

Dabrowski, Marek

Research Report

Thinking beyond the pandemic: Monetary policy challenges in the medium- to long-term

CASE Reports, No. 504

Provided in Cooperation with:

Center for Social and Economic Research (CASE), Warsaw

Suggested Citation: Dabrowski, Marek (2021) : Thinking beyond the pandemic: Monetary policy challenges in the medium- to long-term, CASE Reports, No. 504, ISBN 978-83-7178-718-8, Center for Social and Economic Research (CASE), Warsaw

This Version is available at:

<https://hdl.handle.net/10419/261107>

Standard-Nutzungsbedingungen:

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

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

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

Terms of use:

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

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

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



European Parliament

CASE Reports

Thinking Beyond the Pandemic: Monetary Policy Challenges in the Medium- to Long-Term

Marek Dabrowski

No. 504 (2021)

This paper was prepared for the European Parliament's Committee on Economic and Monetary Affairs (ECON) as an input to the Monetary Dialogue of March 2021 between ECON and the President of the European Central Bank. The original paper is available on the European Parliament's webpage, as part of a series of papers on "Recalibrated Monetary Policy Instruments to Address the Economic Fallout from COVID-19":

<https://www.europarl.europa.eu/cmsdata/230587/Topic%201%20binder.pdf>

Copyright remains with the European Parliament at all times.



WARSAW

BISHKEK

KYIV

TBILISI

CHISINAU

MINSK

“CASE Reports” is a continuation of “CASE Network Studies & Analyses” series.

Keywords:

COVID-19 pandemic, monetary policy, forced saving, monetary overhang, quantitative easing, inflation, fiscal dominance

JEL Codes:

E31, E41, E51, E52, E58, E62, E63, F62, H62, H63

© CASE – Center for Social and Economic Research, Warsaw, 2021

ISBN: 978-83-7178-718-8

Publisher:

CASE – Center for Social and Economic Research
Al. Jana Pawła II 61, office 212, 01-031 Warsaw, Poland
tel.: (48 22) 206 29 00, fax: (48 22) 206 29 01
e-mail: case@case-research.eu
www.case-research.eu

Disclaimer:

The paper contains the views of its author and not of the institutions with which he cooperates.

STUDY

Requested by the ECON committee

Monetary Dialogue Papers, March 2021



Thinking Beyond the Pandemic: Monetary Policy Challenges in the Medium- to Long-Term



Policy Department for Economic, Scientific and Quality of Life Policies
Directorate-General for Internal Policies
Author: Marek DABROWSKI
PE 658.221 - March 2021

EN

Thinking Beyond the Pandemic: Monetary Policy Challenges in the Medium- to Long- Term

Monetary Dialogue Papers
March 2021

Abstract

The economic characteristics of the COVID-19 crisis differ from those of previous crises. It is a combination of demand- and supply-side constraints which led to the formation of a monetary overhang that will be unfrozen once the pandemic ends. Monetary policy must take this effect into consideration, along with other pro-inflationary factors, in the post-pandemic era. It must also think in advance about how to avoid a policy trap coming from fiscal dominance.

This paper was provided by the Policy Department for Economic, Scientific and Quality of Life Policies at the request of the committee on Economic and Monetary Affairs (ECON) ahead of the Monetary Dialogue with the ECB President on 18 March 2021.

This document was requested by the European Parliament's committee on Economic and Monetary Affairs (ECON).

AUTHOR

Marek DABROWSKI, CASE – Center for Social and Economic Research

ADMINISTRATOR RESPONSIBLE

Drazen RAKIC

EDITORIAL ASSISTANT

Janetta CUJKOVA

LINGUISTIC VERSIONS

Original: EN

ABOUT THE EDITOR

Policy departments provide in-house and external expertise to support European Parliament committees and other parliamentary bodies in shaping legislation and exercising democratic scrutiny over EU internal policies.

To contact the Policy Department or to subscribe for email alert updates, please write to:
Policy Department for Economic, Scientific and Quality of Life Policies
European Parliament
L-2929 - Luxembourg
Email: Poldep-Economy-Science@ep.europa.eu

Manuscript completed: February 2021
Date of publication: March 2021
© European Union, 2021

This document was prepared as part of a series on “Recalibrated Monetary Policy Instruments to Address the Economic Fallout from COVID-19”, available on the internet at:
<https://www.europarl.europa.eu/committees/en/econ/econ-policies/monetary-dialogue>

DISCLAIMER AND COPYRIGHT

The opinions expressed in this document are the sole responsibility of the authors and do not necessarily represent the official position of the European Parliament.

Reproduction and translation for non-commercial purposes are authorised, provided the source is acknowledged and the European Parliament is given prior notice and sent a copy.

For citation purposes, the publication should be referenced as: Dabrowski, M., *Thinking Beyond the Pandemic: Monetary Policy Challenges in the Medium- to Long-Term*, Publication for the committee on Economic and Monetary Affairs, Policy Department for Economic, Scientific and Quality of Life Policies, European Parliament, Luxembourg, 2021.

CONTENTS

LIST OF FIGURES	4
LIST OF TABLES	4
LIST OF ABBREVIATIONS	5
EXECUTIVE SUMMARY	7
1. INTRODUCTION	8
2. THE ECONOMIC CHARACTERISTICS OF THE COVID-19 PANDEMIC	10
2.1. The dynamics of the COVID-19 pandemic and its prospects	10
2.2. The limited state of knowledge on the COVID-19 pandemic, its impact on pandemic management, and economic activity	12
2.3. Characteristics of the COVID-19 economic crisis	13
2.4. Crisis implications for monetary and fiscal policies	14
3. MONETARY POLICY DECISIONS 2019-2021 AND THEIR SHORT-TERM IMPACT	17
3.1. Monetary policy decisions of the ECB	17
3.2. Monetary policy decisions of the Fed and BoJ	19
3.3. Impact of monetary policy decisions on CB balance sheets and money supply	20
3.4. QE and an impaired monetary transmission mechanism	23
3.5. Monetary conditions outside major currency areas	24
3.6. CPI inflation and changes in asset prices	25
3.7. The nexus between monetary and fiscal policies	30
4. CHALLENGES FACED BY CENTRAL BANKS AFTER THE PANDEMIC	31
4.1. The potential return of inflationary pressures	31
4.2. Increasing fiscal dominance	33
4.3. Risks to financial stability	34
5. CONCLUSION	35
REFERENCES	37

LIST OF FIGURES

Figure 1:	COVID-19 pandemic: daily new cases (left panel) and daily deaths (right panel) in the world, in thousands, 2020-2021	10
Figure 2:	Cumulative COVID-19 vaccination doses administered per 100 people (logarithmic scale), 01.01.2021 – 11.02.2021	11
Figure 3:	Gross household saving rate, in % of GDP, 2017-2020	14
Figure 4:	ECB net asset purchases in EUR billion, March 2015 – January 2021	18
Figure 5:	PEPP: total bimonthly net asset purchases, in EUR million, March 2020 – January 2021	18
Figure 6:	Securities held outright by the Fed, in USD million, January 2019 – February 2021	20
Figure 7:	CB total assets, January 2019 – December 2020	21
Figure 8:	Major currency areas: CB balance sheets as % of nominal GDP	21
Figure 9:	Major currency areas: broad money, March 2019 – December 2020 (quarterly data)	22
Figure 10:	Composite bank lending rates for NFCs and households in the euro area, annual in %, 2014-2020	22
Figure 11:	Money multiplier (broad money to monetary base) in major currency areas 2019-2020	23
Figure 12:	CB liabilities to other depository corporations, major currency areas, 2019-2020	24
Figure 13:	12-month inflation in major currency areas, in %, 2019-2021	25
Figure 14:	Price of crude oil WTI, in USD per 1 barrel, 2020-2021	26
Figure 15:	Measures of underlying inflation in the euro area, 12-month rate in %, 2019-2020	27
Figure 16:	US Dow Jones Industrial Average (left-hand scale, blue line) and Euro Stoxx 50 Market Index (right-hand scale, black line), 18 February 2020-18 February 2021	28
Figure 17:	US (left-hand scale, blue line) and euro area (right-hand scale, black dotted line) Nominal Home Prices Indexes, 18 February 2020-18 February 2021	28
Figure 18:	Price of gold in USD for 1 troy ounce, 2016-2021	29
Figure 19:	Price of Bitcoin in USD for 1 unit, 2016-2021	29

LIST OF TABLES

Table 1:	Euro area, Japan, and the United States: general government gross debt, % of GDP, 2007-2019	15
----------	---	----

LIST OF ABBREVIATIONS

ABSPP	Asset-backed securities purchase programme
AEs	Advanced economies
APP	Asset purchase programme
BoJ	Bank of Japan
CARES	Coronavirus Aid, Relief, and Economic Security (Act)
CB	Central bank
CBPP3	Third covered bond purchase programme,
CDSs	Collateral default swaps
COVID-19	Coronavirus Disease 2019
CPI	Consumer Price Index
CSPP	Corporate sector purchase programme
DFR	Deposit facility rate
EA	Euro area
ECB	European Central Bank
EM	Emerging market
ETFs	Exchange-traded funds (in Japan)
EU	European Union
EUR	Euro
Fed	Federal Reserve Board (of the United States)
FFR	Federal Fund Rate
FOMC	Federal Open Market Committee
GDP	Gross domestic product
GFC	Global financial crisis

HICP	Harmonised index of consumer prices
IMF	International Monetary Fund
JPY	Japanese yen
J-REITS	Japanese real estate investment trusts
MLFR	Marginal lending facility rate
MM	Money multiplier
MRO	Main refinancing operations (rate)
NFCs	Non-financial corporations
PSPP	Public Sector Purchase Programme, ,
PSBR	Public sector borrowing requirement
PELTRO	Pandemic Emergency Longer-Term Refinancing Operations
PEPP	Pandemic Emergency Purchase Programme
QE	Quantitative easing
TLTRO	Targeted Longer-Term Refinancing Operations
UPMs	Unconventional policy measures
USD	United States dollar
VAT	Value Added Tax

EXECUTIVE SUMMARY

- In February 2021, one year after the outbreak of the COVID-19 pandemic, **it is hard to see its quick end**, despite the development of vaccines and the beginning of a mass vaccination programme. Fighting the pandemic may take longer and cost more (in terms of number of deaths; GDP; and fiscal, job, and personal income losses, among others) than originally expected. Worse, the **knowledge on the ways and speed of the spread of coronavirus remains limited**, which forces governments to rely on **trial and error** in adopting containment measures. Obviously, this increases economic **uncertainty**.
- **The economic characteristics of the COVID-19 crisis differ from the global financial crisis of 2007-2009** and other past financial crises and business cycle downturns. It is a combination of demand- and supply-side shocks that led to the formation of **forced saving** and **monetary overhang**. Despite this difference, governments and central banks reacted with a massive fiscal and monetary relaxation (as they did in 2007-2009), which was costly and not sufficiently targeted.
- **The intensification of asset purchasing programmes was the main policy tool that could be used by central banks to further ease their monetary policies**. However, they only partly achieved their declared goal, that is, increasing the liquidity of economic agents. Part of the additional monetary base returned to central banks in the form of voluntary deposits from commercial banks, repeating the experience of quantitative easing in the 2010s. This confirms that asset purchasing programmes are an imperfect monetary policy tool that weakens financial intermediation and impairs the monetary policy transmission mechanism.
- **Quantitative easing also increases the stock of government securities in central bank books (*de facto* debt monetisation), leading to fiscal dominance and narrowing the room for manoeuvre of monetary policy when the latter needs to be tightened**. Eventually, this may compromise central bank independence and make them tolerant of higher inflation.
- **Monetary tightening may become necessary once the pandemic ends and the accumulated monetary overhang is unfrozen**. Higher inflationary pressures can also be generated by other factors such as overshooting stimulus packages, supply bottlenecks, the expiring deflationary impact of tighter financial regulations, demographic changes, deglobalisation, and the deterioration of fiscal balances.
- **Governments and central banks should think ahead about how to avoid a policy trap caused by rapidly growing public debt and its *de facto* monetary financing, especially in the context of the potential return of inflationary pressures**. They should carefully balance the short-term needs of fighting the pandemic and its adverse socio-economic consequences and the long-term constraints and challenges.

1. INTRODUCTION

In the first quarter of 2020, the COVID-19 pandemic hit the entire world economy in an unexpected way. A year later (February 2021), it is hard to see its quick end, despite having developed vaccines and begun a mass vaccination programme in several advanced economies (AEs).

Most governments responded to the outbreak of the pandemic with strict lockdown measures to protect peoples' lives and to limit the contagion effect. Clearly, the pandemic itself and the accompanying lockdown measures heavily damaged economic activity. Governments had to offer financial relief both to suffering businesses and the population at large. Together with the costs of fighting pandemics, foregone revenue (the effect of the pandemic-related recession) and attempts to boost aggregate demand, it has led to a huge expansion of both fiscal deficit and public debt.

Major central banks (CBs), on their own, responded to the crisis with a new round of monetary relaxation. In fact, it had already started in 2019, well before the pandemic. The pandemic only accelerated and magnified an easing response. Because CB interest rates remained either low (the Federal Reserve Board of the United States, henceforth the Fed), zero, or even negative (the European Central Bank [ECB] and the Bank of Japan [BoJ]), monetary relaxation has had to rely largely on asset purchasing programmes (APPs), popularly called quantitative easing (QE). Its declared intention has been to provide additional liquidity to pandemic-stressed businesses and consumers and meet the declared annual inflation target of 2 or close to 2%, depending on the currency area. A less declared or undeclared policy goal, especially in the case of the ECB, has been to help governments to finance their fresh deficits and rollover the existing stocks of public debt, in some cases a challenging task long before the pandemic (think about Japan and some euro area countries).

What could be seen as a relatively short-term distress in the early 2020s now looks like a longer crisis episode. While the strict lockdown measures were relaxed in most countries of the Northern Hemisphere at the end of the second and beginning of the third quarter of 2020, the next waves of the pandemic created the necessity to reintroduce them, although in a more selective and targeted way. Due to difficulties in predicting the length of the pandemic and its probable end date, economic decisions on both the macro and micro levels are burdened with a high degree of uncertainty.

Against this background, CBs continue their expansionary monetary policies by extending the period of unconventional policy measures (UPMs) and expanding the size of APPs. For example, on 10 December 2020, the ECB Governing Council approved a package of decisions extending their anti-crisis measures taken in 2020 for most of 2021 (ECB, 2020). The huge increase of CB balance sheets is one of major results of these expansionary policies. It may lead to an inflationary pressure in the post-pandemic period (once the lockdown measures end) even if the current consumer price inflation (CPI) remains very low, as in the case of the euro area. There are also other risks associated with the continuation of extra-loose monetary policies, such as building asset bubbles, the engagement of financial institutions in less prudent transactions, distorting a financial sector business model, increasing income and wealth inequalities, and others.

In the current circumstances, CBs do not seem to put sufficient attention to these side effects and remain rather unprepared to respond to the risk of inflationary pressure quickly enough. Furthermore, their *de facto* increasing engagement in public debt financing (even if carried out via secondary market purchases with only monetary policy considerations in mind) can make them hostages of quickly expanding fiscal imbalances. In such circumstances, shrinking their balance sheets can be politically difficult.

The purpose of this briefing paper is twofold: (i) to assess the anti-crisis monetary policy measures taken by the ECB in 2019-2020, including their last package of December 2020, and (ii) to look beyond an immediate COVID-19-related policy horizon by analysing monetary policy challenges in the medium- to long-term.

Our working hypothesis is that the anti-crisis measures of the ECB and other major CBs are only partly effective in achieving the declared goals. On the other hand, they may produce various unintended negative side effects – in particular, the increasing monetary policy dependence on fiscal imbalances and rapidly growing public debt. This may compromise both the independence of CBs as well as their ability to effectively resist post-pandemic inflationary pressures.

The structure of the paper is subordinated to its declared analytical purpose. Chapter 2 deals with the economic characteristics of the COVID-19 pandemic and its impact on the effectiveness of the monetary policy response measures undertaken. In Chapter 3, we analyse the monetary policy decisions of the ECB (and other major CBs for comparison) and their effectiveness in achieving the declared policy goals in the short term. Chapter 4 is devoted to an analysis of the policy challenges which may be faced by the ECB and other major CBs once the pandemic emergency comes to its end. Chapter 5 contains a summary and the conclusions of our analysis.

In our analysis, we use the data sources of the International Monetary Fund (IMF), Eurostat, the ECB, the Fed, Worldometer, Our World in Data, and those collected by other researchers.

