public sector securities under the PEPP reached over €1,064 billion.

In cumulative terms, throughout the reviewed period the Eurosystem made the largest net purchases of public sector securities under PEPP issued by Germany (over €261 billion), followed by France (over €189 billion), Italy (over €182 billion), Spain (over €122 billion) and supranational institutions (over €81 billion). Next in line are the following countries – Netherlands (over €58 billion), Belgium (over €36 billion), Austria (over €28 billion), Greece (over €25 billion) and Portugal (over €23 billion).

Conversely, cumulatively during the reviewed period March 2020 – May 2021 the Eurosystem made the smallest net purchases of public sector securities under the PEPP issued by Estonia (€255 million), followed by Malta (€305 million), Latvia (€1.3 billion), Luxembourg (€1.7 billion), Cyprus (€2.0 billion) and Lithuania (€2.5 billion).



	AT	BE	CY	DE	EE	ES	FI	FR	GR	IE	IT	LT	LU	LV	MT	NL	PT	SI	SK	Supranationals	Total
Cumulative	28731	36086	2060	261137	255	122583	18174	189672	25680	16770	182946	2505	1726	1344	305	58043	23730	4838	6384	81801	1064769
Apr21-May21	4506	5608	161	40618	-1	18356	2827	31440	3744	2608	26128	140	335	239	15	9021	3604	614	493	14565	165038
Feb21-Mar21	3533	4394	187	31769	44	14381	2244	24637	2986	2040	20509	181	70	277	24	7067	2822	580	511	13387	131583
Dec20-Jan21	3125	3886	228	28132	5	12717	1934	21784	2643	1806	18141	104	57	-19	5	6251	2495	513	674	11858	116339
Oct20-Nov20	3953	4918	290	35571	14	16099	2480	27573	3341	2288	22927	92	250	70	23	7911	3159	650	369	8180	140160
Aug20-Sep20	3558	4426	257	32033	29	14918	2232	24817	3020	2057	21811	395	187	50	114	7121	2844	585	547	5831	126832
June20-July20	5142	6392	455	46266	163	23719	3225	35845	5256	2972	36067	543	348	391	0	10285	4655	958	1487	14045	198214
Mar-May 2020	4914	6461	481	46749	0	22392	3232	23575	4690	3000	37365	1051	459	396	123	10389	4150	938	2303	13935	186603

* End-of-period book value in EUR millions. Figures may not add up due to rounding.

Fig. 3. Breakdown of Public Sector Securities under the PEPP (net purchases)

Source: ECB; authors' calculations

Tables 1, 2 and 3 present the private sector primary/secondary market breakdowns under the PEPP at three specific dates – November 30, 2020, March 31, 2021 and May 31, 2021. Private sector primary/secondary market securities are distinguished into 4 asset classes: Asset Backed Securities, Covered Bonds, Corporate bonds and Commercial Papers.

Private sector securities purchases play an important role in the implementation of the ECB's monetary policy in both the APP and the PEPP. In addition to covered bonds and asset-backed securities, the ECB has purchased corporate bonds under the CSPP. Empirical evidence confirms that such purchases have contributed to both a significant easing of financing conditions for euro area

firms and to stronger bond issuance. By freeing up bank balance sheet capacity, they have also had positive spillover effects on firms that do not directly benefit from bond purchases (Lane, 2020b).

The total holdings of private sector primary/secondary market securities amounted to €48.2 billion as of November 30, 2020, €43.8 billion as of March 31, 2021 and €39.5 billion as of May 31, 2021.

As of November 30, 2020, the total holdings of private sector commercial papers amounted to €24,306 million (including primary market holdings - €20,001 million and secondary market holdings - €4,305 million) (Table 1). As of the same date the total holdings of private sector corporate bonds amounted to €20,760 million (including primary market holdings - €8,842 million and secondary market holdings - €11,918 million). Respectively, the total holdings of private sector covered bonds amounted to €3,123 million (including primary market holdings - €557 million and secondary market holdings - €2,566 million).

As shown in Table 1, the largest were the private sector asset holdings of commercial papers under the PEPP as of November 30, 2020. The share of private sector primary market commercial papers holdings was predominant (82.29%), compared to that of secondary market commercial papers holdings (17.71%). Corporate bonds issued by private sector entities took smaller part of total holdings in PEPP as of November 30, 2020. The share of private sector secondary market corporate bonds holdings (57.41 %) was larger than that of primary market corporate bonds holdings (42.59 %). The total holdings of private sector covered bonds were the smallest. For them, the primary/secondary market breakdown shows a much more significant share of private sector secondary market covered bonds holdings (82.16%) than that of primary market covered bonds holdings (17.84%). As of November 30, 2020, there were no holdings of private sector asset-backed securities under the PEPP.

Asset Class	**Asset Backed securities**		**Covered Bonds**		**Corporate Bonds**		**Commercial Papers**	
Market	**Primary market holdings**	**Secondary market holdings**	**Primary market holdings**	**Secondary market holdings**	**Primary market holdings**	**Secondary market holdings**	**Primary market holdings**	**Secondary market holdings**
EUR millions*	0	0	557	2566	8842	11918	20001	4305
Share*	0.00%	0.00%	17.84%	82.16%	42.59%	57.41%	82.29%	17.71%
Date: Nov 30, 2020								

* End of month, at amortised cost. Figures may not add up due to rounding.

Table 1. Private sector primary/secondary market breakdown under the PEPP as of November 30, 2020

Source: ECB; authors' calculations

As of March 31, 2021, the total holdings of private sector corporate bonds amounted to €27,058 million (including primary market holdings - €10,333 million and secondary market holdings - €16,725 million) (Table 2). As of the same date the total holdings of private sector commercial papers amounted to €12,766 million (including primary market holdings - €11,716 million and secondary market holdings - €1,050 million). Respectively, the total holdings of private sector covered bonds amounted to €4,050 million (including primary market holdings - €745 million and secondary market holdings - €3,310 million).

As shown in Table 2, the largest were the private sector asset holdings of corporate bonds under the PEPP as of March 31, 2021. The share of private sector secondary market corporate bonds holdings was predominant (61.81%), compared to that of primary market corporate bonds holdings (38.19%). Commercial papers issued by private sector entities took smaller part of total holdings in PEPP as of March 30, 2021. The share of private sector primary market commercial papers holdings (91.78%) was predominant, compared to that of secondary market commercial papers holdings (8.22%). The

total holdings of private sector covered bonds again were the smallest. For them, the primary/secondary market breakdown shows a much more significant share of private sector secondary market covered bonds holdings (81.63%) than that of primary market covered bonds holdings (18.37%). As of March 31, 2021, there were no holdings of private sector asset-backed securities under the PEPP.

Asset Class	**Asset-backed Securities**		**Covered bonds**		**Corporate bonds**		**Commercial papers**	
Market	**Primary market holdings**	**Secondary market holdings**	**Primary market holdings**	**Secondary market holdings**	**Primary market holdings**	**Secondary market holdings**	**Primary market holdings**	**Secondary market holdings**
EUR millions*	0	0	745	3310	10333	16725	11716	1050
Share*	0.00%	0.00%	18.37%	81.63%	38.19%	61.81%	91.78%	8.22%
Date: March 31, 2021								

* End of month, at amortised cost. Figures may not add up due to rounding.

