

# The ECB's Asset Purchase Programmes: Experience and Future Perspectives

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Compilation of papers





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This document was requested by the European Parliament's Committee on Economic and Monetary Affairs.

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## CONTENTS

### **Go Big or Go Home? The ECB's Asset Purchase Programmes in Macroeconomic Perspective**

Author: Pierre L SIKLOS 5

### **APP vs PEPP: Similar, But With Different Rationales**

Authors: Christophe BLOT, Jérôme CREEL and Paul HUBERT 49

### **COVID-19 and the Future of Quantitative Easing in the Euro Area: Three Scenarios with a Trilemma**

Authors: Luigi BONATTI, Andrea FRACASSO, Roberto TAMBORINI 70

### **The ECB's Asset Purchase Programmes: Effectiveness, Risks, Alternatives**

Authors: Joscha BECKMANN, Salomon FIEDLER, Klaus-Jürgen GERN, Stefan KOOTHS, Josefine QUAST, Maik WOLTERS 101

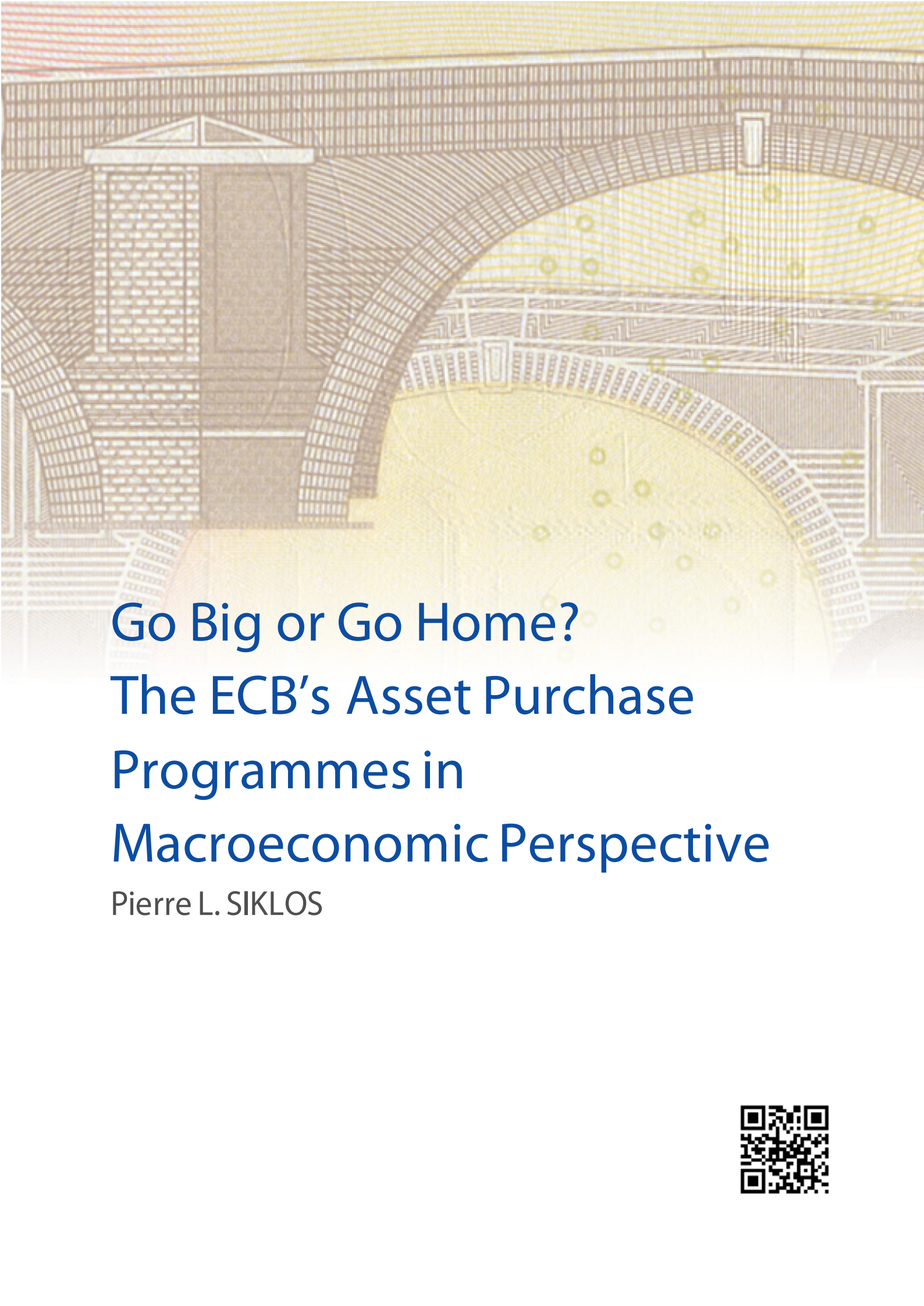
### **This Time is Different: The PEPP Might Not Work in a Sectoral Recession**

Authors: Angela CAPOLONGO, Daniel GROS 129

### **Theory, Evidence, and Risks of the ECB's Asset Purchase Programme**

Authors: Pierpaolo BENIGNO, Paolo CANOFARI, Giovanni DI BARTOLOMEO, Marcello MESSORI 144





# Go Big or Go Home? The ECB's Asset Purchase Programmes in Macroeconomic Perspective

Pierre L. SIKLOS



### **Abstract**

Until this year, governments in the single currency area appeared to be 'missing in action'. There is belated recognition that monetary and fiscal policies must coordinate especially in crisis conditions. The euro area has experienced crisis or near crisis conditions for over a decade. Lessons are being learned late but there continue to be several gaps that the euro area and its members need to close. The paper highlights these and the continuing threats to the single currency area.

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## CONTENTS

<b>LIST OF ABBREVIATIONS</b>	<b>8</b>
<b>EXECUTIVE SUMMARY</b>	<b>11</b>
<b>1. INTRODUCTION</b>	<b>12</b>
<b>2. ASSET PURCHASE PROGRAMMES: AIMS, CHALLENGES, AND EXIT</b>	<b>18</b>
2.1. Aims and a brief chronology: reducing frictions versus stimulus	18
2.2. Challenges	23
2.2.1. Secular stagnation	23
2.2.2. Institutional frictions and conflict	26
2.3. Exit? What exit?	30
<b>3. ASSET PURCHASE PROGRAMMES: ASSESSING THE EVIDENCE</b>	<b>33</b>
3.1. A stumbling block?	33
3.2. Pollyannas and ostriches?	34
<b>4. THE MACRO QUESTION: ASSET PURCHASE PROGRAMMES AND THE EURO AREA ECONOMY</b>	<b>38</b>
<b>5. CONCLUSIONS: WHERE DO WE GO FROM HERE?</b>	<b>42</b>
<b>REFERENCES</b>	<b>45</b>

## LIST OF ABBREVIATIONS

<b>APP</b>	Asset Purchase Programmes
<b>AUT</b>	Austria
<b>BE</b>	Belgium
<b>BIS</b>	Bank for International Settlements
<b>CA</b>	Canada
<b>COVID-19</b>	Coronavirus disease
<b>CY</b>	Cyprus
<b>DE</b>	Germany
<b>ECB</b>	European Central Bank
<b>EFA</b>	Economic and Financial Affairs
<b>ELB</b>	Effective Lower Bound
<b>EMU</b>	European Monetary Union
<b>EP</b>	European Parliament
<b>ES</b>	Spain
<b>EE</b>	Estonia
<b>EU</b>	European Union
<b>EA</b>	Euro Area
<b>Fed</b>	U.S. Federal Reserve Board
<b>FI</b>	Finland
<b>FR</b>	France
<b>G4</b>	Group of Four Economies (USA, GBR, JPN, EUR)
<b>G7</b>	Group of Seven Economies (CAN, DEU, FRA, GBR, ITA, JPN, USA)
<b>GBR</b>	The United Kingdom of Great Britain and Northern Ireland
<b>GDP</b>	Gross Domestic Product
<b>GFC</b>	Great Financial Crisis
<b>GRC</b>	Greece
<b>HICP</b>	Harmonized Index of Consumer Prices
<b>IMF</b>	International Monetary Fund
<b>IE</b>	Ireland
<b>IT</b>	Italy

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<b>JP</b>	Japan
<b>LIBOR3M</b>	London Inter-Bank Offer Rate, 3 months maturity
<b>LTRO</b>	Long-Term Refinancing Operations
<b>LT</b>	Lithuania
<b>LU</b>	Luxembourg
<b>LV</b>	Latvia
<b>MEP</b>	Member of European Parliament
<b>MRO</b>	Main Refinancing Operations
<b>NCB</b>	National Central Banks
<b>NL</b>	The Netherlands
<b>NIRP</b>	Negative Interest Rate Policy
<b>NSP</b>	Non-Standard Policies
<b>OMT</b>	Outright Monetary Transactions
<b>OECD</b>	Organisation for Economic Cooperation and Development
<b>PEPP</b>	Pandemic Emergency Purchase Programme
<b>PT</b>	Portugal
<b>PSAPP</b>	Public Sector Asset Purchase Programme
<b>QE</b>	Quantitative Easing
<b>R*</b>	Short hand for the 'natural' or equilibrium real rate of interest
<b>SDC</b>	Sovereign Debt Crisis
<b>SPF</b>	Survey of Professional Forecasters
<b>SK</b>	Slovakia
<b>SI</b>	Slovenia
<b>TEU</b>	Treaty on Economic Union
<b>TFEU</b>	Treaty on the Functioning of the European Union
<b>UMP</b>	Unconventional Monetary Policy
<b>UK</b>	United Kingdom
<b>US</b>	United States
<b>VIX</b>	Financial market's expectations of aggregate stock price volatility (US-based). Used as an indicator of market sentiment.
<b>WEO</b>	World Economic Outlook

<b>ZEW</b>	Zentrum für Europäische Wirtschaftsforschung (Leibniz Centre for European Economic Research)
<b>ZLB</b>	Zero Lower Bound

## EXECUTIVE SUMMARY

- **GDP growth in the euro area has been disappointingly low and the ECB has under-performed in reaching its own inflation target for several years.** Since the single currency area was created real GDP growth and inflation rates have converged although important divergences remain, especially when it comes to expectations of future growth and inflation.
- **There was a gathering economic storm even before COVID-19.** The pandemic merely exacerbated forces already at play though it would offer the ECB an opportunity to lead by example.
- **Concerns over asset purchase programs by central banks are global and are not new.** Indeed, they can be traced back to the 1990s in Japan. Concerns are two-fold: the size of these interventions and their scope. The latter give rise to worries that monetary and fiscal policies become blurred, and with good reason.
- **The paper examines the record of the ECB since 1999 but focusing on three episodes.** They are: the global financial crisis, the euro area sovereign debt crisis, and the period since non-standard policies, also referred to as unconventional monetary policies, were implemented. The last period can also be said to include the ongoing pandemic crisis.
- **Over the series of crises, some lessons have been learned.** Overall, the ECB's response has improved. The impact of its increasingly frequent and large interventions has arguably become more muted over time. The most important lesson, not completely digested, is the critical need for fiscal and monetary policies to operate in harmony. This need not require a single fiscal policy; it does, however, require a fiscal response from Member States. It also requires better coordination among the sovereign Member States.
- **Legal, policy, and practical threats to good practice in the conduct of monetary policy in the euro area remain.** Missing is a more aggressive attempt by the ECB to engage with the public to counter some of the external pressures faced by the institution.
- **The sharp divide between Northern and Southern Europe over the net benefits of collective action in the euro area could stand a closer look at some of the evidence.** Some of the loudest critics of ECB policy appear to see only costs when there have also been beneficiaries among members who believe a single monetary policy has penalised their economies.
- **Bank centred financing continues to be a threat to economic resilience and recovery and it also has implications for the conduct of monetary policy.** In particular, we do not yet know the full fallout from the ongoing pandemic on the banking system.
- **The record of asset purchase programs in the euro area is mixed.** There is clear evidence that long-term yields have declined but the record at the shorter end of the term structure is less successful. At the macroeconomic level, the best that can be said is that ECB interventions have softened the economic blows from successive crises. However, this is not a recipe for the long-term success of monetary policy.
- **Talk of exit from non-standard monetary policy is premature.** Instead, a clear roadmap of conditions under which the ECB's monetary policy stance would return to some 'new normal' is essential. Together with better fiscal-monetary coordination and greater public engagement, these are the pre-conditions for achieving a more optimistic future for the euro area.

# 1. INTRODUCTION

Only recently the euro area celebrated its 20<sup>th</sup> anniversary (2019). It is perhaps an understatement to point out that the past two decades have been economically eventful. Christine Lagarde, at the time Managing Director of the IMF and now President of the ECB, pointed out that "...at age 20, the euro area is more mature – battle-scarred yes,..." (Lagarde, 2018). Only ten years earlier EMU was declared "...a resounding success..." (EFA, 2008). Since then two financial crises, a continuing and controversial programme of non-standard policies (NSP), and an ongoing global health crisis have intervened. EMU conferences on both occasions noted the challenges faced by the single currency area at the same time they were celebrating its achievements. Unfortunately, reminiscent of the epigram "plus ça change, plus c'est la même chose", the challenges remained largely unaddressed from one decade to the next. Especially relevant for the purposes of the analysis below are the incomplete integration of financial markets in the euro area and inadequate fiscal risk-sharing. These challenges can also be seen through the wider lens of macroeconomic performance, as discussed later.

When policy makers were celebrating EMU@10, the global financial crisis (GFC) was still considered an event that originated elsewhere although there was recognition that the forces of globalisation required a response beyond the US's borders.<sup>1</sup> Unfortunately, the introduction of the euro, in the era of the Great Moderation (Bernanke, 2004), has since been followed by a series of crises with lasting implications which have yet to be fully understood.

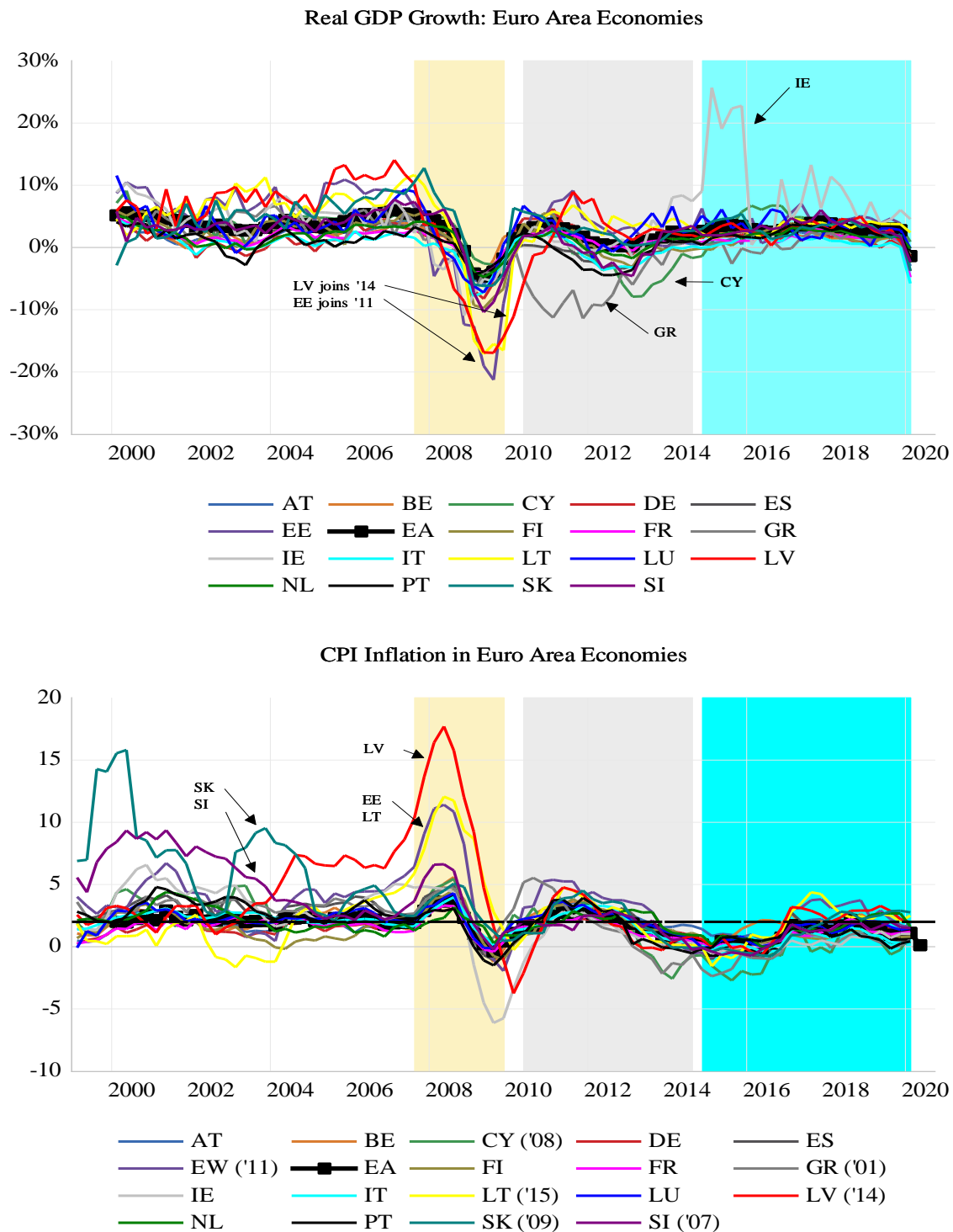
It is useful, as noted above and to set the stage for what is to come, first to consider the overall macroeconomic picture in the euro area. Figure 1 plots real GDP growth and inflation, respectively, for the euro area as well as member economies since the single currency area's inception.<sup>2</sup> The GFC and sovereign debt crisis (SDC) clearly bent the curve on both variables in a negative direction. Stability of sorts appears to emerge in the era of NSP, at least until the first indications of the economic rupture created by the COVID-19 pandemic seen at the very end of the sample (also, see Figure 2). Equally clear, however, is the uneven distribution of the negative shocks. Even in countries with a single currency but several jurisdictions, as in a federation, monetary policy cannot finely tune its impact to regional economic conditions. However, it cannot be entirely insensitive to them.

Former ECB President Trichet long ago indicated the importance of being alert to the "...structural peculiarities..." of the euro area and that these "...have played an important role in positioning the stance of monetary policy..." (Trichet, 2007). Presumably, senior officials in the ECB must surely be aware that the impact of their decisions may well influence divergences within the single currency area. Therefore, while monetary policy is destined to be calibrated for the euro area as a whole, persuading citizens of the net benefits or value added of a single currency area cannot be left to monetary policy alone. This bears repeating, as we shall see, in evaluating the impact of successive ECB APP programmes over the years.

<sup>1</sup> As a member of the Executive Board of the ECB at the time, González-Páramo (2007) said at the time: "...the turmoil originated in a relatively small segment of the US economy – the sub-prime segment of the mortgage market – that has no obvious relationship with the Eurosystem's sphere of interest."

<sup>2</sup> Not all countries shown joined the euro area in the same year. The plot for inflation indicates in parenthesis the membership year if this took place after 1999.

Figure 1: Core macroeconomic indicators: real GDP growth and inflation



Sources: International Monetary Fund, International Financial Statistics, and author's calculations. The shaded areas represent the GFC (2007Q3-2009Q4), the SDC (2010Q2-2014Q3), and NSP (2014Q4-) periods, in that order. The years shown indicate when the euro is introduced. Otherwise, all begin in 1999. Years in parentheses refer to when countries joined the euro after 1999. The long-dashed line is drawn at 2% just above the ECB's stated objective.

A salient feature of the euro area is that its members are sovereign countries. Nevertheless, on the positive side and with few exceptions, a considerable narrowing of the differentials in economic growth and inflation within the single currency area is also evident from Figure 1. More worryingly, but equally striking, however, is that most member countries' inflation rates have been persistently below the ECB's stated inflation objective since the time the euro area was dealing with the SDC.<sup>3</sup>

Of course, the survival of the euro area rests partly on perceptions about the ability of the ECB to deliver on its promise to keep inflation low and stable and, together with the individual policies of sovereign member economies, ensure the conditions necessary to generate adequate economic growth. Stated differently, if past performance is a guide, it is what the future is expected to hold that is a truer harbinger of the longevity of a policy regime. If we examine the five largest economies then, as shown in Figure 2, it is difficult, even before the 2020 pandemic, to conclude that the record has been a stellar one. Figure 2 also highlights the fact that while forecasters disagree for a variety of reasons (e.g., see Siklos, 2013; 2019) they often agree on the broad direction of future growth and inflation.

To be sure, growth and inflation expectations have narrowed but, since the GFC, perceptions of economic performance have slowed, and inflation has typically been seen as missing the target the ECB has set for itself. While there is a common element to some shocks, as in 2008-9 and again during the SDC, the differential sensitivity of these expectations to the various economic shocks over time is also noticeable. These divergences no doubt also contribute to differing perceptions within the euro area about the effectiveness of monetary policy, and interventions of the kind that APP represent.

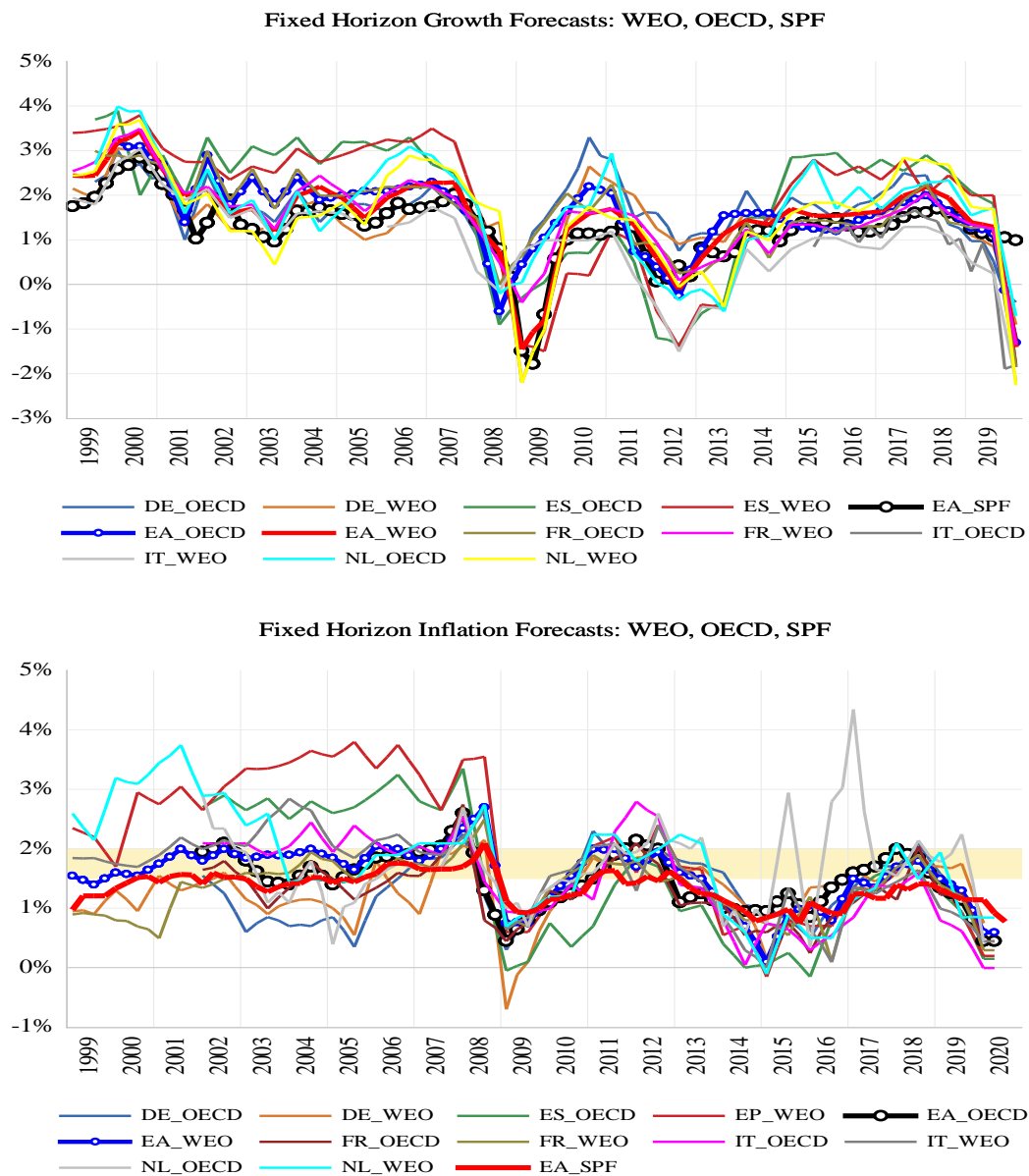
According to most definitions of credibility (e.g., see Bordo and Siklos, 2017), these results point to a loss with a resulting negative impact on the ECB's reputation. Even before the COVID-19 crisis, the continued implementation of NSP, begun in 2015, could not seemingly prevent the gathering storm of negative macroeconomic signals. Still focusing on the five largest euro area economies, Figure 3 reveals that, since early 2018, both real GDP growth and inflation forecasts were pessimistic, at least in the short run.<sup>4</sup> In other words, trouble was brewing even before the events that have gripped the global economy since March 2020. Once again, the indications are less clear when the aggregate euro area alone is examined than when individual economies are considered.

<sup>3</sup> "The Governing Council of the European Central bank aims to keep inflation below, but close to, 2% over the medium term." <https://www.ecb.europa.eu/ecb/tasks/monopol/html/index.en.html>.

<sup>4</sup> Longer-run expectations are arguably more important in the present context. However, as central bankers are fond of pointing out, the profession still has a relatively poor understanding of expectations. Since it is likely that longer term expectations are influenced by many more factors than short-run expectations, it is likely we know even less what drives them. In any case, some recent evidence (e.g. Corsello et al., 2019) finds that long-term inflation expectations are sensitive to short-run surprises. This represents a further challenge to ECB credibility.

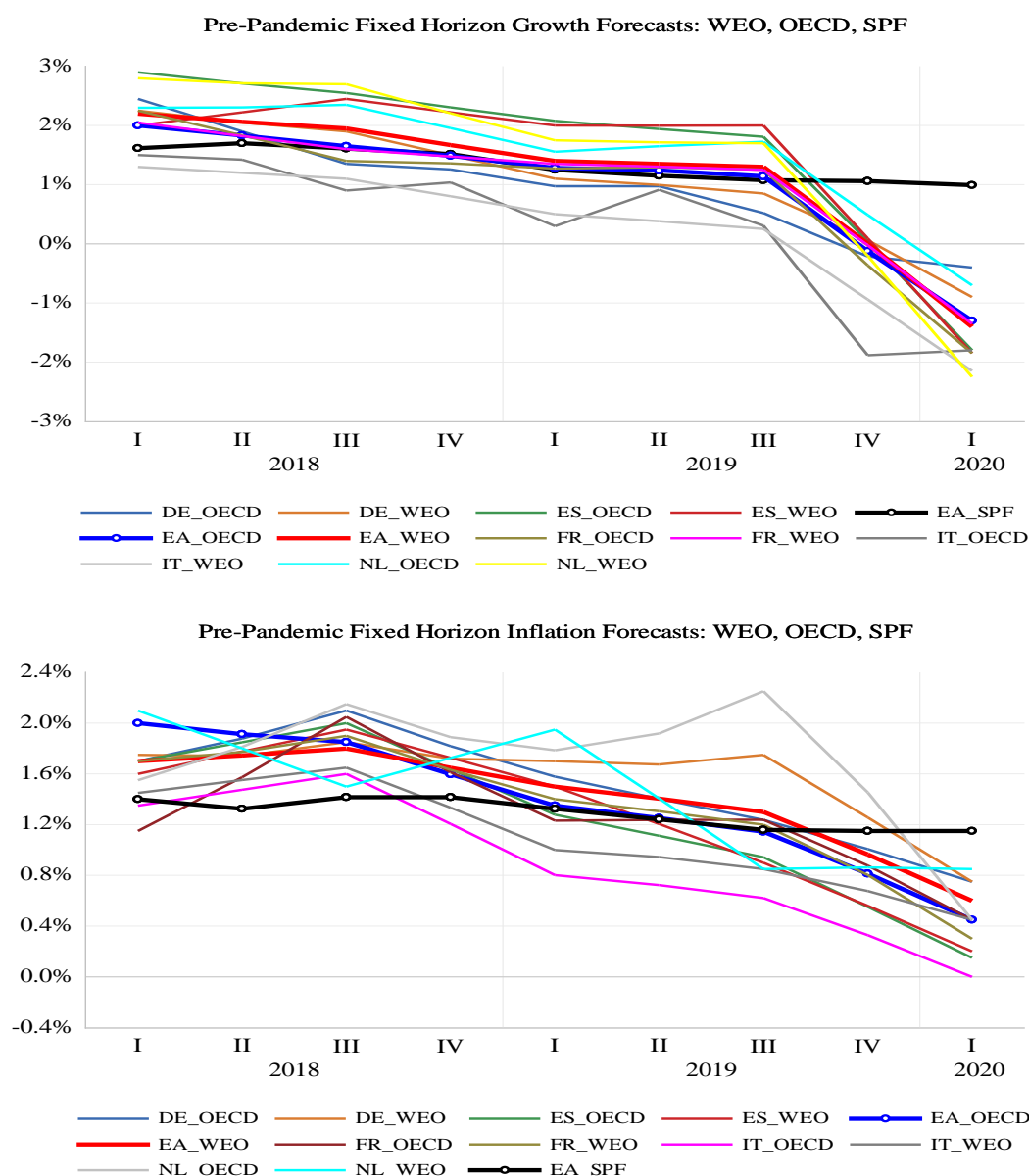


Figure 2: Selected one-year ahead macroeconomic forecasts for growth and inflation



Sources: International Monetary Fund, World Economic Outlook, OECD, ECB Survey of Professional Forecasters, and author's calculations. The shaded horizontal area highlights inflation between 1.5-2% which proxies the ECB's price stability objective.