2. THE ECONOMIC CHARACTERISTICS OF THE COVID-19 PANDEMIC

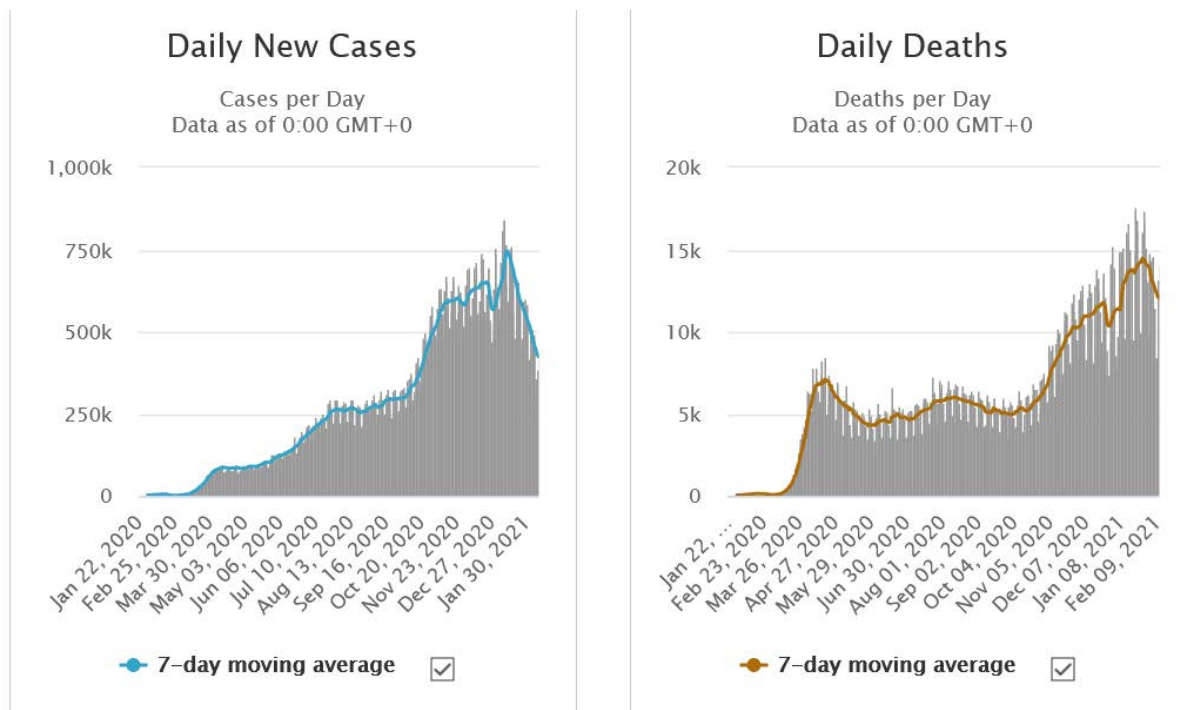
In this chapter, we analyse the dynamics of the COVID-19 pandemic and its prospects (Section 2.1); the state of knowledge on the pandemic, its management, and its economic repercussions (Section 2.2); the nature of the economic crisis caused by the pandemic and how it differs from previous crises, in particular, the global financial crisis (GFC) of 2007-2009 (Section 2.3); and its implications for monetary and fiscal policies (Section 2.4).

2.1. The dynamics of the COVID-19 pandemic and its prospects

To understand the economic impact of the pandemic in the short and medium- to long-term, we must first analyse its actual and future dynamics.

The first cases of the new COVID-19 infection were registered in the Chinese city of Wuhan in December 2019. In late February and early March 2020, it spread to Europe and the United States. A year later, at the time of writing this paper (February 2021), the figures for daily new cases and deaths worldwide (Figure 1) remain high. The figures were increasing rapidly until January 2021. As of 11 February 2021, the total number of identified COVID-19 cases exceeded 108 million and total number of COVID-19-related deaths – 2.3 million¹.

Figure 1: COVID-19 pandemic: daily new cases (left panel) and daily deaths (right panel) in the world, in thousands, 2020-2021



Source: Worldometers, <https://www.worldometers.info/coronavirus/>.

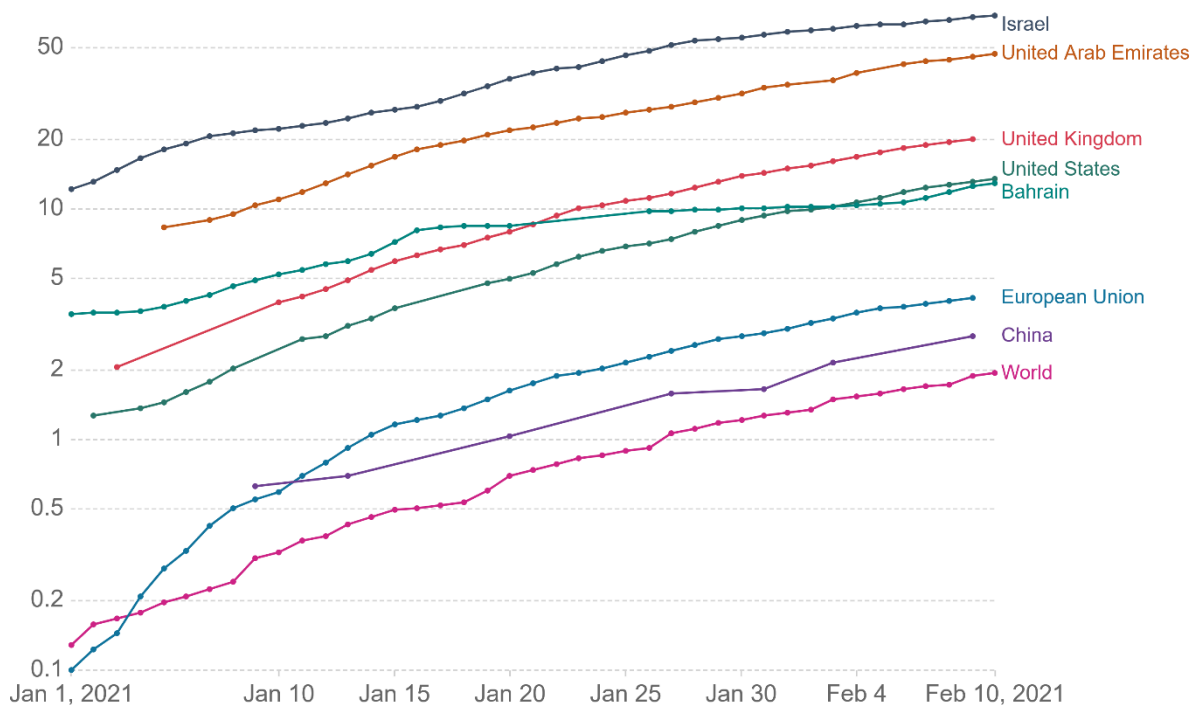
¹ See Worldometers, Coronavirus cases, <https://www.worldometers.info/coronavirus/>.

Predicting the pandemic's dynamic towards the end of 2021 is a risky and highly speculative task, especially given the new mutations of COVID-19 (the so-called British, South African, Brazilian, and Californian ones – see Lancet COVID-19 Commission, 2021), which were identified at the end of 2020 and in early 2021. In such a situation, one cannot rule out new waves of high-intensity infections in 2021 and perhaps beyond.

Throughout 2020, the availability of a vaccine was seen as the potential turning point in fighting coronavirus. When several vaccines became available at the end 2020, it turned out that their production and distribution, as well as the vaccination process itself, would take a few years to cover the entire world population. According to the EIU (2021) forecast, only the EU, the United States, and a few smaller countries (Israel, United Arab Emirates, Bahrain, Singapore, Hong Kong, and Taiwan) have the chance to complete mass vaccination towards the end of 2021. In other regions of the world, vaccination will take more time, until 2023 and beyond (most of Africa). In such a situation, thinking about achieving herd immunity against COVID-19 is unrealistic (Dadush, 2021; Krueger, 2021), especially when the coronavirus is mutating.

The available statistics confirm that the vaccination campaign is rolling out slowly, except from a few small countries (Israel, United Arab Emirates, and Bahrain) and the United Kingdom (which outperforms both the United States and the EU) – see Figure 2.

Figure 2: Cumulative COVID-19 vaccination doses administered per 100 people (logarithmic scale), 01.01.2021 – 11.02.2021



Note: Counted as the number of single doses, which may not be equal to the vaccinated individuals.

Source: Our World in Data, Coronavirus vaccinations, <https://ourworldindata.org/covid-vaccinations>.

The above overview suggests that the pandemic may not end quickly, and the world economy may have to operate in extraordinary circumstances for a longer period of time.

2.2. The limited state of knowledge on the COVID-19 pandemic, its impact on pandemic management, and economic activity

Despite more than a year of experience in fighting the pandemic, the state of knowledge on its actual size, geographical spread, mechanisms of transmission, and effective containment measures remains limited. In this section, we concentrate on those aspects of anti-pandemic management which have an explicit economic impact, leaving aside purely medical and public health problems.

The uncertainty starts with the actual number of infections and even the number of COVID-19-related fatalities. The reason for this is related not only to the imperfections of reporting systems in individual countries but also to difficulties in accurately diagnosing cases without a broad-based testing system, which is present in only a few countries. There is also a large number of asymptomatic cases, especially in younger cohorts of the population, which are difficult to identify even with the help of broad-based testing systems. Therefore, one can speculate that the actual number of infections is a few times larger than what is officially recorded.

An even more limited knowledge concerns the exact channels of disease contagion. While it was clear from the very beginning that keeping physical distance between people, limiting direct person-to-person contact, and using face masks can slow down the proliferation of the pandemic, these actions had to be translated into concrete protection measures aimed at prohibiting or limiting various types of activities. In choosing concrete containment measures, knowledge on the factors facilitating the spread of coronavirus (for example, indoor versus outdoor activities, weather conditions, the seasonality of infections, and the role of schools, among others) plays a decisive role. However, such knowledge is either lacking or very limited and uncertain. Furthermore, there are difficulties explaining cross-country differences in the number of infections and deaths, which could help understand the factors responsible for the contagion and evaluate the effectiveness of various anti-pandemic strategies.

The limited state of knowledge determines the policy responses to the crisis, which are based, in most cases, on trial and error. This approach is reflected in the stop-go policy carried out in most countries.

The policy response began with far-reaching and rather untargeted containment measures in most of Europe and the United States² at the end of the first quarter and beginning of the second quarter of 2020 with the hope that they would stop the spread of coronavirus and stop the pandemic in a relatively short period of time. When the huge economic costs of mass lockdowns became evident (GDP decline was positively correlated with stringency of containment measures – see IMF, 2020; Marcus et al., 2021) and the first wave of pandemic seemed to be over in several AEs (but not globally as seen in Figure 1), governments began relaxing the lockdown measures at the end of the second and in the third quarter of 2020. Economic activity started to recover at a quite rapid pace in the third quarter of 2020 (IMF, 2021a).

However, the return of the pandemic in the autumn of 2020 forced most governments to reintroduce lockdown measures, although in a more targeted way than in the spring of 2020. Since then, and until the time of writing this paper, the stringency of anti-pandemic measures fluctuates in most of AEs (see Hale et al., 2020) depending on the most recent infection and death statistics, pressure from sectoral lobbies, and the political controversies around anti-pandemic policies. One can say it is driven by

² In some East Asian countries (Japan, Taiwan, South Korea, Hong Kong, and Singapore) that had earlier experience with the SARS epidemic, authorities managed to launch a system of mass testing and tracking infection chains with the use of IT technologies early on, avoiding more severe lockdown measures (Stancati and Yoon, 2020).

attempting to balance socio-economic considerations and the capacity of national healthcare systems to deal with the pandemic (Dabrowski, 2020).

While in the first half of 2020 most countries enjoyed broad social and political consensus on the necessity to take tough containment measures, support began to wane at the end of 2020 and in early 2021 when the social and economic costs of the pandemic and lockdown continued to increase and doubts with respect to the effectiveness of concrete anti-pandemic policies and measures intensified. It was seen, among others, in the course of the US presidential election campaign and in the series of anti-lockdown protests held in various countries. The most recent cases (mid-February) of political controversy on anti-pandemic measures include tension in the newly formed government of Italy (Amante, 2021) and the failure of the Czech parliament to prolong the state of emergency to fight the pandemic (Euronews, 2021).

The limited state of pandemic-related knowledge additionally increases the already high degree of uncertainty in respect of the short- and medium-term economic prospects and the unpredictability of government decisions. Uncertainty and unpredictability dampen both private consumption (beyond basic necessities) and even more – investment.

2.3. Characteristics of the COVID-19 economic crisis

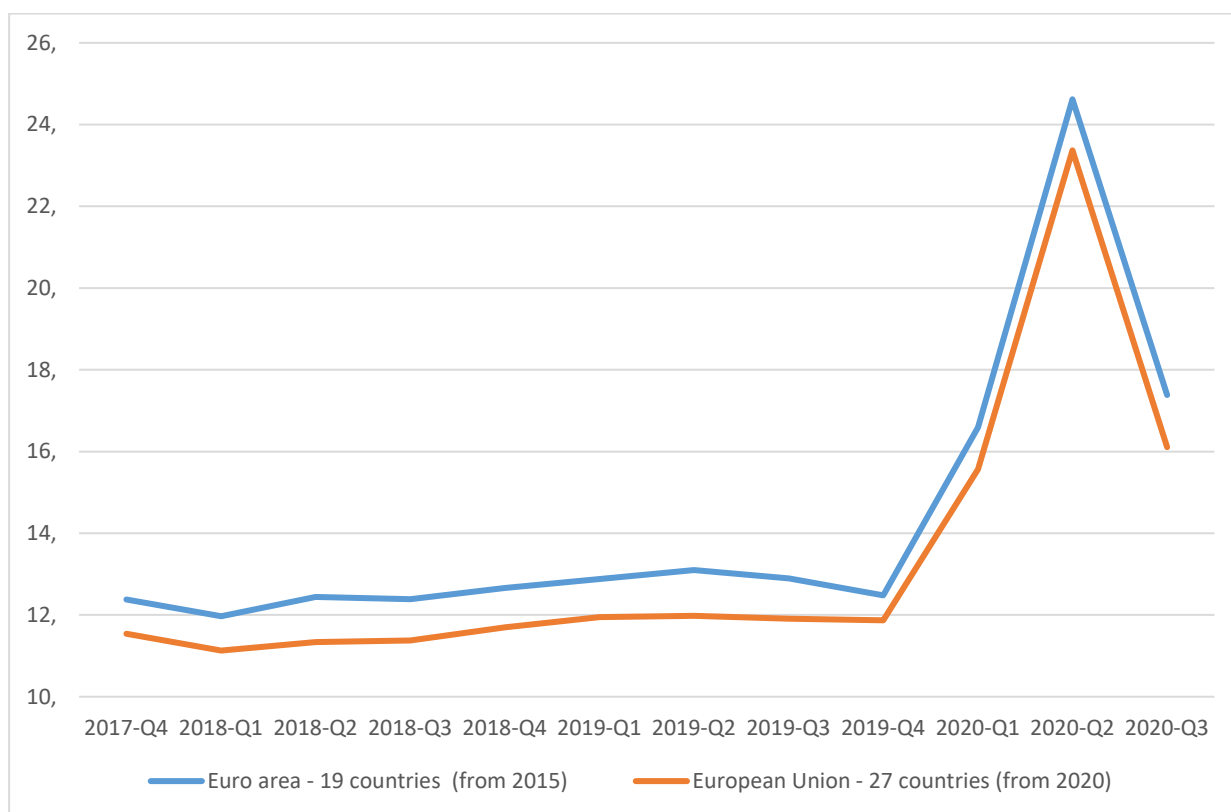
The economic characteristics of the COVID-19 crisis are very different from the GFC of 2007-2009 and other past financial crises or business-cycle downturns. The GFC caused a disruption in financial intermediation, which, by its nature, had a deflationary character. There were also other deflationary factors in play such as new, more stringent financial regulations, the effects of globalisation, and others (Dabrowski, 2019).

The current crisis is a combination of demand-side and supply-side shocks. They result not only from depressed aggregate demand caused by the self-restrained behaviour of both consumers and investors but also from administrative lockdown measures such as the prohibition of certain types of activities, restrictions on the movement of people, or closed borders and the resulting disruption of supply chains. In such circumstances, private spending decreases and private saving increases (Figure 3), but these are forced (involuntary) savings.

One can make a historical analogy to centrally-planned economies where people and enterprises could not spend their money balances on the goods and services they wanted to buy because they were not available on the market (as a result of administrative price controls and the administrative distribution of goods and services) – the phenomenon of a shortage economy as described by Kornai (1980). This led to forced saving (flow) and monetary overhang (stock), which represented a repressed inflation (Cottarelli and Blejer, 1991).

Apart from temporarily frozen demand- and supply-side disruptions, the COVID-19 crisis, especially if prolonged, can lead to substantial structural changes such as the expansion of e-commerce and various e-services (including e-government ones), telework, teleconferencing, online education, and the contraction of business travel, traditional retailing, and, therefore, demand for office and commercial space. At the moment, it is difficult to predict which parts of the observed structural changes have a temporary character and will disappear after the pandemic and which have an irreversible character.

Figure 3: Gross household saving rate, in % of GDP, 2017-2020



Source: Marcus et al., 2021.