Table 2. Private sector primary/secondary market breakdown under the PEPP as of March 31, 2021

Source: ECB; authors' calculations

As of May 31, 2021, the total holdings of private sector corporate bonds amounted to €31,014 million (including primary market holdings - €11,431 million and secondary market holdings - €19,583 million) (Table 3). As of the same date the total holdings of private sector commercial papers amounted to €4,590 million (including primary market holdings - €4,397 million and secondary market holdings - €193 million). The data for the private sector covered bonds holdings as a total amount and according to the type of market were the same as those as of March 31, 2021.

As shown in Table 3, the largest were the private sector asset holdings of corporate bonds under the PEPP as of May 31, 2021. The share of private sector secondary market corporate bonds holdings was predominant (63.14%), compared to that of primary market corporate bonds holdings (36.86%). Commercial papers issued by private sector entities took smaller part of total holdings in PEPP as of May 31, 2021. The share of private sector primary market corporate bonds holdings (95.79%) was predominant, compared to that of secondary market corporate bonds holdings (4.21%). The total holdings of private sector covered bonds again were the smallest. For them, the primary/secondary market breakdown shows a much more significant share of private sector secondary market covered bonds holdings (81.64%) than that of primary market holdings (18.37%).

There are no holdings of private sector asset-backed securities under the PEPP so far.

Asset Class	**Asset-backed Securities**		**Covered bonds**		**Corporate bonds**		**Commercial papers**	
Market	**Primary market holdings**	**Secondary market holdings**	**Primary market holdings**	**Secondary market holdings**	**Primary market holdings**	**Secondary market holdings**	**Primary market holdings**	**Secondary market holdings**
EUR millions*	0	0	745	3310	11431	19583	4397	193
Share*	0.00%	0.00%	18.37%	81.64%	36.86%	63.14%	95.79%	4.21%
Date: May 31, 2021								

* End of month, at amortised cost. Figures may not add up due to rounding.

Table 3. Private sector primary/secondary market breakdown under the PEPP as of May 31, 2021

Source: ECB; authors' calculations

4.2. Supporting access to credit for firms and households

On March 11, 2020, the World Health Organization (WHO) announced that the global spread of COVID-19 had reached a stage where it could be declared a pandemic (WHO, 2020).

At the beginning of 2020, the ECB still did not address the problems arising from the pandemic in its monetary policy decisions. It was not until March 18, 2020 that the ECB decided to introduce a new temporary asset purchase programme – the PEPP. Two meetings of the ECB's Governing Council were held in the period January – March 2020, in which, however, the monetary policy decisions did not address the problems arising from the COVID-19 pandemic in the euro area. These were the meetings of January 23, 2020 and March 12, 2020.

At its meeting on March 18, 2020, the Governing Council of the ECB took a decision to expand the range of eligible assets under the Corporate Sector Purchase Programme (CSPP) to non-financial commercial paper, making all commercial papers of sufficient credit quality eligible for purchase under CSPP (ECB, 2020a).

However, the next meetings of the Governing Council of the ECB have already emphasized that the PEPP is being carried out in order to ease the overall monetary policy stance and to counter the serious risks to the monetary policy transmission mechanism and the outlook for the euro area possessed by the coronavirus pandemic. An example of this is the monetary policy decisions of April 30, 2020 (ECB, 2020c).

At its meeting on March 18, 2020, the Governing Council of the ECB stated that: (1) The Governing Council is committed to playing its role in supporting all citizens of the euro area through the current extremely challenging time; (2) To that end, the ECB aims to ensure that all sectors of the euro area economy can benefit from supportive financing conditions that enable them to absorb this shock. This applies equally to families, firms, banks and governments; (3) The Governing Council does everything necessary within its mandate. It is fully prepared to increase the size of its asset purchase programmes and adjust their composition, by as much as necessary and for as long as needed. It is aimed to explore all options and all contingencies to support the euro area economy through the shock of COVID-19; (4) The ECB does not tolerate any risks to the smooth transmission of its monetary policy in all jurisdictions of the euro area (ECB, 2020a).

In April 2020 the ECB announced package of temporary collateral easing measures to facilitate the availability of eligible collateral for Eurosystem counterparties to participate in liquidity providing operations, such as the Targeted Longer-term Refinancing Operations (TLTRO III) (ECB, 2020d).

At its meeting on April 30, 2020, the Governing Council of the ECB stated that the conditions on the Targeted Longer-term Refinancing Operations (TLTRO III) has been further eased (ECB, 2020c). Specifically, the Governing Council decided to reduce the interest rate on TLTRO III operations during the period from June 2020 to June 2021 to 50 basis points below the average interest rate on the Eurosystem's main refinancing operations (MROs) prevailing over the same period. The interest rate on all Targeted Longer-term Refinancing Operations (TLTRO III) has been reduced by 25 basis points to -0.5% from June 2020 to June 2021. For banks meeting the lending threshold of 0% was introduced on March 12, 2020, the interest rate can be as low as -1%. Moreover, for counterparties whose eligible net lending reaches the lending performance threshold, the interest rate over the period from June 2020 to June 2021 has been determined at 50 basis points below the average deposit facility rate prevailing over the same period (ECB, 2020c).

Also, at its meeting on April 30, 2020, the Governing Council of the ECB introduced a new series of non-targeted Pandemic Emergency Longer-term Refinancing Operations (PELTROs) as a response to the coronavirus emergency (ECB, 2020c). These operations are being carried out in order to support liquidity conditions in the euro area financial system and to contribute to preserving the smooth functioning of money markets by providing an effective liquidity backstop. The PELTROs consist of 7 additional refinancing operations commencing in May 2020 and maturing in a staggered sequence between July 2021 and September 2021 in line with the duration of the collateral easing measures. They are carried out as fixed rate tender procedures with full allotment, with an interest rate that is 25

basis points below the average rate on the main refinancing operations (MROs) prevailing over the life of each PELTRO (ECB, 2020c).

In response to the COVID-19 pandemic, the ECB has increased the amount of money that banks can borrow from it and made it easier for banks to borrow specifically to make loans to those hardest-hit by the spread of the coronavirus, including small and medium-sized enterprises (SMEs) (Lagarde, 2020a). One of the ways the ECB has made borrowing easier is by easing its standards for the collateral that banks give to the ECB as a form of insurance when the ECB lend to them. The ECB has temporarily expanded the list of assets that banks can use as collateral.

The ECB has expanded the use of credit claims as collateral, in particular through the potential expansion of the additional credit claims (ACCs) frameworks (ECB, 2020d). The ACC framework provides the possibility to national central banks (NCBs) to enlarge the scope of eligible credit claims for counterparties in their jurisdictions. This includes the possibility to accept loans with lower credit quality, loans to other types of debtors, not accepted in the ECB's general framework, and foreign-currency loans (ECB, 2020d).