Figure 3: Macroeconomic forecasts on the eve of the pandemic



Source: Same as Figure 2.

I discuss the aims of APP-style programmes, the rationale behind the pandemic emergency purchase programme (PEPP), the set of challenges surrounding the introduction and implementation of unconventional monetary policy (UMP) more generally, as well as providing an overall evaluation of NSP in the following section. Section 3 assesses the empirical evidence around the impact of APP. Section 4 then examines the macroeconomic impact of APP drawing attention to the distinction between global and domestic considerations, as well as the importance of trying to identify the most important sources of shocks that need to be considered in evaluating this kind of policy. The paper concludes by drawing on lessons learned and the way ahead for ECB APP. I conclude, as I began, by underscoring an old lesson. Regardless how fiscal policy is managed in the euro area, a question that is beyond the scope of the paper, it must be compatible with and broadly support the broad direction of monetary policy. The euro area has made progress in this direction. However, as is true elsewhere, it is

difficult to see how an economic reckoning of sorts can be avoided unless a new understanding of the role of monetary policy is developed and the respective roles and functions of monetary and fiscal policy are reconsidered. In the foreseeable future this will, of course, not be possible until the pandemic has passed. In the meantime, the ECB needs to be clearer in communicating the aims of the PEPP and challenge the fiscal authorities to be less passive.

## 2. ASSET PURCHASE PROGRAMMES: AIMS, CHALLENGES, AND EXIT

### 2.1. Aims and a brief chronology: reducing frictions versus stimulus

By international standards, the ECB was a late comer to the group of central banks engaged in UMP (Lombardi et. al., 2018). Perhaps to make clear that the original aims of UMP were a return to the *status quo ante*, interventions in financial markets via the purchase of financial assets was called non-standard. Hence, the acronym NSP which has been used ever since alongside QE. Unlike the US and the UK experiences before it, the ECB was in a relatively better position to signal a departure from the international practice of setting the stance of monetary policy solely via the setting of a policy rate instrument. The reason is that, in the years before QE began in 2015 in the euro area, the ECB intervened by ensuring that financial markets operated smoothly via injections of liquidity. These effectively amounted to subsidising banking systems in order to facilitate lending. In a crisis, financial institutions find that sources of funding can dry up. However, at the same time, lenders do not trust the creditworthiness of borrowers thereby restricting lending. We return to the implications of this phenomenon later.

In contrast, as the GFC erupted in the UK and the US, policy makers were initially confronted with the difficulty of deciding whether the financial turmoil they were facing was a liquidity or a solvency crisis. The resulting identification problem is perhaps most easily understood by the failure of former Fed chair Ben Bernanke to convince the profession, and the public more generally, of the distinction between credit and quantitative easing (Bernanke, 2015: 418). The former is meant to ease credit frictions of the kind just described while the latter represents an attempt to boost economic activity via an expansion of the money supply. Part of the difficulty is that all of these forms of policy easing can impact a central bank's balance sheet. Add the policy of forward guidance, a form of qualitative easing intended to guide investors and the public regarding the expected future path of interest rates, usually conditional on information known to policy makers at the time decisions are made, and it becomes clear that the neat separation of the impact all of these policy tools is difficult to achieve. More recently, negative interest rates have been added to the toolkit and, like many of NSP, remain controversial. Of course, as we shall see below, studies have sought to identify the relative importance of each NSP tool, but these are dependent on possibly questionable assumptions. The challenges alluded to above can also be seen from plots of the asset and liability composition of the ECB's balance sheet (e.g., see Bhattarai and Neely, 2018, Figure 4). Beyond these features is the concern that monetary and fiscal policy become blurred thereby overturning decades of orthodoxy about the role of monetary policy.

As a result, chronologies of NSP in the euro area (Hammermann et. al., 2019; Gambetti and Musso, 2017 are two excellent recent examples) tend to focus on the timing of events and interventions by the ECB. In contrast, Table 1 below highlights the distinction between QE and credit easing if only to highlight the different intentions of these policies. As we shall see below, since legal and institutional aspects of APP play an outsized role in the euro area, the distinction can be useful.

Table 1: QE versus credit easing and forward guidance in the euro area: 2008-2020

Policy Type	Policy Name	Time Period
<b>Forward Guidance</b>	n/a: Qualitative	July 2013-present
<b>Negative Interest Rates</b>	NIRP	June 2014-present
<b>Quantitative Easing</b>	Public Sector Purchase Programme	January 2015-Present
	Pandemic Emergency Purchase Programme	March 2020 - present
<b>Credit Easing</b>	Securities Market Programme	May 2010-September 2012
	Outright Monetary Transactions	September 2012-present
	Asset Backed Securities Purchase Programme	September 2014-present
	Covered Bond Purchase Programme	July 2009-June 2010; November 2011-October 2012; October 2014-present
	Corporate Sector Purchase Programme	June 2016-present
<b>Subsidised Lending to Banks</b>	Longer-term refinancing operations (LTRO) and Targeted LTRO	6 months: March 2008-March 2010; August 2011; 12 months: May 2009-December 2009; October 2011; 3 years: December 2011; 4 years: June 2014; March 2016;

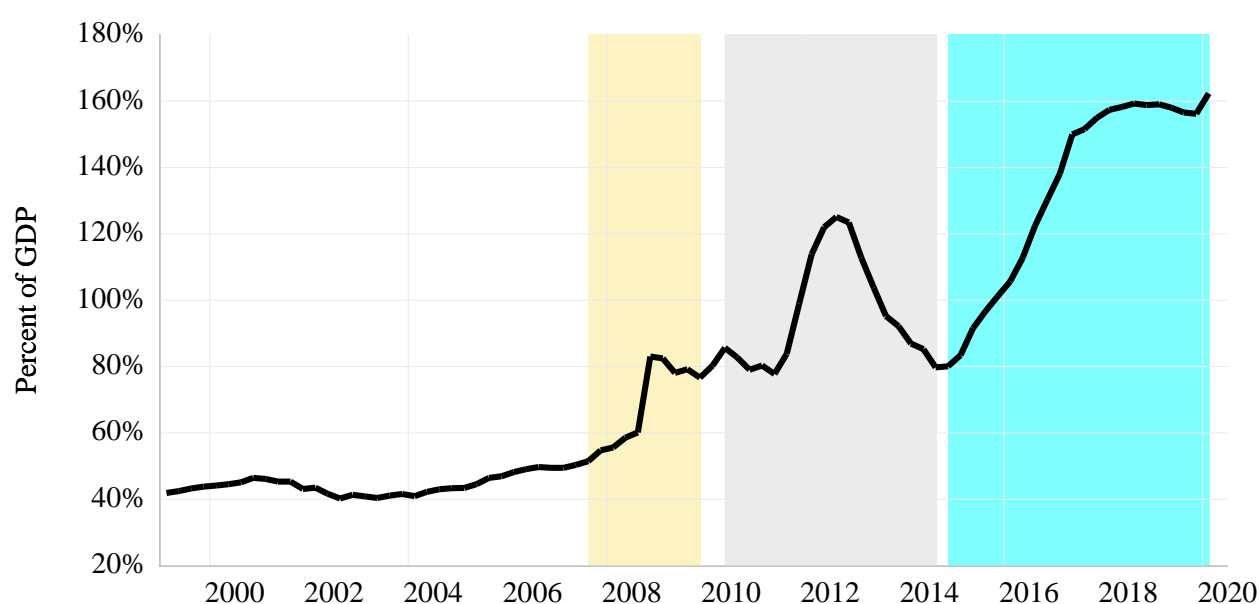
Sources: adapted from Lombardi et.al. (2018) and ECB.

The SDC put paid the idea that the euro area was immune to the responses that led to significant increases in the balance sheet, as a percent of GDP, of the Federal Reserve and the Bank of England. The latter merely followed in the footsteps of the Bank of Japan which paved the way for a similar path in monetary policy at least a decade earlier (e.g., see Siklos 2020a, and references therein).

As shown in Figure 4, the ECB responded with a delay to the unfolding of the GFC. Similarly, the response was deferred as the SDC worsened. Indeed, perhaps as a reflection of the concern that QE-

style policies are outside the ECB's mandate (see section 2.2.2. below), the central bank reversed course. Interestingly, the Bank of Japan also reversed course during its earlier QE experiment though the ECB's retrenchment brought the central bank's assets to GDP ratio back to mid-GFC state. In the Bank of Japan's case the reversal was due to fiscal and monetary policies no longer operating in tandem (Koo, 2008, 2015) while, in the case of the ECB, no doubt pressures on the institution were also at play (see section 2.2.2. below). Since QE was introduced the rise has dwarfed levels attained by the Fed and the Bank of England but fall short of the ones reached by the Bank of Japan. Superficially, since economic growth in both Japan and the euro area fell behind ones attained in the USA and the UK, this does not augur well in evaluating the success of NSP. Of course, there are also other factors to consider before reaching a conclusion about the value-added of NSP, but we are once again required to return to the role of expectations and fiscal policy, neither which underpinned the ECB's efforts, at least until the COVID-19 pandemic.

Figure 4: ECB assets as a percent of euro area GDP



Sources: ECB, Figure 1, and author's calculations. The shaded areas are defined in Figure 1.

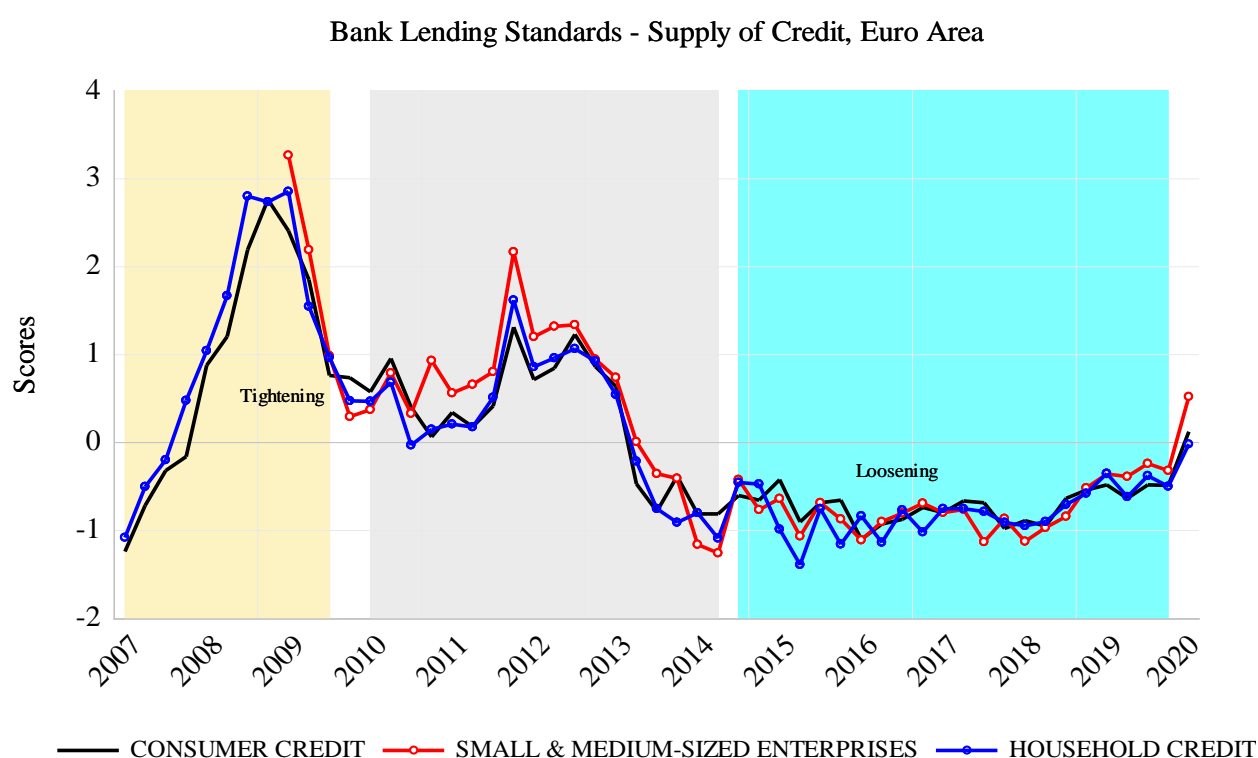
As discussed above, the twin aims of NSP are difficult to disentangle (see, however, section 3 below). Limitations of an institutional nature add to the challenges faced by the ECB. One area where the ECB is unquestionably able to intervene is to reduce financial frictions. Figure 5 displays the results of a survey of lending conditions in the euro area in the markets for consumer credit, credits to small and medium-sized enterprises and household credit. Senior loan officers are asked on a quarterly basis to indicate whether they perceive lending conditions to be tightening or loosening. There is considerable evidence that central banks rely on these surveys to interpret financial conditions and that these have real and monetary implications (e.g., see Filardo and Siklos, 2020 and references therein). Data are published for individual euro area countries. To obtain the data shown in Figure 5, a model that linearly combines individual country estimates is used.<sup>5</sup> To conserve space, the focus is on the supply of credit

<sup>5</sup> More precisely, a factor model is used to extract the most important (in a statistical sense) common factor for the surveys conducted in AT, BE, CY, DE, ES, FI, GR, IE, IT, LU, and PT. Raw data are obtained from [https://www.ecb.europa.eu/stats/ecb\\_surveys/html/index.en.html](https://www.ecb.europa.eu/stats/ecb_surveys/html/index.en.html). The basic approach (i.e., use data for the full sample) followed in Siklos (2020b) is used to obtain the factor scores.

since an important aim of NSP is to prevent an excessive tightening of the supply of credit especially during crisis conditions.<sup>6</sup>

The data suggest, other than in the early stages of the GFC and toward the end of the SDC, that credit conditions tightened and remained tight. Even before QE was introduced in 2015, the supply of credit began to loosen and remained loose until the emergence of the pandemic. Hence, to the extent that ECB interventions intended to loosen lending conditions these were partially successful. Yet, it is also worth pointing out that a tightening bias became evident even as NSP continued to remain in place (see Table 1) and conditions became tight at the end of the sample. Hence, casual observation suggests that QE has its limits.

Figure 5: Select euro area bank lending standards



Source: ECB and Figure 1. Backward-looking indicator of conditions in the three previous months at the time the survey is taken. The scores are defined in such a manner that values above zero signal a tightening of conditions and the reverse interpretation holds when scores are below zero.

Although I return, in section 4, to investigating the aggregate economic effects of NSP in the euro area, ostensibly the other dimension of ECB financial interventions is to stimulate economic activity.

Questions have recently been raised about the usual narrative whereby, other things equal, lower nominal interest rates translate into more economic activity by stimulating aggregate demand. Nevertheless, most central banks still make the case that greater monetary accommodation is beneficial especially when there is slack in the economy. Doubts (e.g., see Woodford and Xie, 2020) have surfaced because interest rates have reached zero and, in a few cases, have breached the so-called

<sup>6</sup> Both forward looking (i.e., expected conditions three months ahead) and backward-looking conditions are surveyed. In addition, surveys have expanded to include demand for loans. Resort to these data would not have altered significantly the interpretations that follow.

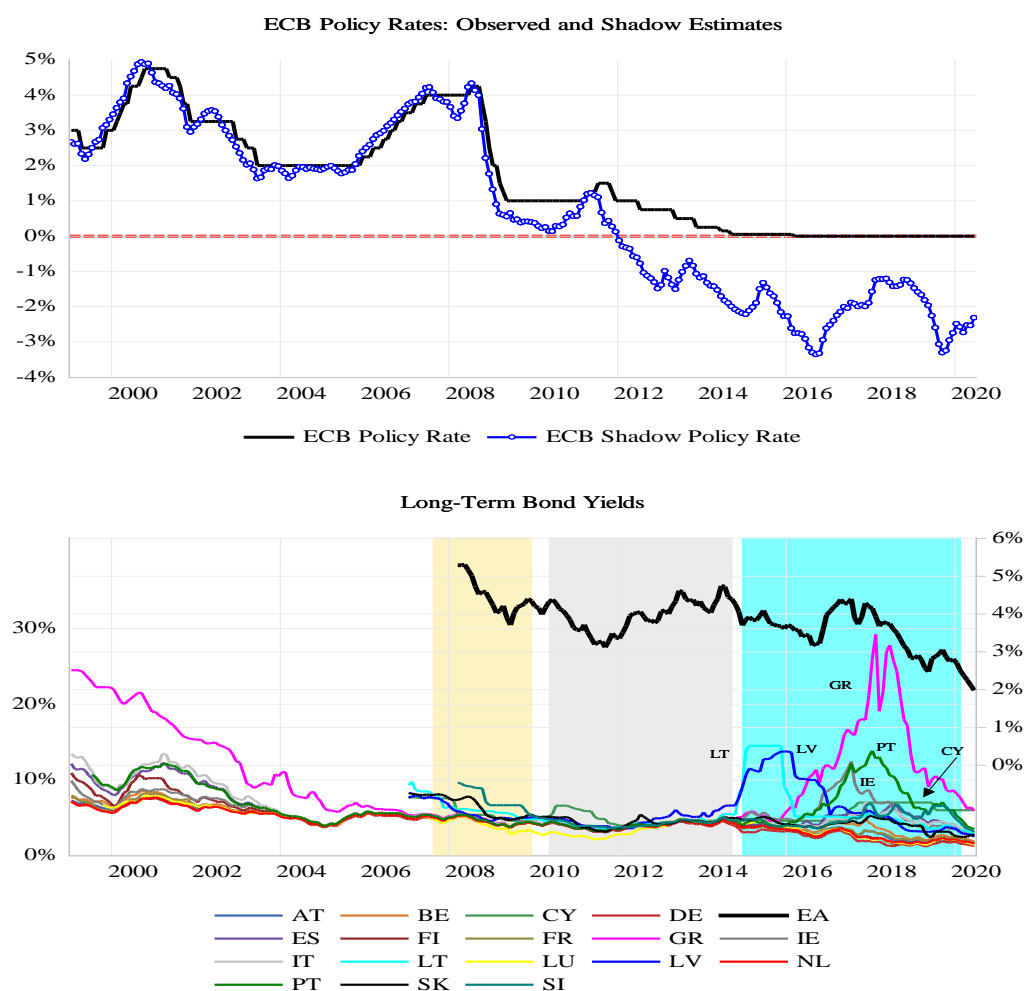
zero lower bound (ZLB; also see Table 1). As a result, several central banks, notably in Denmark, Switzerland, Sweden, and Japan, have not only reached the ZLB but are close to reaching the effective lower bound (ELB), that is, a negative policy rate beyond which it is believed that any beneficial effects are reversed (Brunnermeier and Koby, 2019). The ECB has also ventured into negative interest rates when it set the interest rate on its deposit facility to -0.10% in June 2014. As this is written, the same interest rate stands at -0.50%. Related doubts also include the contribution of ZLB and ELB to raising pessimism in financial markets, especially about the ability of the central bank to maintain inflation expectations close to its stated objective. A novel element of the ECB's NIRP, beginning this year, is that the interest rate spread between borrowing rates from the ECB (negative and, hence, subsidised by the ECB) and lending rates to enterprises (still positive but, in principle could also be subsidised and negative) has widened thereby encouraging more lending. However, the ECB is not able to guarantee that the additional loan generated will go to enterprises likely to be able to pay back the principal or support ones that, unfortunately, may not survive the fallout from the crisis. The latter phenomenon is suggestive of the 'zombie' firms that contributed to the 'lost decades' in Japan (e.g., Banerjee and Hofmann, 2018). Finally, the ECB is placed in this position in part because the euro area is so heavily dependent on banks relative to other systemically large economies (e.g., the USA; see also below).

Figure 6 provides some clues about the ECB's ability to ease monetary conditions thereby providing conditions that ought to stimulate economic activity. The top portion of the figure shows the ECB's policy interest rate, namely the interest rate on main refinancing operations (MRO). However, as explained above, the impact of various NSP are not easily observed or easily translated into interest rate developments. Nevertheless, borrowing from the finance literature, it is possible to estimate a shadow policy rate which aims to quantify the impact of QE on the ECB's policy rate. Figure 6 reveals that, when the GFC began in 2008, both the official and shadow policy rates declined sharply. Moreover, even before QE was launched in earnest in 2015, policy was easing no doubt in response to the SDC. While QE served to further ease monetary conditions there is seemingly little evidence that QE did anything other than prevent an excessive tightening of conditions. This is worth remembering again when the more institutionally related challenges the ECB faces are considered in section 2.23 below.

Economic activity, however, is not only influenced by short-term interest rates of the kind implied by the top portion of Figure 6. Long-term interest rates are crucial. Since NSP are designed to ease financing conditions it is expected that long-term interest rates may also be impacted. As shown in the bottom portion of the figure QE has indeed noticeably reduced long-term interest rates in the euro area. Of course, as before, what is true at the level of the single currency area does not always carry through to individual Member States. While there is evidence, toward the end of the sample, of some convergence within the euro area, long-term interest rates remain considerably higher in several of the countries highlighted in Figure 6. Monetary policy is, of course, neither the only nor even the most important determinant of interest rates. Changes in productivity, the global savings 'glut' (Bernanke, 2005), and structural factors more generally (Fisher, 2016), play major roles and might explain a 'new normal' for interest rates. This has given rise to the challenge posed by secular stagnation to which I turn next.



Figure 6: Monetary and financial conditions in the euro area



Sources: ECB, Krippner (2015, updated), and author's calculations. The estimates for the euro area are weighted averages of individual euro area Member States shown with the weights given by the relative size of each economy (i.e., GDP as a proportion of euro area GDP). Individual euro area Member States' interest rates are plotted against the left hand axis; the euro area proxy is plotted against the right hand axis.

## 2.2. Challenges

Beyond the challenge of navigating the tension between relieving financial market frictions during a crisis as well as providing economic stimulus, potentially exacerbated by institutional idiosyncrasies of the ECB (see section 2.2.2. below), there is a longer run phenomenon that has emerged that is also global in nature.

### 2.2.1. Secular stagnation

Pre-GFC monetary policy was governed by the theory that excessively low interest rates would be inflationary. Of course, the presumption was that the economy was operating at near capacity. Hence, an overly loose monetary policy would lead to a rise in inflation. This line of thought was perhaps most clearly articulated by Milton Friedman in his influential essay published in 1968 (Friedman, 1968). A concern that continues to pre-occupy many policy makers to this day is that monetary policy ought to be restrained lest inflation become excessive. As Friedman wrote: "...we are in danger of assigning to

monetary policy a larger role than it can perform, in danger of asking it to accomplish tasks that it cannot achieve..." (op.cit., p. 5).

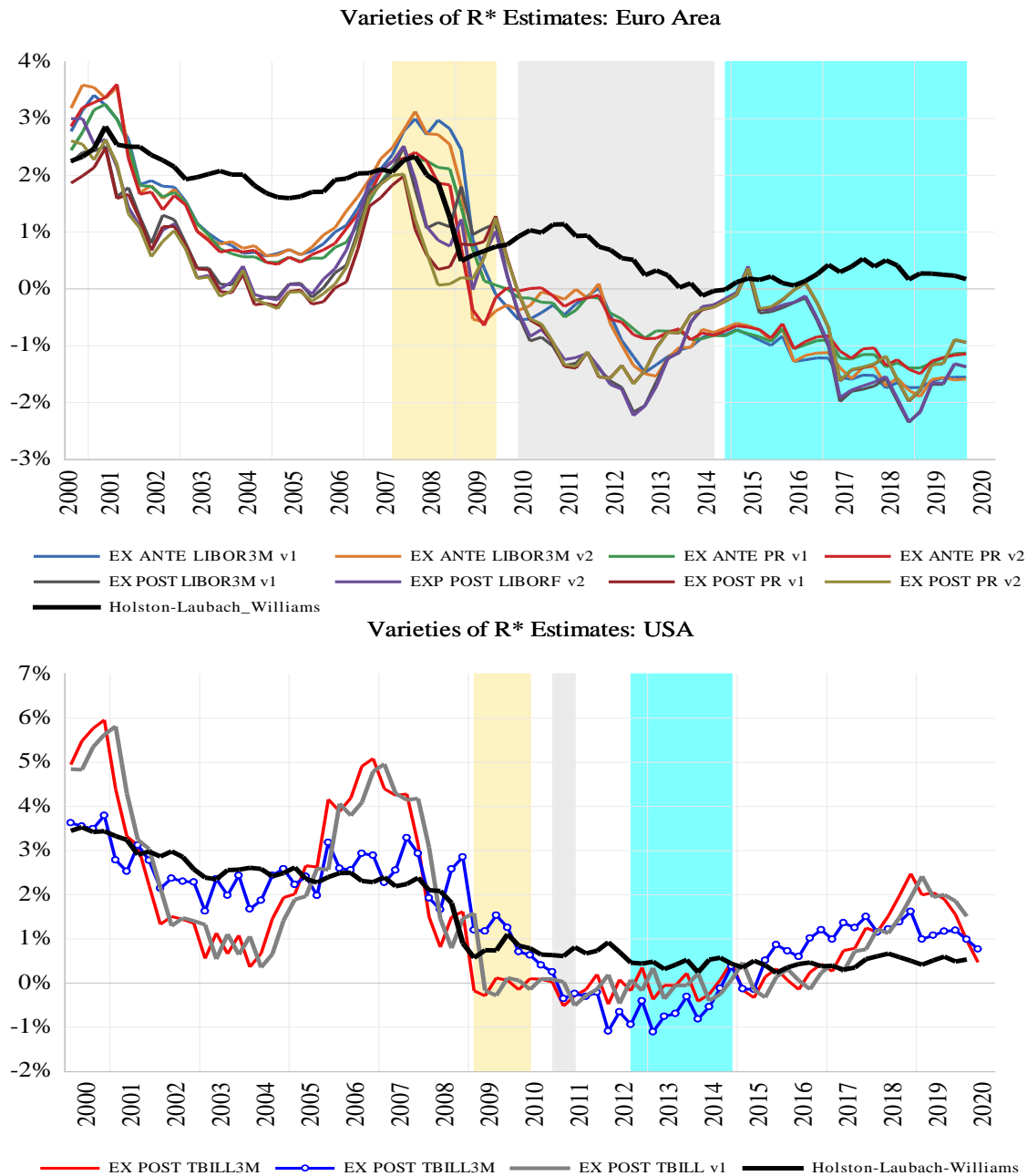
The foregoing implication was further elaborated in another article that had a profound impact on the profession, namely that friction between fiscal and monetary policy objectives would also produce excessive inflation (Kydland and Prescott, 1977). Both of these developments contributed to institutional changes that led to greater central bank autonomy, greater transparency (and accountability), as well as a preference for monetary regimes geared toward inflation control. Although the theory behind assigning a narrow role for monetary policy rested on the absence, in equilibrium, of a trade-off between inflation and output (or unemployment) hypothesised by the Phillips curve, it is sometimes forgotten that Friedman and others also expressed their views in terms of another concept that has been much discussed in recent years, namely the 'natural' or equilibrium interest rate. For the purposes of what follows it is sufficient to think of the equilibrium interest rate as the real interest rate, that is, the interest rate less expected inflation that is consistent with the economy operating at capacity.<sup>7</sup>

If the economy becomes less productive and demographic forces also contribute to reduce the potential growth rate of the economy then monetary policy is powerless to close any slack in the aggregate economy. The result has been expressed in a revival of another old idea by Summers (e.g., see Rachel and Summers, 2019), namely secular stagnation. Whether these forces can explain recent aggregate economic performance is open to debate. Nevertheless, irrespective of the forces that have driven poorer aggregate economic performance, as first shown in Figure 1, the implications for monetary policy are clear. If we could observe the natural real rate, commonly defined as  $R^*$ , then an estimated rate that is too high relative to what is actually observed translates into a monetary policy that is tighter than is necessary. Stated differently, if a measured real interest rate is above  $R^*$ , the real rate that would keep the economy at potential, the tighter is monetary policy and the larger the gap between observed and potential output.

As is often the case in economics, these critical concepts rely on variables that are not observed. A real interest rate is not only affected by the chosen financial instrument it is, more importantly, impacted by how inflation expectations are measured. As already shown in Figure 2, these expectations vary considerably not only across Member States of the euro area but they also differ according to the forecaster in question. Similarly, estimates of  $R^*$  will also be sensitive to how they are estimated. While technical details are outside the scope of this study, there is mounting evidence that  $R^*$  has declined for some time in the industrialised world and the single currency area is no exception. Even if there is a consensus that  $R^*$  has declined, this only serves to justify the view that observed nominal interest rates are destined to remain lower for longer. However, there is still the matter whether the stance of monetary policy set by the ECB is conducive to supporting economic growth.

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<sup>7</sup> The concept is an old one and goes back to Wicksell who is also cited by Friedman.

Figure 7: The evolution of the 'natural' or  $R^*$  real interest rate: selected estimates

Sources: See Figures 1, 5 and author's estimates. TBILL3M is the 3-month Treasury bill rate. Ex post means that observed, and contemporaneous, HICP inflation is subtracted from LIBOR3M or the TBILL3M rates. Ex ante means that the one year ahead mean fixed horizon inflation forecast from the Survey of Professional Forecasters is used. Only ex post estimates were considered for the USA. PR means central bank policy rate. Holston, et. al. (2016, updated) is the source of one set of estimates of  $R^*$ . v1 and v2 are explained in the text.