The right diagnosis of the ongoing structural changes is important not only for structural and institutional policies – for example, the respective adaptation of labour market regulations – but also for monetary and fiscal policies. First, they should facilitate such changes rather than conserving the existing supply side structure, which might mean support for “zombie” firms and industries. If one assumes far-reaching structural changes, estimating the output gap may become more complicated (i.e., due to the mismatch between the new demand structure and the old supply capacities).

2.4. Crisis implications for monetary and fiscal policies

The very nature of the GFC (see Section 2.3) required a bold monetary policy response to avoid a deflationary spiral of the kind observed during the Great Depression of 1929-1933. And because interest rates in major currency areas quickly hit the zero bound, CBs had to resort to UPMs, including large-scale APPs. While expansionary monetary policies achieved their strategic goal (deflation was avoided), the process of withdrawal from UPMs in the second half of the 2010s either went slow (the United States) or did not start at all (the euro area and Japan). The continuous fear of deflation and attempts to push inflation up to the declared 2% – or below but close to 2% – target were major reasons of this failure (Dabrowski, 2019).

As a result, CBs in major currency areas met the new COVID-19-related challenges with interest rates close to zero (the ECB and BoJ) or moderately positive (the Fed). Therefore, monetary relaxation required resorting to UPMs, mainly APPs.

There is also a more fundamental question on which kind of monetary policy response has been required, given the specific character of the COVID-19 crisis analysed in Section 2.3, which is quite different from both the GFC and standard business cycle downturns. Indeed, the surprise outbreak of

the pandemic and the far-reaching lockdown measures in the first half of 2020 caused a negative aggregate demand shock in parallel with a supply-side disruption. The increase in gross household saving (Figure 3) confirms the correctness of this diagnosis. CBs might also fear a potential disruption in financial intermediation as happened during the GFC, so providing additional liquidity seemed to be the right decision. However, once lockdown measures were relaxed in the third quarter of 2020 and then continued in a more selective way, the rationale behind the continued monetary expansion requires a closer analytical scrutiny. And this will be done in Chapter 3 of this paper.

Given the nature of the COVID-19 crisis, the main macroeconomic policy response should come from a fiscal policy side. Governments are confronted with the necessity to:

- finance the direct costs of fighting the pandemic (mostly related to public health measures);
- provide financial compensation to people and businesses directly affected by the economic consequences of the administrative lockdown measures; and
- accommodate for revenue losses and additional social spending resulting from the crisis-related recession (automatic fiscal stabilisers).

This is the minimum agenda of a fiscal response. On top of this, several governments developed various fiscal stimulus packages aimed at boosting aggregate demand or stimulating public investment programmes (Skidelsky, 2021). The design of these packages differs between countries (IMF, 2021b).

The basic constraint comes from the limited fiscal space in most AEs (Table 1). Their fiscal positions substantially deteriorated during the GFC and immediately after (Dabrowski, 2012) and only a few of them (Germany is the most prominent example) managed to use the post-GFC period to rebuild fiscal buffers.

Against the limited fiscal space, governments should use fiscal support measures wisely and carefully. In particular, they should assess whether they have enough fiscal space for a large-scale fiscal stimulus aimed to boost aggregate demand, if they can expect fiscal multipliers to be above one (only in such a situation can the stimulus be self-financing), and what will be the optimal timing of its launching (before the end of the pandemic when demand and supply constraints remain in force or after the termination of containment measures).

Table 1: Euro area, Japan, and the United States: general government gross debt, % of GDP, 2007-2019

Country	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Euro area	65.9	69.6	80.2	85.8	87.7	90.7	92.6	92.8	90.9	90.0	87.6	85.7	84.0
Austria	64.7	68.4	79.6	82.4	82.2	81.7	81.0	83.8	84.4	82.6	78.4	74.0	70.3
Belgium	87.3	93.2	100.2	100.3	103.5	104.8	105.5	107.0	105.2	104.9	101.8	99.9	98.7
Cyprus	53.2	44.1	52.8	55.5	65.0	79.4	102.9	109.2	107.5	103.4	93.9	100.6	95.5
Estonia	3.8	4.5	7.2	6.6	6.1	9.8	10.2	10.4	9.8	9.1	9.1	8.3	8.4
Finland	33.9	32.6	41.5	46.9	48.3	53.6	56.2	59.8	63.6	63.2	61.3	59.6	59.0
France	64.5	68.8	83.0	85.3	87.8	90.6	93.4	94.9	95.6	98.0	98.3	98.1	98.1
Germany	64.0	65.5	73.0	82.4	79.8	81.1	78.7	75.7	72.2	69.2	65.0	61.6	59.5
Greece	103.1	109.4	126.7	146.3	180.6	159.6	177.9	180.2	177.8	181.1	179.3	184.8	180.9
Ireland	23.9	42.4	61.7	86.0	111.1	120.0	120.1	104.3	76.7	74.2	67.4	62.9	57.3
Italy	103.9	106.2	116.6	119.2	119.7	126.5	132.5	135.4	135.3	134.8	134.1	134.8	134.8
Latvia	8.1	18.0	35.8	46.8	43.3	41.9	39.4	40.9	36.7	40.2	40.3	36.5	36.8
Lithuania	15.9	14.6	28.0	36.3	37.2	39.8	38.7	40.6	42.7	39.9	39.3	34.1	37.7
Luxembourg	8.2	15.4	16.1	20.2	19.0	22.0	23.7	22.7	22.0	20.1	22.3	21.0	22.1
Malta	61.9	61.8	66.3	65.3	69.3	65.9	65.8	61.6	55.9	54.5	48.8	45.2	42.6
Netherlands	42.0	53.8	55.8	59.4	61.8	66.4	67.8	68.0	64.6	61.9	56.9	52.4	48.4
Portugal	72.7	75.6	87.8	100.2	114.4	129.0	131.4	132.9	131.2	131.5	126.1	122.0	117.7

Country	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Slovakia	30.3	28.6	36.4	41.0	43.5	51.8	54.7	53.5	51.9	52.0	51.3	49.5	48.0
Slovenia	22.8	21.8	34.5	38.3	46.5	53.6	70.0	80.3	82.6	78.7	74.1	70.4	66.1
Spain	35.8	39.7	53.3	60.5	69.9	86.3	95.8	100.7	99.3	99.2	98.6	97.6	95.5
Japan	175.3	183.3	200.9	207.7	221.9	228.7	232.2	235.8	231.3	236.4	234.5	236.6	238.0
US	64.7	73.7	86.8	95.5	99.8	103.3	104.9	104.5	104.6	106.6	105.7	106.9	108.7

Source: IMF, World Economic Outlook database, October 2020.

Further deterioration of the fiscal situation (higher deficits and the rapid increase of public debt) also raises the expectation that monetary policy will provide a rescue by keeping interest rates low for a long period of time and by partial debt monetisation if necessary (Buiter, 2021). This creates the risk of compromising CB independence and the price stability goal of monetary policy. We will return to this question in Chapters 3 and 4.

3. MONETARY POLICY DECISIONS 2019-2021 AND THEIR SHORT-TERM IMPACT

Having characterised the economic impact of the pandemic (Chapter 2), we turn now to the monetary policy decisions of the ECB and other major CBs in the period of 2019-2021 – that is, immediately before the pandemic and after its outbreak. We also analyse their monetary and non-monetary effects in a short-term perspective. We start with the presentation of the monetary policy decisions of the ECB (Section 3.1), followed by an overview of the Fed and BoJ decisions (Section 3.2). The subsequent sections are devoted to the impact of these decisions on CB balance sheets and money supply (Section 3.3), monetary transmission mechanisms (Section 3.4), monetary conditions outside major currency areas (Section 3.5), CPI inflation and changes in asset prices (Section 3.6), and a monetary-fiscal nexus (Section 3.7).

3.1. Monetary policy decisions of the ECB

The ECB was the last among major CBs to launch a large-scale APP (Dabrowski, 2019). It happened only in March 2015, that is, when the Fed had already started to unwind its QE programmes. The ECB continued them until December 2018, although at a slower pace in 2018 (Figure 4). After a 10-month break, it returned to active net asset purchases in November 2019³. It was motivated, among others, by problems with pushing inflation up to the declared level of below, but close to, 2% over the medium term (Draghi, 2019). In our opinion (Dabrowski, 2019), it was a serious misconception because inflation between 0-2% involves no major policy risk (see Frankel, 2019; Gros, 2019; Leidy and Tokarick, 1998).

After the outbreak of the COVID-19 pandemic, the ECB intensified and eased the conditions of its APPs⁴ and targeted longer-term refinancing operations (TLTRO III)⁵. On the top of this, in March and April 2020, it launched new programmes – the pandemic emergency purchase programme (PEPP)⁶ and the pandemic emergency longer-term refinancing operations (PELTRO)⁷. The novelty of both programmes as compared to the APPs and TLTRO III consisted of their size, greater flexibility (PEPP), and more beneficial terms of lending (PELTRO).

As seen in Figure 4, the average size of total net asset purchases under the APPs throughout 2020 was substantially lower than in 2015-2017, with the peak recorded in March 2020. Figure 5 shows that total bimonthly net asset purchases under the PEPP represented a declining trend.

³ See ECB: asset purchase programmes <https://www.ecb.europa.eu/mopo/implement/omt/html/index.en.html>.

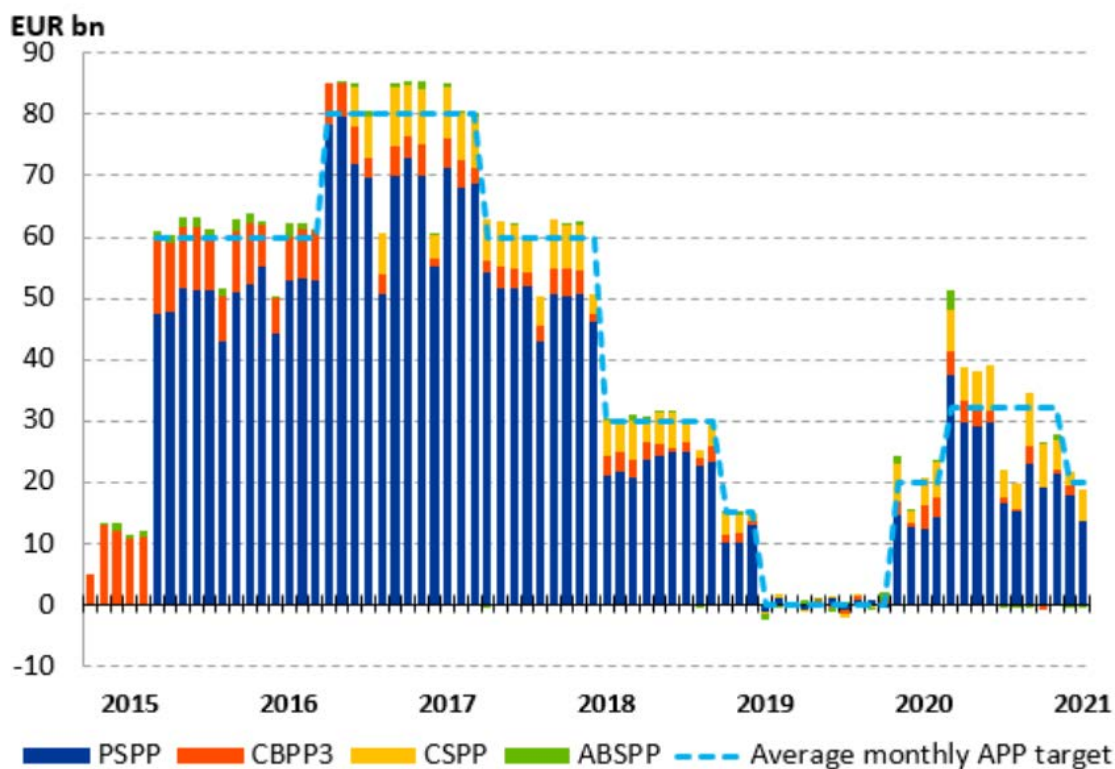
⁴ See ECB: Governing Council Meeting of 11-12 March 2020 <https://www.ecb.europa.eu/press/accounts/2020/html/ecb.mg200409~0026941ce4.en.html>.

⁵ See ECB press release, 12 March 2020: “ECB announces easing of conditions for targeted longer-term refinancing operations (TLTRO III)”, https://www.ecb.europa.eu/press/pr/date/2020/html/ecb.pr200312_1~39db50b717.en.html.

⁶ See ECB: Pandemic emergency purchase programme (PEPP) <https://www.ecb.europa.eu/mopo/implement/pepp/html/index.en.html>.

⁷ See ECB press release, 20 April 2020: “ECB announces new pandemic emergency longer-term refinancing operations” https://www.ecb.europa.eu/press/pr/date/2020/html/ecb.pr200430_1~477f400e39.en.html.

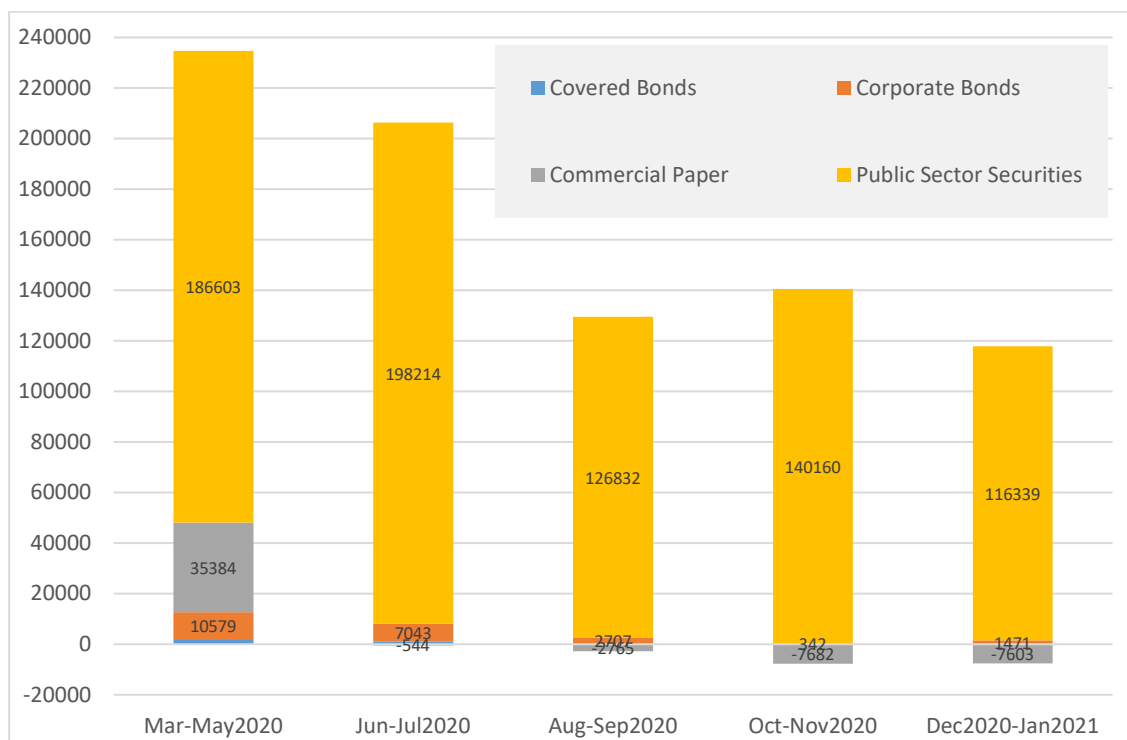
Figure 4: ECB net asset purchases in EUR billion, March 2015 – January 2021



Note: PSPP – public sector purchase programme, CBPP3 – third covered bond purchase programme, CSPP – corporate sector purchase programme, ABSPP – asset-backed securities purchase programme.

Source: ECB, Asset purchase programmes, <https://www.ecb.europa.eu/mopo/implement/omt/html/index.en.html>.

Figure 5: PEPP: total bimonthly net asset purchases, in EUR million, March 2020 – January 2021



Source: ECB, https://www.ecb.europa.eu/mopo/pdf/PEPP_breakdown_history.csv?4fccbac2ae5f38b8ae63b70d05d17fb0.

Since March 2016, the main refinancing operations (MRO) rate remained at zero and the marginal lending facility rate (MLFR) at the level of 0.25%, while the deposit facility rate (DFR) was cut from -0.40% to -0.50% in September 2019⁸.

On 10 December 2020, the ECB Governing Council took a series of decisions in which it:

- increased the envelope of the PEPP by EUR 500 billion to a total of EUR 1,850 billion and extended the horizon for net purchases under this programme to at least the end of March 2022 and the period of reinvestment of principal payments from maturing securities until at least the end of 2023;
- extended the period of more favourable terms of the TLTRO III by 12 months to June 2022; three additional operations will be conducted between June and December 2021;
- extended to June 2022 the duration of the set of collateral easing measures adopted in April 2020;
- offered four additional PELTROs in 2021;
- declared the continuation of APP net purchases at a monthly pace of EUR 20 billion and reinvesting, in full, the principal payments from maturing securities purchased under the APP for an extended period of time.

3.2. Monetary policy decisions of the Fed and BoJ

The Fed and BoJ also reacted to the COVID-19 emergency with a new round of monetary policy easing.