Moreover, the ECB has become less strict with the measure it applies to determine these assets' value (known as a "haircut") (Lagarde, 2020a). The ECB's Governing Council has decided to temporarily increase its risk tolerance level in credit operations through a general reduction of collateral valuation haircuts by a fixed factor of 20% in order to contribute to the collateral easing measures while maintaining a consistent degree of protection across collateral asset types, albeit at a temporarily lower level (ECB, 2020d). In addition, as part of the regular review of its risk control framework, the ECB's Governing Council has decided to adjust the haircuts applied to non-marketable assets, both in the general collateral framework and for ACCs, by fine-tuning some of the haircut parameters (ECB, 2020d).

At its meeting on December 10, 2020, the Governing Council of the ECB took the following main decisions (ECB, 2020e):

1. The Governing Council of the ECB decided to further recalibrate the conditions of the third series of Targeted Longer-term Refinancing Operations (TLTRO III). Specifically, it decided to extend the period over which considerably more favourable terms will apply by 12 months, to June 2022. Three additional operations will also be conducted between June and December 2021. Moreover, the Governing Council decided to raise the total amount that counterparties will be entitled to borrow in TLTRO III operations from 50% to 55% of their stock of eligible loans. In order to provide an incentive for banks to sustain the current level of bank lending, the recalibrated TLTRO III borrowing conditions will be made available only to banks that achieve a new lending performance target.
2. The Governing Council also decided to extend to June 2022 the duration of the set of collateral easing measures adopted by the Governing Council on April 7, 2020 and on April 22, 2020. The extension of these measures will continue to ensure that banks can make full use of the Eurosystem's liquidity operations, most notably the recalibrated TLTROs. The Governing Council will reassess the collateral easing measures before June 2022, ensuring that Eurosystem counterparties' participation in TLTRO III operations is not adversely affected.
3. The Governing Council also decided to offer 4 additional Pandemic Emergency Longer-term Refinancing Operations (PELTROs) in 2021, which will continue to provide an effective liquidity backstop.
4. Net purchases under the Asset Purchase Programme (APP) will continue at a monthly pace of €20 billion. The Governing Council continues to expect monthly net asset purchases under the Asset Purchase Programme (APP) to run for as long as necessary to reinforce the accommodative impact of its policy rates, and to end shortly before it starts raising the key ECB interest rates.
5. The Governing Council decided to continue conducting its regular lending operations as fixed rate tender procedures with full allotment at the prevailing conditions for as long as necessary.

6. The Governing Council also intends to continue reinvesting, in full, the principal payments from maturing securities purchased under the Asset Purchase Programme (APP) for an extended period of time past the date when it starts raising the key ECB interest rates, and in any case for as long as necessary to maintain favourable liquidity conditions and an ample degree of monetary accommodation.

In 2021, from the beginning of the year to the end of July, 5 meetings of the Governing Council of the ECB were held – on January 21, March 11, April 22, June 10 and July 22.

In all these meetings held in 2021, the Governing Council of the ECB reaffirms the continuation of net asset purchases under the Pandemic Emergency Purchase Programme (PEPP) and of reinvestment of principal payments from maturing securities purchased under the PEPP until at least the end of 2023, the continuation of net purchases under the Asset Purchase Programme (APP) at a monthly peace of €20 billion and the reinvestment of principal payments from maturing securities purchased under the APP, and the continuation of liquidity provision through its refinancing operations. At its meeting on July 22, 2021, the Governing Council of the ECB declared that it expects asset purchases under the PEPP over the third quarter of 2021 to be conducted at a significantly higher pace than during the first months of the year (ECB, 2021d).

According to the ECB, the funding obtained through the third series of Targeted Longer-term Refinancing Operations (TLTRO III) plays a crucial role in supporting bank lending to firms and households (ECB, 2021c).

4.3. Keeping borrowing affordable

In all its meetings in 2020 and 2021, the Governing Council of the ECB reconfirmed its very accommodative monetary policy stance. It emphasized the key role of its interest rate policy in promoting lending to businesses and households.

The key ECB interest rates have remained unchanged for a very long time at their historically low levels. They have not changed since September 18, 2019.

From September 18, 2019 until now, the key ECB interest rates have been remained unchanged at the following levels:

- Interest rate on main refinancing operations (MRO) – 0.00%;
- Interest rates on marginal lending facility (MLF) – 0.25%;
- Interest rate on deposit facility (DF) – -0.50%.

The dynamics of key ECB interest rates are shown in Table 4.

At its meeting on July 22, 2021, the Governing Council of the ECB agreed a symmetric inflation target of 2% over the medium term. The key ECB interest rates have been close to their lower bound for some time and the medium-term outlook for inflation is still well below the Governing Council's target. In these conditions, the Governing Council revised its forward guidance on interest rates (ECB, 2021d). It did so to underline its commitment to maintain a persistently accommodative monetary policy stance to meet its inflation target.

In support of its symmetric 2% inflation target and in line with its monetary policy strategy, the Governing Council expects the key ECB interest rates to remain at their current or lower levels until it sees inflation reaching 2% well ahead of the end of its forecast horizon, and durably for the rest of the projection horizon, and it judges that realized progress in underlying inflation is sufficiently advanced to be consistent with inflation stabilizing at 2% over the medium term (ECB, 2021d). According to the ECB, this may also imply a transitory period in which inflation is moderately above target.

(Interest rate levels in percentages per annum)

Date (with effect from)		Deposit facility (DF)	Main refinancing operations (MROs)		Marginal lending facility (MLF)
			Fixed rate tenders Fixed rate	Variable rate tenders Minimum bid rate	
2019	18 Sep.	−0.50	0.00	-	0.25
2016	16 Mar.	−0.40	0.00	-	0.25
2015	9 Dec.	−0.30	0.05	-	0.30
2014	10 Sep.	−0.20	0.05	-	0.30
	11 Jun.	−0.10	0.15	-	0.40
2013	13 Nov.	0.00	0.25	-	0.75
	8 May.	0.00	0.50	-	1.00
2012	11 Jul.	0.00	0.75	-	1.50
2011	14 Dec.	0.25	1.00	-	1.75
	9 Nov.	0.50	1.25	-	2.00
	13 Jul.	0.75	1.50	-	2.25
	13 Apr.	0.50	1.25	-	2.00
2009	13 May	0.25	1.00	-	1.75
	8 Apr.	0.25	1.25	-	2.25
	11 Mar.	0.50	1.50	-	2.50
	21 Jan.	1.00	2.00	-	3.00
2008	10 Dec.	2.00	2.50	-	3.00
	12 Nov.	2.75	3.25	-	3.75
	15 Oct.[4]	3.25	3.75	-	4.25
	9 Oct.[3]	3.25	-	-	4.25
	8 Oct.	2.75	-	-	4.75
	9 Jul.	3.25	-	4.25	5.25
2007	13 Jun.	3.00	-	4.00	5.00
	14 Mar.	2.75	-	3.75	4.75
2006	13 Dec.	2.50	-	3.50	4.50
	11 Oct.	2.25	-	3.25	4.25
	9 Aug.	2.00	-	3.00	4.00
	15 Jun.	1.75	-	2.75	3.75
	8 Mar.	1.50	-	2.50	3.50
2005	6 Dec.	1.25	-	2.25	3.25
2003	6 Jun.	1.00	-	2.00	3.00
	7 Mar.	1.50	-	2.50	3.50
2002	6 Dec.	1.75	-	2.75	3.75
2001	9 Nov.	2.25	-	3.25	4.25
	18 Sep.	2.75	-	3.75	4.75
	31 Aug.	3.25	-	4.25	5.25
	11 May	3.50	-	4.50	5.50