Figure 7 contains a thought experiment. Consider a variety of estimates of  $R^*$ . Two versions are estimated depending on the sophistication of the model used to generate the estimates. They are labelled v1 and v2 in the Figures.<sup>8</sup> Estimates using USA and euro area data were generated. For the

<sup>8</sup> Version 1 estimates (v1) are based on a so-called state space model where  $R_t = R_t^* + u_t$  and  $R_t^* = R_{t-1}^* + v_t$  is latent (i.e., unobserved) and is assumed to follow a random walk (i.e., only the immediate past value helps forecast its future value). The observed interest rate,  $R_t$ , fluctuates around  $R^*$ . In version 2 (v2),  $R^*$  is driven in addition by an estimate of the output gap. Estimates generated by Holston et. al. (2016, updated), assumed to be the estimates ECB policy makers rely on, are used.

euro area, the nominal 3-month LIBOR interest rate is used to estimate the real interest rate for the euro area. For the USA, the nominal 3-month Treasury bill rate is used to calculate the real rate for the USA. Assume that both central banks treat the estimates generated by Holston et. al. (2016; Holston-Laubach-Williams in Figure 7) as the ones that guide setting the stance of monetary policy. If the actual estimates of  $R^*$  are any of the ones shown in Figure 7, other than the Holston-Laubach-Williams estimates, then the ECB is overestimating the 'true' value of  $R^*$  and monetary policy as a result is tighter in the euro area than necessary. Turning to USA data, where all versions of  $R^*$  are estimated in the same manner, we observe that the Fed's view of the correct policy stance is compatible with alternative interpretations since all of the estimates of  $R^*$  are close to each other. Therefore,  $R^*$  used by policy makers in the USA is suggestive of a policy that is closer to what is required to support economic activity in remaining close to potential. Notice that successive QE policies in the US, identified by the vertical shaded areas, aid in ensuring this state of affairs. In contrast, the ECB has not been able to close the gap despite its QE policy.

Needless to say, the thought experiment is fraught with potential problems. Fundamentally, the  $R^*$  concept is unobserved and can be highly sensitive to assumptions made in constructing it. Indeed, the ECB's Chief Economist, Lane (2020b) also highlights the lack of precision in estimating  $R^*$ . Nevertheless, the striking difference between the USA and euro area experience is unlikely to be an accident. Monetary policy in the euro area has contributed to easing policy but there remains a missing ingredient. Can institutional factors be part of the story?

### 2.2.2. Institutional frictions and conflict

There is a long history of pressures on monetary policy (e.g., see Siklos, 2002). While central bank autonomy has waxed and waned throughout history so long as the policy horizon central bankers and government have in mind differs, as does their respective positions on the net benefits and costs of higher inflation, opportunities to interfere with the conduct of monetary policy will be a constant.

One of the characteristics that makes the ECB's position different from other central banks are the high profile legal cases that call attention to certain articles of Treaties that govern the mandate and strategy of the ECB and, more importantly, limits placed on its ability to intervene in financial markets in pursuit of the price stability objective (Article 127 of the TFEU). It is also worth repeating that, unlike most central banks, the ECB was left to its own devices in defining price stability which is the subject of an ongoing review.

Until 2020, the most widely publicised case concerned the legality of the OMT policy that emerged when former ECB President Mario Draghi made the remark in July 2012 to do whatever is necessary to preserve the euro. Later that summer what came to be known as the Outright Monetary Transactions (OMT) policy set the stage for the ECB to intervene in financial markets but in a highly conditional manner and restricted to secondary bond markets. Even this, seemingly clever solution around the restrictions in Article 123 of the TFEU did not prevent a court case from originating in Germany. The case was eventually decided in favour of the ECB (Court of Justice, 2015) because the central bank's actions represented an economic policy compatible with the work of monetary policy. To an economist, it is difficult to identify one type of measure from another but the point made by the Court, namely that the ECB should have broad discretion, because no legislation is able to foresee all contingencies, seems plainly obvious. Nevertheless, as is often the case, even if the actions of the ECB are defensible, how its decisions are communicated can be questioned. For example, the technical features of the OMT mention the compatibility of the programme with its monetary policy mandate, not explicitly specified, but does not defend the decision as compatible with the TEU and TFEU. As Andy Haldane, Bank of England Chief Economist said recently (Haldane, 2017) a little more

conversation, that is, greater effort at communicating policy actions, can go a long way to improving the delivery of monetary policy. Others (e.g., Macklem 2020) have called for greater public engagement on the part of central banks. The ECB has at least begun to understand the role of directly communicating with the public by following in the footsteps of other central banks such as the Fed and initiating the 'ECB Listens' campaign. Such a strategy is essential for the ECB to counter the pressures and costs generated by legal and political challenges to its ability to fulfil its Maastricht Treaty obligations.

A similar set of circumstances prevailed in the most recent court case involving the APP and, hence, is more germane to the issues covered in this paper, where the German Constitutional Court played a larger role. The medium-term implications of the most recent case have yet to unfold but, at its root, the Court (Federal Constitutional Court, 2020) refers to an article in the Protocols of the Treaty (see Box 1). The manner in which the original APP was implemented by the ECB led to the purchase of securities in proportion to the share of Member States' capital of the ECB, subject to an upper limit that was raised 6 months after the original PSPP was introduced. This is known as the capital key which can change according to relative population and GDP size. If changes are large enough this could, in principle, have an impact on the voting rights of the NCB members that make up the ECB's Governing Council.<sup>9</sup>

Among the German Constitutional Court's concerns was the possibility that Articles 123 and 127 (see Box 1) might be violated by the ECB because Member States' sovereignty was being encroached as well as the principle of proportionality that is intended to further protect individual country sovereignty from unwarranted interventions by EU institutions. As the text regarding proportionality suggests (see Box 1) qualitative and quantitative indicators are expected to be used to justify the requirement that a policy meets this standard. There is no explicit account for spillover effects that can emerge both within the single currency area or from external sources. Even if the Court correctly reaffirms the principle that monetary policy orthodoxy supports, namely that monetary policy should do no harm, it appears not to admit that economies are dynamic and that when facts change so should policy. Furthermore, since there can be only a single monetary policy in a monetary union, some collective action that may appear not to satisfy the proportionality principle today may nevertheless yield net benefits for all and effectively become proportional in future. No wonder some observers (e.g., Wolf, 2020) commented that the German Court's decision amounted to ignoring basic economic principles.

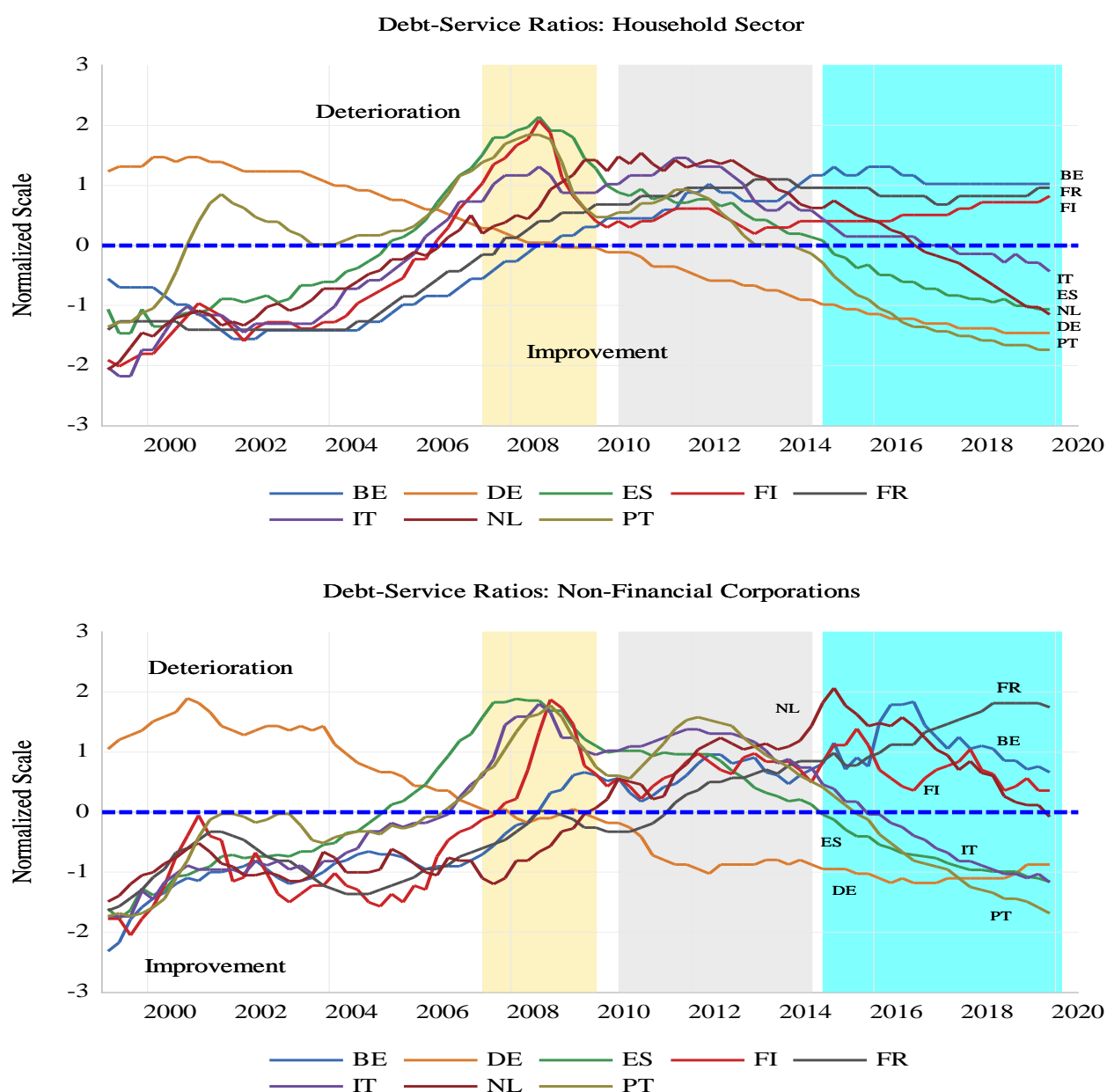
In the spirit of providing some additional quantitative evidence about APP more generally, consider Figures 8 and 9 below. A common theme of some earlier figures, notably Figures 1 through 3, is that monetary policy, and its spillovers, will have differential effects within the single currency area and that this will change over time.

Figure 8 considers debt-service ratios in the household and non-financial corporations sectors. Debt service ratios are considered an important indicator of financial stability since they measure capacity to take on loans. There are a few striking features that may be highlighted. Consider first the household sector. There are two broad trends with some countries showing a deterioration in debt-service ratios while another group experiences persistent improvements in the same ratio, including Germany and the Netherlands. Indeed, several of the countries most directly impacted by the SDC see improvements (i.e., ITA, ESP, PRT). Second, to the extent that QE was beneficial, it can be said to have contributed to bending the curve on debt-service ratios so that while not all countries may have seen the same improvements at least the deterioration seen in the early 2000s ceased.

<sup>9</sup> The latest capital key change took place in December 2018, <https://www.ecb.europa.eu/press/pr/date/2018/html/ecb.pr181203.en.html>.

Turning to the non-financial sector, many of the same countries as in Figure 8 see improvements in their capacity to take on debt. Nevertheless, unlike the household sector, there is less evidence that QE has produced outcomes as clear as for the household sector though, with the exception perhaps of France, deteriorations seen in the early 2000s have moderated.

Figure 8: Debt-service ratios in the euro area

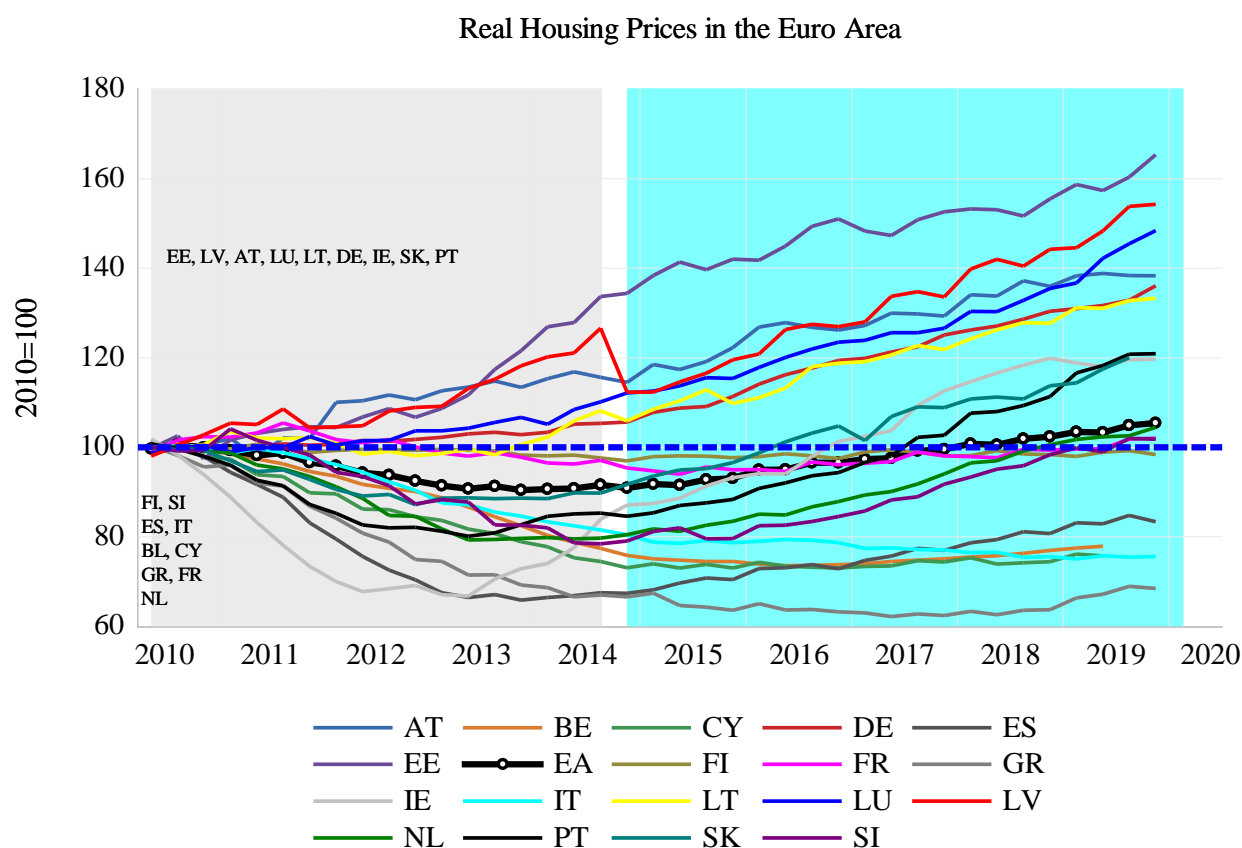


Sources: Figure 1, BIS and author's calculations. The original figures were normalised (index divided by the standard deviation of the series) to facilitate comparability.

Figure 9 plots real housing prices in individual euro area economies. It is often stated that APP-style policies, and QE more generally, inflate asset prices (see section 3). While it is clear that the SDC had a negative impact on some of the largest euro area economies until around 2014, what is also clearly visible is how QE has lifted real housing prices in all parts of the euro. Germany, once again is a beneficiary over the sample. While the outcomes shown in the Figure need not be due entirely to

monetary policy, it can be argued that ECB interventions did not produce a decline in housing prices. The resulting wealth effect may well be stimulative though, again, there are differences of opinion on the subject.

Figure 9: Real housing prices in the euro area



Sources: Figure 1, BIS and author's calculations. See Figure 1 for the year some member countries joined the euro area.

I conclude this section with a discussion of the PEPP by speculating whether this programme will be a new source of tension in the euro area. After all, one of the features of the PEPP is that it has fewer restrictions than the other APP introduced before the pandemic. Moreover, the PEPP expands the number of assets that can be purchased such that any risks and, therefore, potential costs if unsuccessful, both to NCB and the ECB, are potentially higher. Not surprisingly then, some concerns about the programme have already been raised (Arnold, 2020a, 2020b). Interestingly, the road to the introduction of the PEPP follows a path not too dissimilar to the adoption of OMT. ECB President Christine Lagarde, echoing her predecessor, declared that "...there are no limits to our commitment to the euro..." (Lagarde, 2020a).

In principle, the aims of the PEPP are the same as the ones used to implement APP, namely improve market functioning (i.e., reduce financial market frictions) and stimulate the economy. The ECB has already made the case for each (e.g., see Lane 2020a, 2020b). The ECB has also sought to explain how the standard of proportionality is being met (Lagarde, 2020b; Schnabel 2020c). As this is written it is, of course, too early to tell how the PEPP will eventually contribute to euro area economic conditions. Nevertheless, the lines between a pandemic and the conditions that required APP policies in the first place need to be drawn far more clearly than has previously been the case. Whereas emphasis on market conditions and a "proactive" approach (Lane, 2020c) is understandable, the ECB has not sufficiently clearly communicated that a health crisis of the COVID-19 variety requires the central bank



to act as a kind of insurance provider (of last resort), that is, prevent the collapse of financial markets and assist with preventing an economic downturn that is already proving to be among the largest on record. An illustration of failing to adequately draw this distinction is found in the ECB's Vice-President's June 2020 speech (de Guindos, 2020). In the speech emphasis is placed on the PEPP's role to "...provide a significant degree of additional monetary easing..." and to "...safeguard monetary policy transmission...". Another example comes from Lane (2020d). Other than a reference to how policy is intended to assist firms there is too little communication about the role of policy in a pandemic relative to other types of crises. Even if the sentiments contained in some ECB communications are correct, they do not adequately convey the rather distinct nature of the health crisis and distinctions between APP in general and the PEPP in particular. As Mark Carney, former Governor of the Bank of Canada at the time pointed out, a crisis requires a different communication strategy (Carney, 2010). The corollary is that different types of crises may well require different playbooks to deal with them. Indeed, the issue of proportionality, now an increasingly frequent component of ECB communication, seems out of place in a pandemic that need not follow the same rules.

### 2.3. Exit? What exit?

Even as the GFC was receding from view, but poor economic performance lingered (e.g., see Siklos, 2017), there was pressure on the Fed to exit the alphabet soup of quantitative and credit easing programmes. Bernanke (2010) outlined the exit from the historic increase in the size of its balance sheet. Exit refers to the end of the "...extraordinary degree of policy accommodation in place..." (English et. al., 2011, p. 12) and was rooted in the dual objectives of the central bank. Hence, recommendations could be couched in terms of overall economic outcomes. A particular concern was how exit from various programmes would be communicated (English et. al., 2011; Appendix). Eventually, this translated into the data-dependent approach to monetary policy which emphasised that monetary policy could not be pre-determined even as the Fed sought to provide guidance. Indeed, the Fed would eventually combine gradual increases in the policy rate, beginning at the end of 2015, with modest contractions in the size of the balance sheet (e.g., see Yellen, 2015; Bhattarai and Neely, 2018).

The ECB's exit strategy was formulated even earlier. Then ECB President Trichet (2009), shortly before the SDC erupted, but while the GFC was ongoing, outlined the ECB's exit strategy. First, and foremost, achieving medium-term price stability as defined by the ECB (see note 3). Second, allowing pre-announced interventions to end when their term expires. Third, to maintain institutional credibility. Unfortunately, Trichet recalls the decision to raise the policy rate in July 2008 when oil prices were rising very quickly but there were, at the time, few convincing indications that expectations were about to become unanchored and the GFC was set to erupt in a few months' time. Moreover, his successor, Mario Draghi, would reverse course almost immediately. The policy rate increases engineered by Trichet were, arguably, the most heavily criticised of his tenure.

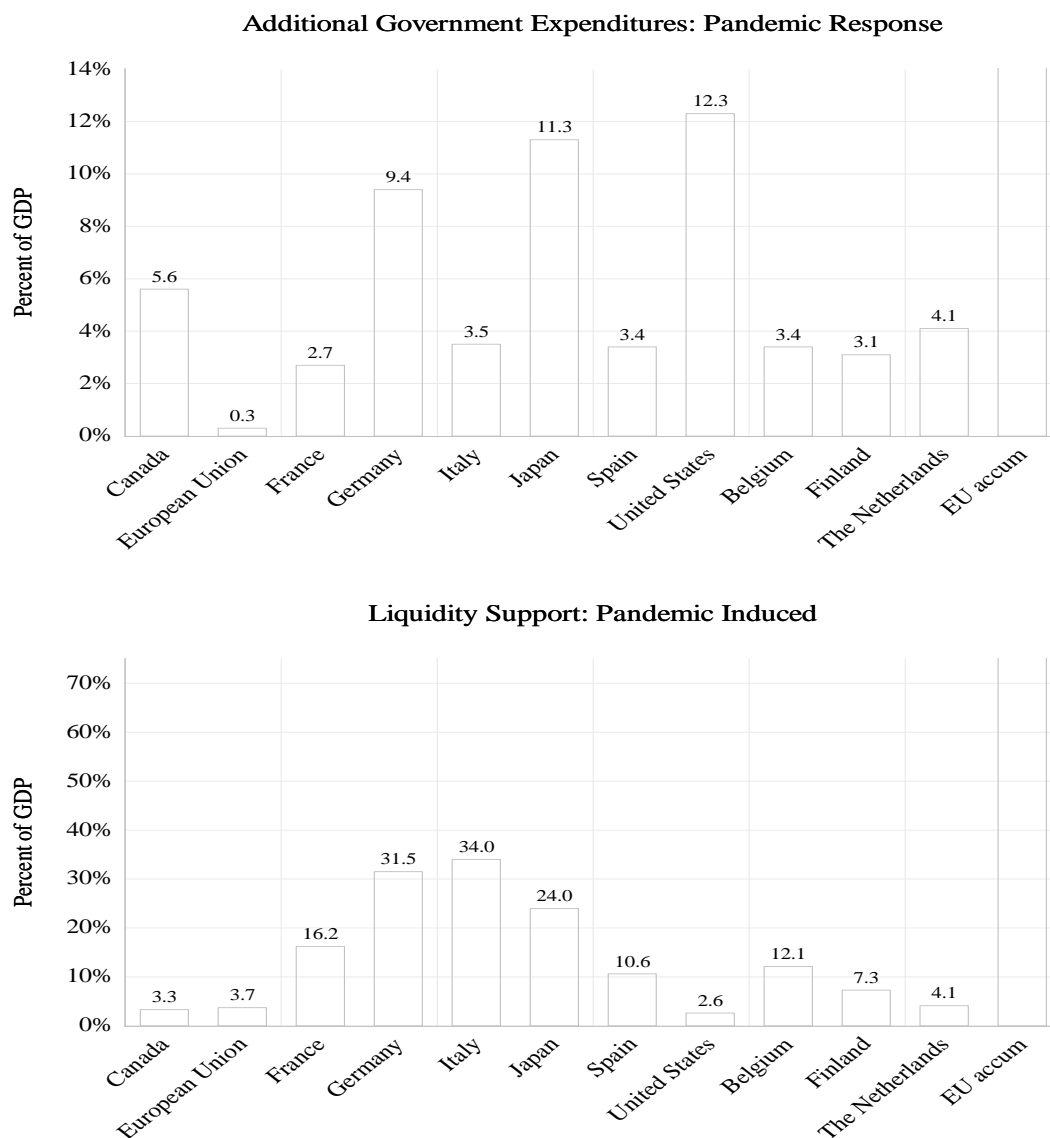
In general, central banks should have resisted the call for an exit strategy in the midst of, as Trichet put it: "...the most severe crisis the developed world has witnessed for more than sixty years." (Trichet, 2009). First, since central bankers themselves reiterated the uncertainty of the economic environment it hardly adds to credibility to indicate how one will exit a regime of NSP when it is unable or unwilling to define what is normal. Is normal the *status quo ante*? Second, the middle of a crisis is likely not the time that financial markets, let alone households, will be attentive to the process by which extraordinary interventions will be unwound. Third, a look back suggests that the last attempt at an exit, beginning in 2012, was with the benefit of hindsight premature. Nevertheless, it is worth recalling that the same criticism was raised about Bank of Japan policy in the early 2000s (see Siklos, 2020a, and references therein). It may well be appropriate for an institution to internally plan for an exit but, once



made public, it is only a matter of time until financial markets begin to ask about the precise timing of any tightening of monetary conditions. The onset of the pandemic brings additional challenges for an exit. The good news, in light of the remarks above, is that there is little discussion of an exit strategy for the time being.

As noted above, central bankers in the industrial world were not keen on referring to the state of the world pre-March 2020 as normal. How else to understand indications of some reversals in QE given the signs policy makers were clearly aware of, as illustrated in Figure 3? Additionally, as shown in Figure 10, the sheer scale of the fiscal interventions measured as a percent of each economy's GDP, over and above the monetary ones, bring into focus the issue raised earlier, namely that large increases in fiscal expenditures, intended to soften the blow of the pandemic's economic effects, will not easily be reversed and must consider a much longer horizon than politicians are used to. There is a rare opportunity for the policy horizon of central banks and Treasuries, at least for a time, to come closer than ever to each other. I return, in the conclusions, to the implications of this result.

Figure 10: Monetary and fiscal responses to the pandemic: selected estimates



Sources: International Monetary Fund (<https://www.imf.org/en/Topics/imf-and-covid19/Fiscal-Policies-Database-in-Response-to-COVID-19>) and author's calculations. Estimates (as a % of GDP) are given above each bar. Estimates for the EU add individual estimates for the European Union, France, Germany, Italy, Spain, Belgium, Finland, and the Netherlands.

Consider then the implications of the estimates in Figure 10. Individually, at the time of writing, most euro area countries' fiscal expenditures in response to the pandemic are dwarfed by those in the United States and Japan. Combined, the euro area response is substantially larger although it is worth keeping in mind that the data are incomplete. The liquidity support in the euro area combined, again noting the same caveats as before, is even more impressive.

The glass half full way of thinking suggests that the combined euro area response met well the challenge of the pandemic, at least in fiscal and monetary terms. The glass half empty attitude, however, would focus on the paltry response at the level of EU institutions.<sup>10</sup> As I will explain in the conclusions, this goes some way to explain the first part of the title of the paper.

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<sup>10</sup> As this is written, EU leaders agreed, in July 2020, on a EUR 750 billion recovery fund with the opportunity for the European Commission to borrow collectively for the first time. The European Parliament has yet to agree to the plan. See [https://ec.europa.eu/info/live-work-travel-eu/health/coronavirus-response/recovery-plan-europe\\_en](https://ec.europa.eu/info/live-work-travel-eu/health/coronavirus-response/recovery-plan-europe_en).

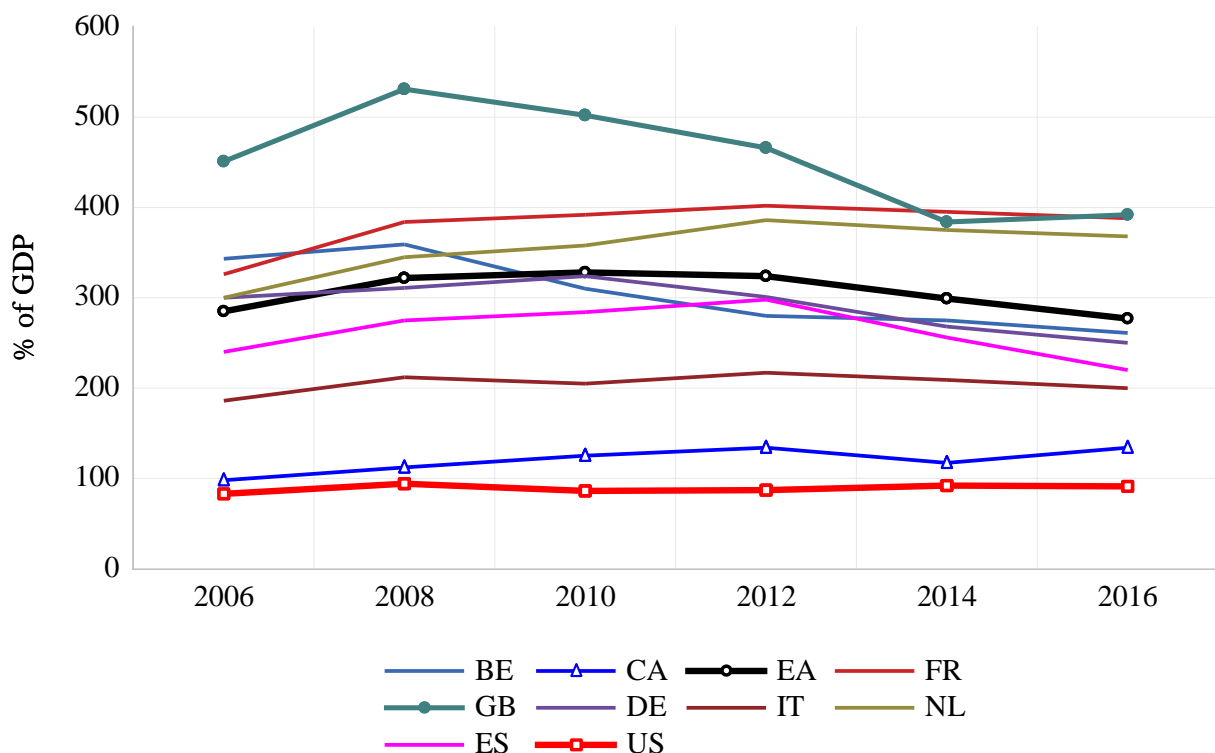
### 3. ASSET PURCHASE PROGRAMMES: ASSESSING THE EVIDENCE

#### 3.1. A stumbling block?

Beyond the supranational feature that separates the ECB from other central banks is another idiosyncrasy of the European financial system with implications for monetary policy and economic performance in the euro area more generally. Figure 11 displays in graphical form the size of bank assets to GDP for select euro area economies as well as a few advanced economies. The vertical axis gives the size of the banking sector as a percentage of GDP in countries other than the USA whose banking sector size is measured on the horizontal axis. There is no weighting applied (e.g., population size, number of banks) so all the bubbles are of the same size. As discussed below, the plot is meant to highlight an important distinction in the relative size of banks in North America versus the euro area and Europe more generally.