The Fed cut the Federal Fund Rate (FFR) by 1.50 percentage points (to the range 0.00-0.25) in two steps taken in March 2020. Before, between July and October 2019, the FFR was reduced in three steps by 0.75 percentage points.

In the second half of 2019, the Fed also returned to net purchases of securities, starting to again increase its balance sheet (after its reduction between October 2017 and August 2019⁹). On 15 March 2020, after the outbreak of the pandemic, it decided to increase its holdings of Treasury securities by at least USD 500 billion and mortgage-backed securities by at least USD 200 billion¹⁰. A week later, it eliminated upper limits of these operations¹¹. Within its regulatory and supervisory mandate, the Fed also launched several sector-targeted lending programmes¹². All these measures led to an increase of its asset holdings by approximately 75% in the period between March 2020 and February 2021 (Figure 6).

In March and April 2020, the BoJ adopted three kinds of easing measures (Kuroda, 2020): (i) a special programme to support financing non-financial firms, worth JPY 110 trillion (the purchase of corporate bonds and refinancing financial institutions which lend to non-financial firms); (ii) purchasing Japanese government bonds without limits and the provision of USD funds based on cooperation with other CBs; and (iii) purchases of certificates of exchange-traded funds (ETFs) and real estate investment trusts

⁸ See ECB: Key ECB interest rates https://www.ecb.europa.eu/stats/policy_and_exchange_rates/key_ecb_interest_rates/html/index.en.html.

⁹ See Federal Reserve: History of the FOMC's Policy Normalization Discussions and Communications <https://www.federalreserve.gov/monetarypolicy/policy-normalization-discussions-communications-history.htm>.

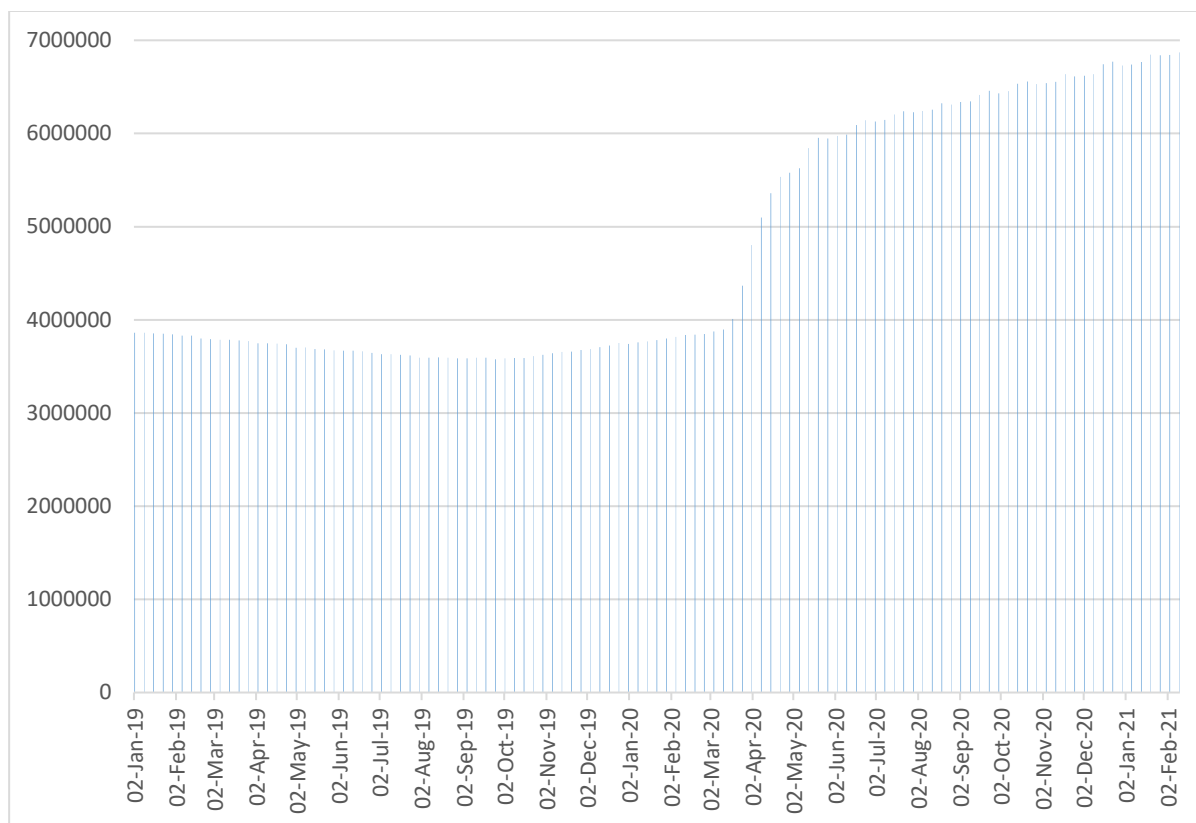
¹⁰ See Federal Reserve, FOMC statement, 15 March 2020 <https://www.federalreserve.gov/newsevents/pressreleases/monetary20200315a.htm>.

¹¹ See Federal Reserve, FOMC statement, 23 March 2020 <https://www.federalreserve.gov/newsevents/pressreleases/monetary20200323a.htm>.

¹² See Federal Reserve, Coronavirus Disease 2019 (COVID-19) - Funding, Credit, Liquidity, and Loan Facilities <https://www.federalreserve.gov/funding-credit-liquidity-and-loan-facilities.htm>.

(J-REITS). In December 2020, it extended the period of all these programmes to at least September 2021 and enlarged their envelopes (Vogado, 2020).

Figure 6: Securities held outright by the Fed, in USD million, January 2019 – February 2021



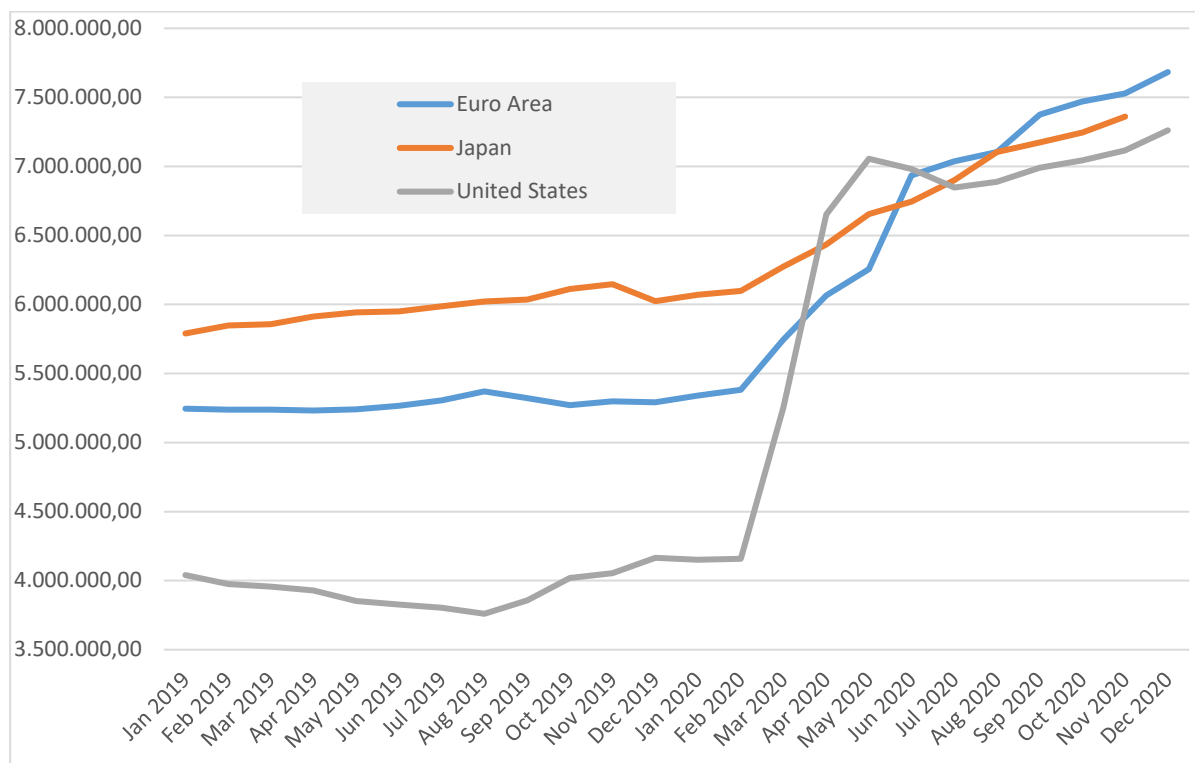
Source: Federal Reserve, Total Assets of the Federal Reserve
https://www.federalreserve.gov/monetarypolicy/bst_recenttrends_accessible.htm.

3.3. Impact of monetary policy decisions on CB balance sheets and money supply

The new round of monetary relaxation launched in 2019 but intensified in 2020 (see Sections 3.1 and 3.2), in particular, increasing the size of net asset purchases, has led to the further expansion of CB balance sheets both in nominal terms (Figure 7) and even more in relation to GDP (Figure 8), because GDP was shrinking in 2020 in all three analysed economies.

The BoJ has been rapidly expanding its total assets since 2013, so the year 2020 brought about only a modest acceleration. The ECB recorded a more visible change in the previous trend: after a period of a relatively stable stock of total assets (2018-2019), they started to grow rapidly from March 2020 (by 42.7% between the end of February and the end of December 2020). However, it was the Fed that made the most dramatic U-turn. After a period of shrinking its balance sheet (2017-2019), it recorded a rapid increase by 93.1% between the end of August 2019 and the end of December 2020, most of which occurred during the period from March to June 2020.

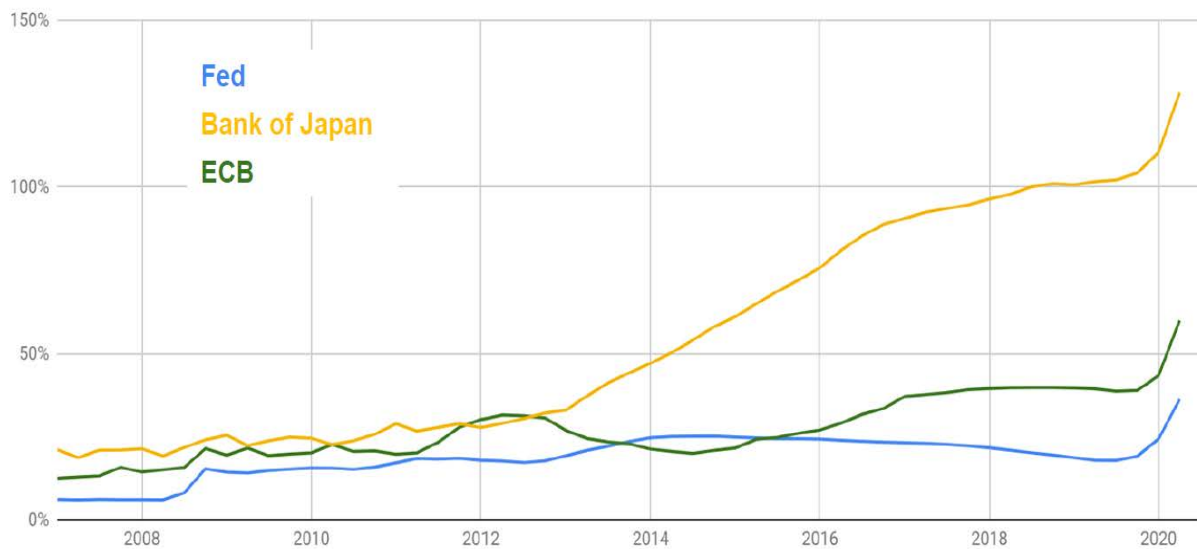
Figure 7: CB total assets, January 2019 – December 2020



Note: ECB in EUR million, BoJ in JPY hundred million, US Fed in USD million.

Source: IMF International Financial Statistics.

Figure 8: Major currency areas: CB balance sheets as % of nominal GDP

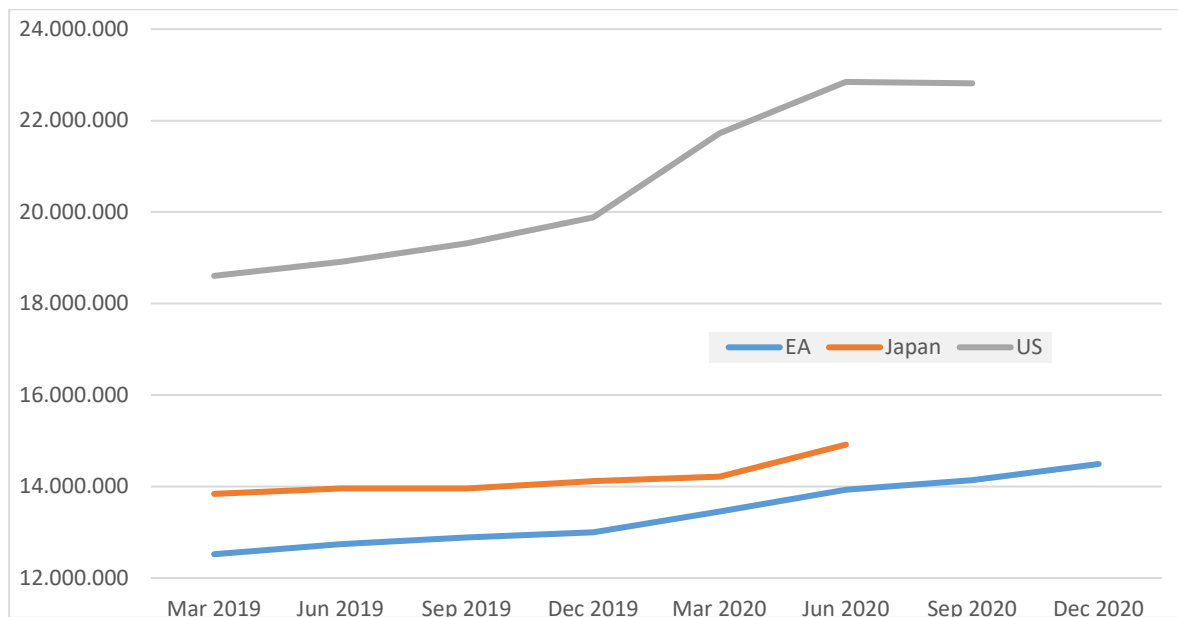


Source: Mosser, 2020.

The rapid growth of CB assets and the monetary base has led to an increase in broad money (Figure 9), although at a slower pace than the former. The annual growth of broad money amounted to 11.5% in

the euro area (December 2019 to December 2020), 14.7% in the United States (September 2019 to September 2020), and 6.9% in Japan (June 2019 to June 2020).

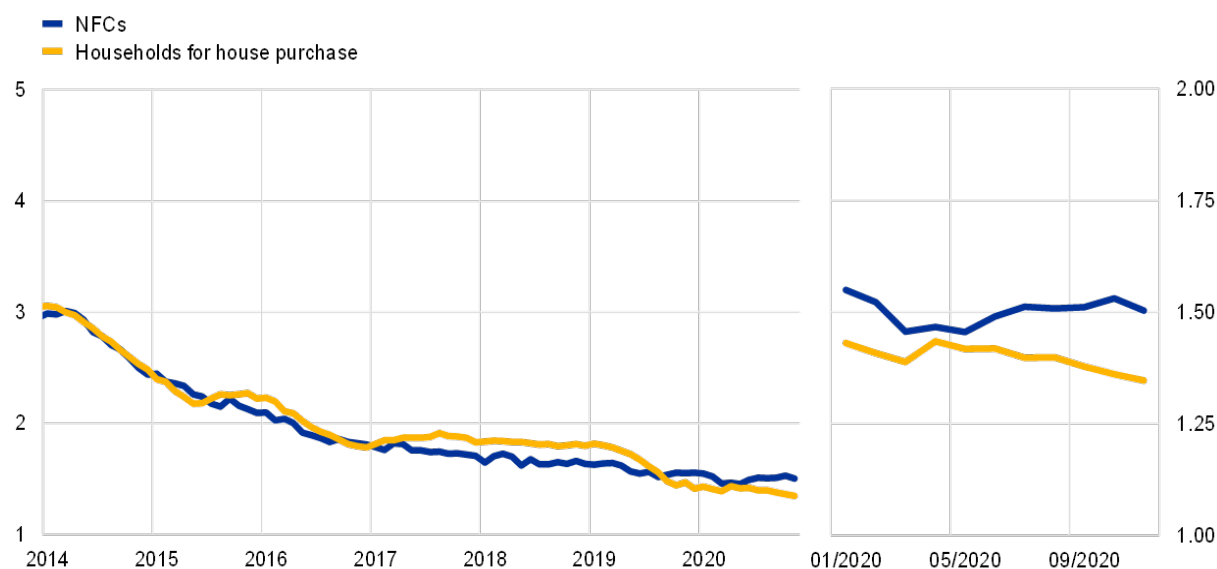
Figure 9: Major currency areas: broad money, March 2019 – December 2020 (quarterly data)



Note: ECB in EUR million, BoJ in JPY hundred million, US Fed in USD million.