2000	6 Oct.	3.75	-	4.75	5.75
	1 Sep.	3.50	-	4.50	5.50
	28 Jun.[2]	3.25	-	4.25	5.25
	9 Jun.	3.25	4.25	-	5.25
	28 Apr.	2.75	3.75	-	4.75
	17 Mar.	2.50	3.50	-	4.50
	4 Feb.	2.25	3.25	-	4.25
1999	5 Nov.	2.00	3.00	-	4.00
	9 Apr.	1.50	2.50	-	3.50
	22 Jan.	2.00	3.00	-	4.50
	4 Jan. [1]	2.75	3.00	-	3.25
	1 Jan.	2.00	3.00	-	4.50

* Prior to March 10, 2004, changes to the interest rate for main refinancing operations were, as a rule, effective as of the first operation following the date indicated, unless stated otherwise. The change on 18 September 2001 was effective on that same day. From March 10, 2004 onwards, the date refers both to the deposit and marginal lending facilities and to the main refinancing operations (with changes effective from the first main refinancing operation following the Governing Council decision), unless otherwise indicated.

[1] On December 22, 1998 the ECB announced that, as an exceptional measure between January 4, 1999 and January 21, 1999, a narrow corridor of 50 basis points would be applied between the interest rates for the marginal lending facility and the deposit facility, aimed at facilitating the transition to the new regime by market participants (ECB, 1998).

[2] On June 8, 2000 the ECB announced that, starting from the operation to be settled on June 28, 2000, the main refinancing operations of the Eurosystem would be conducted as variable rate tenders. The minimum bid rate refers to the minimum interest rate at which counterparties may place their bids (ECB, 2000).

[3] As of October 9, 2008 the ECB reduced the standing facilities corridor from 200 basis points to 100 basis points around the interest rate on the main refinancing operations.

[4] On October 8, 2008 the ECB announced that, starting from the operation to be settled on October 15, the weekly main refinancing operations would be carried out through a fixed-rate tender procedure with full allotment at the interest rate on the main refinancing operations. This change overrode the previous decision (made on the same day) to cut by 50 basis points the minimum bid rate on the main refinancing operations conducted as variable rate tenders (ECB, 2008).

Table 4. History of key ECB interest rates (Interest rate levels in percentages per annum)

Source: ECB

4.4. Ensuring short-term concerns do not prevent lending

The ECB has implemented measures to support bank liquidity conditions and money market activity. At its meeting on July 22, 2021, the Governing Council of the ECB announced the following measures (ECB 2020f):

- Series of additional Longer-term Refinancing Operations (LTROs) to safeguard liquidity and money market conditions;
- Operations allotted on a weekly basis and all mature on June 24, 2020, when the fourth operation of TLTRO III was settled.

On July 22, 2021, the Governing Council of the ECB took decision to conduct additional Longer-term Refinancing Operations (LTROs) in order to provide immediate liquidity support to banks and to safeguard money market conditions in the euro area. These operations have been conducted according to an indicative calendar, as fixed rate tender procedures with full allotment. The rate in these operations has been fixed at the average of the deposit facility rate over the life of the respective operation. Interest has been paid when the respective operation matures (ECB 2020f).

The Targeted Longer-term Refinancing Operations (TLTRO III), the additional Longer-term Refinancing Operations (LTROs) and the Pandemic Emergency Purchase Programme (PEPP) collectively support the provision of bank lending especially by easing the conditions at which credit claims are accepted as collateral (ECB, 2020d).

4.5. Increasing banks' lending capacity

In the context of the crisis, the ECB has adopted important measures to help euro area banks to focus on playing their vital role as lenders during the extraordinary period of COVID-19 pandemic. The ECB has reduced its requirements about the amount of funds, or "capital", that banks are required to hold as a buffer for difficult times (Lagarde, 2020a). In addition, the ECB has given banks more flexibility on supervisory timelines, deadlines and procedures. In this way, banks are expected to use any freed-up funds to absorb losses and support the economy, and not to pay out dividends (Lagarde, 2020a).

On March 12, 2020, the ECB announced the following measures to ensure that its directly supervised banks could continue to fulfill their role in funding the real economy during the COVID-19 pandemic (ECB, 2020g):

- Banks are allowed to fully use capital and liquidity buffers with a view to withstand stressed situations like the coronavirus crisis.
- Banks are allowed to operate temporarily below the level of capital defined by the Pillar 2 Guidance (P2G), the capital conservation buffer (CCB) and the liquidity coverage ratio (LCR). The Pillar 2 Guidance (P2G) indicates to banks the adequate level of capital to be maintained in order to have sufficient capital as a buffer to withstand stressed situations, in particular as assessed on the basis of the adverse scenario in the supervisory stress tests.
- Banks can benefit from relief in the composition of capital for Pillar 2 Requirements or P2R. In fact, P2R covers risks which are underestimated or not sufficiently covered by Pillar 1.
- Banks can take advantage from the operational flexibility given to them by the ECB with regard to the implementation of bank-specific supervisory measures. For example, the ECB has rescheduled on-site inspections and extended deadlines for the implementation of remediation actions stemming from recent on-site inspections and internal model investigations, while ensuring the overall prudential soundness of the supervised banks.
- The ECB asked banks not to pay dividends or buy back shares during COVID-19 pandemic. Banks should not pay dividends for the financial years 2019 and 2020 until at least 1 October 2020 and should also refrain from share buy-backs aimed at remunerating shareholders (ECB, 2020h).

On March 3, 2020, the ECB Banking Supervision sent a letter to all significant banks to remind them to consider and address pandemic risk in their contingency strategies and to take appropriate actions for responding to the COVID-19 pandemic (Enria, 2020). These actions are presented at Table 5.

Actions of banks to prepare and respond to the COVID-19 pandemic	
1. Establishing adequate measures of infection control in the workplace which can include systems to reduce infection transmission and worker education.	5. Assessing and urgently testing whether large scale remote working or other flexible working arrangements for critical bank staff can be activated and maintained to ensure business continuity.
2. Assessing to which extent bank contingency plans include a pandemic scenario which provides for scaling measures commensurate with the institution's geographic footprint and business risk for the particular stages of a pandemic outbreak.	6. Proactively assessing and testing the capacity of existing IT infrastructure, also in light of a potential increase of cyber-attacks and potential higher reliance on remote banking services.
3. Assessing how quickly measures foreseen under the pandemic scenario of the contingency plan could be implemented and how long operations could be sustained under such a scenario.	7. Assessing risks of increased cyber-security related fraud, aimed both to customers or to the institution via phishing mails, etc.
4. Assessing whether alternative and sufficient back-up sites can be established in light of possible pandemic.	8. Entering into a dialogue with critical service providers to understand whether and to ascertain how services continuity would be ensured in case of a pandemic.