Since 2006, the size of banks has not changed much (indicated by the size of the bubbles). However, other than for the UK, bank assets to GDP in the euro area are considerably higher than in the USA (horizontal axis) or Canada (vertical axis). This illustrates the much greater dependence of banks on sovereigns, and vice-versa, that gave rise to the so-called 'doom-loop' wherein the risks that banks carry on their balance sheets is dependent on the risks they carry from holding of sovereign debt. Dealing with this issue is an ongoing concern (see, for example, Alogoskoufis and Langfield, 2019). Nevertheless, the mutual dependence between banks and sovereigns is a long standing one (see Filardo and Siklos, 2020) that goes beyond the scope of this paper but it presents yet another challenge especially since the amount of debt being issued was impacted by the SDC and is now being exacerbated by the pandemic.

Figure 11: The size of the banking sector: selected global and euro area estimates (bank assets to GDP)



Sources: BIS and author's calculations. Data are bi-annual for the period 2002-2016.

As Morris et al. (2020) point out since we do not yet know the financial fallout for banks from the pandemic it is not possible to state how banks will eventually cope with the adjustments to their business model once state support is withdrawn. In any case, just as institutional limits potentially place constraints on the ability of the ECB to respond to any crisis so does the large role played by banks in European finance.

### 3.2. Pollyannas and ostriches?

Taking a step back, to an overview of responses by policy makers, many academics and other interested observers to QE-style monetary policies can be placed into roughly two groups, namely *pollyannas* and *ostriches*. The former see QE as essential and, in spite of worries about the potential distortion of asset prices, a problem of the ‘kicking the can down the road’ variety, is essentially seen as always beneficial. Ostriches view the shift away from sole reliance on the policy rate instrument to interventions that increase the size of central bank balance sheet as akin to taking the ‘road to perdition’. QE policies cannot undo structural and other policy changes required to meet the challenges raised by crises, financial or otherwise. This is not the place for a detailed account of the various positions (see, however, Siklos, 2017). Nevertheless, it is worth highlighting because, as is often the case, the truth lies somewhere in between the two camps.

Returning to the twin motivations of the APP, the monetary authorities have tended to emphasise the importance of maintaining order in financial markets, that is, ensuring that buyers can transact at some agreed to price. In other words, there is a difference between providing liquidity and funding. Indeed, this is the implicit motivation behind the addition of some of the articles in the TFEU highlighted earlier. Controversy and debate then centre more on the second motivation of APP-style programmes, namely whether they can stimulate economic activity (i.e., higher inflation and real economic growth). The most obvious way to do so is to lower interest rates. For a given inflation rate this translates into a lower real interest rate which ought to incentivise more economic activity. However, one also needs to consider how interest rates are influenced along the term structure. After all, motivations for borrowing and lending short-term and long-term are not the same.<sup>11</sup>

Lombardi et. al. (2018) review the impact of QE-style policies in both the advanced and emerging market economies in view of the attendant global spillovers these policies have generated. Drawing on over 60 studies since at least 2009, the authors summarise the interest rate effects on long-term yields as shown in Figure 12 below. The focus here is on long-term yields since these are likely to have the greatest consequences for aggregate economic activity. Another explanation for this focus is that central bank policy rates are traditionally believed to have their greatest impact on the short-term end of the term structure of interest rates.

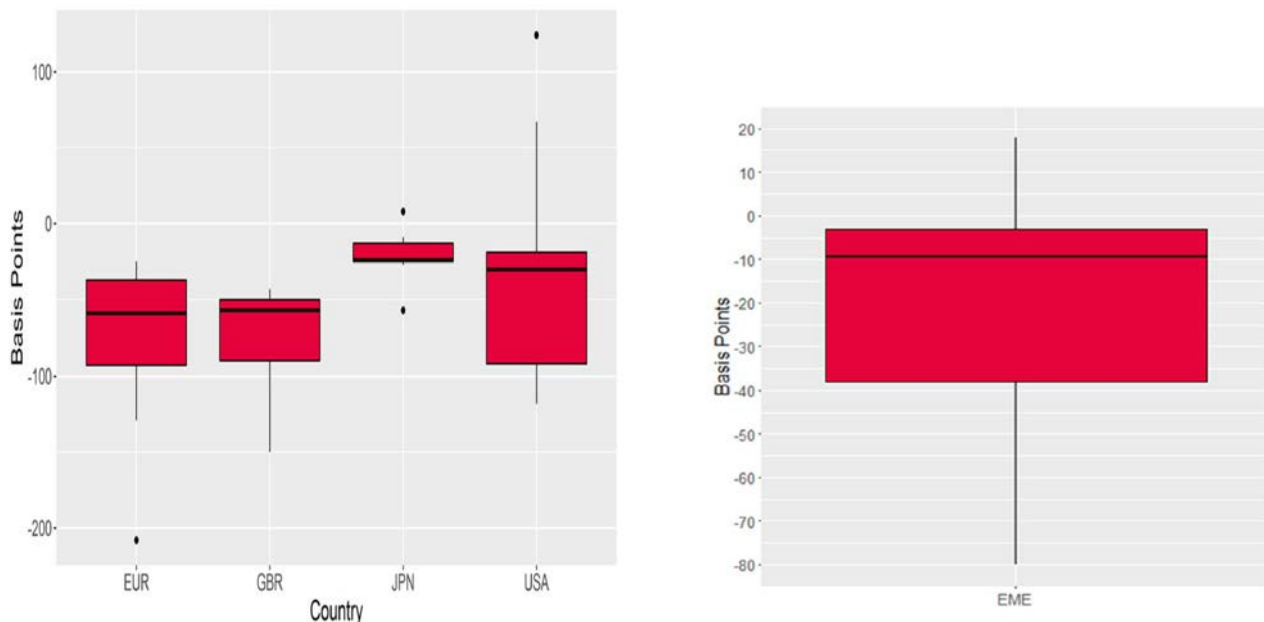
It will not be surprising to readers that different studies reach different results. After all, estimated models, sampling frequencies, and estimation samples can differ widely. Consider first the left-hand side box plots. While there is disagreement about the impact of APP in the euro area all estimates are negative and statistically significant. Hence, the direction of change in long-term yields has decidedly been in the correct direction. Indeed, the bulk of the impact on long-term yields has been negative in all four economies where QE has been implemented for some time. The US stands out for the sheer variation in estimates, some of which are in the wrong direction if one only considers tail estimates. Estimates for Japan, arguably the country with the longest experience with QE, are notable because of the very small range of estimates. Since Lombardi et. al. (2018), newer studies do not appear to generate estimates of the impact of APP in the euro area that are outside the boxed areas shown in

<sup>11</sup> In what follows, for simplicity, I will ignore the distinction between holding period return and the yield to maturity.

Figure 12. For example, Eser et. al. (2019) report that yields on 10-year instruments in the euro area declined by 95 basis points so within the shaded area displayed in Figure 12.

The box plot on the right is notable because, in contrast to complaints raised by some that advanced economies' QE policies amounted to a form of 'beggar thy neighbour' strategy to deal with the GFC and SDC, available estimates suggest that long-term yields in emerging markets also declined. Hence, at least at the long-term end of the term structure, spillover effects appear to have been globally positive.

Figure 12: The impact of quantitative easing: global evidence



Source: Lombardi, Siklos, St. Amand (2018), Figures 2 and 3. Data for EUR (EA), GBR (UK), JPN (JP), and USA (US) based on 65 studies between 2011-2018. Data for EME based on 24 studies between 2013-2018. The impact on long-term yields (10Y and longer) in basis points is measured on the vertical axes. The horizontal line inside the shaded are is the median estimate. The top and bottom edges of the box are the 1<sup>st</sup> and 3<sup>rd</sup> quartiles, respectively. The vertical lines are values up to +/- 3 times the inter-quartile range. The dots are values that exceed the vertical lines and are considered 'outlier' estimates.

It was noted earlier that central banks in advanced economies that introduced QE would soon also apply a form of forward guidance (FG) to influence interest rate expectations. Since these are also thought to negatively influence yields (e.g., by repeating the 'lower for longer' mantra for policy rates) not all the estimates shown in Figure 12 can be attributed to APP style programmes. Hubert and Labondance (2019), and Böck et. al. (2020), are two studies supporting the finding that FG contributed to the reduction of yields in the euro area. However, a critical caveat is that FG works mainly during crisis times and their impact, as is true of APP-style policies, may decline over time the more frequently they are applied.

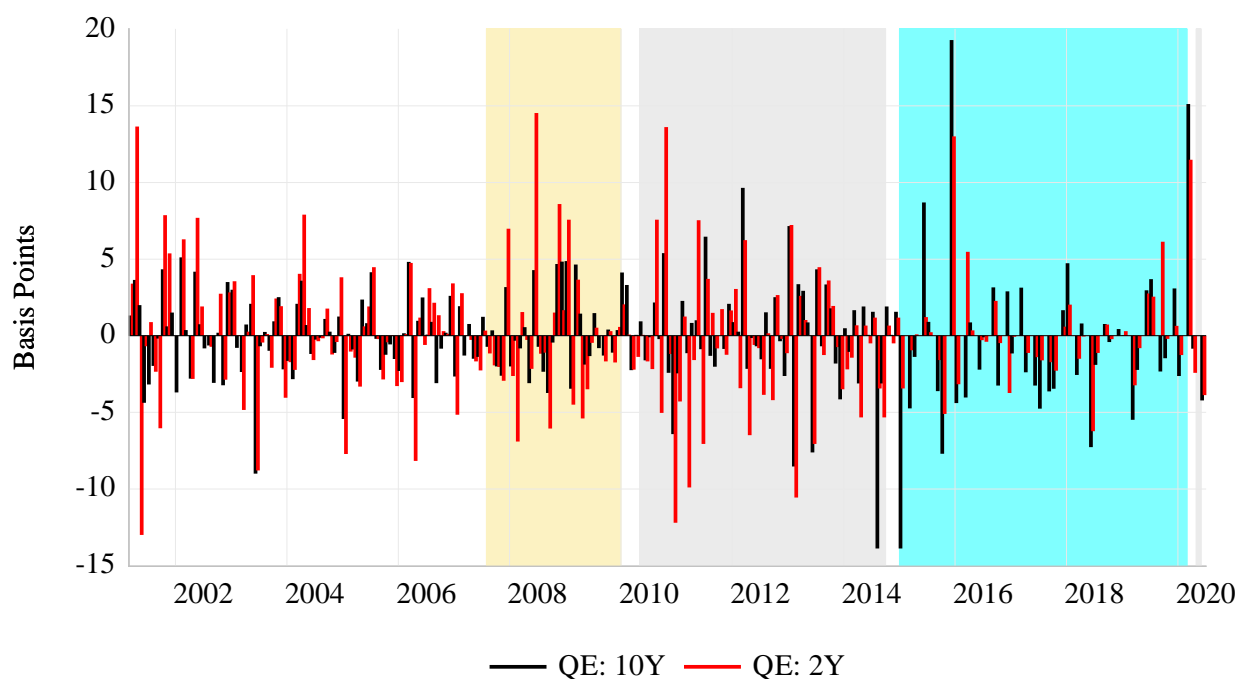
Evaluations of QE must also consider the shorter end of the yield structure. Even if the evidence is clear that monetary policy is able to lower long-term yields, and even if central bank policy rates are at the ELB, the situation is less clear cut for short-term interest rates. For example, Lombardi et. al. (2019) report that central bank interventions of the QE variety are more likely to influence yields throughout the term structure when there is both turmoil in financial markets and policy rates are perceived to be near the ELB. Otherwise, the impact on short-term yields is small to negligible. However, unlike the

existing literature which assumes that all monetary policy surprises are contained in observed price movements, the authors demonstrate that what central banks communicate, via press releases and the publication of the minutes of monetary policy committee meeting, is a missing ingredient in attempts at providing a more complete assessment of the impact of QE.

Altavilla et.al. (2019), prepared before the COVID-19 era, illustrates some of the foregoing points for the euro area. It is also extremely helpful because the authors continue to update the data. Hence, we can obtain a few glimpses about the immediate impact of PEPP. As explained earlier, yields on financial instruments respond to policy 'surprises', that is, to unexpected changes in the stance of monetary policy that prompts financial markets to revise their views about the current and future course of interest rates.

Figure 13 plots Altavilla et. al.'s (2019) estimates of surprises since 2002 for the euro area updated to include estimates in the early phase of the pandemic. It also includes data updated until June 2020 at the time data are downloaded (July 2020). The shaded areas highlight, as before, the three periods that are the focus of this paper (see Figure 1). The height of each bar indicates the impact, either positive or negative, on two sets of sovereign bonds, namely ones with 2 or 10 years to maturity. Generally, prior to the APP era (the right most shaded area), short term yields were more impacted than long-term yields. Visually, one is also able to observe that the size of monetary policy surprises are smaller, in absolute terms, pre-GFC and SDC periods. Indeed, policy surprises appear to become more volatile during the SDC than at any other time since 2002. On balance policy surprises tend to be negative more often, and smaller, during the QE era than prior to 2015. All of these results provide additional support for the broader findings summarised in Figure 12 above. Finally, since the onset of the pandemic (the very end of the sample), the available data suggest that all ECB Governing Council meetings produced declines in both short and long-term yields.

Figure 13: Monetary events and monetary surprises in the euro area



Source: Altavilla et. al. (2019, updated).

A somewhat less flattering picture emerges when individual euro area economies are examined. Table 2 provides a summary of the evidence. The data reveal considerable variation across countries and over time as well as between 2 and 10 year sovereigns. Notice also that while all euro area countries shown experienced substantial declines in short-term yields, the results are dramatically different at the long end of the term structure for 10-year yields. Instead, one must look to the SDC era to see a reversal of sorts with 10-year yields falling in all four euro area economies, and not only where the SDC had its greatest effects (i.e., ESP and ITA in the present case). Finally, declines at the long end continue throughout the QE period while short term yields experience very mixed effects for the 2-year yield. The latter results provide more support for the interpretation of Figure 13 above. More importantly, the results in Table 2 reveal details that are not immediately observable when data are aggregated at the euro area level (i.e., as in Figure 12).

Table 2: The cumulative impact of ECB NSP (basis points)

	2Y yields			10Y yields		
	GFC era	SDC era	QE era	GFC era	SDC era	QE era
DE	<b>-22</b>	12.16	10.66	4.1	<b>-21.36</b>	<b>-23.41</b>
ES	<b>-14.7</b>	<b>-25.65</b>	<b>-26.2</b>	12.65	<b>-36.7</b>	<b>-36.95</b>
FR	<b>-15.8</b>	19.64	18.04	<b>-0.10</b>	<b>-22.32</b>	<b>-24.17</b>
IT	<b>-18.05</b>	<b>-17.6</b>	<b>-18</b>	1.80	<b>-7.96</b>	<b>-9.01</b>

Source: Altavilla et. al (2019, updated) and author's calculations. 2Y and 10Y are two, and ten, years yields on government bonds. QE is the short-hand expression for the APP.

The evidence to date, while broadly consistent with the view that monetary policy continues to be effective, even in the euro area where additional constraints of an institutional nature must be considered, is only half of the story. The more difficult question about the aggregate economic impact of APP style policies remains unanswered. I turn to some evidence in the following section.

## 4. THE MACRO QUESTION: ASSET PURCHASE PROGRAMMES AND THE EURO AREA ECONOMY

There are two dimensions to consider in providing an assessment of APP on aggregate economic activity. First, there is the global angle, that is, the extent to which the euro area economy is linked to the global economy. While the GFC interrupted the relative importance of global factors, for example, by reducing trade in goods, services and commodities, on the eve of the pandemic the trade fallout was not expected to be much more than a temporary interruption (e.g., see Ademuyiwa and Siklos, 2019).<sup>12</sup> As this is written, however, and especially in global trade, there are far greater fears that a form of de-globalisation will gather pace (e.g., see Irwin, 2020). The size of the euro area, as well as the trading patterns of its members, may well provide some protection against shocks from abroad but, as in many other situations mentioned already, these external shocks are unlikely to be evenly distributed throughout the single currency area.

Similarly, domestically induced shocks will also be transmitted unequally within the euro area. Ultimately, however, there can only be a single monetary policy and, since the euro floats against world currencies, there is little that monetary policy can do to ensure that external shocks are transmitted equally to all euro area member countries. However, to the extent the aphorism ‘a rising tide lifts all boats’ is valid, a finding that APP-style programmes contributed to raising GDP growth as well as assisting the ECB in meeting its inflation objectives a focus on the entire euro area is justified if the benefits are seen all across the EU, even if the positive effects are unevenly distributed.<sup>13</sup>

What follows illustrates the potential impact of ECB policies since the SDC when the ECB ceased to rely on the policy rate alone to set the stance of monetary policy. Moreover, in the interests of simplicity, while it is not possible to assume that the results to follow capture the impact of ECB policies alone, it is reasonable to assume that the broad direction of the effects to be considered were, in large part, supported by the actions taken by the central bank. Finally, it would be preferable to examine a more complete model that allows for real, monetary and financial variables to interact (e.g., as in Siklos, 2020b). However, the object of the exercise below is to illustrate a useful concept that may be employed in future to assess the value added of any ECB intervention and not to provide a definitive estimate of the net benefits of APP.

I consider three variables constructed to capture a wide variety of economic indicators of real economic activity, the stance of monetary policy, and the degree of ease in financial conditions. The approach is the same as the one used to illustrate lending standards (Figure 5). The approach is also one that has frequently been used to capture in as parsimonious a manner as possible the combined impact of a large number of indicators that are used to measure macroeconomic conditions. In the case of the real economy, I use observed and forecasted inflation and real GDP growth as well as the euro area unemployment rate and oil prices. In the case of the stance of ECB monetary policy, I use the shadow policy rate (Figure 6) since, in principle, this captures some of the impact of the wide variety of ECB interventions that have taken place since the GFC. Also included is the growth rate of the M3 monetary aggregate since the ECB still purports to include a monetary pillar. Finally, since the shadow rate is an imperfect measure, the size of central bank assets (ECB and national central banks) to GDP is also

<sup>12</sup> Indeed, the upward trend in financial globalisation slowed but was not reversed. Trade globalisation appears to have impacted China the most and, in any case, evidence that it was slowing down began well before the GFC.

<sup>13</sup> Returning to Figure 1, a model of the kind used to combine individual member country lending standards (see Figure 5 and footnote 5) finds that economic growth within the euro area is very highly correlated over the 1999-2020 period. The only exceptions are PT, GR, and IT, though the GFC, the SDC and QE periods play an important role in this finding. The same result holds for inflation though, interestingly, the relationship among euro area member countries is not as close as it is for GDP growth. On the other hand, no country stands out except for LT, LV, and SK but these are relative late comers to the single currency area.



included. Finally, the financial factor consists of the currency to GDP ratio, the VIX, a three months interest rate (LIBOR3M), a ten year yield (see Figure 6), and real housing prices (see Figure 9).<sup>14</sup>

The resulting factor model estimates yields scores which, when suitably normalised, provide a kind of indicator of real, monetary and financial market performance. To provide a simple and illustrative assessment of the impact of APP, I proceed as follows. Obtain estimates of the indicator for each one of the three factors over the 1999-2010 period, that is, the available data until the start of the SDC. Next, assume that the relative weights estimated and used to generate the factor scores remain unchanged until the end of the sample and in spite of the introduction of APP. This is a simple and convenient way of asking what would have happened to each one of the factors if the relative importance of its components did not change after 2010Q1. Hence, I am conducting a 'what if' type of exercise. Finally, the counterfactual estimates of the real, monetary, and financial indicators, are compared with estimates for the full sample (1999Q1-2020Q1). The indicators are defined in such a manner that a rise in the indicator means an improvement in real economic conditions and a tightening of monetary and financial conditions.

Figure 14 shows the estimates of the (normalised) factor scores, while Table 3 provides additional insights into the changing behaviour of the factors over time. Beginning with Table 3 the sign of the estimates of the weights, referred to as factor loadings, indicates whether they raise or lower the factor scores when they change, while their size provides an indication of the relative importance of each component. If we examine the real factor we observe, as expected, that a rise in the unemployment rate produces a deterioration in the real factor as does a rise in oil prices. Increases in inflation or real GDP growth in various forms improve aggregate economic conditions. Moreover, the relative importance of these variables dwarfs the remaining ones in terms of their relative contribution to overall real economic activity. Equally interesting is that inflation, both observed and expected, contributed far more to real economic conditions over the full sample than when only the pre-SDC period is considered. Turning to monetary conditions, all three components play important roles in determining the stance of monetary policy. Relative to the full sample, the shadow rate's relative importance was lower pre-SDC. This is consistent with the enhanced role played by the introduction of UMP since 2015 and is also gleaned from the rising gap between the observed and shadow policy rates (see Figure 6). The same is true of central bank assets to GDP while money growth's relative importance appears to have decreased over time.

Finally, if one examines the financial factor, the following stylised facts are observed. Rises in interest rates and in real housing prices tighten financial conditions. It is notable that real housing prices have a much smaller weight over the full sample than in the pre-SDC period. Credit to GDP plays a relatively large role in both samples while the weight of interest rate changes rises substantially since the SDC. Finally, a rise in the VIX, a proxy of uncertainty sentiment, is associated with a tightening of financial conditions in the full sample but contributes to a very small deterioration in financial conditions.

The salient results from Figure 14 are easily summarised. Policies introduced during the SDC softened the decline in economic activity, but these also appear to have slowed the recovery thereafter. This is seen from the fact that the decline in real economic performance, especially in 2012, was lower in the full sample estimates than when the counterfactual estimates are considered. The situation is then reversed until APP are introduced. Indeed, economic activity is relatively higher under the counterfactual than when all the data are employed. Thereafter, the results are mixed and there is little to distinguish the counterfactual from the full sample estimates.

<sup>14</sup> I would have liked to include data from the ECB Bank Lending Survey (see Figure 5). However, since the data begin in 2006, it was not practical to include the relevant data.

Matters are somewhat clearer when monetary conditions are examined (middle graph). Monetary conditions are looser under the full sample estimates than if there were essentially no interventions in place, that is, if pre-SDC conditions prevailed. Thereafter, that is, since 2017, monetary conditions are tighter on the basis of full sample estimates than in the counterfactual case where pre-SDC conditions remain in place. By 2019 the two estimates are virtually identical. One interpretation then is that APP eased monetary conditions relative to the do-nothing case, but the ECB appears to have tightened conditions too quickly, at least relative to the counterfactual experiment. Finally, financial conditions reveal a notable change in the period since APP were introduced. Prior to 2015, financial conditions are tighter in the full sample case than when pre-SDC conditions are assumed to have remained unchanged. Around the end of 2015, the situation is reversed with financial conditions based on actual data become looser, and remain so until the end of the sample, than if pre-SDC conditions had not changed. Clearly, these results highlight that the impact of APP require going beyond just the impact on the real economy and monetary conditions. Unfortunately, however, the results also suggest that reaching a conclusion about the net value added of non-standard policies is not straightforward. While there are indications that UMP can yield beneficial results, what is left unanswered are the potentially cumulative effects of distortions of the kind mentioned above. As emphasised in the final section, policy makers will need to estimate and propose policies to deal with the resulting economic and financial distortions.

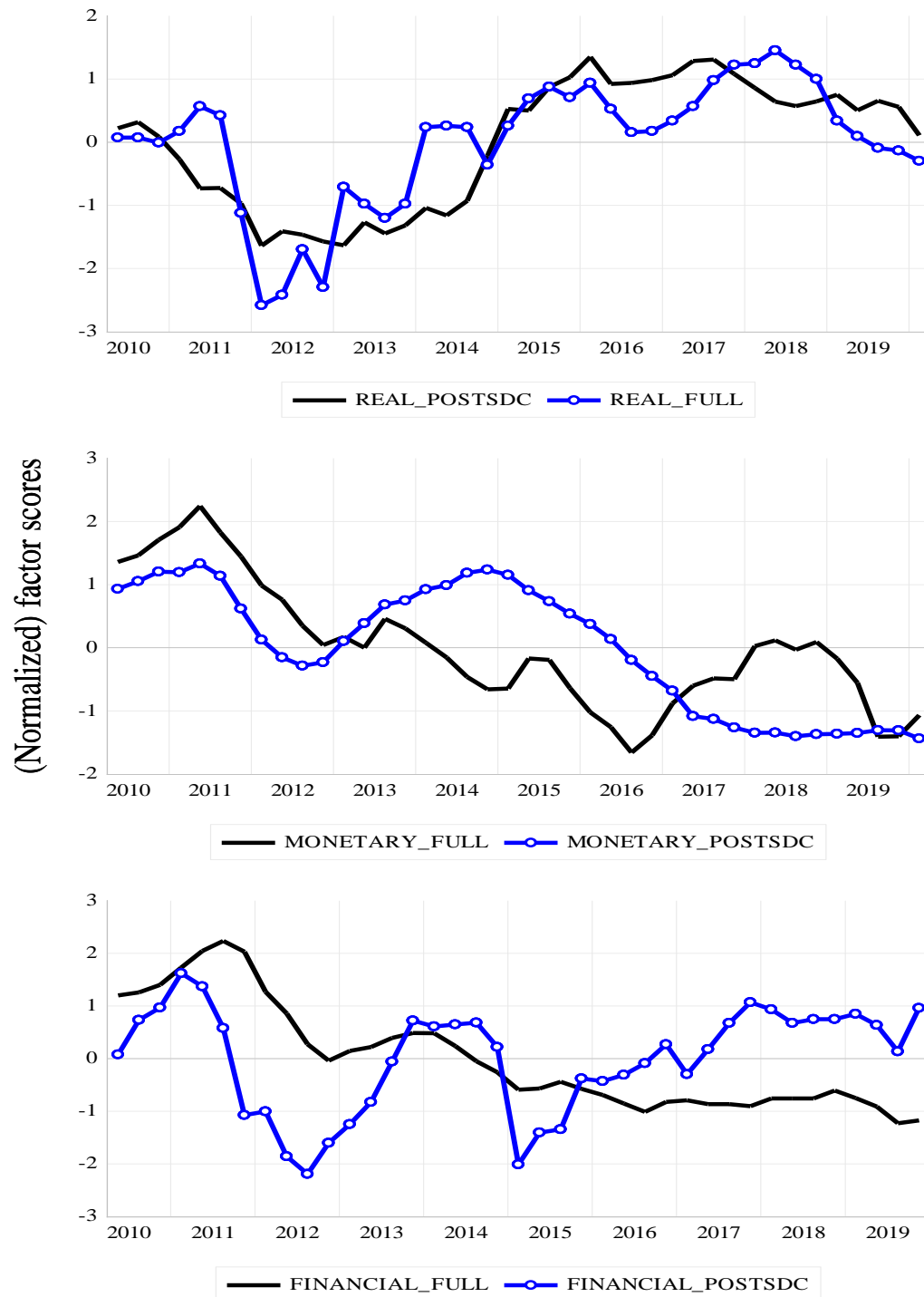
Table 3: Real, monetary and financial conditions in the euro area and their components

	Variables					
<b>REAL</b>	<b>Inflation</b>	<b>GDP growth</b>	<b>Expected Inflation</b>	<b>Unemployment rate</b>	<b>Oil Prices</b>	<b>QE</b>
Full sample	0.27	0.89	0.29	1	-0.34	-0.36
Pre-SDC	0.59	0.97	0.60	0.96	-0.39	-0.14
<b>MONETARY</b>	<b>Shadow rate</b>	<b>M3 growth</b>	<b>Central Bank assets/GDP</b>			
Full sample	1	0.54	-0.84			
Pre-SDC	0.83	0.72	-0.56			
<b>FINANCIAL</b>	<b>Credit to GDP</b>	<b>VIX</b>	<b>LIBOR3M</b>	<b>Euro 10Y</b>	<b>Real House prices</b>	
Full sample	-0.84	0.42	0.95	0.88	0.23	
Pre-SDC	-1	-0.16	0.35	0.57	0.75	

Note: The figures show the so-called factor loadings, that is, the weights of each component which, when aggregated, produces the indicators shown in Figure 14. If the estimate is positive the component raises the indicator, and the reverse holds when the sign is negative. Estimates were obtained by imposing the assumption that there is a single common factor and via maximum likelihood. Inflation is HICP inflation in the euro area; real GDP growth is the same as in Figure 1. Oil prices

are Brent prices per barrel. The full sample is usually 2000Q1-2020Q1, after transformations (e.g., taking growth rates) and data availability for some series. The pre-SDC sample ends in 2010Q1 (also see Figure 1).

Figure 14: How did the SDC and APP impact the euro area? A counterfactual



Source: Author's calculations. Three factors are considered: real, monetary and financial. Each factor consists of several variables. For REAL, inflation, real GDP growth, inflation forecasts (SPF), growth forecasts (SPF), unemployment rate, and oil prices. For MONETARY, the shadow ECB policy rate (Figure 6), growth in the M3 monetary aggregate, and central bank assets to GDP ratio. For FINANCIAL, credit to GDP ratio, VIX, LIBOR3m, 10 years yield for the euro area (see Figure 6), and the growth rate of real house prices (Figure 9). Data are from the ECB, BIS, and Federal Reserve Bank of St. Louis. FULL means estimate if the full sample is used. POSTSDC means using estimates for the pre-SDC sample period alone to estimate the post-SDC period estimates.

## 5. CONCLUSIONS: WHERE DO WE GO FROM HERE?

We are now well over a decade into non-standard monetary policies. Policy regimes with a comparable life span can easily be found (e.g., Bretton Woods). It is worth asking, therefore, whether monetary instruments introduced since 2008 have stood the test of time and ought to remain part of the toolkit available to the monetary authorities. The answer is a qualified yes.