Source: IMF International Financial Statistics.

Figure 10: Composite bank lending rates for NFCs and households in the euro area, annual in %, 2014-2020



Note: Composite bank lending rates are calculated by aggregating short- and long-term rates using a 24-month moving average of new business volumes. The latest observation is for November 2020. NFCs stands for non-financial corporations.

Source: ECB, 2021, Chart 13, p. 24.

However, the borrowing costs for the non-financial sector have improved only marginally, at least in the euro area. Figure 10 shows that while composite commercial bank lending rates for households for home purchases in the euro area continued to decrease in 2020, the similar rates for non-financial corporations (NFCs), that is, businesses, even increased slightly in the second half of 2020.

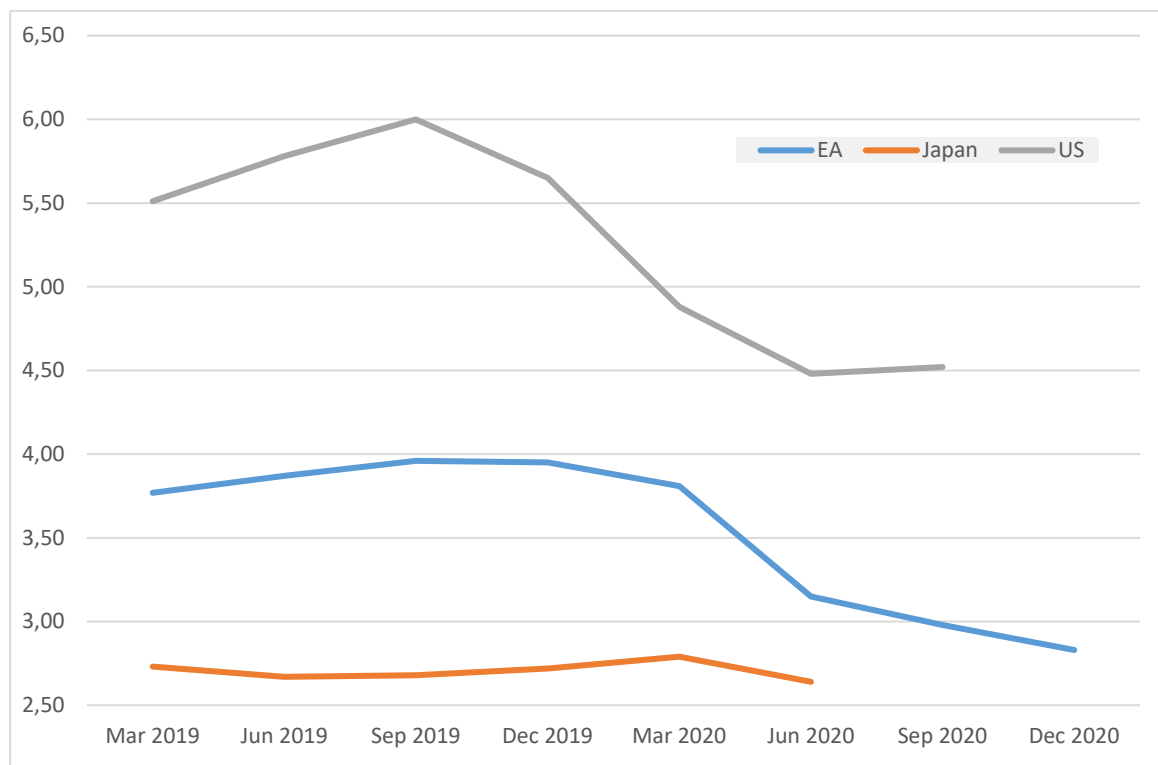
Both the slower growth of broad money and the stabilisation or even increase in lending rates for businesses suggest problems with the effective transmission of the bold monetary impulses provided by CBs, which we will analyse in Section 3.4.

3.4. QE and an impaired monetary transmission mechanism

In our previous analysis (Dabrowski, 2019), we diagnosed the unintended negative impact of QE on the depth of financial intermediation. When CBs increased their stock of assets, the money multiplier (MM), defined as the quotient of broad money to the monetary base, decreased. When CBs stop net purchases or decrease the stock of assets, the MM increased.

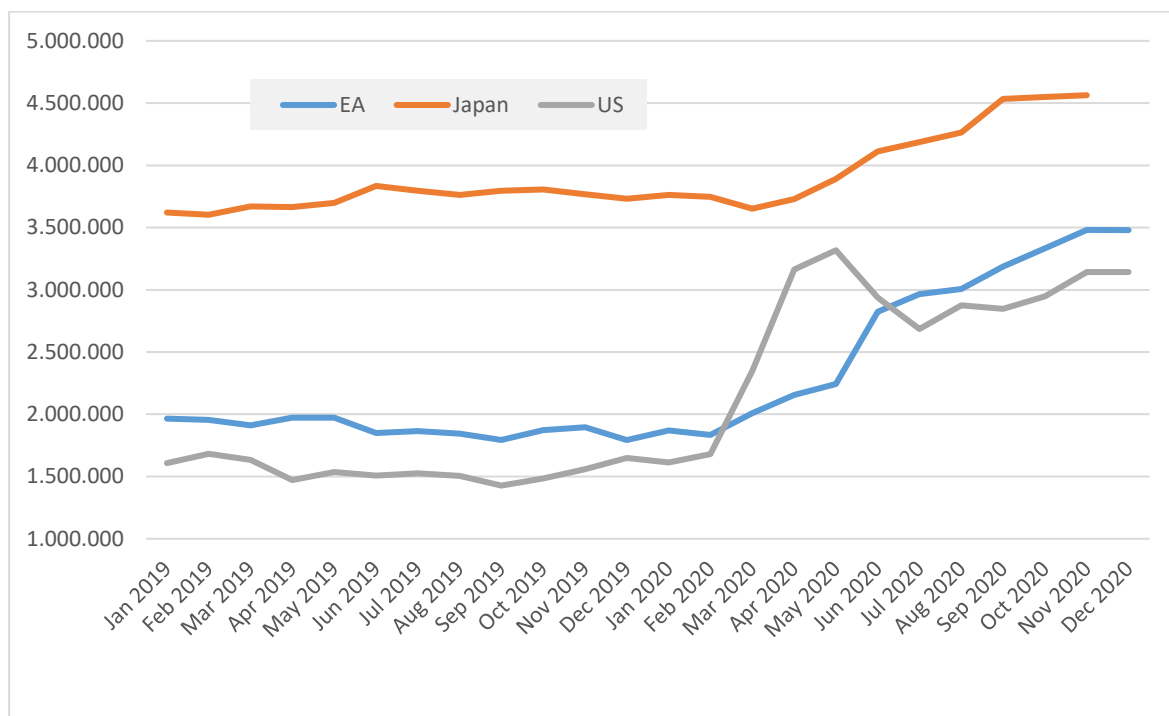
The negative impact of QE on the MM could be explained by the behaviour of commercial banks. When CBs intensified asset purchases, commercial banks increased their voluntary deposits with CBs despite negative deposit rates in the ECB and BoJ. When CBs stabilised or started to reduce their stocks of assets, commercial banks gradually reduced their deposits with CBs.

Figure 11: Money multiplier (broad money to monetary base) in major currency areas 2019-2020



Source: IMF International Financial Statistics.

Figure 12: CB liabilities to other depository corporations, major currency areas, 2019-2020



Note: ECB in EUR million, BoJ in JPY hundred million, US Fed in USD million.

Source: IMF International Financial Statistics.

Our hypothesis (Dabrowski, 2019) was that QE absorbed so many low-risk liquid securities from the financial market that commercial banks had to increase their voluntary deposits in CBs to be able to manage their liquidity according to prudential norms. The alternative but not radically different interpretation was that commercial banks were restricted in their lending activities by the limited demand for credit (despite low interest rates) or by the various regulatory limits imposed on them as result of the far-reaching tightening of financial market regulations after 2008.

Figures 11 and 12 suggest that a negative impact of QE on the MM was also present during the newest round of QE in 2019-2020, in particular, in the case of the Fed and the ECB. The additional factors that could prevent the full absorption of the growing monetary base by commercial banks are related to the economic characteristics of the current crisis. By this we mean the direct consequences of the lockdown measures and the crisis-related uncertainty, which negatively affect investment decisions in many sectors and industries and increase lending risk.

Overall, the above analysis points to an impaired transmission mechanism when monetary policy resorts to UPM, especially QE.

3.5. Monetary conditions outside major currency areas

In late February and early March 2020, emerging market (EM) economies suffered from large-scale capital outflows as result of the global financial market turmoil caused by the outbreak of the pandemic. Capital outflow led to a rapid increase in EM collateral default swaps (CDSs), spreads between EM bond yields and those in major currency areas, the depreciation of EM market currencies, and the collapse of their stock markets (Dabrowski and Dominguez-Jimenez, 2020).

Fortunately, in most EMs, the adverse shock lasted only a few weeks, except in countries that were macroeconomically fragile before the pandemic, like Argentina, Lebanon, or Turkey. The monetary

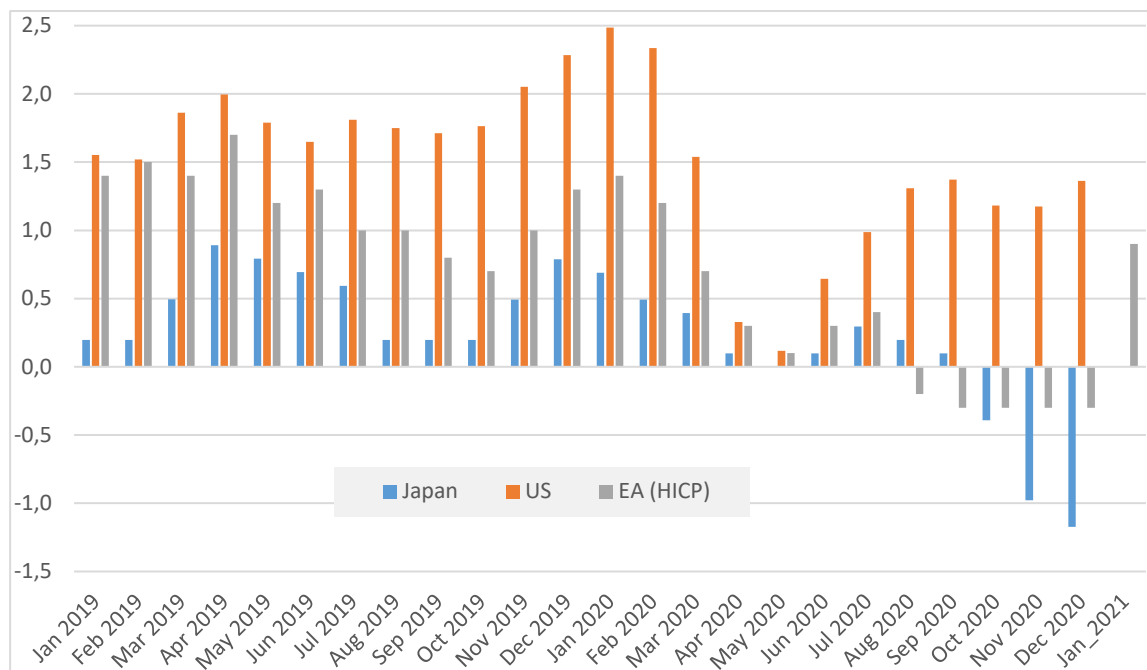
expansion in major currency areas (see Sections 3.1 and 3.2) has helped easing EM financial conditions since April 2020 (Kalemli-Ozcan, 2020). Given the dominant role of the USD, the Fed's monetary policy has had the biggest positive impact on EM financial conditions and has helped in returning net capital inflows; the ECB and BoJ also contributed to this relief, especially in their neighbourhoods.

Apart from monetary easing, both the Fed and the ECB launched currency swaps with several EM CBs. The ECB also offered EUR repo lines to non-euro area CBs (Lane, 2020). On 10 December 2020, the ECB Governing Council extended the repo facility for CBs and all temporary swap and repo lines with non-euro area CBs until March 2022 (ECB, 2020).

3.6. CPI inflation and changes in asset prices

In 2019 and Q1 2020, the euro area recorded a 12-month inflation below 1.5% and Japan – below 1.0%. Inflation in the United States was higher – between 1.5-2.5% (Figure 13). After the outbreak of the COVID-19 pandemic, inflation decreased everywhere. In the second half of 2020, it became negative in the euro area and Japan. In the United States, it was in the range of 1.0-1.5%.

Figure 13: 12-month inflation in major currency areas, in %, 2019-2021



Note: CPI inflation for the US and Japan, HICP inflation for the EA.

Sources: IMF International Financial Statistics (the US and Japan), ECB (the EA).

As mentioned in Section 3.1, low inflation in the euro area served as the key justification for a return to QE in Q4 2019. After the pandemic outbreak, the weight of this argument in favour of continuous monetary expansion has been further strengthened in all major currency areas (see Buiter, 2021; Ranasinghe et al., 2020). However, one should be careful with drawing far-going conclusions from very low or even negative inflation figures (see O'Brien et al. [2021] for a comprehensive analysis of supply- and demand-side factors influencing inflation during the COVID-19 pandemic).

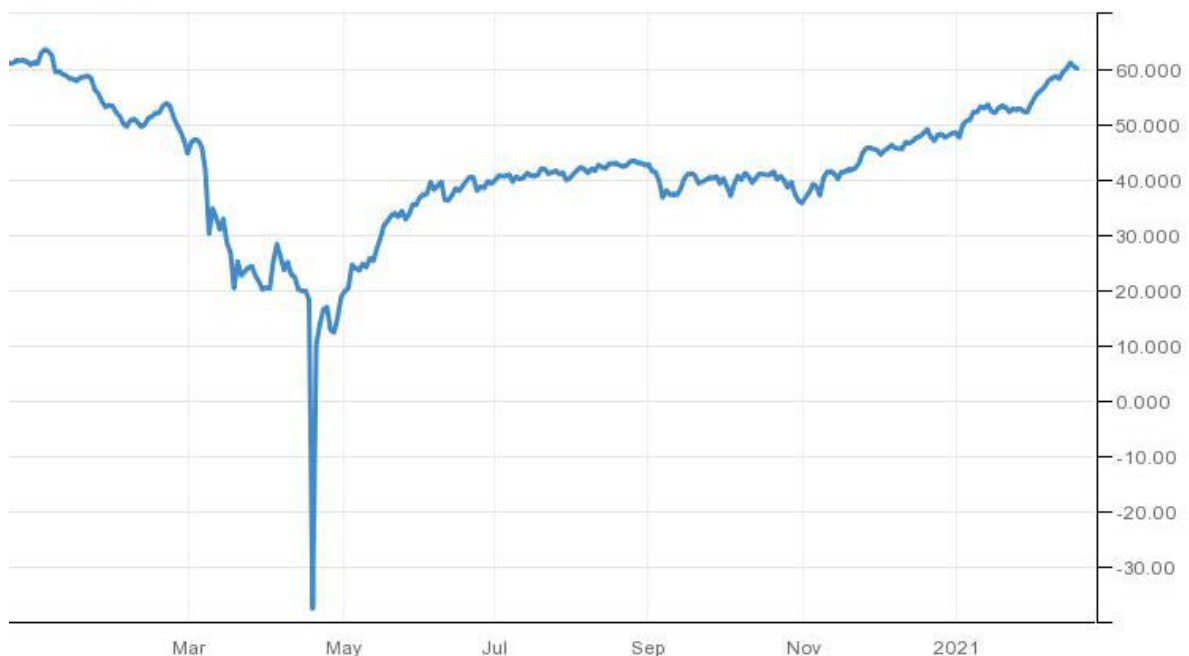
First, low inflation may result not only from the subdued aggregate demand or hypothetically insufficient money supply but also from lockdown measures that radically change the composition of

the consumer basket¹³ and distort sectoral and industry-specific balances between demand and supply.

Second, as analysed in Section 2.3, the subdued aggregate demand can have a temporary character, resulting from anti-pandemic containment measures. It can rebound once the pandemic and lockdown are over (unfreezing a monetary overhang resulting from forced saving).

Third, there were numerous supply-side shocks in 2020, the most notable of them being related to the collapse of oil and other commodity prices in March and April 2020 (Figure 14).

Figure 14: Price of crude oil WTI, in USD per 1 barrel, 2020-2021



Source: Trading Economics, <https://tradingeconomics.com/commodity/crude-oil>.