Table 5. Bank actions for preparing and responding to the pandemic

Source: ECB Banking Supervision; Enria (2020).

4.6. Preserving financial stability through international cooperation

The ECB has reactivated swap lines and enhanced existing swap lines with central banks across the globe in response to the COVID-19 pandemic. On December 10, 2020, the Governing Council of the ECB decided that the Eurosystem repo facility for central banks (EUREP) and all temporary swap and repo lines with non-euro area central banks would be extended until March 2022 (ECB, 2020e).

In the period from the outbreak of the pandemic to the end of June 2021, the following swap and liquidity lines have been reactivated or enhanced between the ECB and other central banks:

On March 15, 2020, a coordinated central bank action was taken to enhance the provision of global US dollar liquidity through US dollar liquidity swap line arrangements. The ECB and other major central banks (the Bank of Canada, the Bank of England, the Bank of Japan, the US Federal Reserve, and the Swiss National Bank) were agreed to offer weekly US dollar operations with 84-day maturity in addition to the existing 1-week operations (ECB, 2020i). Later, on March 20, 2020, a new coordinated central bank action was taken to further enhance the provision of US dollar liquidity.

On March 15, 2020, the ECB and Danmarks Nationalbank reactivated a currency arrangement (swap line) and increased the maximum amount to be borrowed by Danmarks Nationalbank from €12 billion to €24 billion. The purpose of the reactivation was for Danmarks Nationalbank to provide euro liquidity to Danish financial institutions (ECB, 2020j).

On April 15, 2020, the ECB and Hrvatska narodna banka (Croatian National Bank) agreed to set up a new precautionary currency agreement (swap line) amounted at €2 billion to provide euro liquidity to Croatian financial institutions in order to address possible market dysfunction (ECB, 2020k).

On April 15, 2020, the ECB and the Bulgarian National Bank (BNB) set up a new swap line to provide euro liquidity (ECB, 2020l). Under this new swap line, the BNB is able to borrow up to €2 billion from the ECB in exchange for Bulgarian levs (BGN). The maximum maturity for each drawing

is 3 months. The swap line was in place until 31 December 2020. Currently Bulgaria participates in the Exchange-rate Mechanism II (ERM II), which is a prerequisite for an EU Member State to join the euro area.

On June 19, 2020, the ECB and other major central banks (the Bank of England, the Bank of Japan and the Swiss National Bank, in consultation with the US Federal Reserve) jointly decided to reduce the frequency of 7-day US dollar operations from daily to three times per week in view of the improvements in US dollar funding conditions and the low demand at 7-day maturity US dollar liquidity-providing operations (ECB, 2020m). This new frequency was effective from July 1, 2020 up to the end-August 2020. Later, on August 20, 2020, an additional collective decision was taken by the ECB and these major central banks to further reduce the frequency of their 7-day operations from three times per week to once per week (ECB, 2020n). This operational change started as of September 1, 2020. In both cases, the practice of these central banks to continue to conduct weekly operations with an 84-day maturity is maintained.

On August 28, 2020, the ECB and Hrvatska narodna banka (Croatian National Bank, HNB) as well as the Banca Națională a României (National Bank of Romania, BNR) agreed to extend the respective euro liquidity lines by 6 months until the end of June 2021. The lines were established earlier in 2020 to provide euro liquidity to financial institutions in the two countries via their respective national central banks to address possible euro liquidity needs in the presence of market dysfunctions due to the COVID-19 shock (ECB, 2020o). The euro liquidity lines had been agreed initially until the end of 2020. Through a swap line agreement, the HNB can borrow up to €2 billion from the ECB in exchange for Croatian kuna. Under its repo line, the BNR can borrow up to €4.5 billion from the ECB in exchange for adequate euro-denominated collateral. The maximum maturity for each drawing is 3 months (ECB, 2020o).

On February 4, 2021, the ECB decided to offer a nine-month extension of its temporary swap and repo lines with the non-euro area central banks of Albania, Croatia, Hungary, the Republic of North Macedonia, Romania, San Marino and Serbia (ECB, 2020p). The duration of their euro liquidity lines with the ECB is up to March 2022. "The lines were established earlier in 2020 to provide euro liquidity to financial institutions in the respective countries via the corresponding national central banks. The objective of these euro liquidity lines is to address possible euro liquidity needs in non-euro area countries in the presence of market dysfunctions due to the COVID-19 pandemic. Furthermore, they aim at preventing spillback effects on euro area financial markets and economies that might adversely impact the smooth transmission of ECB monetary policy. The temporary euro liquidity lines had previously been set to expire in June 2021" (ECB, 2020p).

There is preliminary empirical evidence showing that the extraordinary actions and measures taken by the ECB have helped to stabilize broad financing conditions in the euro area, improve market liquidity and reduce volatility, thus protecting the financial conditions needed to achieve the ECB's mandate for price stability (Schnabel, 2020b).

5. CONCLUSIONS

"*The outbreak and escalating diffusion of the COVID-19 pandemic has confronted Europe with a health emergency that, in addition to the humanitarian crisis, poses severe challenges to the euro area economy and financial system, as well as to the transmission of the common monetary policy*" (De Guinos & Schnabel, 2020). By counteracting the tightening of financial conditions that confronted the euro area economy in the face of the COVID-19 crisis, the ECB's extraordinary actions and measures have been providing crucial support to the real economy and, ultimately, to price stability (Hutchinson & Mee, 2020). The Pandemic Emergency Purchase Programme (PEPP) has contributed to reducing borrowing costs and increasing bank lending in the euro area, thus helping people and businesses to weather the crisis.

The following conclusions can be drawn from the empirical analysis made in the paper on net purchases under the PEPP:

1) There is a clear linear trend of increasing the cumulative net purchases under the PEPP during the whole period from the start of the programme to the end of June 2021.
2) At the end of June 2021 the cumulative net purchases under this programme exceeded €1,184 billion. A record high of monthly net purchases under the PEPP is reported in June 2020 (€120 billion).
3) For the entire period March 2020 – May 2021 cumulatively the total net purchases of public sector securities under the PEPP reached over €1,064 billion. In comparison, the total holdings of private sector primary/secondary market securities amounted to €39.5 billion as of May 31, 2021.
4) Total private sector primary/secondary market securities holdings under the PEPP decreased over the reviewed period.
5) The private sector commercial papers under the PEPP, which had the largest holdings as of November 30, 2020, give way to corporate bonds, which occupy a leading position over the next two periods.
6) In private sector commercial papers under the PEPP there is a steady trend for their holdings on the primary market to prevail in comparison with those on the secondary market during the reviewed period.
7) In private sector corporate bonds under the PEPP there is a sustainable trend for their holdings on the secondary market to prevail in comparison with those on the primary market during the observed period.
8) For private sector covered bonds under the PEPP, the same trend is observed throughout the entire period. The total holdings of private sector covered bonds traditionally are the lowest throughout the period. No changes in the data for the private sector covered bonds holdings are reported, either as a total or by market type between the end of March and the end of May 2021.
9) There are no holdings of private sector asset-backed securities under the PEPP permanently throughout the whole period.