Resort to extraordinary measures, particularly when there is a growing body of experience and lessons learned, is necessary but, just as with fire alarms or medication, should be used sparingly and only as directed. First, because the evidence is not overwhelming that the set of NSP employed to date are successful in all respects. Beyond the evidence shown here and the extant literature that continues to debate the merits of UMP, success as measured by the impact of NSP on interest rates suggest that it has a hit and miss element to it. Second, and equally important, while the autonomy of central banks, together with their mandate for price stability, justified large scale interventions in financial markets, compatibility with fiscal policy was often given short shrift. Central banks were left, perhaps willingly, to do the heavy lifting even if, arguably, some of the conditions that gave rise to the SDC cannot be attributed to ECB actions or constraints on its ability to intervene.

As the pandemic develops and, hopefully, becomes a distant memory, developments at the European level suggest an understanding of the need for monetary and fiscal policies to support each other. Of course, this is an old lesson that needs to be learned again. Finally, if NSP is a treatment, it must surely end if only because it risks become less and less effective over time, as the US experience has shown (e.g., see Rogers et. al., 2014). Central bank credibility (e.g., see Bordo and Siklos, 2017) plays an important role here. Not only is the maintenance of credibility essential to support the public's belief that the current monetary regime of inflation control will remain in place, but credibility will also assist the unwinding of extraordinary measures when this is appropriate. Economic history (also see Bordo and Siklos, 2016) suggests this the best way to deal with fears of excessively high future inflation as debt levels rise quickly in response to the global pandemic.<sup>15</sup> More importantly, the accumulated impact of NSP are sure to have distorted financial markets. After all, NSP are an attempt to partially administer financial asset prices and history is not kind to attempt to undermine the workings of markets. Indeed, all sorts of spillovers from the application of NSP are unavoidable, both inside the euro area as well as globally. Moreover, such policies bring monetary policy much closer to becoming a form of fiscal policy. Once again, history is not kind to such attempts that go on for too long.

Where then do we go from here? In no order of importance, I would suggest the following implications from the foregoing analysis. Policy makers must quantify more precisely the economic impact of the distortionary effects of NSP. Central bank interventions have spread or are spreading to the full length of the term structure and across more sectors of the economy. It is no accident that prolonged interventions by central banks, well intentioned as they are, are not substitutes for reforms that can raise productivity and economic growth and, hence, ensure that the 'unpleasant' debt arithmetic does not take hold.<sup>16</sup> Japan is sometimes thought of as an object lesson for the risks in question (e.g., see Siklos, 2020a).

Given the size of the interventions, magnified for understandable reasons because of the ongoing pandemic, there is already pressure to think about an exit strategy. Senior ECB officials are at pains to point out that existing interventions can be reversed. However, the public has been told this story before, while a return to the *status quo ante* before the events of 2008 never really took hold. It might

<sup>15</sup> Broadbent (2020) essentially concurs based on the U.K. experience. For a broader analysis of the issues in question see, for example, Reis (2019).

<sup>16</sup> This is a reference to the proposition that, if the real cost of carrying debt exceeds economic growth, debt levels can rise without limit.

be more credible for central banks to argue, and with a sufficient degree of clarity and precision, the kind of economic conditions, beyond just a return to price stability, required before exit actually takes place. And, if NSP remain part of the ECB's toolkit, to provide the public with an indication of the size and composition of its post-NSP balance sheet. Equally important, these steps must be taken in a manner that is coherent with fiscal policies in the euro area. If this is not done, then central bank credibility will be further eroded. At the risk of repeating the obvious, what makes the euro area unique is the combination of a single monetary policy for disparate and sovereign states. It is ironic now that Brexit has taken place that the words of a former U.K. Prime Minister, Harold Macmillan, uttered in 1960, should remain relevant in this connection. "It is the basic principle...that we respect each other's sovereignty in matters of internal policy. At the same time, ...in this shrinking world...the internal policies of one nation may have effects outside it. We may sometimes be tempted to say to each other, 'Mind for your own business'. But in these days I would myself expand the old saying so that it runs, 'Mind your own business, but mind how it affects my business, too.'" (George-Brown, 1980, p. 210).

Just as monetary policy became successful not only because it pursued price stability but was carried out in a forward-looking manner, so must the fiscal authorities adopt some of the strategies developed by the monetary authorities. This means that central banks are not the only ones that will have to come up with an exit strategy. The fiscal authorities should eventually be pressed to do the same.

None of the foregoing suggestions are straightforward to carry out if only because the time horizon of the monetary authorities will eventually conflict with the ones the fiscal authorities have in mind. In addition, there are likely institutional implications for the future conduct of monetary policy that are beyond the scope of this paper, but daunting nonetheless.

Underscoring the continuing conflict between fiscal and monetary policies is the recurring legal tension between the Treaties that bind the various Member States of the euro area and the almost natural reaction to 'do whatever it takes' when a crisis of some kind erupts. While economists' prescriptions may not fit nicely with legal language that governs how European-wide institutions should behave, one cannot forget the view that the single currency is also a political project. Resolving this tension is essential. Indeed, it comes as no surprise that a legal challenge to the PEPP has originated from Germany (Colitt, 2020). The planned European Recovery Fund is intended to be temporary; it is not meant to be a euro area maintenance and sustainability fund.

Beyond the various arguments marshalled for or against NSP, one clear lesson, clearly learned as COVID-19 spread around the globe, is that interventions of the APP and PEPP varieties stand a far better chance of being successful when they are very large. As Bernanke, Geithner, and Paulson (2019) suggested in their retrospective of their time managing the GFC in the US, those responsible for managing crises must be given "...the authority they need to respond with overwhelming force" (op.cit., p. 122). Therefore, if the toolkit of the ECB is to be expanded it must be with the sentiment expressed in the first part of the title of this paper.

## Box 1: Extracts from the TEU and TFEU

The ECB operates as a supra-national institution in a monetary union of many sovereign states. Accordingly, its institutional structure does not have exact parallels elsewhere in the world. Yet, the aims and strategy of monetary policy strategy are similar to ones followed by many central banks. Since the current predicament the ECB finds itself in partially reflects institutional considerations and has been the subject of legal battles, as explained in section 2.2.3., it is worth repeating some of the passages from the respective Treaties that govern the existence and tasks of the ECB used by supporters and detractors of the central bank to support their respective cases. Of course, in doing so, it must be recognized that my interpretation of the pressures faced by the ECB is one that an economist would make and cannot be construed as a legal opinion.

**Treaty on European Union**

From PREAMBLE

*RESOLVED to achieve the strengthening and the convergence of their economies and to establish an economic and monetary union including, in accordance with the provisions of this Treaty and of the Treaty on the Functioning of the European Union, a single and stable currency,*

Article 5 (ex Article 5 TEC) **1.** The limits of Union competences are governed by the principle of conferral. The use of Union competences is governed by the principles of subsidiarity and proportionality; ...**4.** Under the principle of proportionality, the content and form of Union action shall not exceed what is necessary to achieve the objectives of the Treaties.

**Treaty on the Functioning of the European Union**

From PREAMBLE

*ANXIOUS to strengthen the unity of their economies and to ensure their harmonious development by reducing the differences existing between the various regions and the backwardness of the less favoured regions,*

Article 119 (ex Article 4 TEC) **1.** For the purposes set out in Article 3 of the Treaty on European Union, the activities of the Member States and the Union shall include, as provided in the Treaties, the adoption of an economic policy which is based on the close coordination of Member States' economic policies, on the internal market and on the definition of common objectives, and conducted in accordance with the principle of an open market economy with free competition. C 326/96 EN Official Journal of the European Union 26.10.2012 **2.** Concurrently with the foregoing, and as provided in the Treaties and in accordance with the procedures set out therein, these activities shall include a single currency, the euro, and the definition and conduct of a single monetary policy and exchange-rate policy the primary objective of both of which shall be to maintain price stability and, without prejudice to this objective, to support the general economic policies in the Union, in accordance with the principle of an open market economy with free competition. **3.** These activities of the Member States and the Union shall entail compliance with the following guiding principles: stable prices, sound public finances and monetary conditions and a sustainable balance of payments.

Article 123 (ex Article 101 TEC) **1.** Overdraft facilities or any other type of credit facility with the European Central Bank or with the central banks of the Member States (hereinafter referred to as 'national central banks') in favour of Union institutions, bodies, offices or agencies, central governments, regional, local or other public authorities, other bodies governed by public law, or public undertakings of Member States shall be prohibited, as shall the purchase directly from them by the European Central Bank or national central banks of debt instruments.

Article 127 (ex Article 105 TEC) **1.** The primary objective of the European System of Central Banks (hereinafter referred to as 'the ESCB') shall be to maintain price stability. Without prejudice to the objective of price stability, the ESCB shall support the general economic policies in the Union with a view to contributing to the achievement of the objectives of the Union as laid down in Article 3 of the Treaty on European Union. The ESCB shall act in accordance with the principle of an open market economy with free competition, favouring an efficient allocation of resources, and in compliance with the principles set out in Article 119.

Protocols on the application of the principles of subsidiarity and proportionality Article 5

Draft legislative acts shall be justified with regard to the principles of subsidiarity and proportionality. Any draft legislative act should contain a detailed statement making it possible to appraise compliance with the principles of subsidiarity and proportionality. This statement should contain some assessment of the proposal's financial impact and, in the case of a directive, of its implications for the rules to be put in place by Member States, including, where necessary, the regional legislation. The reasons for concluding that a Union objective can be better achieved at Union level shall be substantiated by qualitative and, wherever possible, quantitative indicators. Draft legislative acts shall take account of the need for any burden, whether financial or administrative, falling upon the Union, national governments, regional or local authorities, economic operators and citizens, to be minimised and commensurate with the objective to be achieved. <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A12008E%2FPRO%2F02>.



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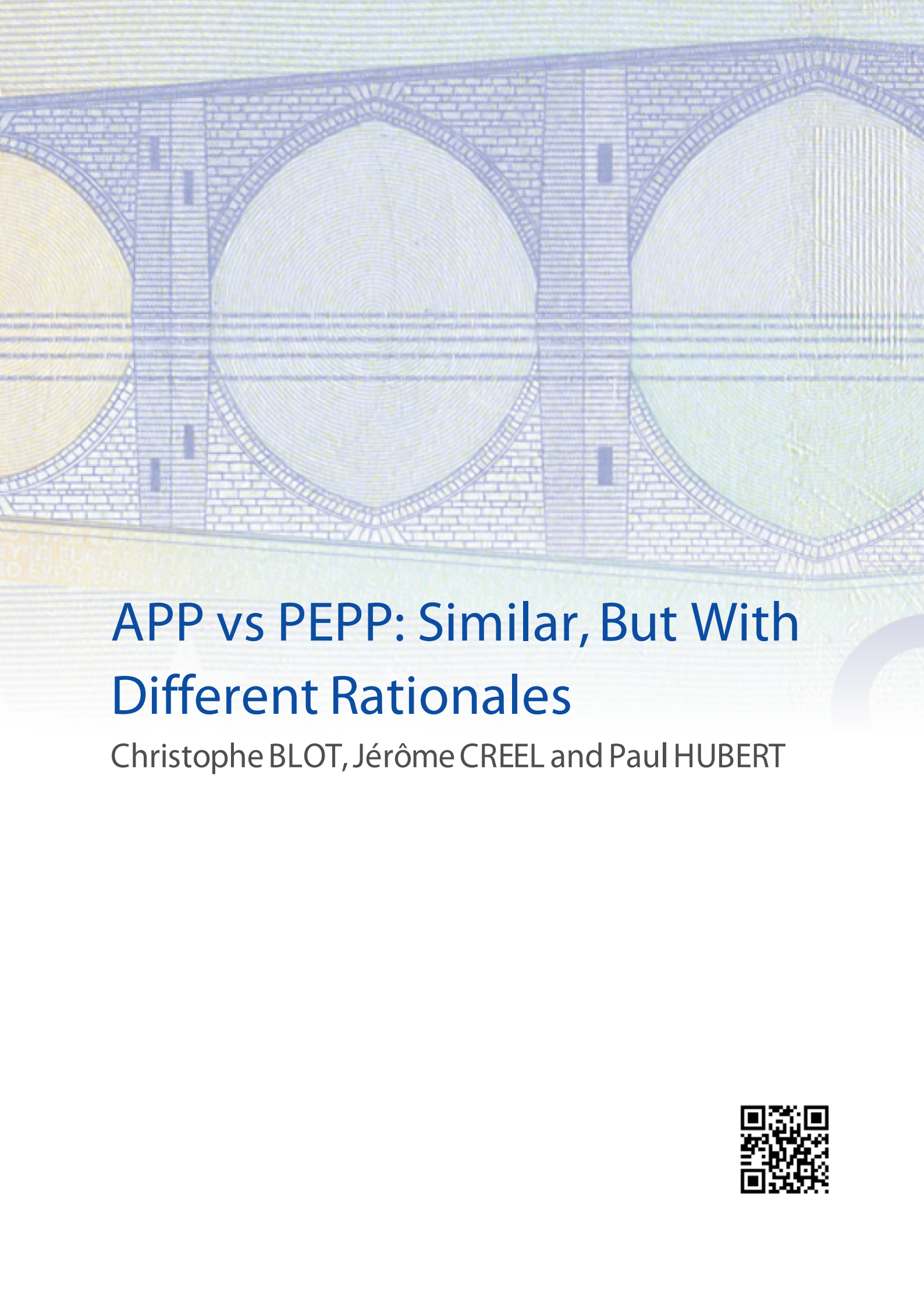
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# APP vs PEPP: Similar, But With Different Rationales

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## **Abstract**

ECB's asset purchase programmes have been implemented at different times in different economic environments and may pursue different objectives. From the point of view of removing financial fragmentation and taming sovereign stress in the euro area, the PEPP has been successful so far. Moreover, this outcome was obtained without fully using its potential resources. To date and contingent on the available set of information, the current monetary stance has not gone too far and it retains some ammunitions.

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## **CONTENTS**

<b>LIST OF ABBREVIATIONS</b>	<b>52</b>
<b>EXECUTIVE SUMMARY</b>	<b>53</b>
<b>1. INTRODUCTION</b>	<b>54</b>
<b>2. THE ECB AND THE COVID-19 CRISIS</b>	<b>55</b>
<b>3. THE DIFFERENT RATIONALES FOR APP AND PEPP</b>	<b>58</b>
<b>4. WHAT ARE THE RISKS ASSOCIATED WITH PEPP?</b>	<b>64</b>
4.1. Going too far	64
4.2. Not going far enough	65
4.3. In what direction does the balance of risks go?	65
<b>REFERENCES</b>	<b>69</b>

## LIST OF ABBREVIATIONS

<b>APP</b>	Asset purchase programme
<b>CJEU</b>	Court of Justice of the European Union
<b>ECB</b>	European Central Bank
<b>FCC</b>	Federal Constitutional Court
<b>PEPP</b>	Pandemic emergency purchase programme
<b>PELTRO</b>	Pandemic emergency longer-term refinancing operations
<b>PSPP</b>	Public Sector Purchase Programme
<b>QE</b>	Quantitative easing
<b>TFEU</b>	Treaty on the Functioning of the European Union
<b>TLTRO</b>	Targeted long-term refinancing operations
<b>ZLB</b>	Zero lower bound

## EXECUTIVE SUMMARY

- **The ECB's asset purchase programmes have been implemented at different times in different economic environments and may pursue different objectives.** We review these considerations to analyse the consequences of such programmes.
- **The APP arrived at a moment when the euro area was facing strong deflationary risks whereas the PEPP was implemented when the inflation outlook was uncertain** (because the Covid-19 crisis is a mix of a supply, demand and uncertainty shocks) but fragmentation risks were on the upside and sovereign risks and increasing spreads could impair the transmission of monetary policy across euro area countries.
- **The declared will to tackle the fragmentation of the euro area** and the removal of the self-imposed limits suggest that the ECB sets a sort of "spread targeting" objective to the PEPP.
- From the point of view of this "spread targeting" objective, the **PEPP is successful with both the level and volatility of sovereign spreads at low levels.**
- **This outcome was obtained without a full utilisation of the potential resources of the PEPP.** The weekly flow of purchases is indeed decreasing since July. This suggests that the signalling effect of the PEPP was strong and credible in taming sovereign stress.
- **Ultra-loose and "disproportionate" monetary policy raised the risk of overshooting the inflation target and exceeding the price stability mandate.**
- The effectiveness of monetary policy decisions, asset purchases in this context, has to be **assessed with respect to the objective of the programme and the economic context in which it was implemented.**
- **The transmission of monetary policy relies on various interactions between macroeconomic and financial variables** such that the price stability objective cannot be insulated from the real economy.
- **In the situation where the pandemic crisis prevents fiscal consolidation and makes a rise in inflation or in real GDP uncertain,** an accommodative monetary policy that reduces nominal yields and so financing conditions, is undeniably relevant to ensure public debt sustainability.



## 1. INTRODUCTION

The role of central banks is crucial to limit the economic and financial consequences of crises. By lowering policy rates, buying assets, or supporting liquidity, monetary policy can be quickly decided and implemented. However, the action of policy makers – central bankers and governments – should also take into account the features of the crisis. With the COVID-19 crisis, the world economy has been hit by a negative shock, which has triggered the most important fall in output since the Second World War. The nature of the shock is also unprecedented since it has, to a large part, been the consequence of decisions to restrict economic activities (closure of shops, schools and encouragement to stay at home). Even if those restrictions have been partially lifted, some constraints remain. In 2020-Q2, the GDP has plummeted by 11.8% and inflation was close to zero.<sup>1</sup> There are signs of rebound for 2020-Q3, but economies will still suffer from the crisis and from the remaining prophylactic measures. There is consequently a need for an economic stimulus that rests, at least partially, on expansionary monetary policy.

It may yet be noted that the ECB decisions are taken in special circumstances. The stance of monetary policy in the euro area was already loose before the outbreak of the COVID-19 crisis and the ECB found itself with less ammunition than the Federal Reserve Board for instance. More importantly, the ECB asset purchases have been criticised within the Governing Council itself one year ago and by the German Constitutional Court, which has asserted that ECB's asset purchasing policy could have disproportionate effects on related objectives and could be relatively ineffective at achieving the objective of price stability. Such a situation may hamper ECB's actions. There is then a need to explain the rationales and objectives of the decisions taken by the ECB to deal with the specific nature of the crisis and to assess the balance of risks of these decisions. The ECB's asset purchase programmes have been implemented at different times in different economic environments and may pursue different objectives. We review these considerations to analyse the consequences of such programmes.

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<sup>1</sup> It would even be in negative territory in August according to the Eurostat flash estimate.

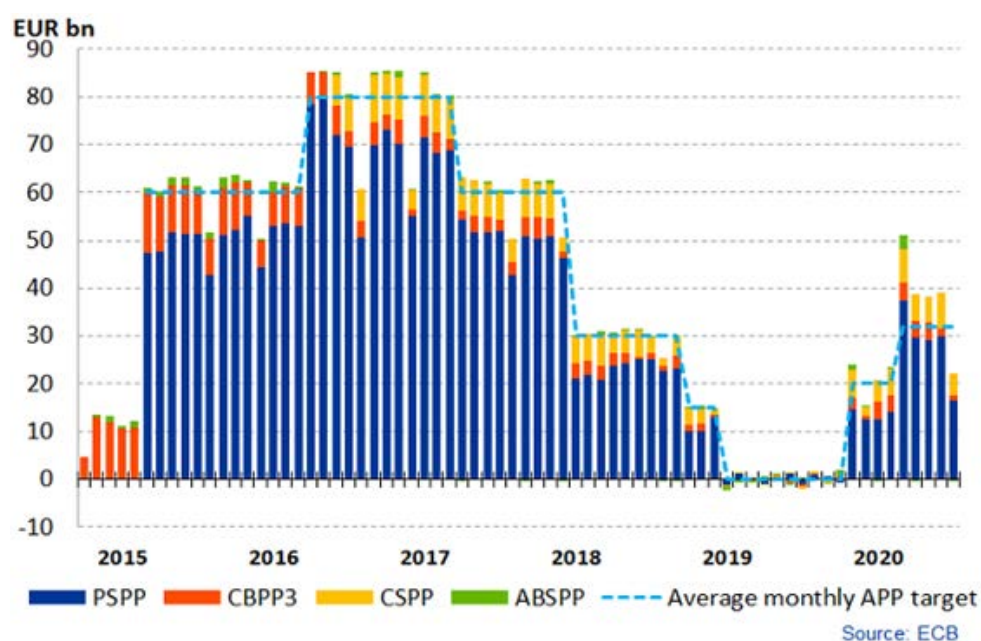


## 2. THE ECB AND THE COVID-19 CRISIS

As in 2008-2009 during the subprime crisis, central banks have been on the front line to provide a response to the COVID-19 crisis. Where the policy rate had not already reached the zero lower bound (ZLB), central banks first decided to cut it as in the United States and in the United Kingdom. The Federal Reserve held two unscheduled meetings on 3 and 15 March 2020 to implement a first package of emergency measures beyond the interest rates cuts. It mainly consisted in the re-activation of liquidity provision programmes that were launched during the subprime crisis and in a new wave of asset purchases.

In the euro area, the first decisions were taken on 12 March 2020 and consisted in the extension of existing programmes. The ECB had indeed not started to phase out from unconventional measures. The initial asset purchase programme (APP) started in March 2015 and was initially supposed to last until September 2016. It was yet extended multiple times both in terms of its length and of the flow of monthly purchases (see Figure 1) and it was still effective at the outbreak of the COVID-19 crisis. Consequently, the net flow of purchases was brought back to zero during most of 2019, so that the stock of assets held by the ECB was kept constant but resumed after the decisions taken in September 2019. It was also the case for the Targeted long-term refinancing operations (TLTRO) that enabled banks to obtain liquidity from the Eurosystem conditionally on the supply of credits to non-financial agents.

Figure 1: Flows of asset purchases

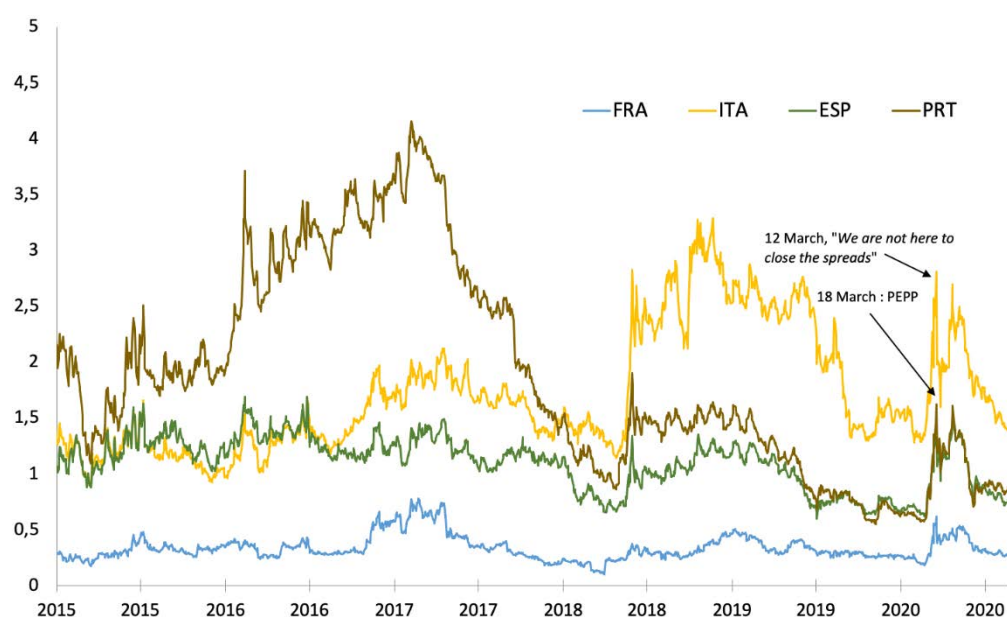


Source: ECB.

On 12 March 2020, the ECB increased the envelope of net assets purchases within the APP by EUR 120 billion. The aim was to support financing conditions by weighing down on sovereign yields. Moreover, TLTRO were granted at more favourable conditions for banks to stimulate credit and new long-term refinancing operations (LTRO) were announced to meet liquidity needs and address potential risks of self-fulling crises.

Despite rising tensions on the sovereign debt market and notably on the Italian yield, the ECB did not initially communicate on this issue. During the press conference held at the end of the 12 March 2020 meeting, ECB President Christine Lagarde answered a journalist's questions that "We [the members of the Governing Council] are not here to close spreads", which immediately amplified tensions in financial markets (Figure 2). Later, President Lagarde went back on this issue re-affirming that the ECB aimed to avoid fragmentation in the euro area and would pay attention to any impairment of the transmission of monetary policy. One week later, on 18 March 2020, the ECB took decisions in accordance with these words. A new asset purchase programme was launched: the pandemic emergency purchase programme (PEPP) with an overall envelope of EUR 750 billion extended to EUR 1.35 trillion on 4 June 2020. It was notably asserted that these purchases would be conducted in a flexible manner regarding the allocation across countries. While the overall envelope should comply with the capital key of the national central banks, it may temporally deviate from it if there is a need to reduce sovereign spreads for a given country.

Figure 2: Sovereign interest rate spread with Germany

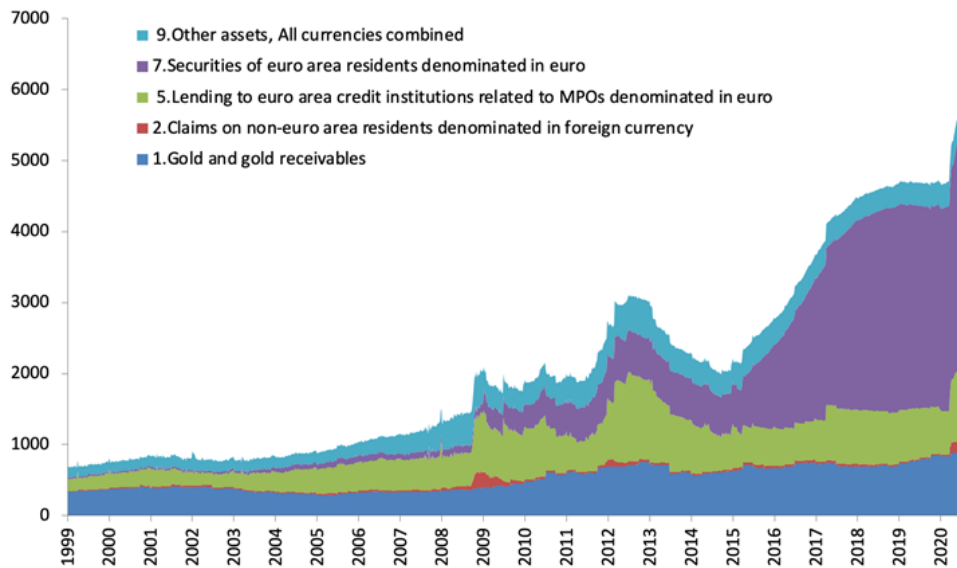


Source: Datastream. In percentage points.

Moreover, given the role of the US dollar in international financial transactions, the swap lines between the main central banks have been renewed to maintain liquidity in the international interbank market. Finally, on 30 April 2020, the ECB announced 7 long-term liquidity granting operations between May 2020 and December 2020 (PELTRO: pandemic emergency longer-term refinancing operations), with a maturity ranging from 16 months for the first - which took place in May - to 8 months for the last.

These measures have triggered a new rise of the Eurosystem's balance sheet (Figure 3). Under the APP, Treasuries represented more than three quarters of the asset purchased since the 13 March 2020. The total amount of assets held under the APP went from EUR 2.639 trillion to EUR 2.819 trillion. It may also be noticed that the ECB increased its holdings of private securities with a total outstanding reaching EUR 228 billion by the end of August 2020. However, the bulk of assets purchases have been implemented under the new PEPP programme.

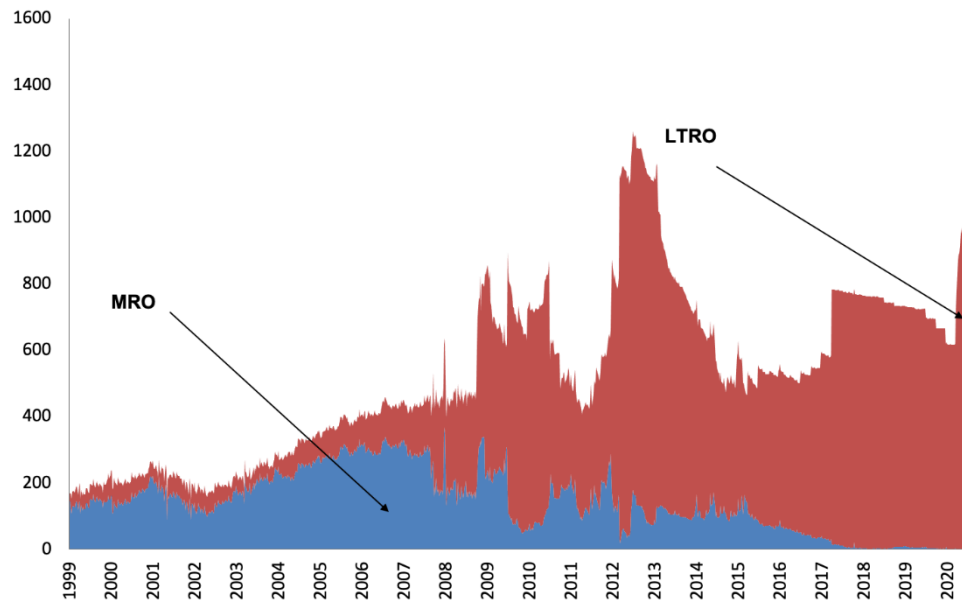
Figure 3: Assets of the Eurosystem



Source: ECB. In EUR millions.