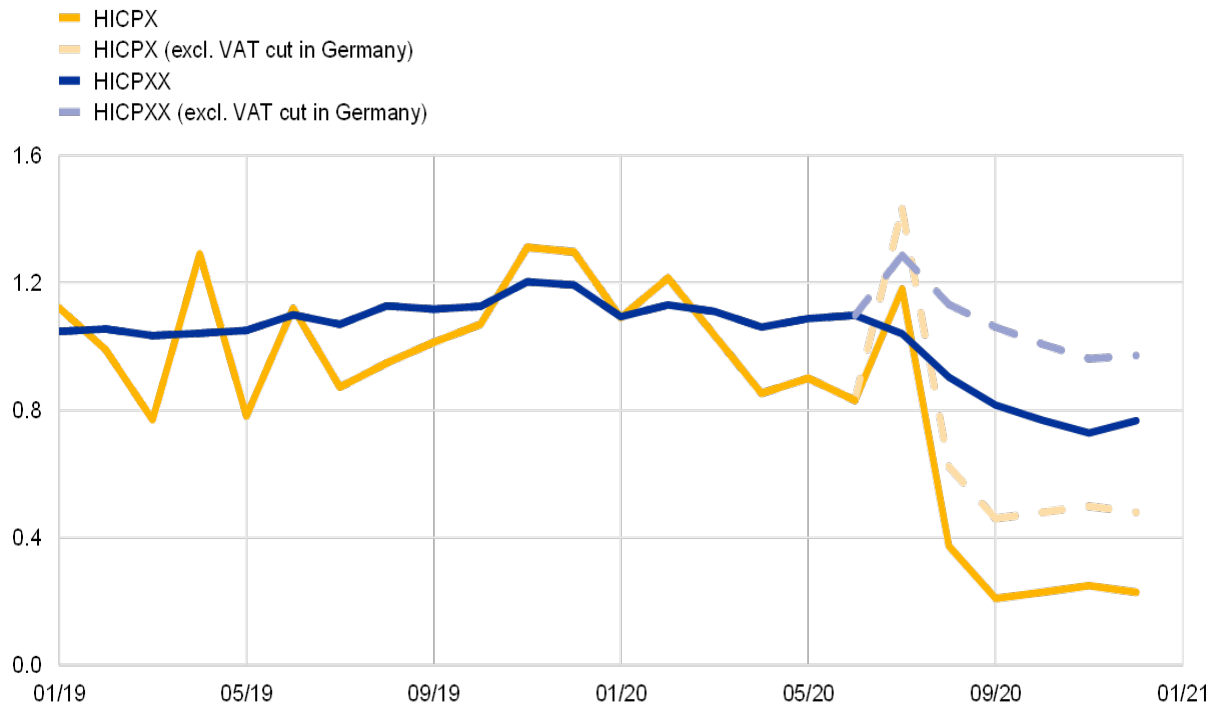
Fourth, temporary cuts in the value added tax (VAT) in some euro area countries (Austria, Cyprus, Germany, Greece, and Ireland) in the second half of 2020¹⁴ also had a downward impact on recorded inflation in this period. The most substantial reduction in VAT rates took place in Germany where the basic VAT rate was lowered from 19 to 16% and the reduced VAT rate – from 7 to 5% for all goods and services, for the period of 1 July to 31 December 2020 (Asquith, 2020). In other economies, VAT cuts concerned only selected goods and services.

Figure 15 shows the effects of excluding changes in energy, food, travel-related items, clothing and footwear prices, and VAT rates in Germany from the headline HICP indicator. Such an underlining inflation measure remains in positive territory and is more stable than the headline HICP. However, it also represents the declining trend in the second half of 2020.

¹³ Technically, changes in the composition of the consumer basket and the weights of individual items can be taken into consideration by CPI statistics ex-post in the subsequent year.

¹⁴ See 2021 European Union VAT rates, <https://www.avalara.com/vatlive/en/vat-rates/european-vat-rates.html>.

Figure 15: Measures of underlying inflation in the euro area, 12-month rate in %, 2019-2020

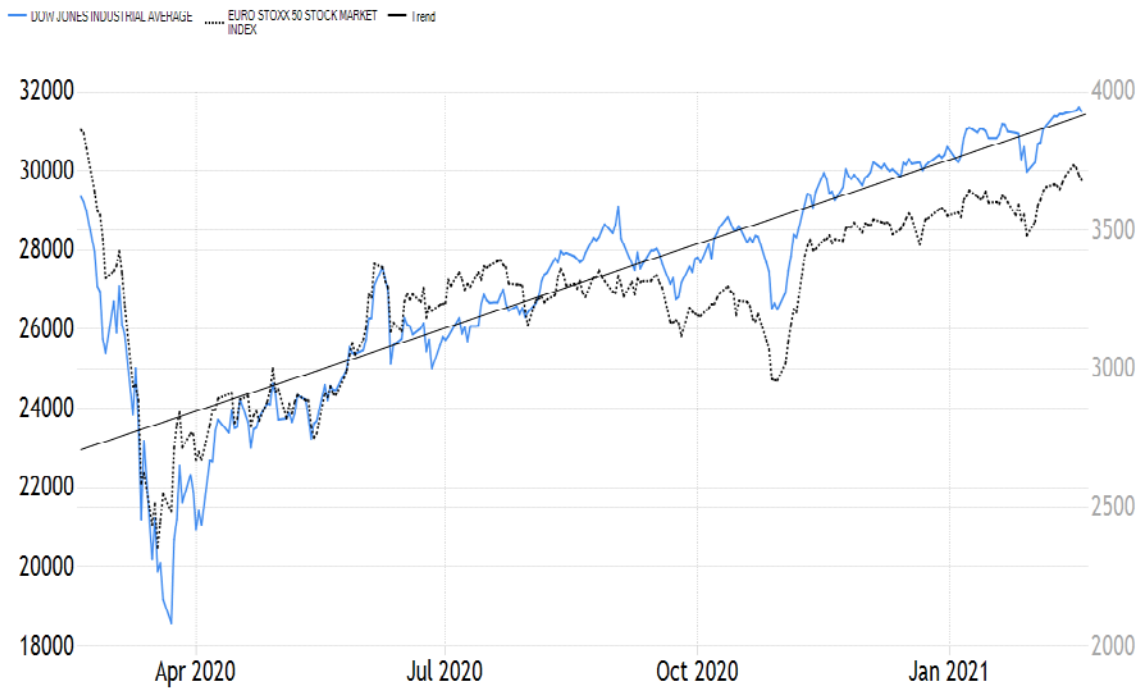


Notes: HICPX – HICP excluding food and energy; HICPXX – HICP excluding energy, food, travel-related items, clothing and footwear prices.

Source: ECB, 2021, Chart 8, p. 18.

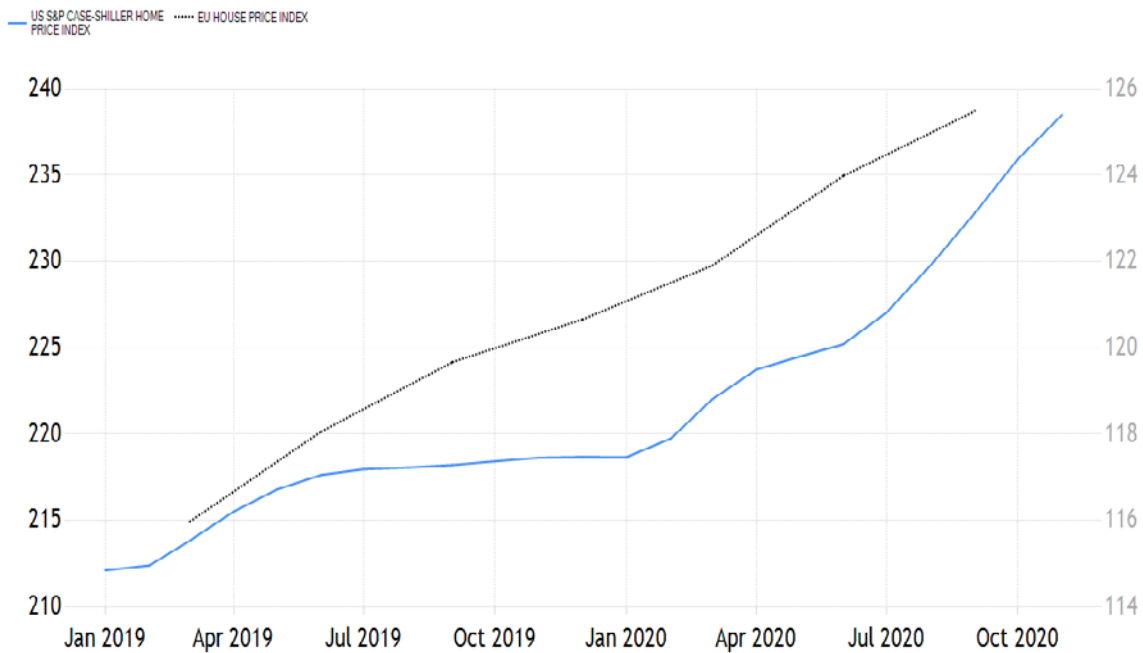
The measure of underlying inflation can help to predict potential changes in the headline HICP in the near future. By this we mean growing oil prices since November 2020 (Figure 14) and the expiration of most temporary VAT rate cuts in Germany at the end of 2020. Perhaps the euro area positive headline inflation of 0.8% in January 2021 reflects the impact of these changes and the beginning of a new trend.

Figure 16: US Dow Jones Industrial Average (left-hand scale, blue line) and Euro Stoxx 50 Market Index (right-hand scale, black line), 18 February 2020-18 February 2021



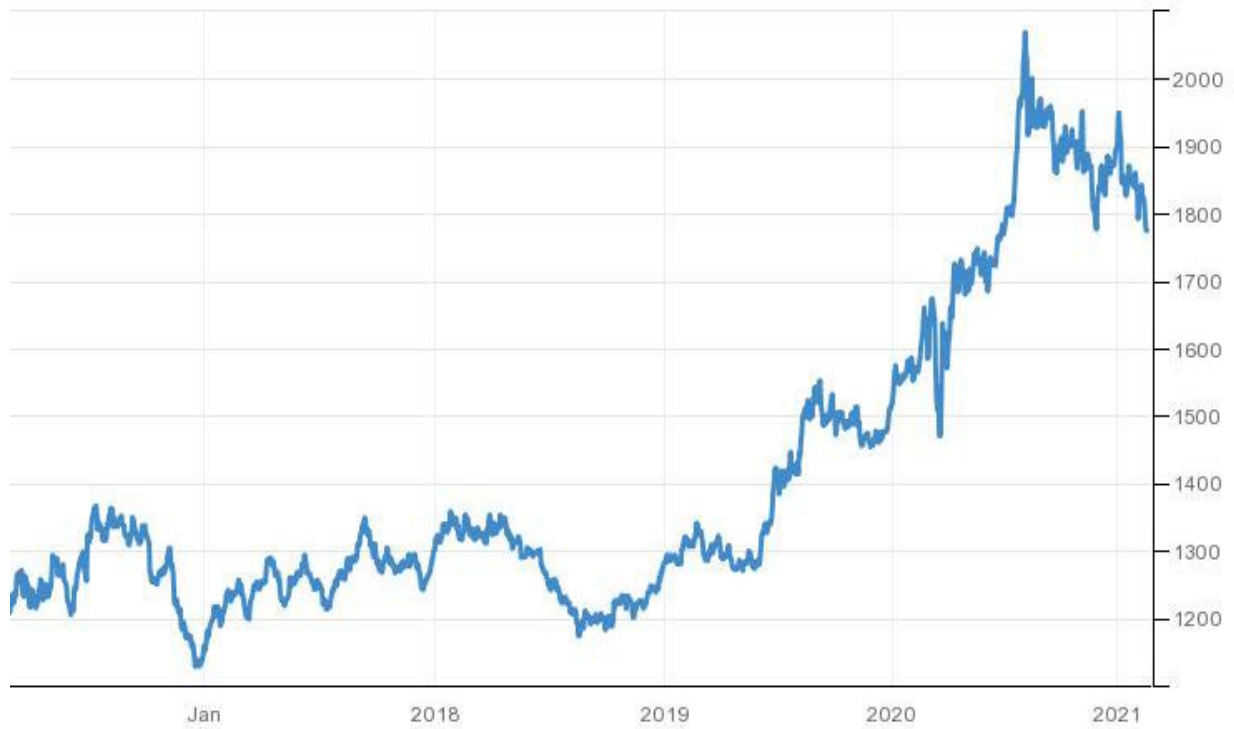
Source: Trading Economics, <https://tradingeconomics.com>.

Figure 17: US (left-hand scale, blue line) and euro area (right-hand scale, black dotted line) Nominal Home Prices Indexes, 18 February 2020-18 February 2021



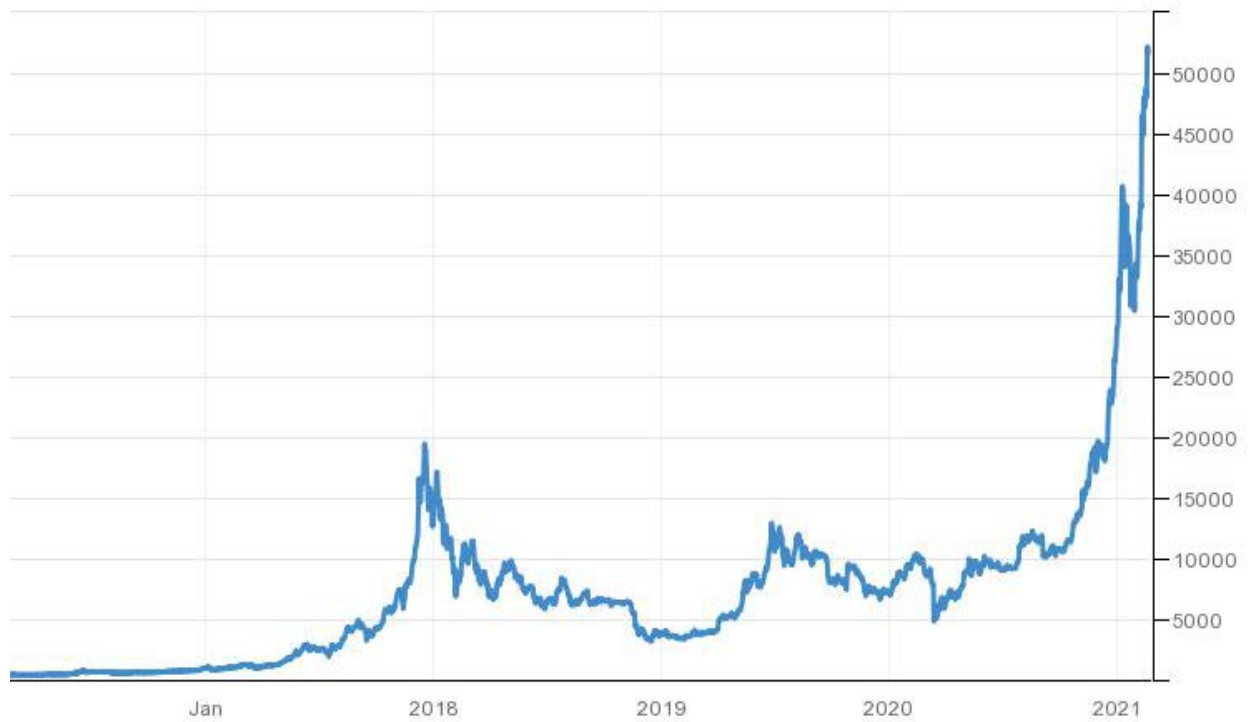
Source: Trading Economics, <https://tradingeconomics.com>.

Figure 18: Price of gold in USD for 1 troy ounce, 2016-2021



Source: Trading Economics, <https://tradingeconomics.com>.

Figure 19: Price of Bitcoin in USD for 1 unit, 2016-2021



Source: Trading Economics, <https://tradingeconomics.com>.

In our previous analysis (Dabrowski, 2019), we argued that changes in the CPI are not able to fully capture the existing inflationary pressures because part of this pressure is absorbed by changes in asset prices. Figures 16-17 present the dynamic of housing prices and the stock market (both in the euro area and the United States), while Figures 18-19 – the dynamics of the prices of gold and the Bitcoin virtual currency. They all demonstrate a strongly increasing trend during the pandemic, except the price of gold, which after a rapid increase in the first half of 2020 moderated somewhat in the second half of 2020 and the beginning of 2021, and a short dip in stock prices in February and March 2020. This should serve as a warning signal of the unrecorded inflationary potential and the risk to financial stability – the two questions which we will address in Chapter 4.

3.7. The nexus between monetary and fiscal policies

Figure 4 shows that purchases of government bonds have dominated all APPs conducted by the ECB. The same relates to APPs conducted by the BoJ, the Fed, and other CBs that engage in QE. As a result, CBs in several AEs, including the three CBs analysed in this paper, accumulated large stocks of government securities.

Such an effect of QE, even if originally unexpected and undesired, seems to be unsurprising and unavoidable. Several rounds of large-scale QE since 2008 absorbed the bulk of commercial papers and securities of sufficient quality and liquidity acceptable to CBs. Government bonds remain the only available assets to continue QE, especially as their supply is growing rapidly due to large fiscal imbalances and increasing public sector borrowing requirements (PSBRs) during the pandemic. The higher supply of government bonds meets the higher demand for them by those CBs that want to expand their APPs.