ACKNOWLEDGMENTS

This paper has been prepared within the research project “The innovative unconventional monetary policy of the leading central banks and its effects on advanced and developing countries, with an accent on Bulgaria” (supported by the Bulgarian National Science Fund of Ministry of Education and Science, Bulgaria; № DN15/10 from 11.12.2017).

REFERENCES

1. Acharya, VV, Eisert, T, Eufinger, C & Hirsch, CW 2015, “Whatever it Takes: The Real Effects of Unconventional Monetary Policy”, Paper at the IMF 16th Jacques Polak Annual Research Conference, Washington, DC, November, Available at: https://www.imf.org/external/np/res/seminars/2015/arc/pdf/Eisert.pdf
2. Adrian, T & Shin, HS 2009, “Money, Liquidity and Monetary Policy”, *American Economic Review*, vol. 99, no. 2, May, pp. 600-605.
3. Al-Eyd, A & Berkmen, SP 2013, “Fragmentation and Monetary Policy in the Euro Area”, *IMF Working Paper*, WP/13/208, International Monetary Fund, European Department, October. Available at: https://www.imf.org/external/pubs/ft/wp/2013/wp13208.pdf
4. Agarwal, S, Chomsisengphet, S, Mahoney, N & Stroebel, J 2017, “Do banks pass through credit expansions to consumers who want to borrow?”, *Quarterly Journal of Economics*, vol. 133, pp. 129-190.

5. Altavilla, C & Giannone, D 2016, "The effectiveness of non-standard monetary policy measures: evidence from survey data", *ECB Working Paper*, no. 1951, European Central Bank, Frankfurt am Main, August, Available at: https://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp1951.en.pdf
6. Altavilla, C, Giannone, D, & Lenza, M 2014, "The Financial and Macroeconomic Effects of OMT Announcements (July 9, 2014)", *ECB Working Paper*, no. 1707, ECB, Frankfurt am Main, August, Available at: https://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp1707.pdf
7. Altavilla, C, Carboni, G & Motto, R 2015, "Asset purchase programmes and financial markets: lessons from the euro area", *ECB Working Paper*, no. 1864, ECB, Frankfurt am Main, November, Available at: https://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp1864.en.pdf
8. Andrade, P, Breckenfelder, J, De Fiore, F, Karandi, P & Tristani, O 2016, "The ECB's Asset Purchase Programme: An Early Assessment", *ECB Working Paper*, no. 1956, ECB, Frankfurt am Main, September, Available at: https://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp1956.en.pdf
9. Bech, M & Malkhozov, A 2016, "How have central banks implemented negative policy rates?", *BIS Quarterly Review International banking and financial market developments*, Bank for International Settlements, Monetary and Economic Department, March, pp. 31-44. Available at: https://www.bis.org/publ/qtrpdf/r_qt1603.pdf
10. Bini Smaghi, L 2009, "Conventional and unconventional monetary policy", Keynote lecture at the International Centre for Monetary and Banking Studies (ICMB), 28 April, ECB, Directorate General Communications, Frankfurt am Main. Available at: https://www.ecb.europa.eu/press/key/date/2009/html/sp090428.en.html
11. Borio, C & Disyatat, P 2009, "Unconventional monetary policies: an appraisal", *BIS Working Paper*, no. 292, Bank for International Settlements, Monetary and Economic Department, November, Available at: https://www.bis.org/publ/work292.pdf
12. Borio, C & Zabai, A 2016, "Unconventional monetary policies: a re-appraisal", *BIS Working Papers*, no. 570, Bank for International Settlements, Monetary and Economic Department, July, Available at: http://www.bis.org/publ/work570.pdf
13. Carpinelli, L & Crosignani, M 2017, "The Effect of Central Bank Liquidity Injections to Bank Credit Supply", Paper at the "Banks, Systemic Risk, Measurement and Mitigation" Conference Bocconi Baffi-Carefin, Sapienza University, Review of Financial Studies, Rome, 17 March, Available at: http://matteocrosignani.com/site/wp-content/uploads/2017/03/Crosignani_Rome.pdf
14. Carpinelli, L & Crosignani, M 2021, "The Design and Transmission of Central Bank Liquidity Provisions", Journal of Financial Economics, vol. 141, issue 1, July, pp. 27-47.
15. Chakraborty, I, Goldstein, I & MacKinlay, A 2019, Monetary Stimulus and Bank Lending, *Working Paper*, Miami, USA, February, Available at: https://moya.bus.miami.edu/~ichakraborty/papers/monetarystimulus.pdf
16. Cœuré, B 2017, "The international dimension of the ECB's asset purchase programme'", Speech at the Foreign Exchange Contact Group meeting, 11 July, ECB, Directorate General Communications, Frankfurt am Main, Available at: https://www.ecb.europa.eu/press/key/date/2017/html/ecb.sp170711.en.html
17. Constancio, V 2016, "International headwinds and the effectiveness of monetary policy", Speech given at the 25th Annual Hyman P. Minsky Conference on the State of the U.S. and World Economies at the Levy Economics Institute of Bard College, Blithewood, Annandale-on-Hudson, New York, 13 April, Available at: https://www.ecb.europa.eu/press/key/date/2016/html/sp160413.en.html
18. Cour-Thimann, P & Winkler, B 2013, "The ECB's Non-standard Monetary Policy Measures; The Role of Institutional Factors and Financial Structure", *ECB Working Paper Series*, no. 1528, April, ECB, Frankfurt am Main, Available at: https://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp1528.pdf