Figure 3 also illustrates that lending to euro area credit institutions has also jumped to a new record high as a consequence from the allocation of liquidity through the PELTRO, suggesting that there was a need to avoid a liquidity squeeze since long-term refinancing operations have increased by EUR 563 billion after 19 June 2020 (Figure 4). It may also be noted that claims, denominated in foreign currency, have risen by EUR 125 billion in March-April following the swap operations.

Figure 4: Lending to euro area credit institutions for monetary policy purposes

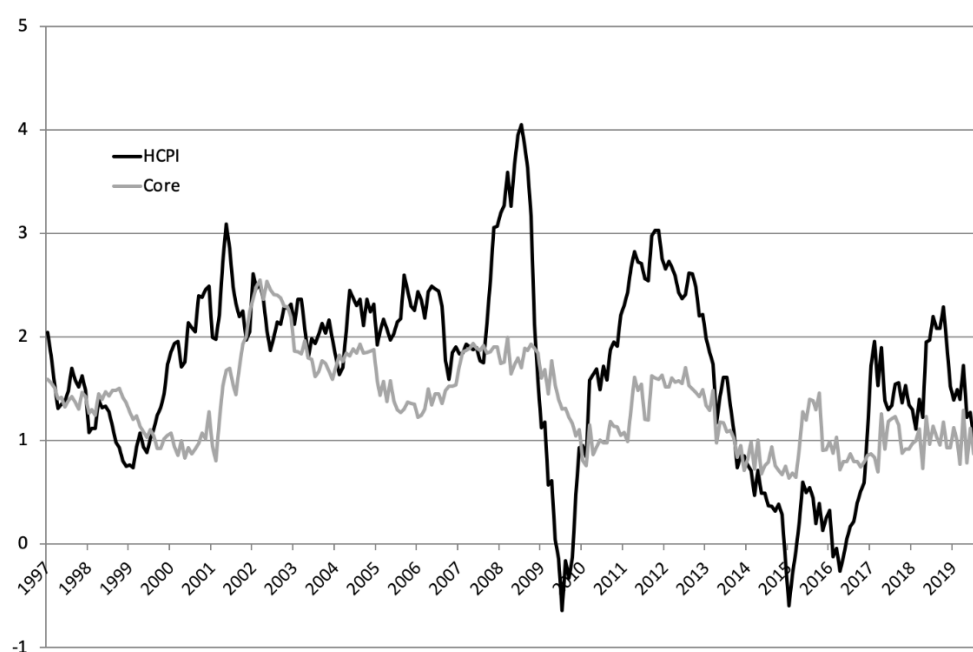


Source: ECB. In EUR millions.

### 3. THE DIFFERENT RATIONALES FOR APP AND PEPP

The APP was initiated “to support the monetary policy transmission mechanism and provide the amount of policy accommodation needed to ensure price stability” (ECB webpage). This policy, rejected many times by Governing Council members between 2009 and 2012 when the Federal Reserve and the Bank of England implemented their first quantitative easing (QE) programs, was eventually adopted by the ECB in face of the deterioration of the economic outlook. The ECB therefore aimed at strengthening the means implemented to fight deflationary risks in the euro area. These risks had indeed increased with the fall in inflation, the continued high level of unemployment and the possibility of a drop in expectations around 2014-2015 (Figure 5). In doing so, the ECB hoped to ensure that inflation expectations would remain anchored, to reduce risk premia and financing conditions and to push the euro down.

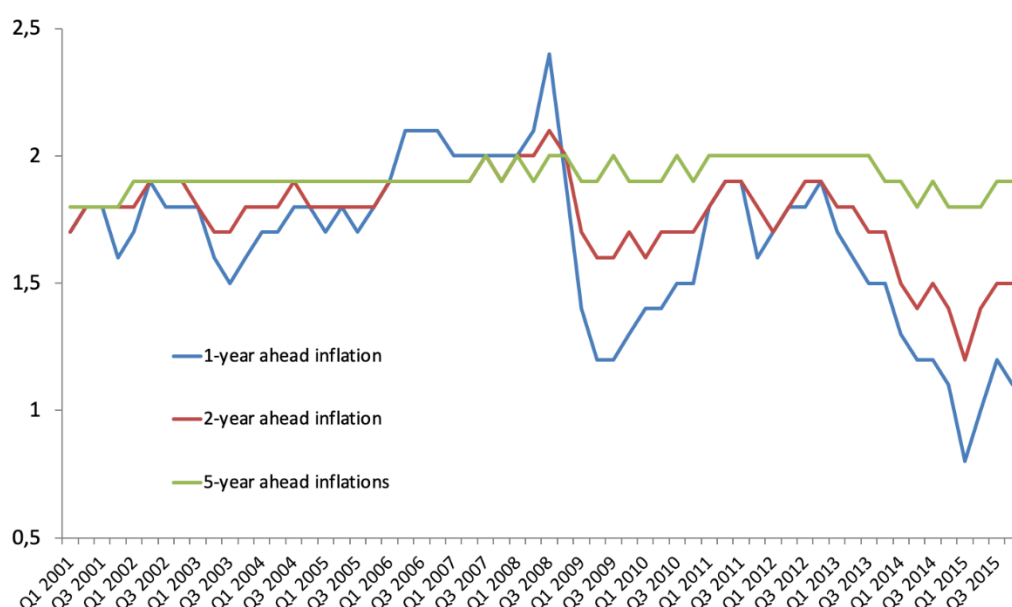
Figure 5: Euro area inflation measures



Source: Eurostat. In %.

The deflationary risk was significant in the euro area in 2014. It had intensified with the drastic fall in oil prices that pushed inflation down, which in turn called into question the anchoring of expectations. Inflation turned negative from December 2014, with a contribution from the energy subindex of -0.7 percentage points over the last quarter. Surveys conducted among professional forecasters (the ECB's Survey of professional forecasters, SPF) indicated a sharp fall in expected inflation over the next two years and five years (Figure 6). This evolution was an important source of concern for the ECB, which targets inflation close to 2% in the medium term. This showed that in the medium term, forecasters favoured a low inflation scenario and thought that the ECB would be unable to bring inflation back to its target despite the policy decisions implemented so far. Even at the worst of the Great Recession of 2009, inflation expectations did not go down to such a low level.

Figure 6: Euro area inflation expectations



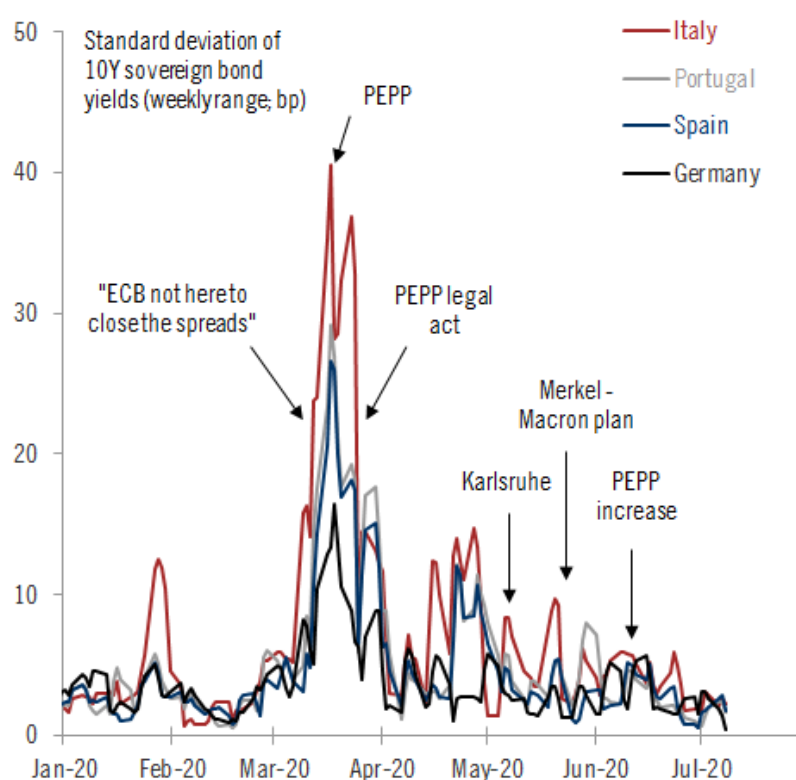
Source: Eurostat. In %.

Five years later, the euro area and the world economy have faced an unprecedented situation and the measures announced by the ECB aimed at dealing with the specific consequences associated with COVID-19 crisis (see Section 2). In the present situation, the negative demand shock has triggered a fall of output and a slowdown of inflation calling for a more expansionary monetary policy. However, the fall in demand mainly stem from the inability to spend as a consequence of lockdown measures. In parallel, lockdown measures have also created a supply shock that may amplify in the future in the event of mass bankruptcies. There is certainly a need to implement an expansionary monetary policy but standard measures should account for the features of the crisis. Keeping interest rates low is yet still important to support spending after the lockdown is lifted and to ease the debt burden on indebted agents. The measures should also prevent financial constraints from pushing non-financial agents to cut back on their spending. It is indeed crucial to prevent the risk of a liquidity crisis. The outbreak of the crisis, even if it is not financial in nature, causes great uncertainty about the degree of exposure of economic actors to future losses. There is therefore a risk of default which can cause mistrust and reduce access to market liquidity. Central banks must therefore play the role of lender of last resort to avoid a liquidity crisis and limit financial stress. The interest rate cuts are therefore needed to send a signal that access to central bank liquidity will remain favourable. It should also be accompanied by liquidity operations as those contemplated with the PELTRO.

However, the main measures to face the crisis must undoubtedly be budgetary as it can be more precisely geared to agents suffering more from the consequences of the lockdown. The role of monetary policy must therefore also - and above all - support the action of governments, which consists in supporting the incomes of the most deprived people and exposed to the risk of job loss (under partial unemployment or full unemployment), the activity of companies which cannot absorb the shock linked to the closure and to the decline in demand and public health expenditure. This will result in an increase in debt which may cause tensions in the financial markets, push interest rates upward and therefore constrain the effectiveness of fiscal policy but also that of the transmission of monetary policy. By purchasing sovereign securities, the central bank guarantees the government in the short term against liquidity risk. It is indeed essential that there be coordination - at least implicitly

- between monetary policy and fiscal policy. This was the aim of the decision taken on the 18 March 2020 by the ECB, with the announcement of the new asset purchase program - the PEPP – which is a temporary non-standard monetary policy measure designed “to counter the serious risks to the monetary policy transmission mechanism and the outlook for the euro area posed by the coronavirus (COVID-19) outbreak” (ECB webpage). It is reasonable to think that the implementation of this program was, if not due to, at least brought forward because of President Lagarde’s comment on sovereign spreads (Figure 7). The program initially planned EUR 750 billion of asset purchases until the end of 2020. The purchases would be spread over the different asset classes already acquired by the ECB and, for purchases of government securities, continuing to respect the holding limit per issuer and the ECB capital key, which would lead the ECB to buy a higher proportion of German securities than of Italian or Spanish securities.

Figure 7: Sovereign interest rate volatility



Source: Pictet. In basis points.

On 26 March, the ECB announced that it will not apply its self-imposed purchase limits on the PEPP scheme in its programme legal act<sup>2</sup> (Article 5). Asset purchases were previously capped at 33% of each country’s debt issuances. The ECB added that its purchases would be made according to each country’s shareholding in the ECB, the so-called capital key, but that these purchases would be done in a “flexible” manner across time allowing for deviations. These removals of the ECB self-imposed limits for the PEPP make it possible through these deviations from the capital key to effectively reduce spreads in sovereign interest rates. Overall, the PEPP therefore looks like a scheme to reduce tensions that emerged in sovereign debt markets. These purchases will make it possible to ease financing conditions

<sup>2</sup> Decision (EU) 2020/440 of the European Central Bank of 24 March 2020 on a temporary pandemic emergency purchase programme.



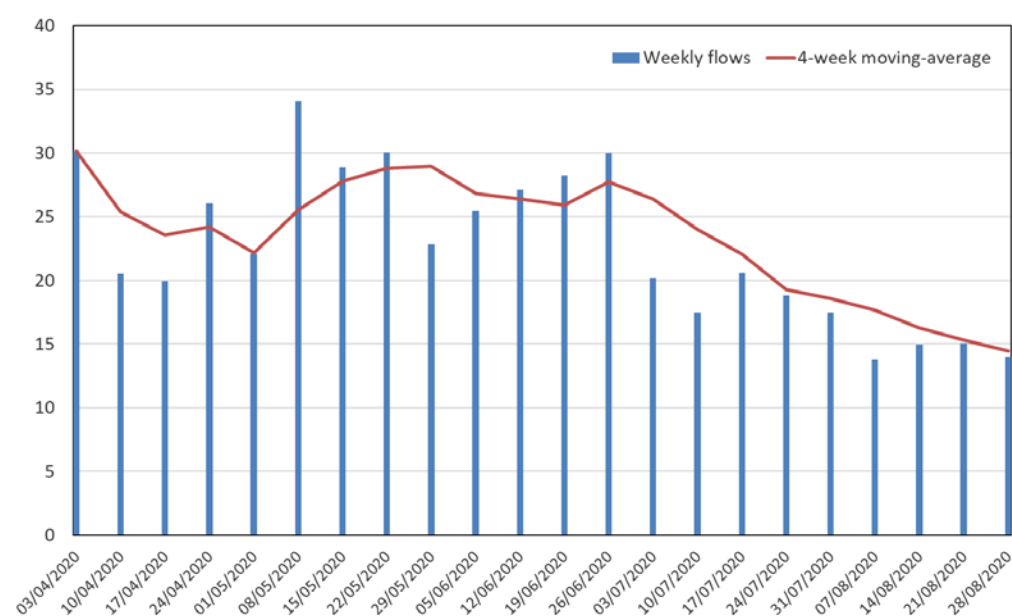
for the private sector as well as for Member States in the euro area, which will support the efforts made by governments to support activity.

On 4 June 2020, not only did the ECB increase the envelope for the PEPP by EUR 600 billion but also reiterated that the benchmark allocation across countries would be the capital key of national central banks and that purchases would be conducted in a “flexible manner”, allowing for fluctuations in the distribution of purchase flows overtime. The Governing Council also stated that it would not terminate net asset purchases under the PEPP before the end of June 2021 and that maturing bonds will be reinvested until at least the end of 2022. President Lagarde, in the press conference of 4 June 2020, stressed the dual role of the PEPP: “on the one hand, it has a monetary policy stance about it, but on the other hand – as you know because that was the one that certainly predominated in the early phase of the crisis – it is critically important because of its flexibility in order to transmit monetary policy, in order to reduce market stress in order to avoid fragmentation”. This statement reinforces the idea that the PEPP is more about closing sovereign spreads than the inflation spread with the inflation target. Meanwhile, it is not contradictory with the ECB mandate since inflation remains below the target. The aim of the PEPP was clarified again at the meeting of the 16 July 2020. President Lagarde insisted on the first objective of the PEPP, which is to “address the risk of market fragmentation and impairment to monetary policy transmission”.

The removal of the self-imposed limits suggests that the ECB gave a sort of “spread targeting” objective to the PEPP. This objective can be seen to follow two broader goals: the first one is specifically related to a monetary union and consists in avoiding the fragmentation of the economic zone as expressed by President Lagarde, the second one is more macroeconomic and aims to lower financing conditions for firms and governments. Avoiding a snowball effect enables firms and governments to devote resources to cushion the effect of the COVID-19 crisis rather than to increased interest payments. Overall, the COVID-19 crisis being both a supply and a demand shock, the effect on inflation appeared mixed initially such that inflation was not necessarily going to decrease further. The rationale for the PEPP initially might not have been about inflation per se. As of now, the recessionary effect of depressed demand seems to dominate the inflationary effect of the supply shock. A second objective of the PEPP about inflation would be consistent with the macroeconomic situation.

One interesting fact to highlight is how successful the PEPP policy has been with regard to this objective (Figure 7), especially when looking at the decreasing flow of asset purchases during the last months. The flows went from more than EUR 25 billion per week from April to the end of June, and slowed down to EUR 15 billion per week in July and August (Figure 8). Sovereign spreads are at a relatively low level despite the overall economic and sanitary uncertainty, the sharp increase in unemployment rates, the drop in GDP levels and the jump in public deficits and sovereign debts across the euro area. The ECB has thus enabled to avoid the fragmentation of the euro area and adding a sovereign debt crisis to the economic and sanitary crises. It also helped ensure the smooth transmission of monetary policy to all countries. Eventually, this outcome has been reached quickly and with only a small share of the overall package announced on 18 March. In addition, one can note that the flow of PEPP asset purchases has decreased in the most recent period which suggests either that the private demand for sovereign bonds is high enough for the ECB to step down or that the signal conveyed to investors through the PEPP is strong enough beyond actual purchases to calm down tensions.

Figure 8: Flows of PEPP asset purchases

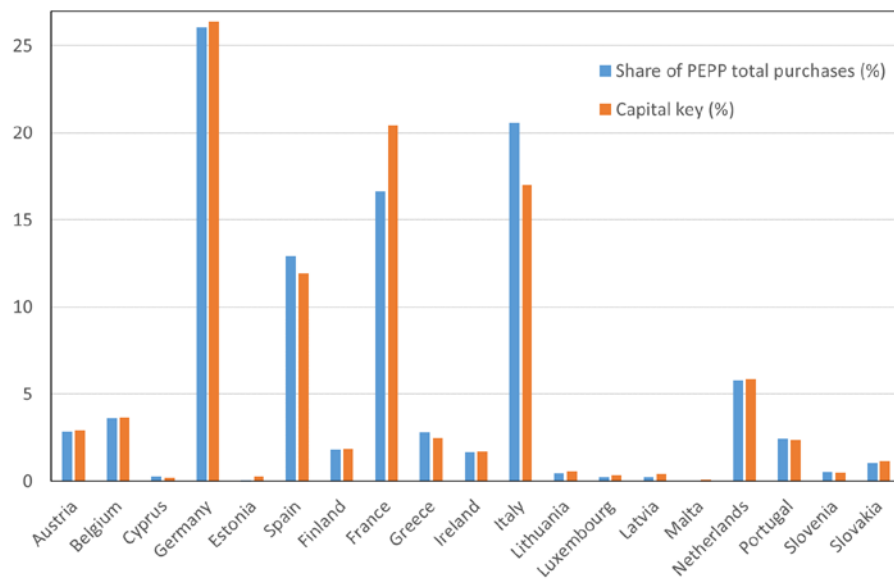


Source: ECB. In billions €.

It is interesting to note that while Italian and Spanish bonds have been bought in higher quantities than the respective capital key of these two countries (Figure 9), German sovereign bonds have not been bought less than the German capital key. In fact, they have been bought consistently with the German capital key. As of July 2020, German bonds represent a bit more than 25% of the overall PEPP total purchases while the German capital key relative to euro area countries is of 25%. This suggests that the ECB would not have to buy relatively more German public debt in the future which might have widened spreads. As the flow of PEPP purchases reduces, the ECB could slowly rebalance purchases relative to capital keys for Italy and Spain to assess whether financial market stress have effectively reduced. In the absence of new spread increases, the suggested objective of “spread targeting” of the PEPP would therefore be met and the ECB could gradually continue reducing its flow of purchases in order to keep ammunition for the future.



Figure 9: Share of cumulated PEPP purchases at the end of July 2020



Source: ECB. In %. Capital key are recomputed relative to Eurozone countries only, dropping the capital share of the ECB owned by national central banks outside the euro area.

## 4. WHAT ARE THE RISKS ASSOCIATED WITH PEPP?

There has been several criticisms against the expansionary measures implemented by the ECB in September 2019.<sup>3</sup> Concerns were notably related to the risks for financial stability to keep interest rates – policy and markets yields – so low for so long and to potential undesirable redistributive effects. The implementation of the new measures to deal with the Covid-19 crisis may also raise some risks. It may yet be noticed that those decisions were taken in a different context changing the nature of risks associated with the PEPP. The euro area economy faces two mutually exclusive risks related to the implementation of the PEPP: first, the PEPP may go too far; second, it may not go far enough. We discuss these two risks more explicitly in the following subparts, and we propose an appraisal on the balance of risks.

### 4.1. Going too far

The criticisms raised against the APP can nevertheless hold for the PEPP as well. Even if the ECB does not create currency but central bank reserves (that do not enter monetary aggregates) to implement these purchases, in a monetarist tradition, the first criticism to monetary expansion is the inflation risk that this policy embeds. An ultra-loose monetary policy may hamper the mandatory achievement of price stability in the euro area.

The second criticism relates to the side effects that an ultra-loose policy may pose: the trade-off between price stability and real activity may change and may not be consistent with the ECB mandate where price stability remains a primary objective while real activity is only part of a set of secondary objectives. This issue of monetary policy's side effects has certainly been revived by the ruling of the German Federal Constitutional Court (FCC) in May 2020.<sup>4</sup> The FCC has requested a review of the proportionality of the ECB asset purchase policy between the “monetary policy objective” and “the economic policy effects arising from the programme”. These latter effects relate to “public debt, personal savings, pension and retirement schemes, real estate prices and the keeping afloat of economically unviable companies”.<sup>5</sup>

The FCC ruling on the public sector purchase programme (PSPP) on 5 May 2020 did not oppose a former judgment by the Court of Justice of the European Union (CJEU) on the PSPP: “(the FCC) did not find a violation of the prohibition of monetary financing of Member States budgets”. Therefore, it disagrees that PSPP “effectively circumvents” provisions of the Treaty on the Functioning of the European Union (TFEU). The FCC judgment argues that “a manifest circumvention of the prohibition of monetary financing is not ascertainable, especially because (...) the purchase limit of 33% per international securities identification number is observed (and) purchases are carried out according to the ECB’s capital key”. The FCC goes on and argues that “the PSPP does not provide (...) a risk-sharing programme – which would (...) be impermissible under (German) primary law – in relation to bonds of the Member States purchased by national central banks”.

Meanwhile, the FCC considers that the judgment of the CJEU is “incomprehensible” for it was not based upon a clear and prior diagnosis of the economic policy consequences of the implementation of PSPP. The lack of prior review of the “proportionality” between the core objective of monetary policy and its side effects undermines, according to the FCC, the principle of conferral of monetary delegation to the ECB and therefore requires “closer scrutiny”.

<sup>3</sup> See Blot and Hubert (2019) for a critical analysis of these concerns.

<sup>4</sup> See BVerfG, Judgment of the Second Senate of 05 May 2020 - 2 BvR 859/15 -, paras. 1-237.

<sup>5</sup> The latter are commonly named “zombie firms”.

Lastly, the effectiveness of monetary policy at pushing inflation up can be questioned. Does the large monetary stimulus compensate for the low elasticity of prices to interest rates or does it reveal the lack of monetary policy effectiveness?

## 4.2. Not going far enough

Due to the large uncertainty surrounding the world and euro area economy in 2020 and 2021, the risk remains that the ECB response to the crisis is insufficient to restore inflation and real activity in the euro area. The OECD and IMF outlooks for 2020 and 2021 point to an unprecedented recession despite large fiscal and monetary expansions. In this regard, the extension of PEPP in 2021 may have to be pursued further.

Moreover, the evolution of forbearances in the third and fourth 2020 quarters will also help signal the liquidity needs of firms in the euro area and may either give another rationale to 2020 TLTRO measures if these operations have not been fully used yet, or it may require looser monetary policies if ammunitions are missing.

Last, the distribution of forbearances and unemployment rises across euro area Member States will shed light on the even or uneven capacity of Member States to cope with the economic consequences of the pandemic. The approval of the Recovery Plan by the European Council in July 2020 will certainly reduce the needs for further monetary intervention but the depth of the crisis may still remain high and beyond the fiscal capacity to tame the crisis of some Member States. The protracted economic, social and financial divergences between euro area Member States may feed the risk of a split of the euro area itself.

## 4.3. In what direction does the balance of risks go?

There are two counter-arguments to the inflation risk of ECB monetary policies. First, these policies have not led to an increase in money creation *per se*, but to an increase in central bank reserves. These reserves are not prone to generate inflation pressures for they do not circulate in the economy. Second, the inflation expectations have remained low and below the inflation target, even at a long-term horizon.

On the side effects of ECB policies, there are two different angles worth following to discuss the FCC judgment. The first one relates to the application of the proportionality principle by the ECB, as exposed in the judgment. The FCC's distinction between "monetary policy objective" and "the economic policy effects arising from the programme" is a bit puzzling for macroeconomists. It looks as if the FCC thought that achieving the monetary policy objective of the ECB did not require interactions with other macroeconomic and financial variables. Actually, monetary policy can deliver its objective via the usual functioning of the transmission channels of monetary policy. The most direct one is the interest rate channel: if consumer price inflation goes up and above the target, the central bank can raise its policy rate and it will in turn push the long-term interest rate up and dampen aggregate demand. What works when consumer price inflation goes up works symmetrically when it goes down and below the target... unless the policy rate has reached the zero lower bound. If it happens (and it did), the central bank must resort to other instruments. But for both conventional and non-standard tools, the transmission of monetary policy relies on credit, asset price, exchange rate, and balance sheet channels and the effectiveness of those channels hinges on the response of aggregate demand. Hence, "the economic policy effects arising from the programme" are the very reason behind the implementation of the PSPP for there are part of the transmission channels that will (try to) make monetary policy effective at achieving price stability. Remember that disentangling monetary effects from economic effects is not an easy task, for the interrelationships are many. Moreover, the "monetary policy

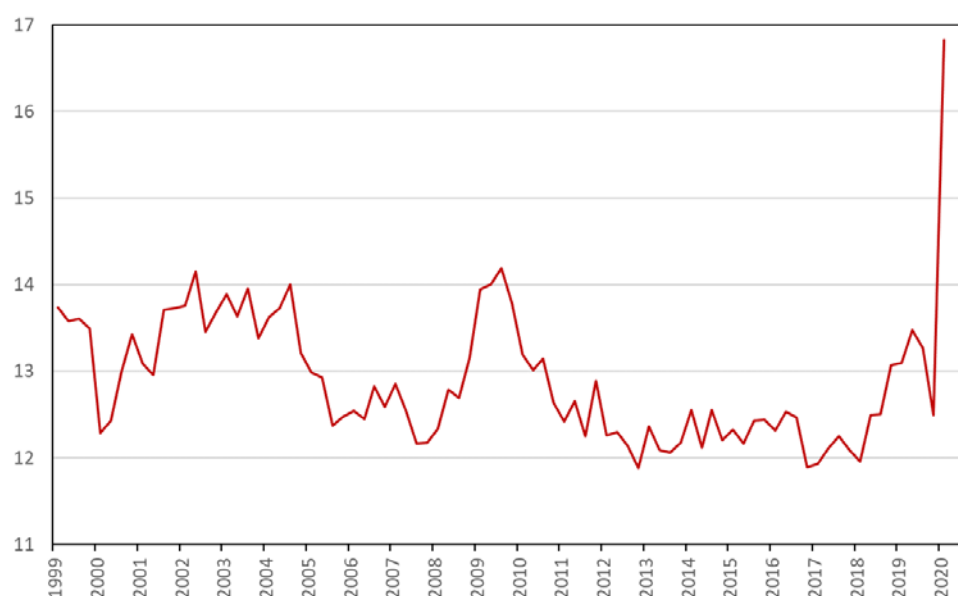
objective" that the FCC isolates is the price stability objective. In so doing, the FCC fails to give due consideration to the secondary objectives that the TFEU attributes to the ECB, like "aiming at full employment and social progress" and "the promotion of economic, social and territorial cohesion, and solidarity among Member States". We argued earlier that there was scope for clarifying the status of these secondary objectives in the ECB mandate because some of them can help achieve price stability (Blot et al., 2020).

The second angle relates to the management of public debt and the interactions with ECB policies. The FCC judgment argues that "a manifest circumvention of the prohibition of monetary financing is not ascertainable, especially because (...) the purchase limit of 33% per international securities identification number is observed (and) purchases are carried out according to the ECB's capital key". The FCC goes on and argues that "the PSPP does not provide (...) a risk-sharing programme – which would (...) be impermissible under (German) primary law – in relation to bonds of the Member States purchased by national central banks". The FCC arguments on the purchase limit and respect of the capital key in the PSPP will act as a Damocles' sword on the PEPP. The FCC's ruling of 5 May 2020 comes as a threat to the capacity of the ECB to implement the measures it has taken in the context of the coronavirus crisis.

Actually, on 18 March 2020, the ECB announced that, "while the benchmark allocation across jurisdictions will continue to be the capital key of the national central banks, (PEPP) purchases will be conducted in a flexible manner. This allows for fluctuations in the distribution of purchase flows over time, across asset classes and among jurisdictions". It continued arguing that "to the extent that some self-imposed limits might hamper action that the ECB is required to take in order to fulfil its mandate, the (ECB) Governing Council will consider revising them to the extent necessary to make its action proportionate to the risks that we face". It is clear that the FCC implicitly objects to these new monetary settings. As for the requirement of European solidarity, as laid down in Article 3 of the Treaty of the European Union (TEU), the FCC also rules out a risk-sharing mechanism. This latter outcome may be another hurdle to the management of the current coronavirus crisis.

During a few weeks in the spring of 2020, the decision of the FCC left doubt about the ability of the Bundesbank to continue to be involved in unconventional monetary operations. At the end of June 2020, the Bundestag pronounced itself in favour of the ECB and its new unconventional policies which, in the short term, removes the threat of an early end to monetary easing. This will however not prevent a further appeal by German plaintiffs against the ECB and, in the longer term, a new judicial episode.