However, such a “symbiosis” has several negative consequences and involves serious risks to macroeconomic and financial stability (see Chapter 4). Even if APPs are conducted exclusively for monetary policy purposes (to increase the CB’s monetary base or flatten a yield curve) and via the secondary market, they mean the *de facto* monetisation of public debt. QE increases demand for government securities and makes public debt financing easier. In many instances, it reduces market pressures on more prudent fiscal policies. It also decreases public debt service costs¹⁵. This means that the phenomenon of record-low nominal and real interest rates in AEs, which often serves as an argument in favour of the further expansion of government borrowing (see Blanchard, 2019; Furman, 2020), is not only an effect of the excessive saving as compared to investment needs¹⁶ but can also be seen as an indirect effect of QE.

Overall, as a result of QE, major CBs, including the ECB, became increasingly involved in the indirect financing of public debt, which can narrow the monetary policy room for manoeuvre, make it more dependent on fiscal imbalances, and compromise CB independence. We will further discuss this issue in Chapter 4.

¹⁵ In the case of the PEPP, the ECB did not follow the strict country capital key on a monthly basis to help those euro area governments whose yields were higher. However, towards the end of 2020, the ECB minimised such interventions.

¹⁶ See the hypothesis of secular stagnation as developed by Summers (2016) and Summers and Stansbury (2019).

4. CHALLENGES FACED BY CENTRAL BANKS AFTER THE PANDEMIC

Regardless of the length of the COVID-19 pandemic, it will leave behind a heavy social and economic legacy, which will be uneasy to overcome. For this reason, policymakers should not limit their actions and decisions to responding to today's challenges, however serious and dramatic they are. They should think ahead to the post-pandemic period and its challenges and assess the consequences of today's choices from a longer-term perspective. Too often, anti-crisis measures taken hastily today without due consideration of the potential side effects can have serious repercussions for the future.

The postulate of thinking ahead of the curve also concerns monetary policymakers. For central bankers, three problems in the post-pandemic era may be particularly challenging: (i) the potential return of inflationary pressures, (ii) fiscal dominance, and (iii) risks to financial stability.

4.1. The potential return of inflationary pressures

Inflation in AEs was low during the entire decade of the 2010s (Dabrowski, 2019) and even lower in 2020, after the outbreak of the COVID-19 pandemic (see Section 3.6 and Figure 13). This may support the expectation (based on an extrapolation of past trends) that the low inflationary environment will continue for the next couple of years, regardless of monetary and fiscal policy decisions (see e.g., Blanchard, 2020; Demertzis, 2021). Some financial market forecasts even warn of a continuous deflation risk in 2021 (Zangana, 2020).

Early 2021 official macroeconomic forecasts predict a moderate inflation pick up based on the assumption of a gradual but relatively fast economic recovery. According to the IMF (2021a, footnote 8 to Table 1, p. 4), inflation in the euro area will amount to 0.9% in 2021 and 1.2% in 2022, in Japan – 0.1% in 2021 and 0.5% in 2022, and in the US – 2.1% in both 2021 and 2022. According to the European Commission (2021, Table 1, p. 1), inflation in the euro area will amount to 1.4% in 2021 and 1.5% in 2022.

Inflationary expectations measured by surveys of professional opinions or derived from market-based indicators (changes in bond yields and swap rates) also show only a very modest inflation revival, not exceeding an annual rate of 2% (Demertzis, 2021; ECB, 2021, Chart 9; European Commission, 2021, Graph 1.17, p. 19).

However, by their very nature, both macroeconomic forecasts and various measures of inflationary expectations are based, explicitly or implicitly, on the assumption of the continuation of past trends and economic behaviour and an unchanged policy regime (Blanchard, 2020). Therefore, they may not be able to capture the actual inflation risks coming from the economic aspect of the COVID-19 crisis (see Section 2.3), the consequences of anti-crisis monetary and fiscal policy responses (see Chapter 3), and the longer-term demographic and structural challenges faced by AEs (Goodhart and Pradhan, 2020).

Even if the previous warnings on returning inflation (including the ones presented by the author of this paper – see e.g., Dabrowski, 2019) have not materialised yet, it does not mean that it will never happen. There are several arguments that may validate the hypothesis on a more pro-inflationary macroeconomic environment in the post-pandemic era as compared to the decade of the 2010s.

In the short term, there are several potentially pro-inflationary factors which should be taken into consideration. The most important one relates to the monetary overhang (the effect of forced saving – see Section 2.3) accumulated in 2020. At the moment, it is quite difficult to estimate its actual size and predict how quickly it can be unfrozen. Putting it in other words, the question is whether the demand

for money will return to its pre-pandemic level and, if yes, how quickly. The rapid increase in asset prices (Section 3.6) may suggest that the hidden (or repressed) inflationary potential is quite substantial.

The recovery of commodity prices to their pre-pandemic levels (see Figure 14 for oil prices) means that their deflationary impact observed in 2020 is largely over. There are also first signs of supply-side bottlenecks, for example, in container transport (Smith, 2021) and semiconductor production (Miller et al., 2021), which may lead to respective price increases. They confirm the hypothesis that the post-crisis recovery will not mean a simple reemployment of idle capacities. Rather, the structural changes induced by the COVID-19 pandemic and lockdown will lead to a certain mismatch between demand and supply.

There are also concerns related to the size of the fiscal stimulus package proposed by the Biden administration in the United States and its potential inflationary consequences. Olivier Blanchard, in a series of tweets¹⁷ published on 7 February 2021, argues that the size of the proposed stimulus (USD 1.9 trillion), in addition the Coronavirus Aid, Relief, and Economic Security (CARES) package of USD 900 billion approved by the US Congress in December 2020 and the high probability that consumers will spend USD 800 billion out of the excessive saving accumulated in 2020, gives a total amount of USD 3.6 trillion of additional effective demand, while the upper bound estimation of the output gap in the United States is USD 900 billion – that is, four times less. Summers (2021) raised similar concerns and arguments. Interestingly, both authors downplayed the inflation risk and called for a more active fiscal policy not so long ago.

Going beyond short-term considerations, there are several arguments pointing to potential inflationary forces in the medium- to long-term. First, deflationary pressures triggered by the immediate effects of the GFC (serious disruption in financial intermediation) and followed by a new set of financial regulations (Dabrowski, 2019) will not continue forever. Their potential seemed to reach their limits in the second half of the 2010s.

Second, according to Goodhart and Pradhan (2020), China's integration with the world economy since the 1990s produced a powerful deflationary impact because of its abundant, well-trained, and inexpensive labour force and high national saving. However, this impact is about to expire or even turn to the opposite, largely due to demographic changes in China (shrinking working age population and population ageing) and its maturing economy. Similar demographic changes in AEs will work in the same, inflationary direction (Bartsch et al., 2020).

Third, tensions in the world trade system triggered by the protectionist policies of the United States under President Donald Trump may also produce inflationary consequences if continued. At the time of writing this paper, it remains unknown whether the new US administration of President Joseph Biden will conduct more pro-trade policies than its predecessor. However, one can assume that substantial progress in the liberalisation of world trade like that observed in the 1990s and early 2000s is very unlikely in the near future. The continuation of the downward pressure on the prices of tradeable goods and services generated in the previous 30 years by global competition is very unlikely (Bartsch et al., 2020; Goodhart and Pradhan, 2020).

Fourth, the rapid deterioration of fiscal balances and the growing public debt have an inflationary character in the long term. Furthermore, they constrain a CB's room for manoeuvre in fighting inflation. This issue will be further discussed in Section 4.2.

¹⁷ See Olivier Blanchard, <https://twitter.com/ojblanchard1/status/1358122336432648192>.

4.2. Increasing fiscal dominance

The analysis presented in Sections 2.4 and 3.7 show the narrowing fiscal space in most AEs, which has been temporarily relaxed only by ultra-loose monetary policies conducted via large purchases of government securities and *de facto* public debt monetisation. This has led to an increasing fiscal dominance (Landau, 2021) or, using other words, an increasing monetary policy dependence on fiscal policy. In practice, CBs may become hostages of fiscal authorities and the inability or unwillingness of governments to carry out a necessary fiscal adjustment on time¹⁸. In turn, this may create a serious obstacle to monetary policy tightening and reversing QE when inflation pressure comes back.

In such circumstances, CBs will be confronted with an increasingly dramatic dilemma. Fulfilling their price stability missions will require first stopping the APPs and then reducing their balance sheets, on the one hand, and hiking interest rates, on the other (Blanchard, 2020). However, both will lead to an increase in the government's interest payments and a further deterioration of its fiscal position, other things being equal. Some governments may face the risk of sovereign insolvency which, in turn, will undermine the stability of the financial sector (see Section 4.3) and boost inflationary expectations.

On the other hand, giving in to fiscal pressures would lead to higher inflation and undermining thus far stable inflationary expectations (Landau, 2021), which has constituted a stable anchor to both monetary and fiscal policies in major currency areas since the mid-1990s. Higher inflation could perhaps depreciate the real stock of public debt (i.e., if it had an unexpected character), but other economic and social consequences would be negative.

Unfortunately, the ongoing process of updating monetary policy strategies (completed by the Fed, unfinished by the ECB) seems to go towards creating formal excuses for higher inflation by the mechanism of making up past inflation "underperformance".

The new version of the "Statement on Longer-Run Goals and Monetary Policy Strategy" (FOMC, 2020) announced by the Fed on 27 August 2020 reinterpreted the inflation target of 2% as a longer-term average, which means that "*...following periods when inflation has been running persistently below 2 percent, appropriate monetary policy will likely aim to achieve inflation moderately above 2 percent for some time.*" With all the imprecision of this declaration (what does "*moderately above 2 percent*" and "*for some time*" mean exactly?)¹⁹, it looks like giving price stability less attention in the future in favour of other declared (maximum employment, moderating long-term interest rates) or undeclared policy goals (for example, easing fiscal constraints).

In January 2020, the ECB also launched the process of its monetary policy strategy review, its first since 2003. At the time of writing this paper, it is still an ongoing process scheduled to be concluded in 2021. However, the public address of ECB President Christine Lagarde on 30 September 2020 in which she mentions the need for "symmetry" in regard to the inflation target and discusses the possibility of making up for inflation misses (Lagarde, 2020) may suggest a similar approach to the Fed's strategy revision.

The expert debate, which accompanies the process of the ECB strategy review, brings even more radical proposals like, for example, increasing the inflation target to accommodate structural changes in the economy originating from the EU's decarbonisation policy (Rey, 2020).

¹⁸ The broad critique of the supposed fiscal austerity in the 2010s in the United States, euro area and UK (see e.g., Krugman, 2015; Skidelsky, 2015) and the disregard for fiscal sustainability constraints will not help in timely decisions to stop fiscal expansion and taking the necessary fiscal adjustment measures.

¹⁹ Being such an imprecise formula itself may create higher inflationary expectations – see Bartsch et al. (2020).

Overall, the increasing fiscal dominance may undermine CB independence, the fundamental institutional achievement of the last two decades of the 20th century (Landau, 2021), which can be considered from a historical perspective as the equivalent of the metallic standard or hard peg. Unfortunately, in the context of increasing fiscal dominance, there are experts who are ready to recommend monetary accommodation by increasing PSBRs and who consider CB independence as an illusion (see Buiter, 2020; 2021).

4.3. Risks to financial stability

Risks to financial stability is another potential challenge that deserves the serious consideration of both governments and monetary authorities. On the one hand, painful lessons and memories from the GFC and the resulting financial regulation and supervision reforms in the 2010s made the financial sector more stable and resilient to adverse shocks. However, on the other hand, the COVID-19 crisis has generated new risks and uncertainties. In particular, banks and non-banking financial institutions can become victims of asset bubbles, especially in the housing and stock markets (see Section 3.6), and recession. While in 2020 the number of enterprise insolvencies (clients of commercial banks) did not increase due to various governmental support schemes (Claeys et al., 2021), the situation may change in 2021 and subsequent years for the worse. It will result in an increasing share of non-performing loans and deteriorating financial results and balance sheets for banks. Bank profitability has also been negatively influenced by very low market interest rates and negative CB interest rates. In addition, low interest rates may distort credit allocation in favour of the so-called “zombie” firms (i.e., those without a viable market perspective) and further deteriorate the quality of banks’ assets.

The increasing risks to financial stability may pose a serious challenge to CBs both in their role of financial supervisors and institutions responsible for financial stability (all three CBs analysed in this paper are mandated with such a role) and as monetary authorities. Any potential incidence of financial instability may have a negative impact on monetary stability. In addition, the necessity to rescue the financial sector, especially banks, may stay in conflict with monetary policy objectives and their price stability mandate (see Cukierman, 1996; Dall’Orto Mas et al., 2020).

5. CONCLUSION

The economic crisis caused by the COVID-19 pandemic has been the second global adverse shock of this size in the 21st century, after the GFC of 2007-2009. However, its economic characteristics are different from the GFC and other financial crises and business cycle downturns. While the GFC generated a powerful deflationary shock due to far-reaching disruption in financial disintermediation and then the new regulatory regime in the financial sector, the COVID-19 crisis is a combination of supply- and demand-side disruptions caused by anti-pandemic containment measures, massive uncertainty, and the resulting precautionary behaviour of both consumers and investors. This leads to the phenomenon of forced (involuntary) saving and the building up of a monetary overhang.

However, disregarding differences between both crises, governments and CBs reacted to the current crisis in a similar way as 12 years earlier, that is, by massively relaxing both fiscal and monetary policies. While the necessity of some forms of fiscal and monetary support (to fight the pandemic, compensate for the lockdown, supply the financial sector with sufficient liquidity, and help economies outside major currency areas) has been out of question, the idea of the aggressive and untargeted boosting of aggregate demand by fiscal and monetary measures in the time of lockdown restrictions raises serious doubts. First of all, it is very costly, especially when most governments entered the COVID-19 crisis without sufficient fiscal buffers.

Similarly, CBs in AEs did not manage to withdraw from UPMs, stop QE, reduce their balance sheets, or increase interest rates above zero in the second half of the 2010s (the Fed was a partial exception) (Dabrowski, 2019). Therefore, after the outbreak of the COVID-19 crisis, they had only one method of monetary policy easing left – the further intensification of APPs. However, as already experienced in the 2010s, QE has numerous shortcomings and undesired side effects²⁰. One concerns the adverse impact of QE on financial intermediation and the monetary transmission mechanism. The additional monetary base is not fully absorbed by commercial banks and does not reach their clients – enterprises and households. The reason being that banks prefer to keep a substantial part of their additional liquidity in the form of voluntary deposits with CBs (despite negative interest rates).

Another problem relates to the monetary-fiscal nexus. Conducting a mass-scale QE, CBs must rely on purchasing government bonds because of a shortage of other assets of sufficient quality and liquidity. However, this leads to an increasing monetary policy dependence on fiscal policy (fiscal dominance) and, by decreasing yields on government bonds, weakens government incentives to conduct a prudent fiscal policy. On the contrary, it creates the expectation of low interest rates in the long term – an illusion of a “free lunch” – which is far from reality (Rogoff, 2020). Actually, it only delays the moment of truth when governments are confronted with fiscal sustainability constraints. This is the challenge faced not only by EM economies. Governments of AEs, including those which have global currencies, are not fully free of them as demonstrated, for example, by the fiscal crisis at the euro area periphery in the first half of the 2010s.

For CBs, such an ever closer “symbiosis” between monetary and fiscal policies can mean the dramatic narrowing of their room for policy manoeuvre and the *de facto* compromising of their independence. This may happen when CBs should tighten monetary policy to resist inflationary pressures. Because each form of tightening (stopping QE, reducing CB balance sheets, and hiking CB interest rates, among others) will create upward pressure on government bond yields, it can lead to an open conflict between CBs and the executive and legislative branches of government (Goodhart and Pradhan, 2020). Again, something that has been experienced on numerous occasions by CBs in EM economies may also

²⁰ See Hartwell (2018) and Siklos (2020) for overviews of the successes and failures of QE.

become a reality in AEs, even those with the advanced institutional safeguards of CB independence like in the euro area.

This is not a purely hypothetical scenario. The reversal of a more than a decade-long deflationary pressure may come sooner than many tend to think, for a number of reasons. In the short term, it may originate from the unfreezing of the monetary overhang formed during the pandemic, demand-supply mismatches resulting from pandemic-induced structural changes, and overshooting monetary and fiscal stimulus packages, to mention only a few. In the medium- to long-term, inflationary pressures can result from the expiring deflationary impulses of the 2010s (related to the legacy of the GFC and tighter financial regulations), demographic changes, deglobalisation, and the deterioration of fiscal balances.

Governments and CBs should think ahead about how to avoid a policy trap caused by a rapidly growing public debt and its *de facto* monetary financing, especially in the context of the potential return of inflationary pressures. With no doubt, balancing short-term needs (especially in times of emergency) and long-term constraints and challenges is an art of policymaking (see Landau, 2021). Such an art is badly needed in the current situation, especially if fighting the COVID-19 pandemic is going to take longer and cost more than originally expected.