19. De Guinos, L 2021, "Euro area banks in the recovery", Speech by Luis de Guindos, Vice-President of the ECB, at the Frankfurt Euro Finance Summit, Frankfurt am Main, 28 June, Available at: https://www.ecb.europa.eu/press/key/date/2021/html/ecb.sp210628_1~a91b7b3d4a.en.html
20. De Guinos, L & Schnabel, I 2020, "The ECB's commercial paper purchases: A targeted response to the economic disturbances caused by COVID-19", Blog post by Luis de Guindos, Vice-President of the ECB, and Isabel Schnabel, Member of the Executive Board of the ECB, the ECB Blog, 3 April, Available at: https://www.ecb.europa.eu/press/blog/date/2020/html/ecb.blog200403~54ecc5988b.en.html
21. Dell'Ariccia, G, Laeven, L & Marquez, R 2014, "Real interest rates, leverage, and bank risk-taking", *Journal of Economic Theory*, vol. 149, pp. 65-99.
22. DECISION (EU) 2020/440 OF THE EUROPEAN CENTRAL BANK of 24 March 2020 on a temporary pandemic emergency purchase programme (ECB/2020/17), Official Journal of the European Union OJ L 91, 25.3.2020, Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32020D0440&from=EN
23. Draghi, M 2014, "Introductory statement to the press conference (with Q&A)", ECB Directorate General Communications, Frankfurt am Main, 4 December, Available at: https://www.ecb.europa.eu/press/pressconf/2014/html/is141204.en.html
24. Draghi, M 2016, "Addressing the causes of low interest rates", Introductory speech by Mario Draghi at a panel on „The future of financial markets: A changing view of Asia" at the Annual Meeting of the Asian Development Bank, Frankfurt am Main, 2 May, Available at: https://www.ecb.europa.eu/press/key/date/2016/html/sp160502.en.html
25. Enria, A 2020, "Contingency preparedness in the context of COVID-19", ECB Banking Supervision, SSM-2020-0108, 3 March, Frankfurt am Main, Available at: https://www.bankingsupervision.europa.eu/press/letterstobanks/shared/pdf/2020/ssm.2020_letter_on_Contingency_preparedness_in_the_context_of_COVID-19.en.pdf
26. ECB 1998, "The ECB interest rates to be applied at the start of Stage Three", ECB, 22 December, Frankfurt am Main, Available at: https://www.ecb.europa.eu/press/pr/date/1998/html/pr981222.en.html
27. ECB 2000, "Monetary policy decisions", ECB, 8 June, Frankfurt am Main, Available at: https://www.ecb.europa.eu/press/pr/date/2000/html/pr000608.en.html
28. ECB 2008, "Changes in tender procedure and in the standing facilities corridor", ECB, 8 October, Frankfurt am Main, Available at: https://www.ecb.europa.eu/press/pr/date/2008/html/pr081008_2.en.html
29. ECB 2020a, "ECB announces €750 billion Pandemic Emergency Purchase Programme (PEPP)", Press release, ECB, 18 March, Frankfurt am Main, Available at: https://www.ecb.europa.eu/press/pr/date/2020/html/ecb.pr200318_1~3949d6f266.en.html
30. ECB 2020b, "Monetary policy decisions", Press release, ECB, 4 June, Frankfurt am Main, Available at: https://www.ecb.europa.eu/press/pr/date/2020/html/ecb.mp200604~a307d3429c.en.html
31. ECB, 2020c, "Monetary policy decisions", Press release, ECB, 30 April, Frankfurt am Main, Available at: https://www.ecb.europa.eu/press/pr/date/2020/html/ecb.mp200430~1eaa128265.en.html
32. ECB, 2020d, "ECB announces package of temporary collateral easing measures", Press release, ECB, 7 April, Frankfurt am Main, Available at: https://www.ecb.europa.eu/press/pr/date/2020/html/ecb.pr200407~2472a8ccda.en.html

33. ECB 2020e, "Monetary policy decisions", Press release, ECB, 10 December, Frankfurt am Main, Available at: https://www.ecb.europa.eu/press/pr/date/2020/html/ecb.mp201210~8c2778b843.en.html
34. ECB 2020f, "ECB announces measures to support bank liquidity conditions and money market activity", Press release, ECB, 12 March, Frankfurt am Main, Available at: https://www.ecb.europa.eu/press/pr/date/2020/html/ecb.pr200312_2~06c32dabd1.en.html
35. ECB 2020g, "ECB Banking Supervision provides temporary capital and operational relief in reaction to coronavirus", Press release, ECB, 12 March, Frankfurt am Main, Available at: https://www.bankingsupervision.europa.eu/press/pr/date/2020/html/ssm.pr200312~43351ac3ac.en.html
36. ECB 2020h, "ECB asks banks not to pay dividends until at least October 2020", Press release, ECB, 27 March, Frankfurt am Main, Available at: https://www.bankingsupervision.europa.eu/press/pr/date/2020/html/ssm.pr200327~d4d8f81a53.en.html
37. ECB 2020i, "Coordinated central bank action to enhance the provision of global US dollar liquidity", Press release, ECB, 15 March, Frankfurt am Main, Available at: https://www.ecb.europa.eu/press/pr/date/2020/html/ecb.pr200315~1fab6a9f1f.en.html
38. ECB 2020j, "ECB and Danmarks Nationalbank reactivate swap line to provide euro liquidity", Press release, ECB, 20 March, Frankfurt am Main, Available at: https://www.ecb.europa.eu/press/pr/date/2020/html/ecb.pr200320~165793c952.en.html
39. ECB 2020k, "ECB and Hrvatska narodna banka set up swap line to provide euro liquidity", Press release, ECB, 15 April, Frankfurt am Main, Available at: https://www.ecb.europa.eu/press/pr/date/2020/html/ecb.pr200415_1~92fe0267b1.en.html
40. ECB 2020l, "ECB and Bulgarian National Bank set up swap line to provide euro liquidity", Press release, ECB, 22 April, Frankfurt am Main, Available at: https://www.ecb.europa.eu/press/pr/date/2020/html/ecb.pr200422~962a743486.en.html
41. ECB 2020m, "US dollar liquidity-providing operations from 1 July 2020", Press release, ECB, 19 June, Frankfurt am Main, Available at: https://www.ecb.europa.eu/press/pr/date/2020/html/ecb.pr200619~8badb7725d.en.html
42. ECB 2020n, "Reduction in frequency of 7-day US dollar liquidity-providing operations as of 1 September 2020", Press release, ECB, 20 August, Frankfurt am Main, Available at: https://www.ecb.europa.eu/press/pr/date/2020/html/ecb.pr200820~4c0e97dec5.en.html
43. ECB 2020o, "ECB extends euro liquidity lines with two central banks", Press release, ECB, 28 August, Frankfurt am Main, Available at: https://www.ecb.europa.eu/press/pr/date/2020/html/ecb.pr200828~412bf7c3fd.en.html
44. ECB 2020p, "ECB extends bilateral euro liquidity lines with non-euro area central banks", Press release, ECB, 4 February, Frankfurt am Main, Available at: https://www.ecb.europa.eu/press/pr/date/2021/html/ecb.pr210204~f8f544a715.en.html
45. ECB 2021a, "Pandemic emergency purchase programme (PEPP)", ECB, Frankfurt am Main, Available at: https://www.ecb.europa.eu/mopo/implement/pepp/html/index.en.html
46. ECB 2021b, "What is the pandemic emergency purchase programme (PEPP)", ECB, Frankfurt am Main, 28 July, Available at: https://www.ecb.europa.eu/explainers/tell-me/html/pepp.en.html
47. ECB, 2021c, "Monetary policy decisions", Press release, ECB, 10 June, Frankfurt am Main, Available at: https://www.ecb.europa.eu/press/pr/date/2021/html/ecb.mp210610~b4d5381df0.en.html

48. ECB 2021d, "Monetary policy decisions", Press release, ECB, 22 July, Frankfurt am Main, Available at: https://www.ecb.europa.eu/press/pr/date/2021/html/ecb.mp210722~48dc3b436b.en.html

49. European Parliament 2020, "The ECB's Mandate: Perspectives on General Economic Policies. Compilation of Papers", STUDY, Requested by the ECON committee, *Monetary Dialogue*, June, Policy Department for Economic, Scientific and Quality of Life Policies Directorate-General for Internal Policies PE 648.814 - May, Available at: https://www.europarl.europa.eu/cmsdata/207722/Topic%201%20compilation%20online.pdf

50. Ferrando, A, Popov, A & Udell, GF 2018, "Do SMEs Benefit from Unconventional Monetary Policy and How? Micro-Evidence from the Eurozone", *Journal of Money, Credit, and Banking*, vol. 51, issue 4, pp. 895-928.