Figure 10: Euro area household saving rate



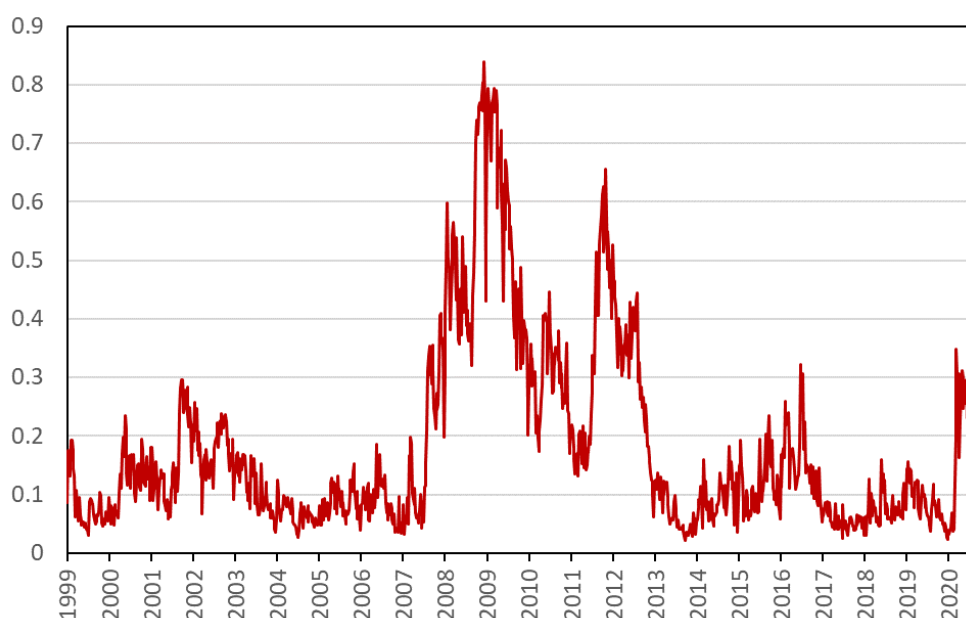
Source: Eurostat. In % of gross disposable income.

Last, the accommodation of monetary policy is undeniably important for currently growing public debts to remain sustainable. The sustainability of public debt requires primary surpluses, a surge of nominal GDP or low real interest rates that reduce interest charges. In the short run, the uncertainty surrounding the real consequences of the pandemic prevents fiscal consolidation and makes a rise in inflation or in real GDP very unlikely. Consequently, the only instrument left to ensure debt sustainability is the nominal yield on government bonds: the lower the nominal yield, the lower the risk of unsustainability.

Low interest rates disfavour private savings, a considerable concern in ageing societies. Without objecting the argument at the micro level for those holding net saving positions, a macro perspective may better help shed light on recent monetary decisions. Indeed, the pandemic and the lockdown have been followed by a substantial increase in private savings and a sharp decline in private investment (Figure 10). The balance between savings and investment has certainly been in favour of the former, hence legitimising a rebalancing via an accommodative monetary policy.

Regarding financial instability that monetary policy may generate, a glance at the CISS (Figure 11) does not seem to testify for a persistent surge in financial instability. While the rough evolution of stock markets does not give insights in “abnormal” evolutions, indicators of bubble like the one developed by Blot et al. (2020) give a better proxy of financial instability.

Figure 11: Financial stress dynamics: the CISS index




Source: ECB. Systemic Stress Composite Indicator, Index.

All these elements point to the conclusion that the current monetary stance has not gone too far, to date and contingent on the available set of information. Has it gone far enough? Only the release of real GDP and inflation data in next quarters will tell but the convergence of nominal yields on government bonds across euro area countries may already reflect that the ECB policy has done enough – jointly with public policies – to remove the risk of a break-up of the euro area.

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# COVID-19 and the Future of Quantitative Easing in the Euro Area: Three Scenarios with a Trilemma

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## **Abstract**

We present the set of measures that the ECB has undertaken to fight the pandemic crisis by outlining the deep impact that COVID-19 is having on economic structures, and by highlighting the differences between the current policy package and previous ECB's programmes. Moreover, we discuss what are the challenges that await the ECB in the medium to long run, contingent on different post-COVID scenarios concerning economic growth and inflation, considering its peculiar multinational jurisdiction.

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# CONTENTS

<b>LIST OF ABBREVIATIONS</b>	<b>73</b>
<b>EXECUTIVE SUMMARY</b>	<b>74</b>
<b>1. INTRODUCTION</b>	<b>75</b>
<b>2. THE ECONOMIC POLICY CHALLENGES OF COVID-19</b>	<b>76</b>
2.1. The transmission channels from the pandemic to the economy	76
2.2. Demand and supply shocks	77
2.3. Sectoral effects and supply chains	78
2.4. The monetary-financial network	80
2.5. Monetary policy, fiscal policy, and the euro area	81
<b>3. NOT ALL QE PROGRAMMES ARE THE SAME: THE PECULIAR FEATURES OF THE PEPP</b>	<b>85</b>
3.1. Restoring the monetary and financial network	85
3.2. Supporting fiscal policy	86
3.3. Keeping the euro area together	87
3.4. Putting moral hazard on hold	88
<b>4. THE CHALLENGES AHEAD</b>	<b>90</b>
4.1. Scenario 1: Fast recovery and pick up of inflation	90
4.2. Scenario 2: Slow recovery and stagnation	92
4.3. Scenario 3: The ECB's "worst-case" scenario	94
<b>5. CONCLUDING REMARKS</b>	<b>96</b>
<b>REFERENCES</b>	<b>97</b>

## LIST OF ABBREVIATIONS

<b>APP</b>	Asset Purchases Programme
<b>CSPP</b>	Corporate Sector Purchase Programme
<b>ECB</b>	European Central Bank
<b>ESM</b>	European Stability Mechanism
<b>EU</b>	European Union
<b>IOU</b>	I Owe You
<b>LTRO</b>	Long Term Refinancing Operations
<b>NGEU</b>	Next Generation EU
<b>PEPP</b>	Pandemic Emergency Purchase Programme
<b>QE</b>	Quantitative easing
<b>SURE</b>	Support to mitigate Unemployment Risks in an Emergency
<b>TFEU</b>	Treaty on the Functioning of the European Union
<b>TLTRO</b>	Targeted Long Term Refinancing Operations
<b>UMP</b>	Unconventional monetary policies

## EXECUTIVE SUMMARY

- **The COVID-19 pandemic modified profoundly the economic structures, the economic processes, and the transmission mechanisms of policy actions in the euro area.** Because of its depressing effects on both the supply side and demand side, large parts of the conventional wisdom in economic policymaking appear as unfit.
- **The pandemic has dragged the ECB into a trilemma**, among **preserving the integrity of the euro area** against massive flight-to-safety phenomena and self-fulfilling prophecies, on the one side, and "**monetary orthodoxy**" (the central bank with a single mandate of price stability and no debt financing over the long term) and "**fiscal orthodoxy**" (fully national fiscal sovereignty under budget and debt constraints plus "market discipline") on the others.
- **Both the PEPP**, that is the extraordinary QE programme established to address the crisis and preserve the integrity of the euro area and the smooth functioning of monetary policy, **and the agreement on a "Next Generation EU" package** connected to the EU budget **open a timely and necessary relaxation of these orthodoxies.** Yet, these solutions have been presented and justified as **exceptional and temporary**, aiming to prevent economic collapse and buying time until the recovery.
- In this paper we argue that what will happen to this consensus and what unconventional tools will become part of the ECB's new toolbox in the future rests much on the **economic and political scenarios that will materialise once the pandemic will end**, especially if it will be evident that in some countries the political conditions for fiscal consolidation and effective growth-enhancing reforms are missing.
- If the economy will **recover immediately**, or after a little while, the rationale for expansive asset purchases will be weaker. In the case of a **prolonged stagnation**, the ECB would be economically justified to continue its unconventional interventions, but prolonged and large QE purchases will be accepted only if a consensus will be reached on a revised review of the ECB' strategy and, possibly, on the reform of the euro area economic governance. The ECB would eventually face a difficult choice between supporting the debt of the countries in trouble or exposing the euro area to a crisis that might lead to its implosion. This is, ultimately, a threat to the very existence of the ECB.
- **The ECB cannot be left to deal with this dilemma alone.** This is the right time for euro area countries to check whether guidelines and strategies shaping the ECB's policies are still appropriate for the post-COVID-19 world and eventually try to modify it. The PEPP and other extraordinary measures are buying time, also to accomplish this profound rethinking.

# 1. INTRODUCTION

The ECB, not unlike other central banks, but with its own peculiarities, is addressing the unprecedented challenges posed by the *specific, “extraordinary and acute economic crisis”* due to the COVID-19 pandemic by adopting a set of emergency measures: *“Extraordinary times require extraordinary action”* (Lagarde, 2020a). This package of measures mainly consists of extensions or further easing of previous programmes launched after the financial and economic crisis of the early 2010s (e.g. LTROs, TLTROs, CSPP), a new enhanced arrangement of the APP (including the newly-established PEPP), and the relaxation of macroprudential regulations for the banking sector.<sup>1</sup>

The pandemic hit still convalescent economies. This was particularly the case in the euro area, where the crisis had been deeper and longer than in other advanced regions, with growth still remaining anaemic in 2018-19. The ECB's stance, at the outbreak of the pandemic, was in substantial continuity with the very accommodative mode of the previous years, whereas monetary policy in the US and UK was heading towards normalisation (see EEAG, 2020).<sup>2</sup> Indeed, the pre-shock macroeconomic trends of the euro area, according to the ECB's judgement, did not allow for a quick exit from its strongly accommodative stance (Lagarde, 2019). The assessment of the previous experience has been matter of extensive research and debate, also in the series of Monetary Dialogues, and the past is not our main focus here.<sup>3</sup> Hence, in this paper we wish to present the set of measures that the ECB has undertaken to fight the pandemic crisis by outlining the deep impact that the COVID-19 shock is having on economic structures, by highlighting what differs between the current policy package and previous ECB's programmes, and by discussing what are the scenarios that the ECB is likely to face in the future.

In more detail, Chapter 2 depicts the profound modifications that the pandemic brings about in the functioning of the economy, by focusing on the channels whereby the pandemic is affecting it, the uneven effects that it is bringing in different sectors, the disruptions that is causing in the supply chains and monetary-financial networks.

Chapter 3 points out differences and analogies between previous ECB's quantitative easing (QE) programmes and the measures that it is currently undertaking, in particular stressing the peculiar features of the Pandemic Emergency Purchase Programme (PEPP) *vis-à-vis* the Asset Purchase Programme (APP) and the reasons why the monetary authority emphasises the extraordinary and temporary nature of the former.

Chapter 4 seeks to figure out what are the challenges that await the ECB in the medium to long run, depending on different hypotheses in the post-COVID-19 scenario concerning economic growth and inflation, with special reference to the delicate choices that the ECB may have to make because of its multinational jurisdiction.

Chapter 5 concludes by calling for a rethinking of monetary policy in the post-pandemic world.

<sup>1</sup> The complete timeline of ECB measures is provided by Claeys (2020). The author also provides a detailed argumentation about the statutory legitimacy of the measures, that we do not address here.

<sup>2</sup> However, as of late 2019, normalisation of monetary policy was still regarded as largely incomplete, and reversible, worldwide (Borio, 2019).

<sup>3</sup> Lane (2020a) provides an up-to-date and detailed account of the ECB's monetary policy tools in the eve of the pandemic. Earlier Monetary Dialogue assessments of UMP are collected in European Parliament (2015, 2016, 2017).

## 2. THE ECONOMIC POLICY CHALLENGES OF COVID-19

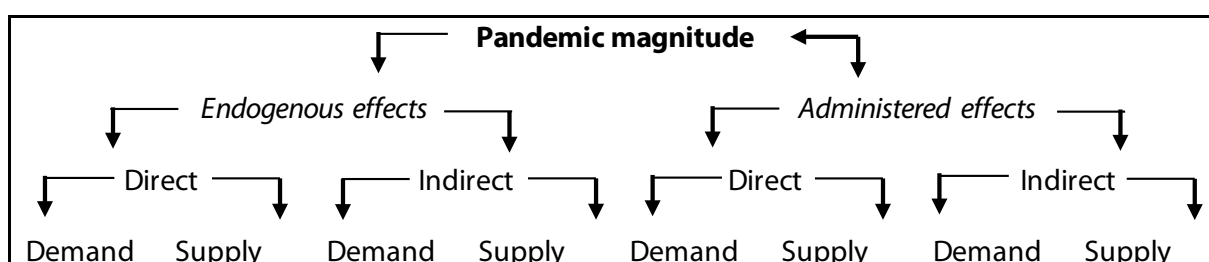
Any assessment of present and future economic policy choices in the euro area should be aware of the profound modifications that the COVID-19 pandemic is creating in economic structures, economic processes, and transmission mechanisms of policy actions. Large parts of the conventional wisdom built along the past several decades are all of a sudden becoming unfit. A similar effect was widely felt in the face of the global financial crisis and great recession of 2008-09, and, indeed, the pandemic has caught the major economies, and the economic profession, in still convalescent state. Furthermore, as we shall see, the implications of the pandemic are of a different, largely unusual, nature.

Researchers in academia and official institutions are frantically seeking to understand how post-COVID-19 economies may look like and to organise new knowledge in a systematic and workable framework.<sup>4</sup> In just a few months, a remarkable amount of research has been produced and much more is in the pipeline. We deem therefore important that the "state of art", though still quite incomplete and in evolution, is brought to institutional actors in the best possible way. This is a necessary step to identify the challenges facing the ECB in the future and influencing the future use of QE.

### 2.1. The transmission channels from the pandemic to the economy

To understand the pandemic's transmission channel, a general orientation scheme is provided in Figure 1. The fundamental input variable is the pandemic magnitude, which consists of four dimensions: **speed**, **extension**, **infectivity** (how many people fall ill), **lethality** (how many people die).<sup>5</sup> The two variables with the highest relevance are infectivity and lethality, which are the outcome of the speed and extension of the pandemic in connection with the capacity of the health-care system to cope with mounting pressure. Hence, the limitation of speed and extension is key to the strategy of containment of the pandemic, with two main tools: social distancing and the so-called lockdown (e.g. limitations to individuals' mobility and/or the suspension of economic activities).

Figure 1: The transmission channels of the pandemic



Source: Authors' own elaboration.

The outcomes of the transmission channels of the pandemic are the effects on (aggregate) demand and supply as vehicles of repercussions on wages, employment and prices. What the scheme in Figure 1 highlights is that, first, **both demand and supply** are bound to be affected by the pandemics, and, second, that the final changes in demand and supply are the combined results of a variety of effects with possibly different and conflicting signs.

<sup>4</sup> See for instance, among many, Vaitilingham (2020), and the two CEPR e-books edited by Baldwin and Weder di Mauro (2020a, 2020b).

<sup>5</sup> For an economist's view of epidemic models see e.g. Baldwin (2020)

The transmission channels from the pandemic to the economy can first be distinguished between **endogenous** and **administered**, each affecting demand and supply in a direct and indirect manner. Moreover, the pandemic has a global dimension, so that each channel in the scheme should be thought of as exposed to imported spillovers as well as a vehicle of exported spillovers.

Endogenous are the effects that would occur with no administrative measures of the authorities or independently of them. This is an important channel to keep into consideration, as witnessed by the lively debate on the trade-off between "health and wealth". It would be a serious mistake, made by some governments at the earlier stages of the pandemic, to think that the pandemic hurts the economy only as a consequence of the restrictions imposed to prevent the diffusion of the virus. Zero restrictions do not mean zero economic losses because the unfettered pandemic does hurt (seriously) the economy by itself, possibly delivering *both* high fatalities *and* large economic losses (e.g. Bodenstein et al., 2020).

As said, the main government containment measures are **social distancing** and the **lockdown** of types of economic activities and/or sectors; these are also the main drivers of the economic effects of the pandemic via the administered channel (through their own branches in the scheme). At the same time, however, these measures are expected to have also a positive feedback on the reduction of the pandemic magnitude. Hence, even within the strict economic domain, quite apart from the intrinsic value assigned by the government to human lives and health, if administered restrictions have a cost, they also have a benefit to the extent that the endogenous effects of the pandemic on the economy will be mitigated.

All in all, this general picture highlights that economic policy in the time of the pandemic should pursue a **twin-arm strategy**: one aims at finding the optimal balance between the costs and benefits of administered restrictions, the other aims at sustaining the economy in order to minimise the overall impact (endogenous and administered) of the pandemic. The two arms are complementary: the first reduces the need for the second and vice versa.

In order to calibrate the measures necessary to sustain the economy, the best possible diagnosis of the various channels of the pandemic represented in Figure 1 is crucial. Research in this field is evolving in real time, so to speak, and we cannot present a full-blown analysis here. However, it is worth examining a few channels on which a substantial clarity has already been achieved, so as to inform the role that monetary policy and the ECB may play.

## 2.2. Demand and supply shocks

Let us first consider the endogenous channels. As the pandemic unfolds, the first-order economic effect is due to infections and fatalities. The infected and the deceased interrupt their economic activities, in the first place at work. This amounts to a sudden drop in the labour force, i.e. a **supply-side shock**. Households with working members forced to stay at home, or passed away, lose part of their income, which also creates a **demand-side shock**. In normal times, firms facing a fall in their labour force may go to the labour market in order to replace the lost workers, and newly hired workers may, in the aggregate, compensate for the demand cuts of the inactive ones. Yet the speed and extension of the pandemic may well freeze labour supply, too, thus making worker replacement extremely hard.<sup>6</sup>

<sup>6</sup> Examining an economy with mild and scattered lockdown like the US as of March 2020, Coibion et al. (2020) have found a fall in the participation in the labour force of 7%, more than double of the cumulative decline 2008-16. Considering Korea, which has not implemented lockdown, Aum et al. (2020) have estimated an endogenous drop in employment between 2% and 3%, while lockdown accounts at most for half of the job losses in the US and the UK.

The administered lockdown of firms and sectors has basically the same effects, with the difference that it can be engineered paying careful attention to intersectoral relationships and the continuity of supply of basic goods and services in order to avoid uncontrolled cascades of spillovers upstream and downstream across firms and sectors, which can in fact magnify the overall collapse of production and employment (Barba Navaretti et al 2020).

A round of indirect effects on demand and supply may involve the other production factor, namely capital. It is well established by theory and evidence that in face of higher uncertainty on cash flows firms delay investment projects (Dixit, 1992; Dixit and Pyndick, 1994; Saltari and Ticchi, 2007). If the upsurge of uncertainty is particularly strong, interest rate cuts might fail to stimulate capital expenditures to a sufficient degree, even with the interest rate at its zero lower bound (Miyazaki et al, 2004; Belke and Göcke, 2019). Moreover, even firms that decide to carry on their plans may be unable to purchase new equipment if suppliers are unable to deliver it. The consequence is that also investment, in addition to consumption, falls amplifying the demand-side effect. But, delay, or cutting, of investments is also a supply-side shock since production capacity is curtailed or will not grow as much as it would in normal times.

The double-sided effect of the pandemic, epitomised by the elementary segment of the whole process described above, gathers almost general agreement among analysts. Then conventional macroeconomic policies encounter a first problem, since they are based on theories, and models, where aggregate demand and supply are independent. Consider a central bank, such as the ECB, with the single mandate of price stability. The change in the price level brought about by supply and demand falling together may be of any sign. And if the price index goes up because supply falls more than demand, is a monetary restriction the right response? Moreover, monetary and fiscal (budgetary) policies are regarded as means of managing aggregate demand with negligible supply-side effects, whereas, as we shall see, they affect both.

### 2.3. Sectoral effects and supply chains

A second challenge for conventional macro-policy is that the **sectoral composition of the shocks** is crucial, which may be ill-managed by means of standard aggregative models. As said above, in this respect, administered lockdowns are preferable since they enable the government to control for the intersectoral effects. As a result, several different situations may arise: (i) firms (sectors) that stop production because they are locked down, (ii) firms (sectors) that stop production because of bottlenecks in the intermediate supply chain, (iii) firms (sectors) that can produce but face a fall in demand, (iv) firms (sectors) that can produce and face a rise in demand.

Case (i) is emblematic of an administered supply-side shock that creates a parallel demand-side shock as previously described. In the portion of the economy under administered lockdown the market mechanisms are out of order, and also demand stimuli are pointless. **Quantity adjustments** (production and employment are cut in parallel) become predominant and pervasive.<sup>7</sup> The key policy issue is the **survival of the involved firms and workers**, knowing that the more of them fall apart, the more the shock is transmitted to the rest of the economy. These considerations explain why "buying

<sup>7</sup> The general picture is more akin to the *rationing schemes* (i.e. firms are constrained in the supply of goods and in the demand for labour, households are constrained in the supply of labour and in the demand for goods) studied as microfoundations of Keynesian economics (e.g. Barro and Grossman, 1970; Malinvaud, 1977). When demand and supply in goods and labour markets fall together, prices and wages change little, if any, not because they are not free to move but because rationing (dis)equilibria cannot be resolved by decentralised price changes. Deep mechanisms of decentralised inter-sectoral or inter-personal adjustments becomes critical. Modern "non conventional" tools apt to study these processes of *self-organisation of complex systems*, imported from physical and biological sciences, have been developed, such as network analysis and agent-based systems (see e.g. Brock and Colander, 2000; Colander et al., 2008; Delli Gatti et al., 2013; Elliot et al., 2019). These tools have already gained some ground in support of policymaking after the crises of the last decade, and they will probably receive a new impulse.



time" (Hassler and Storesletten, 2020) is indeed an essential element of policymaking at the time of a pandemic (more on this in paragraph 3.2).<sup>8</sup> The problem here has a prominent financial content that will be discussed later in paragraph 2.4.

Case (ii) has attracted a lot of attention, especially in the global perspective of imported/exported effects (Baldwin and Tomiura, 2020). Supply chains are an eminent example of self-organisation of a complex system of production relationships based on free mobility of goods and persons, a net of international investment, and an efficient web of long-distance transports. It is clear that the breakdown of supply chains is playing a crucial role in determining the economic impact of the pandemic.<sup>9</sup> Indeed, it is well-known that **international trade is a magnifier of economic shocks**. There is a general feeling that the organisation of supply chains has revealed unsuspected fragilities. Where does the breakdown begin and how does it spread? Are these effects temporary or permanent? How will the system look like after the pandemic? What will be the impact on price and wage inflation dynamics? What the role of the exchange rate? Understanding these phenomena, and figuring out appropriate interventions, will require large use of sophisticated tools.<sup>10</sup>

Cases (iii) and (iv) represent the portion of the economy where markets are still in function, but are also conditioned by the spillovers from the portion under lockdown. The main spillover channel is households under income constraints. But, **consumers also relocate their demand** across goods and services in response to the pandemic; these choices, beside authorities' dispositions, matter but they are hardly predictable. Main drivers are new pandemic-related needs (health-care products and services are the obvious example) and subjective perception of risk (conditional on available official, or unofficial, information). High risk perception, and self-imposed social distancing, may penalise consumption with high social interaction (public entertainment, tourism, collective transports, sports). Preferences also shift towards individual and at-home consumption and activities in general, the most tangible case being the boom of personal ICT devices supporting distance work, education, entertainment, shopping. Another important distinction is between durable and non-durable goods. The purchase of a new washing machine may be put off and resumed as the economic situation improves; skipping the Saturday night's family pizza is a non-recoverable loss for the restaurant.

Two are the main messages that follow for policy modelling and implementation. First, demand-supply effects across sectors are the main drivers of changes in prices, whose aggregate sign, however, remains largely undefined *a priori* (Baqae and Fahri, 2020). Second, the width and depth of the pandemic economic crisis is largely conditioned by the sectoral structure of the economy, its location in international supply chains, the behaviour of consumers, and how information is provided and received. The **heterogeneous impact of the pandemic** is an aspect of particular importance in the multi-country setup of the euro area. As we shall see in the subsequent chapters, not only do the direct and indirect shocks hit countries in very different conditions, but they also set in motion highly differentiated reactions in the public and private sectors. While the governments in the EU took their time to negotiate a common, extraordinary and one-off response, the ECB was since the beginning, and will remain, the only "central" institution able to act with a view to preserving the integrity of a

<sup>8</sup> The President of the ECB, Ms Lagarde, used the expression 'put the economy on hold' in the ECB blog "[How the ECB is helping firms and households](#)". 9 April 2020.

<sup>9</sup> Bonadio et al. (2020), examining 64 countries in a multi-sector framework, argue that the contribution of supply chain breakdown to the world GDP loss may reach one third. *The Economist* in March reported analyses predicting that the lockdown of Hubei alone (a relatively small region in China), could freeze 10% worldwide shipments of smartphones).

<sup>10</sup> Granular inter-sector analysis, in the first place (e.g. Bonadio et al., 2020), and network self-organisation analysis in the second (Schiavo and Sartori, 2015; Fracasso et al., 2018 are examples).

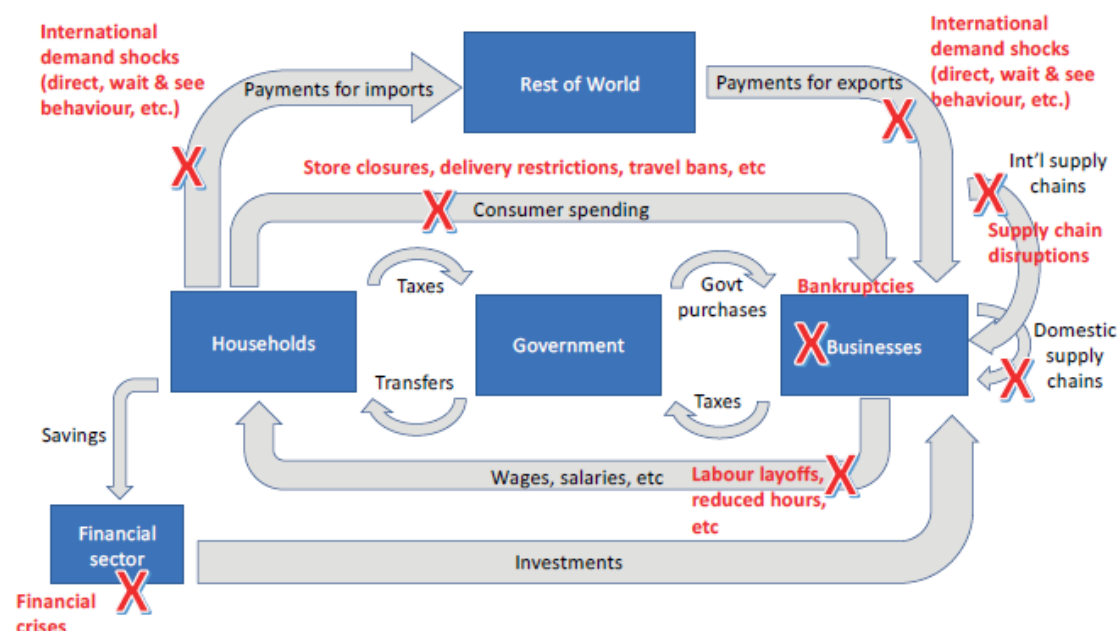
differentiated area. The issue is likely to re-emerge in the near future, but it will differ in accordance with the health and economic scenario that will materialise (see chapter 4).

## 2.4. The monetary-financial network

The orderly functioning of the economy rests on the **orderly functioning of the underlying financial network**. In fact, developed economies live on myriads of transactions of goods and services that are not settled in nature (barter) but by means of IOUs. The basic one is fiat money (legal coins and notes), which is an IOU of the central bank. Though cash need not be used, this kind of economy stands on its own feet as long as IOUs are in fact, and people believe they are, *payable in money*. The web of IOUs should be understood as a complex evolving structure whose fragility or resilience depend on the topological characteristics of the connections between the various nodes (banks, financial intermediaries, borrowers), and the rules of the game (regulatory institutions). This view has far-reaching implications for monetary policy in the pandemic (Leijonhufvud, 2007; Borio, 2012, 2019; Haldane, 2009; Stiglitz, 2011).

A first glance at the way the pandemic may disrupt the financial network that underpins the economy is given by the circular monetary flow reproduced in Figure 2 from Baldwin and Weder di Mauro (2020b). It shows the interrelations among the economic sectors (households, non-financial firms, financial intermediaries, government, and rest of the world) in terms of the reciprocal flows of payments generated by transactions in goods and services. Payments of one sector are revenues for another. The monetary equilibrium of the economy obtains if each sector is in balance (payments = revenues).

Figure 2: The monetary flow network



Source: Baldwin and Weder di Mauro (2020b).

The red crosses in the flow chart indicate where the effects of the pandemic break down the circuit, i.e. they create an imbalance between payments and revenues. As an example, consider the simple circuit between households and business. Locked-down businesses interrupt payments to households; the

consequent interruption of consumer spending makes businesses illiquid, i.e. unable to meet their own payment obligations. The "bug" is then transmitted downstream because those who fail to receive payments from illiquid businesses become illiquid themselves. This is the typical domino effect, or "cascade" in network parlance, that spreads the initial shock throughout the economy and that actually triggers the Keynesian multiplier effects.

As said above, payments need not, and typically do not, take place by means of cash, they are replaced by IOUs. Thus the key role of the banking system (central bank + chartered banks) is twofold: first, guarantee the **viability of IOUs**, second, stand ready to **provide liquidity**. In fact, IOUs are to be payable in money on call. Knowing that businesses' IOUs that promise payments are not matched by IOUs that promise revenues, all claimants do want to be paid cash. The only alternative to bankruptcy cascades is a swap of businesses' IOUs to banks against the equivalent provision of cash.