REFERENCES

- Amante, Angelo (2020). "Last-minute extension of Italian ski ban dismays Draghi's new allies". *Reuters*, 15 February. Available at <https://www.reuters.com/article/us-health-coronavirus-italy-ski-idUSKBN2AF1GQ>
- Asquith, Richard (2020). "Germany cuts VAT from 19% to 16% until 31 Dec 2020". *Avalara VATlive*, 4 June. Available at <https://www.avalara.com/vatlive/en/vat-news/germany-cuts-vat-from-19--to-16--until-dec-2020.html>
- Bartsch, Elga, Jean Boivin, and Philipp Hildebrand (2020). "Preparing for a higher inflation regime". *SUERF Policy Note*, Issue 211, December, SUERF – The European Money and Finance Forum. Available at https://www.suerf.org/docx/f_b3f9a0026fb6e31d468ed053f43eb6fb_18939_suerf.pdf
- Blanchard, Olivier J. (2019). "Public Debt and Low Interest Rates". *NBER Working Paper*, No. 25621, February. Available at <https://www.nber.org/papers/w25621.pdf>
- Blanchard, Olivier J. (2020). "Is there deflation or inflation in our future?" *Vox.EU/ CEPR*, 24 April. Available at <https://voxeu.org/article/there-deflation-or-inflation-our-future>
- Buiter, Willem H. (2020). "Willem H. Buiter Says More...". *Project Syndicate*, 22 September (interview). Available at <https://www.project-syndicate.org/say-more/an-interview-with-willem-h-buiter-2020-09>
- Buiter, Willem H. (2021). "The Fed Must Step Up Again". *Project Syndicate*, 26 January. Available at <https://www.project-syndicate.org/commentary/fed-should-monetize-deficits-from-biden-stimulus-package-by-willem-h-buiter-2021-01>
- Claeys, Gregory, Mia Hoffmann, and Guntram B. Wolff (2021). "Corporate insolvencies during COVID-19: keeping calm before the storm". *Bruegel Blog*, 7 January. Available at <https://www.bruegel.org/2021/01/corporate-insolvencies-during-covid-19-keeping-calm-before-the-storm/>
- Cottarelli, Carlo and Mario Blejer (1991). "Forced Savings and Repressed Inflation in the Soviet Union: Some Empirical Results". *IMF Working Paper*, WP/91/55, June. Available at https://www.elibrary.imf.org/doc/IMF001/02566-9781451847550/02566-9781451847550/Other_formats/Source_PDF/02566-9781455298808.pdf
- Cukierman, Alex (1996). "The Economics of Central Banking". *CentER Discussion Paper*, 1996 (31), Tilburg: Macroeconomics. Available at <https://pure.uvt.nl/portal/files/524048/31.pdf>
- Dabrowski, Marek (2012). "Fiscal and Monetary Policy Determinants of the Eurozone Crisis and its Resolution". *CASE Network Studies and Analyses*, No. 443. Available at http://www.case-research.eu/sites/default/files/publications/CNSA_2012_443.pdf
- Dabrowski, Marek (2019). "Fighting the Previous War: Does the World Economy Face a Deflationary Threat?". Publication for the committee on Economic and Monetary Affairs, Policy Department for Economic, Scientific and Quality of Life Policies, European Parliament, Luxembourg. Available at <http://www.europarl.europa.eu/cmsdata/186945/CASE%20FINAL-original.pdf>
- Dabrowski, Marek (2020). "Fighting the COVID-19 Pandemic: Economic Dilemmas and Choices". *Valdai Club Expert Opinions*. 30 November 2020. Available at <https://valdaiclub.com/a/highlights/fighting-the-covid-19-pandemic-economic-dilemmas/>

- Dabrowski, Marek, and Marta Dominguez-Jimenez (2020). "Emerging market central banks and quantitative easing – high-risk advice". *Bruegel blog*, 26 August, <https://www.bruegel.org/2020/08/emerging-market-central-banks-and-quantitative-easing-high-risk-advice/>
- Dall'Orto Mas, Rodolfo, Benjamin Vonessen, Christian Fehlker, and Katrin Arnold (2020). "The case for central bank independence: a review of key issues in the international debate". *ECB Occasional Paper Series*, No. 248, October. Available at <https://www.ecb.europa.eu/pub/pdf/scpops/ecb.op248~28bebb193a.en.pdf>
- Dadush, Uri (2020). "A matter of life and death: governments must speed up vaccination". *Bruegel blog*. 13 January. Available at <https://www.bruegel.org/2021/01/a-matter-of-life-and-death-governments-must-speed-up-vaccination/>
- Demertzis, M. (2021). "Continuing fiscal support and the risk of inflation". *Bruegel Blog*, 17 February. Available at <https://www.bruegel.org/2021/02/continuing-fiscal-support-and-the-risk-of-inflation/>
- Draghi, Mario (2019). "Hearing at the Committee on Economic and Monetary Affairs of the European Parliament". Introductory Statement by Mario Draghi, President of the ECB, at the ECON committee of the European Parliament, Brussels, 23 September. Available at <https://www.ecb.europa.eu/press/key/date/2019/html/ecb.sp190923~f7dc5b72be.en.html>
- ECB (2020). "ECB prolongs support via targeted lending operations for banks that lend to the real economy". Press release, 10 December. Available at <https://www.ecb.europa.eu/press/pr/date/2020/html/ecb.mp201210~8c2778b843.en.html>
- ECB (2021). *Economic Bulletin*, No. 1/2021. European Central Bank. Available at <https://www.ecb.europa.eu/pub/pdf/ecbu/eb202101.en.pdf>
- EIU (2021). "Coronavirus vaccines: expect delays: Q1 global forecast 2021". A report by The Economist Intelligence Unit. Available at <https://www.eiu.com/n/campaigns/q1-global-forecast-2021/>
- Euronews (2021). "Czech MPs refuse to extend the state of emergency despite government pleas". *Euronews*, 12 February. Available at <https://www.euronews.com/2021/02/12/czech-parliament-refuses-to-extend-the-state-of-emergency-despite-government-pleas>
- European Commission (2021). "European Economic Forecast: Winter 2021 (Interim)". *European Economy Institutional Paper*, No. 144, February. Available at https://ec.europa.eu/info/sites/info/files/economy-finance/ip144_en_1.pdf
- FOMC (2020). "Statement on Longer-Run Goals and Monetary Policy Strategy". Board of Governors of the Federal Reserve System, Federal Open Market Committee, 27 August. Available at https://www.federalreserve.gov/monetarypolicy/files/FOMC_LongerRunGoals.pdf
- Frankel, Jeffrey (2019). "Central Banks Should Forget About 2% Inflation". *Project Syndicate*, 25 July. Available at <https://www.project-syndicate.org/commentary/central-banks-inflation-target-expectations-by-jeffrey-frankel-2019-07>
- Furman, Jason (2020). "Global Economic Prospects: COVID-19 and Labor Markets". Presentation at the PIIE Virtual Event on "Global Economic Prospects: Fall 2020", 8 October, Peterson Institute for International Economics. Available at <https://www.piie.com/system/files/documents/furman2020-10-08gepppt.pdf>

-
- Goodhart, Charles, and Manoj Pradhan (2020). *The Great Demographic Reversal: Aging Societies, Waning Inequality and Inflation Revival*. Cham: Palgrave Macmillan. Available at <https://link.springer.com/book/10.1007%2F978-3-030-42657-6>
 - Gros, Daniel (2019). "The ECB's Deflation Obsession". *Project Syndicate*, 6 September. Available at <https://www.project-syndicate.org/commentary/ecb-deflation-obsession-by-daniel-gros-2019-09>
 - Hale, Thomas et al. (2020). "Oxford COVID-19 Government Response Tracker". Blavatnik School of Government. Available at <https://www.bsg.ox.ac.uk/research/research-projects/coronavirus-government-response-tracker#data>
 - Hartwell, Christopher A. (2018). "EMU reform and the 'new normal' for monetary policy". Publication for the committee on Economic and Monetary Affairs, Policy Department for Economic, Scientific and Quality of Life Policies, European Parliament, Luxembourg. Available at <http://www.europarl.europa.eu/cmsdata/157013/CASE%20final%20publication.pdf>
 - IMF (2020). *World Economic Outlook, October 2020: A Long and Difficult Ascent*. Washington, DC: The International Monetary Fund, 7 October. Available at <https://www.imf.org/-/media/Files/Publications/WEO/2020/October/English/text.ashx>
 - IMF (2021a). *World Economic Outlook Update, January 2021: Policy Support and Vaccines Expected to Lift Activity*. Washington, DC: The International Monetary Fund, 20 January. Available at <https://www.imf.org/-/media/Files/Publications/WEO/2021/Update/January/English/text.ashx>
 - IMF (2021b). *Fiscal Monitor Update, January 2021*. Washington, DC: The International Monetary Fund, 20 January. Available at <https://www.imf.org/-/media/Files/Publications/fiscal-monitor/2021/Update/January/English/text.ashx>
 - Kalemli-Ozcan, Sebnem (2020). "Emerging Market Capital Flows under COVID: What to Expect Given What We Know". *Special Series on COVID-19*. The International Monetary Fund, 16 September. Available at <https://www.imf.org/-/media/Files/Publications/covid19-special-notes/en-special-series-on-covid-19-emerging-market-capital-flows-under-covid.ashx>
 - Kornai, Janos (1980). "Economics of Shortage". Amsterdam: North-Holland.
 - Krueger, Anne O. (2021). "Does Pandemic Debt Relief Work?" *Project Syndicate*, 25 January. Available at <https://www.project-syndicate.org/commentary/the-problem-with-pandemic-debt-relief-by-anne-krueger-2021-01>
 - Krugman, Paul (2015). "The case for cuts was a lie. Why does Britain still believe it? The austerity delusion." *The Guardian*, 29 April. Available at <https://www.theguardian.com/business/ng-interactive/2015/apr/29/the-austerity-delusion>
 - Lagarde, Christine (2020). "The monetary policy strategy review: some preliminary considerations". Speech by President of the ECB at the 'ECB and Its Watchers XXI' conference, Frankfurt am Main, 30 September. Available at <https://www.ecb.europa.eu/press/key/date/2020/html/ecb.sp200930~169abb1202.en.html>
 - Lancet COVID-19 Commission (2021). "Priorities for the COVID-19 pandemic at the start of 2021: statement of the Lancet COVID-19 Commission". *Lancet*, 12 February. Available at [https://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736\(21\)00388-3.pdf](https://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736(21)00388-3.pdf)
 - Landau, Jean-Pierre (2021). "Inflation and the Biden stimulus". *Vox.EU-CEPR*, 8 February. Available at <https://voxeu.org/article/inflation-and-biden-stimulus>

- Lane, Philipp R. (2020). "The pandemic and ECB monetary policy". Presentation at SUERF E-Conference on "How to spend it? How to pay it back? EU and US Perspectives", 14 October, School of International and Public Affairs, Columbia University. Available at <https://www.ecb.europa.eu/press/key/date/2020/html/ecb.sp201014~3a2f87fb27.en.pdf>
- Leidy, Michael and Stephen Tokarick (1998). "Considerations in Reducing Inflation from Low to Lower Levels". *IMF Working Paper*, WP/98/109, August. Available at <https://www.imf.org/~media/Websites/IMF/imported-full-text-pdf/external/pubs/ft/wp/wp98109.ashx>
- Kuroda, Haruhiko (2020). "The impact of COVID-19 on the Japanese economy and the Bank of Japan's response". Remarks by the Governor of the Bank of Japan at the Virtual Event Co-Hosted by Harvard Law School (HLS) and Program on International Financial Systems (PIFS), 26 June. Available at <https://www.bis.org/review/r200803b.htm>
- Marcus, J. Scott et al. (2021). "The Impact of the COVID-19 on the Internal Market". Publication for the committee on Internal Market and Consumer Protection, Policy Department for Economic, Scientific and Quality of Life Policies, European Parliament, Luxembourg.
- Miller, Joe, David Keohane, and Kana Inagaki (2021). "Car manufacturing hit by global semiconductor shortage". *Financial Times*, 8 January. Available at <https://www.ft.com/content/e264fd41-7ee9-4fba-be3c-21446298efd9>
- Mosser, Patricia C. (2020). "Central Bank Policy Responses". Presentation at SUERF E-Conference on "How to spend it? How to pay it back? EU and US Perspectives", 14 October, School of International and Public Affairs, Columbia University. Available at https://www.suerf.org/docx/l_00411460f7c92d2124a67ea0f4cb5f85_26931_suerf.pdf
- O'Brien, Derry, Clemence Dumoncel, and Eduardo Goncalves (2021). "The role of demand and supply factors in HICP inflation during the COVID-19 pandemic – a disaggregated perspective". *ECB Economic Bulletin*, No. 1/2021. Available at https://www.ecb.europa.eu/pub/economic-bulletin/articles/2021/html/ecb.ebart202101_02~7c3bd48751.en.html
- Ranasinghe, Dhara, Ritvik Carvalho, and Saikat Chatterjee (2020). "Enough talk, time for action: Five questions for the ECB". *Reuters*, 7 December. Available at <https://www.reuters.com/article/us-eurozone-markets-ecb-graphic-idUSKBN28H0JG>
- Rey, Helene (2020). "The Core of the ECB New Strategy". *Project Syndicate*, 8 October. Available at <https://www.project-syndicate.org/commentary/ecb-strategy-review-must-change-price-stability-target-by-helene-rey-2020-10>
- Rogoff, Kenneth (2020). "Falling real interest rates, rising debt: A free lunch?" *Journal of Policy Modeling*, 42 (4): 778-790. Available at <https://www.sciencedirect.com/science/article/pii/S0161893820300387/pdf?md5=0cf453deb7a20fdc6eed662338a84cab&pid=1-s2.0-S0161893820300387-main.pdf>
- Siklos, Pierre L. (2020). "Go Big or Go Home? The ECB's Asset Purchase Programmes in Macroeconomic Perspective". Publication for the committee on Economic and Monetary Affairs, Policy Department for Economic, Scientific and Quality of Life Policies, European Parliament, Luxembourg. Available at http://www.europarl.europa.eu/cmsdata/211389/2_CASE%20final.pdf
- Skidelsky, Robert (2015). "The Failure of Austerity." *SPERI Paper*, No. 23, June. Sheffield Political Economy Research Institute. Available at <http://speri.dept.shef.ac.uk/wp-content/uploads/2018/11/SPERIPaper23-the-failure-of-austerity.pdf>

- Skidelsky, Robert (2021). "The Silent Revolution in Economic Policy". *Project Syndicate*, 16 February. Available at <https://www.project-syndicate.org/commentary/covid19-economic-recovery-plans-fiscal-policy-by-robert-skidelsky-2021-02>
- Smith, Elliot (2021). "Container shipping locked in a 'significant bottleneck' as demand surges back". *CNBC*, 10 February. Available at <https://www.cnn.com/2021/02/10/maersk-q4-2020-earnings.html>
- Stancati, Margherita and Dasl Yoon (2020). "Covid-19's Global Divide: As West Reels, Asia Keeps Virus at Bay". *The Wall Street Journal*, 20 October. Available at <https://www.wsj.com/articles/covid-19s-global-divide-as-west-reels-asia-keeps-virus-at-bay-11603186202>
- Summers, Lawrence H. (2016). "The Age of Secular Stagnation: What It Is and What to Do About It". *Foreign Affairs*, March/April. Available at <https://www.foreignaffairs.com/articles/united-states/2016-02-15/age-secular-stagnation>
- Summers, Lawrence H. (2021). "The Biden stimulus is admirably ambitious. But it brings some big risks, too". *The Washington Post*, 4 February. Available at <https://www.washingtonpost.com/opinions/2021/02/04/larry-summers-biden-covid-stimulus/>
- Summers, Lawrence H. and Anna Stansbury (2019). "Whither Central Banking?" *Project Syndicate*, 23 August. Available at <https://www.project-syndicate.org/commentary/central-bankers-in-jackson-hole-should-admit-impotence-by-lawrence-h-summers-and-anna-stansbury-2-2019-08>
- Vogado, Stephen (2020). "Japan: Bank of Japan keeps rates unchanged in December; extends special Covid-19 financing program". *Focus Economics*, 18 December. Available at <https://www.focus-economics.com/countries/japan/news/monetary-policy/bank-of-japan-keeps-rates-unchanged-in-december-extends-special>
- Zangana, Azad (2020). "Has deflation returned to Europe?" *Schroders Insights/ Economic Views*, 22 December. Available at <https://www.schroders.com/en/us/private-investor/insights/economic-views/has-deflation-returned-to-europe/>

The economic characteristics of the COVID-19 crisis differ from those of previous crises. It is a combination of demand- and supply-side constraints which led to the formation of a monetary overhang that will be unfrozen once the pandemic ends. Monetary policy must take this effect into consideration, along with other pro-inflationary factors, in the post-pandemic era. It must also think in advance about how to avoid a policy trap coming from fiscal dominance.

This paper was provided by the Policy Department for Economic, Scientific and Quality of Life Policies at the request of the committee on Economic and Monetary Affairs (ECON) ahead of the Monetary Dialogue with the ECB President on 18 March 2021.