51. Gros, D 2016a, "Effectiveness of the ECB programme for asset purchase: Where do we stand?", *Monetary Dialogue*, European Parliament, Directorate-General for Internal Policies, Policy Department A: Economic and Scientific Policy, Economic and Monetary Affairs, Compilation of Notes, 21 June, Available at: https://www.europarl.europa.eu/RegData/etudes/IDAN/2016/578995/IPOL_IDA(2016)578995_EN.pdf

52. Gros, D 2016b, "Ultra-low or Negative Yields on Euro-Area Long-term Bonds: Causes and Implications for Monetary Policy", *CEPS Working Document*, No. 426, September, Available at: https://www.ceps.eu/wp-content/uploads/2016/09/D%20Gros%20on%20Ultra-low%20or%20Negative%20Yields%20on%20Euro-Area%20Long-term%20Bonds%20-%20CEPS%20WD.pdf

53. Grund, S 2020, "The Legality of the European Central Bank's Pandemic Emergency Purchase Programme", *Delors Institute Policy Brief*, 25 March, (Draft).

54. Heider, F, Saidi, F & Schepens, G 2019, "Life below Zero: Bank Lending under Negative Policy Rates", *The Review of Financial Studies*, vol. 32, pp. 3728-3761.

55. Hutchinson, J & Mee, S 2020, "The impact of the ECB's monetary policy measures taken in response to the COVID-19 crisis", *ECB Economic Bulletin*, Issue 5/2020, ECB, Frankfurt am Main, July, Available at: https://www.ecb.europa.eu/pub/economic-bulletin/focus/2020/html/ecb.ebbox202005_03~12b5ff68bf.en.html

56. Jiménez, G, Ongena, S, Peydró, JL & Saurina, J 2014, "Hazardous times for monetary policy: What do twenty-three million bank loans say about the effects of monetary policy on credit risk-taking?", *Econometrica*, vol. 82, pp. 463-505.

57. Jobst, A & Lin, H 2016, "Negative Interest Rate Policy (NIRP): Implications for Monetary Transmission and Bank Profitability in the Euro Area", *IMF Working Paper*, WP/16/172, August, International Monetary Fund, European Department, Washington DC, Available at: https://www.imf.org/external/pubs/ft/wp/2016/wp16172.pdf

58. Maddaloni, A & Peydró, JL 2011, "Bank risk-taking, securitization, supervision, and low interest rates: Evidence from the euro-area and the US lending standards", *Review of Financial Studies*, vol. 24, pp. 2121-2165.

59. Lagarde, C 2020a, "Our response to the coronavirus pandemic", The ECB Blog, Frankfurt am Main, Available at: https://www.ecb.europa.eu/home/search/coronavirus/html/index.en.html

60. Lagarde, C 2020b, "Monetary policy in a pandemic emergency", Keynote speech at the ECB Forum on Central Banking, 11 November, Frankfurt am Main, Available at: https://www.ecb.europa.eu/press/key/date/2020/html/ecb.sp201111~d01e03eb9c.en.html

61. Lagarde, C 2021, "One year of the PEPP: many achievements but no room for complacency", The ECB Blog, 22 March, Frankfurt am Main, Available at: https://www.ecb.europa.eu/press/blog/date/2021/html/ecb.blog210322~7ae5eca0ee.en.html

62. Lagarde, C & De Guinos, L 2021, "Monetary Policy Statement", Press Conference, 22 July, Frankfurt am Main, Available at: https://www.ecb.europa.eu/press/pressconf/2021/html/ecb.is210722~13e7f5e795.en.html

63. Lane, PR 2020a, "The macroeconomic impact of the pandemic and the policy response", The ECB Blog, 4 August, Frankfurt am Main, Available at: https://www.ecb.europa.eu/press/blog/date/2020/html/ecb.blog200804~b2c0f2115a.en.html

64. Lane, PR 2020b, "The Monetary Policy Package: An Analytical Framework", The ECB Blog, 13 March, Frankfurt am Main, Available at: https://www.ecb.europa.eu/press/blog/date/2020/html/ecb.blog200313~9e783ea567.en.html

65. Lilley, A, Rogoff, K 2019, *The Case for Implementing Effective Negative Interest Rate Policy*, Scholar Harvard University, Cambridge MA, USA, Available at: https://scholar.harvard.edu/files/rogoff/files/lilley_rogoff_implenting_effective_negative_rate_policy_sept_2019.pdf

66. Panetta, F 2020, "Asymmetric risks, asymmetric reaction: monetary policy in the pandemic", Speech at the meeting of the ECB Money Market Contact Group, 22 September, Frankfurt am Main, Available at: https://www.ecb.europa.eu/press/key/date/2020/html/ecb.sp200922~d158475fe0.en.html

67. Schnabel, I 2020a, "Going negative: the ECB's experience", Speech at the Roundtable on Monetary Policy, Low Interest Rates and Risk Taking at the 35th Congress of the European Economic Association, 26 August, ECB, Directorate General Communications, Frankfurt am Main. Available at: https://www.ecb.europa.eu/press/key/date/2020/html/ecb.sp200826~77ce66626c.en.html

68. Schnabel, I 2020b, "The ECB's response to the COVID-19 pandemic", Speech at the ECGI 24-Hour Global Webinar, 16 April, ECB, Directorate General Communications, Frankfurt am Main. Available at: https://www.ecb.europa.eu/press/key/date/2020/html/ecb.sp200416~4d6bd9b9c0.en.html

69. Tamele, B, Zamora-Pérez, A, Litardi, C, Howes, J, Steinmann, E & Todt, D 2021, "Catch me (if you can): assessing the risk of SARS-CoV-2 transmission via euro cash", *ECB Occasional Paper*, no. 259, July, ECB, Frankfurt am Main, Available at: https://www.ecb.europa.eu/pub/pdf/scpops/ecb.op259~33b180d450.en.pdf?5600eb360c1a45382efac52d904660d0

70. Trifonova, S, Trifonova, V, Atanasov, At, & Kolev, S 2017, *The unconventional monetary policy of the world's leading central banks and its effects on developed and developing countries, incl. and for Bulgaria*, Collective monograph, Evdemonia Production EOOD Publishing House, Sofia, ISBN: 978-619-7209-23-5.

71. WHO 2020, "Coronavirus disease 2019 (COVID-19) Situation Report – 51", 11 March, World Health Organization, Available at: https://apps.who.int/iris/bitstream/handle/10665/331475/nCoVsitrep11Mar2020-eng.pdf?sequence=1&isAllowed=y

72. Zaghini, A 2021, "The Covid pandemic in the market: infected, immune and cured bonds", *ECB Working Paper Series*, no. 2563, June, ECB, Frankfurt am Main, Available at: https://www.ecb.europa.eu/pub/pdf/scpwps/ecb.wp2563~30e67f8e56.en.pdf?4626e06c0e8c19ccb30692a97a2a011c

73. Zhou, S 2019, "Assessing the Macroeconomic Impact of the ECB's Asset Purchase Programme in a Dynamic Nelson-Siegel Modelling Framework", *MPRA Paper*, no. 92530, MRPA Munich Personal RePEc Archive, University of Hamburg, 8 February, Available at: https://mpra.ub.uni-muenchen.de/92530/1/MPRA_paper_92530.pdf