Now it is banks that hold businesses' promises of payments unmatched by equivalent promises of revenues. But, it may be argued, taking risk is the banks' own business. As noted by Beck (2020) and Borio (2020), today banks in the euro area are in better health than a decade ago, with the important difference that the crisis of the 2010s originated in the financial sector, whereas the pandemic has hit the real economy first. True, but with a caveat. Banks' good health has been gained at the cost of heavy regulatory and prudential burdens. Sustainable risk has to be diversifiable, but if the business sector's illiquidity is pervasive, risks cannot be diversified away and the systemic illiquidity would simply be shifted from businesses to banks. There is only one backstop to this shifting process: the **central bank**.

## 2.5. Monetary policy, fiscal policy, and the euro area

Scholars of different persuasions today converge on the following recommendations (e.g. Baldwin and Weder di Mauro 2020a, 2020b): 1) preventing the economy from complete collapse requires **prompt, large and unconditional support**, both on the demand-side and on the supply-side, of the kinds presented so far, 2) monetary and fiscal policies are **strategic complements** (using both allows lesser use of each) and should be coordinated, 3) each instrument should be **targeted appropriately**, and 4) coordination should take place **internationally** too. Each of these recommendations, however, should also be considered against the background of the specificities of the euro area, and of the ECB therein, which will also be discussed in greater detail in the next chapters.

In consideration of the features of the pandemic crisis outlined so far, the role, tools and mission of monetary policy are quite remote from the received wisdom of the Great Moderation era – management of short-term interest rates to control inflation and smooth out the business cycle (Borio, 2020). They are not entirely novel, though. The departure from the conventional policies of the 1990s begun with the earlier wave of "exceptional times" brought by the Global Financial Crisis (Pill and Reichlin, 2014; Borio, 2019). As the euro area economy was already living through a period of low inflation and low interest rates, what is certain is that the normal mechanisms to induce the banking systems to support the economy will remain out of order. An extension of **unconventional monetary policies** (UMP) is under way.

As we shall see in the next chapter, this can be done in various forms and techniques, and it depends on the specific needs to be addressed and on the institutional/political constraints on the ECB' room for manoeuvre. Yet, basically, the first pillar is liquidity supply – the time-honoured role of "**lender of last resort**". The canonical one is liquidity supply to banks (normally by repurchasing IOUs issued by the private sector). This can be complemented by direct purchases of corporate bonds bypassing banks. The third sector that can receive liquidity by way of purchases of bonds is the public sector. Eventually, and hypothetically, even the non-business private sector might receive liquidity directly –

an operation dubbed "helicopter money" after Friedman (1969).<sup>11</sup> The second pillar, again targeted to banks, is relaxation of macroprudential regulations and constraints with a view to spurring more risk appetite and credit supply, even at the expense of risk taking in the medium term. Overall, the common aim of these operations is to remove bottlenecks (Wyplosz, 2020), i.e. the red crosses in Figure 2 that interrupt the financial network that gives life to the economy. To the extent that they succeed in preserving or resetting firms' capacity, they also have supply-side effects.<sup>12</sup>

Also, in this case, the euro area is characterised by several national banking and financial sectors, not entirely integrated and prone to segmentation along national borders. This adds an additional layer of complexity for the ECB, especially in case of panic and self-enforcing "**flight to safety**" phenomena not entirely justified by fundamentals (De Grauwe, 2012; De Grauwe and Ji, 2013). UMP in the euro area must also aim at reducing the likelihood and the impact of capital flights, in order to preserve the integrity of those credit and financial markets in the euro area that are still functioning.

These supports, one way or another, imply huge liquidity injections *vis-à-vis* greater debts (or debt swaps). Either liquidity is channelled to the private sector through banks (and the central bank absorbs private debt) or it is intermediated by the public sector (and the central bank absorbs public debt). Which channel is better (or what mix) is open to discussion, provided that all the necessary liquidity is injected into the economy.

Lending of last resort, however, raises the long-lived objection (among others that will be discussed subsequently) that keeping economic units (either private or public) alive by means of liquidity injections interferes with market mechanisms and creates **moral hazard** (undisciplined behaviour on the expectation of being rescued), unless the operation is based on the clear diagnosis that the unit suffers from a temporary liquidity shortage with the exclusion of a permanent insolvency disease. The question is notorious in the euro area where it constitutes a major stumbling block in the way of reforming the governance of the Monetary Union (CEPR, 2018).

In the specific circumstances created by the pandemic, other considerations, beyond moral hazard, take centre stage (Wyplosz, 2020). The goals of safeguarding market mechanisms and inhibiting moral hazard should be balanced against the scale and ramifications of the negative externalities of bankruptcies, which would be extremely large (again, an aspect where the network topology of the system becomes critical: Delli Gatti et al., 2009), and probably accompanied by widespread sense of injustice across society. Again, also in this context, the strategy of "buying time" is essential, but not without risks. On the other hand, it is likely that almost unconditional and ubiquitous lending of last resort will leave a legacy that will have to be dealt with. As we shall discuss in Chapter 3, the ECB managed to find a temporary balance to tackle the pandemic, yet the problem will re-emerge in certain scenarios illustrated in Chapter 4. Moreover, it is unclear how much time will have to be bought, at risk that the longer the duration of the unconventional policies, the more difficult it will be to revert them.

It would also be a mistake to think of policy domains separately: monetary policy concerns money and finance, and fiscal policy concerns the "real economy" only. They are **complements** because both may concur to the task of restoring the functionality of the financial network, by supporting banks' task of liquidity provision and reducing their risk-taking, which in turn lightens the burden of central bank's lending of last resort to financial intermediaries and non-financial firms. This is the case with three

<sup>11</sup> Recently "helicopter money" has been used with more elastic and extended coverage of liquidity operations, though the original meaning in Friedman's parable was that of money falling from sky into ordinary people's pockets. Helicopter money has recently received support from authors like Cochrane (2020) and Gali (2020).

<sup>12</sup> Supply-side effects of monetary policy are not entirely novel either. They were part of the strand of New Keynesian macroeconomics with capital market imperfections that went astray in the making of the macroeconomics of the Great Moderation (Greenwald and Stiglitz, 1988, 1993; Stiglitz, 2011). Evidence of these effects in the euro area can be found in Passamani and Tamborini (2013).

typical fiscal measures (EEAG, 2020): cancellation, reduction or deferral of **taxes, unemployment benefits** and other targeted transfers to households and firms, **public guarantees** for loans to households and firms.

As of July 2020, the overall amount of these measures was above 40% of GDP in Italy and Germany, and almost 30% in France and Belgium (EEAG, 2020, pp. 9-10). About half or more of the packages was accounted for by public guarantees, which will become outlays only to the extent that loans will be nonperforming. So far, public consumption and investment represent a minor share of the overall fiscal stimuli, but growing is the share of resources devoted to finance employee furlough schemes.

As usual, there are no free meals. The other side of these benefits for the real economy and its (private) financial health is a huge increase in **public debt**.<sup>13</sup> Available data (Eurostat) foresee that the debt-to-GDP ratio in the euro area as a whole will rise from 86% in 2019 to 102.7% in 2020. Seven countries (Belgium, Greece, Spain, France, Italy, Portugal and Cyprus) will be above 100%. A similar upsurge of public debt is under way in the rest of the world. The heterogeneous ability of financing and re-financing national sovereign debts across countries affects both the discourse on the economic governance in the euro area and the range of tools the ECB will be able to adopt in the future (we shall expand on this in the next chapters).

Closely related is the problem of safeguarding the **central bank's independence** (Borio, 2020). In the long term, whether public debt is held by the central bank or by market investors, what really represents a threat is the co-called **fiscal dominance**, namely that monetary policy will be dictated by the government's financial needs (e.g. pressures to inflate debt away or to keep interest rates unduly low) to the detriment of price stability, which for the ECB is the primary objective. For example, in the euro area, compliance with the no-bailout clause or an increase in interest rates if necessary to curb inflation could lead some Member States to default on their sovereign debt.

In this connection, a further message to the euro area is that the simple relaxation of budget and debt rules, leaving each country's destiny to its own fiscal capacity, would not be enough. Even in case governments presuming to enjoy enough fiscal space were right (and it is still too early to say), pushing more borderline countries towards their limits of borrowing capacity, or beyond, would disrupt European financial markets, and hence put an excessive burden on the ECB: a remake of the 2010-12 sovereign debt crises on an immeasurable scale.

This concern has contributed to the deployment of resources by the EU to its Member States of an unprecedented scale (European Council, 2020). They are still in the process of being operationally defined or only partly activated, but they will play a role in the near future. Among these, the Support to mitigate Unemployment Risks in an Emergency (SURE) plan is targeted to unemployment benefits, whereas the two most significant instruments, the European Stability Mechanism (ESM)'s COVID credit line (for euro area members) and the EUR 750 billion Next Generation EU (NGEU) package are targeted to specific plans of public expenditure.

The overall monetary-fiscal pandemic scenario raises indeed a number of questions, from the pressure on central banks to monetise public debt, to the demarcation line between monetary-fiscal cooperation and preservation of monetary independence, to the moral hazard question, which are especially thorny for the euro area. Notably, all the measures deployed at the EU-euro area level have been presented as exceptional and temporary programmes to prevent economic collapse and to foster the recovery: yet, they will leave a legacy that questions the possibility to suspend the ongoing

<sup>13</sup> As to private debt, it was already at historical heights in advanced economies before the pandemic, and it will certainly not decline (Borio 2020, Becker et al. 2020).

cooperation and coordination between fiscal and monetary policy. We shall probe into these issues in the next chapters.

In a wider perspective, the pandemic seems to be dragging the euro area into a **trilemma**, already emerged with the crisis of the 2010s, among preserving **euro area integrity**, on one side, and "**monetary orthodoxy**" (the central bank has the single mandate of price stability and cannot finance sovereign debt over the long term) and "**fiscal orthodoxy**" (full national fiscal sovereignty under budget and debt constraints *plus* "market discipline") on the other. When member countries fall under severe economic or financial distress, it is no longer possible to preserve both the twin orthodoxies and the integrity of the euro area because of the activation of self-fulfilling prophecies of risks of breaking up. Either monetary and fiscal orthodoxy, or perhaps both to some extent, should be relaxed.<sup>14</sup> The final agreement on the Commission's proposal of the NGEU package opens to a relaxation of fiscal orthodoxy in order to share some of the burden of the euro area integrity placed on the shoulders of the ECB. Whether these will be extraordinary exceptions to the rule remains to be seen, notwithstanding current official positions, and what growth scenario will materialise once the pandemic will be over, as discussed in Chapter 4, is particularly important.

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<sup>14</sup> In this perspective, the move of the ECB into the territory of unconventional monetary policies since 2012 can be viewed as relaxation of monetary orthodoxy *vis-à-vis* the preservation of fiscal orthodoxy by means of "austerity" and the Fiscal Compact.



### 3. NOT ALL QE PROGRAMMES ARE THE SAME: THE PECULIAR FEATURES OF THE PEPP

As pointed out on various occasions by the President of the ECB, Ms Christine Lagarde, and by other Members of the Executive Board of the ECB, the Governing Council's decision to launch a temporary, flexible and intense asset purchase programme of private and public sector securities (i.e., the PEPP) was motivated by economic considerations regarding the *"risks to the monetary policy transmission mechanism and to the outlook for the euro area posed by the outbreak and diffusion of the coronavirus"*.<sup>15</sup> The Decision (EU) 2020/440 of the ECB of 24 March 2020 states that:

*"The PEPP is established in response to a specific, extraordinary and acute economic crisis, which could jeopardise the objective of price stability and the proper functioning of the monetary policy transmission mechanism. Due to these exceptional, fast-evolving and uncertain circumstances, the PEPP requires a high degree of flexibility in its design and implementation compared with the APP and its monetary policy objectives are not identical to that of the APP."*

As during the Great Recession, the co-movement between falling economic activity and a deflationary drift has removed the dilemma between the commitment to price stability and the support to economic activity: this permits the ECB to pursue its *secondary* statutory objectives, mentioned in Article 3.3 of the TFEU, of "sustainable growth", "full employment" (together with "smooth operation of the payments system" and "financial stability"), without any conflict with its *primary* commitment to maintaining the inflation rate close to, but below, 2% (Claeys, 2020).

Understanding the economic considerations behind this decision, and others to follow, is necessary in order to appreciate the rationale for the Governing Council's decisions as well as the details differentiating the design of the PEPP from that of the expanded APP.

#### 3.1. Restoring the monetary and financial network

In the context of the prompt, large and unconditional supports to the economy presented in the previous chapter, we have seen that restoring the functionality of the monetary and financial circuits is of the utmost importance. As a matter of fact, the negative implications of the pandemic in the euro area have been further amplified by a pro-cyclical tightening in financial conditions, with a decline in stock prices, liquidity shortages in the credit system, and an increase in the bond yields.

To fulfil its mandate, the Governing Council decided to adopt new measures to counter the emergence of **liquidity shortages**, to ease the funding conditions of firms and consumers, and to avoid a **segmentation of euro area markets** along the national borders (more on this below). Traditional measures to ease the monetary stance, such as the reduction of short-term policy rates, would have not worked well in such a context, even more considering that policy and market rates were already close to the effective lower level. Not only the crisis hit an area already struggling with subdued inflation pressures and very low interest rates, but also the temporary nature of the pandemic was reducing the effectiveness of changes in short-term policy rates through the expectation channel. Changes in the banks' portfolios towards activities with a higher risk-adjusted return in a deleveraging/contractionary period required significant changes at the very end of the yield curve, as these could have set in motion a broader portfolio rebalancing covering all sectors and jurisdictions. TLTROs and targeted asset purchases under the PEPP were chosen to exert a strong and direct

<sup>15</sup> ECB (2020) "[ECB announces €750 billion Pandemic Emergency Purchase Programme \(PEPP\)](#)", Press release, 18 March 2020.



influence on credit supply and on the entire structure of the yield curve, thereby supporting financial stability and, ultimately, the smooth functioning of the transmission mechanism.

As a complement to the above-mentioned measures, the ECB has also relaxed **bank capital requirements** and the rules on non-performing loans, and collateral requirements on TLTRO in order to increase the commercial banks' lending capacity and to expand the reach of its measures. This move has been motivated by the ECB's willingness not to exacerbate negative loops between banks and financial markets, favouring the adoption of solutions to help temporarily distressed debtors.

Albeit sensible in the heart of the crisis, this choice raises some concerns on the regulatory side of monetary policy. As the latter is tightly connected with conventional and unconventional measures, how the ECB will exit the temporarily relaxed prudential rules will encroach on its attempt to exit temporary and extraordinary asset purchases. This will add up to the regulatory treatment of excessive banks' exposures to domestic sovereign bonds, a particular aspect of the sovereign-bank nexus, to encourage cross-border diversification while limiting risk sharing the euro area level.<sup>16</sup> Unless the ECB is willing to keep most of the assets purchased during the PEPP for a very long time, it will be necessary to ensure that the euro area banking system will contribute to reabsorb part of the public debt without aggravating the forces that are conducive to market segmentation.

### 3.2. Supporting fiscal policy

As said, it is unchallenged that the shock requires a combined reaction by the fiscal and monetary authorities. The Governing Council of the ECB acknowledged explicitly the fact that governments and central banks around the world must take complementary and coordinated actions.

The interpretation of such complementarity is reflected clearly into the feature of the PEPP, whose design, timing and size **match the actual and prospective scale of public (and corporate) debt** issuances, expected in several countries to be so large to create an upward pressure on sovereign yields, worsening even more also the funding conditions for the private sector.<sup>17</sup> The monetary accommodation of such additional and extraordinary issuances of public debt, thus, was deemed necessary to counter the risks of increasing borrowing costs and of crowding out of private investors and consumers.

To ensure that the ECB will not be dragged into direct and indirect budgetary financing in normal times, the Governing Council repeatedly stressed the extraordinary nature of such purchases and its goal of addressing the extraordinary issuances connected with the cost to counter the costs of the pandemic. As mentioned also by the President of the ECB, the new instrument was explicitly "*tailored to manage the staggered progression of the virus*". This relates well with the idea, explained above, that direct purchases of assets were the most effective tools to provide the overall stimulus necessary to support all areas and all sectors of the euro area in a period when normal transmission channels are not available.

Also, it is for this very reason that the Governing Council also established that the consolidated holdings under Article 5 of Decision (EU) 2020/188 of the European Central Bank (ECB/2020/9) should not apply to PEPP holdings, thereby removing issuer and issue limits imposed on the purchases under the APP. It should be noted that the announcement and the deployment of the first tranches of purchases under the PEPP were only partially effective in containing divergence across sovereign spreads; the Franco-

<sup>16</sup> To be considered are, also, the changes in the banking business in response to the pandemic (e.g. greater competition from non-banking intermediaries, digitalisation, home-working) and the limitations to cross-border mergers that may remain in a political environment characterised by renewed nationalistic tensions.

<sup>17</sup> The total gross issuance of sovereign bonds in the euro area between January and mid-July 2020 was close to EUR 1 trillion.

German proposal for a Recovery Fund (18 May 2020) and the expansion of the size of the PEPP by an envelope of EUR 600bn (4 June 2020) were important to lower the yields on the 10-year sovereign bonds. This is a sign that markets were expecting such cooperation between monetary and fiscal authorities and, accordingly, a relaxation of monetary and fiscal orthodoxies, as suggested in the conclusion of Chapter 2.

### 3.3. Keeping the euro area together

Although financial conditions worsened everywhere in the euro area, problems became particularly acute in those sectors and in those jurisdictions that were most exposed to the shock, or whose ability to implement adequate countercyclical policy responses was jeopardised by pre-existing vulnerabilities (in particular, the countries with higher outstanding public debt, with lower expected growth and with weaker banking systems).

If unaddressed, the situation would have led to abrupt and significant portfolio rebalancing and to a self-enforcing "flight to safety" phenomenon, with capital flows moving towards "safer" sectors/countries within the euro area, favoured by substitutability across sovereign bonds, the adoption of the same currency and the absence of capital controls. Such capital flights, in turn, would have worsened the economic outlook (through their negative impact on the productive sectors, the financial markets and the credit institutions), and would have impeded the smooth transmission of monetary policy across jurisdictions. Moreover, the Governing Council subscribes to the view, emerged in the course of the sovereign debt crisis of 2010-12, that there exists a non-fundamental and volatile component of sovereign bond yields, possibly associated with self-fulfilling vicious dynamics, that impairs the smooth transmission of monetary policy, and that needs to be tackled by the authorities.<sup>18</sup>

**Stabilizing the financial markets** and implementing the monetary policy stance by means of larger liquidity provision could be interpreted as two sides of the same task, rather than two different objectives, whereas ordinary measures would not have been capable to undo the highly skewed effects of the crisis across sectors and jurisdictions.

This interpretation of the economic and financial situation in the euro area has important consequences for the design of the PEPP. Indeed, it is essential to **guarantee an ample flexibility** in the purchases of securities over time, across asset classes and among jurisdictions, as the ECB aims to ensure that all sectors of the economy and all jurisdictions benefit from the supportive financing conditions necessary to absorb the shock and restart, and to magnify the impact of fiscal policy measures. Accordingly, the asset purchases under the PEPP must cover the entire yield curve and address specifically all those areas, sectors, and jurisdictions that need it the most.<sup>19</sup>

However, fundamentals-driven crisis and expectations-driven turmoils are difficult to distinguish, both *ex ante* and *ex post*. Divergent assessments of the extent to which asset prices or interest-rate spreads reflect fundamentals are normal and legitimate.<sup>20</sup> The Dutch central bank Governor Klaas Knot has

<sup>18</sup> "Liquidity provision and asset purchases by central banks can limit self-fulfilling overshooting dynamics and the associated risks to financial stability... In the absence of active market stabilisation by the central bank, the intrinsic self-validating nature of flight-to-safety dynamics creates the risk of asset price movements and cross-border financial flows that, in terms of their magnitude, are unwarranted by fundamentals, but that also reflect a switch across multiple self-fulfilling beliefs-driven equilibria" (Lane 2020b). Examples of the relevant literature are De Grauwe (2012), De Grauwe and Ji (2013).

<sup>19</sup> The Decision (EU) 2020/440 of the European Central Bank of 24 March 2020 states: "A flexible approach to the composition of purchases under the PEPP is nonetheless essential to prevent current dislocations in the aggregate euro area sovereign yield curve from being translated into further distortions in the euro area risk-free yield curve, while also ensuring that the overall orientation of the programme covers all jurisdictions of the euro area."

<sup>20</sup> Many analysts, for instance, are convinced since long ago that the ECB's bond buying programmes and 'buyer of last resort' status keep Italian bond spreads tighter than they should be based on debt and growth fundamentals. In the special circumstances created by the pandemic, however, it is hard to deny that the ECB could not but act as a market stabiliser, also in the attempt to crowd-in private investors and limit the escalation of vicious self-feeding circles.

repeatedly warned against the creation of a "**central bank put**", for the potential distorting effects it may have in financial markets. This issue is bound to re-emerge in the future, especially in the case of a promising economic recovery in the majority of euro area countries. Moreover, as the APP will be continued for a while in parallel with the PEPP and until the inflation outlook improves considerably, a prolongation and expansion of the PEPP over time would risk jeopardising the very difference between the two programmes, namely the temporary, targeted and exceptional nature of the PEPP.

Finally, as pointed out in passing by Lilley and Rogoff (2019), due to the fact that the ECB has no unique fiscal counterpart in the euro area, its QE is effectively a means to issuing a short-term synthetic Eurobond and to purchasing national debts. The ECB does not only transform long-term government debt into short-term ECB's liabilities, as all central banks do, but it also transforms the "national identity" of the liabilities. This has greatly contributed to the effectiveness of the ECB's QE during the PEPP (and before), but it is also the very aspect that concerns most those who believe that moral hazard issues should remain high in the policy agenda. This also represents a crucial problem in the definition of the ECB strategy and in the continuation of QE in the future.

### 3.4. Putting moral hazard on hold

It is undeniable that the PEPP raises a problem of moral hazard, that is obviously accentuated by the concomitant announcement of a programme of fiscal transfers in favour of the more vulnerable countries (the NGEU).<sup>21</sup> ECB officials regard moral hazard less of a concern by stressing that the pandemic shock is "*exogenous, detached from economic fundamentals and affecting all countries in the euro area.*" (Lagarde, 2020b).

Actually, although the origin of the current crisis is truly due to an event beyond the control of governments, its heterogeneous effects and implications depend also on how national and local authorities react to the pandemic. Furthermore, the capacity of the different governments to respond to the crisis is heavily conditioned by the fiscal space they have, which is in its turn negatively correlated with their outstanding public debt-to-GDP ratio, whose pre-pandemic level was the result of previous national policies. In this respect, the current crisis confirms that keeping public debt at high levels is a source of vulnerability, since when events with low probability but high impact do strike, the tension between the necessity of a large fiscal stimulus and debt sustainability is exacerbated (Borio; 2020).

Hence, in the presence of huge differences in terms of fiscal buffers among euro area countries, a programme of massive purchases of government bonds by the ECB does not have the same relevance and urgency for all countries, even when the adverse shock is common to the entire currency union and the purchases are allocated in accordance to the capital key, since they provide relief particularly to the more vulnerable countries such as the Southern European ones (financial markets promptly registered this asymmetry by reducing interest differentials among euro area government bonds after the PEPP announcement).

The European institutions have rightly judged that in the present circumstances the moral hazard concern is strictly dominated by the risk that, without a strong policy response at the European level, the pandemic could even lead to an implosion of the euro area (see also paragraph 2.5). Consistently, one can interpret the insistence whereby the European authorities emphasised the extraordinary and temporary nature of such programmes as a way to minimise their moral hazard implications.

In particular, in the case of the PEPP, the Governing Council established that:

<sup>21</sup> In the future, the argument goes, the experience of these programmes may induce some countries to act less prudently in the anticipation of assistance in the case of large adverse shocks on the part of the European institutions and the more solid member countries.

- (i) the asset purchases will be temporary, contingent to the crisis and exceptional;
- (ii) allocations will be guided by the capital key, even though only over the medium term;
- (iii) the programme will ensure only a limited extent of risk sharing, according to the APP rules;
- (iv) the Governing Council has established a clear (though reviewable) net purchase horizon (i.e., June 2021) for the PEPP, whereas the APP will continue to have a contingent horizon (i.e., *"for as long as necessary to reinforce the accommodative impact of its policy rates, and to end shortly before it starts raising the key ECB interest rates"*).

Notably, the recent decision of the German Federal Constitutional Court on the proportionality of the PSPP may, to a certain extent, strengthen the case for not stretching too far the adoption of instruments developed to achieve specific, contingent and temporary objectives.

## 4. THE CHALLENGES AHEAD

Obviously, future developments are shrouded in uncertainty, depending predominantly on how the pandemic will evolve, and how the economies will move in the hypothetical post-pandemic future, if and when an efficacious vaccine will be available for mass administration, and similar non-economic factors. The prevailing guess is that by mid-2021, the deadline set by the Governing Council for the PEPP, some of this uncertainty will have cleared and – hopefully – that by the end of 2021/first half of 2022 the pandemic will be over.<sup>22</sup> Accepting this outlook as the most likely, still there remain some open issues that will affect future policymaking: once the situation normalises after the rebound, will inflation remain close to zero or will it grow above the target? What growth regime will take place after the rebound in the euro area? As anticipated, in this chapter we discuss to what extent the QE programme and other UMP measures will be state-contingent and, for the time being, hardly predictable.

Looking at the overall picture of output, employment, wages and prices, most of the current conjectures revolve around two main post-pandemic scenarios, one with **fast recovery and pick up of inflation**, one with **slow recovery and stagnation** (e.g. EEAG, 2020; Mann, 2020).

### 4.1. Scenario 1: Fast recovery and pick up of inflation

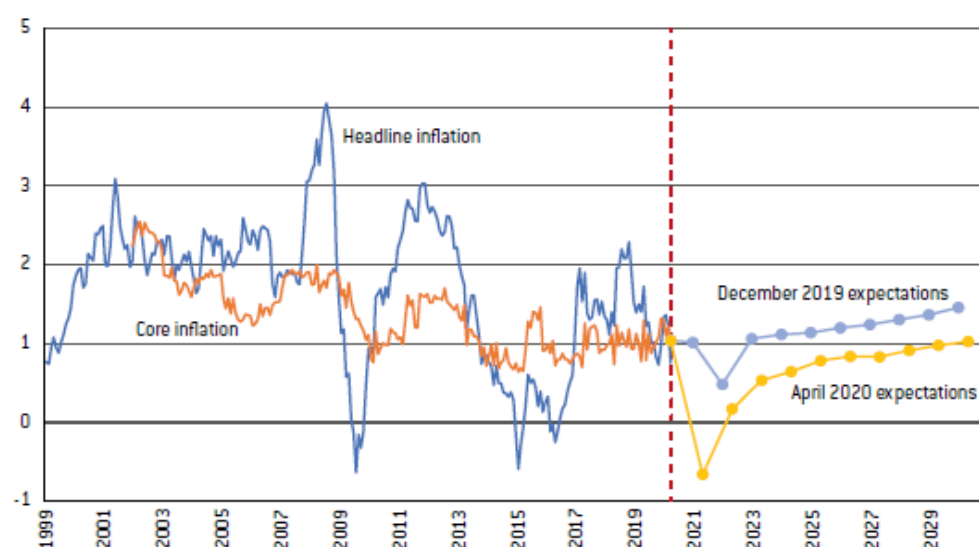
The post-lockdown restart of economic activity is in the current data, but it may easily confound a temporary rebound with a stable recovery. The optimistic outlook rests on the presumption that the bulk of the recession has been due to the lockdown, and that the extent and timeliness of the monetary and fiscal supports have limited the damages. As a matter of fact, the most severe lockdown measures are being lifted everywhere in the euro area, and hence it is quite natural that, starting from the third quarter of 2020, we will observe a string of sizeable macroeconomic improvements quarter-on-quarter. The overall result, however, may not deliver a complete and long-lasting return to normality, bearing in mind that economic normality will only be achievable once sanitary normality will be firmly re-established.

In the first place, it is necessary to clarify what "normality" means in this context. As already recalled in Chapter 3, the pre-pandemic euro area economy was still muddling through the long-term repercussions of the Great Recession. So, even in the most optimistic case of quick reabsorption of the pandemic shock, it is likely that the ECB will still be facing the pre-COVID fragile macroeconomic outlook that discouraged a resolute normalisation of monetary policy. There is wide agreement that accelerating inflation is not an immediate threat for the euro area. Actually, the inflation outlook remains weak and below the target (see Figure 3). If one considers the estimated impact of asset purchases in the pre-pandemic period, the APP and PEPP would have to be expanded further to push inflation to the desired path.

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<sup>22</sup> According to a recent statement by the World Health Organization, it is reasonable to expect a return to normal sanitary conditions in about two years. It is highly unrealistic that everybody will agree upon the time in which the pandemic can be considered over. Some disagreement and uncertainty about the end date of the COVID-19 emergency will be unavoidable.

Figure 3: Euro-area inflation, core, headline and market expectations (y-o-y, %)



Source: Claeys (2020).

Also, countries that in the aftermath of the Great Recession have experienced faster recovery of growth and employment, struck scholars and policymakers with the **"missing inflation" puzzle** (Hooper et al, 2019), which relates to the broader debate about the "flattening" of the Phillips Curve, the weak reaction of inflation to the business cycle. Some scholars hold the view that this is a long-lasting phenomenon due to structural changes in the labour markets, in the wage-price setting practices, and in international trade mostly induced by globalisation.<sup>23</sup> In this case, the QE programme is likely to remain in the ECB's toolbox as part of a larger set of UMP (among which negative interest rates).

Alternatively, it is possible that the pandemic crisis has somehow undermined the conditions that kept the Phillips curve flat and that – when the pandemic will be over – the large amount of money available will feed inflation, boosted by supply-side forces such as: the acceleration of the reversal of globalisation and re-nationalisation of supply chains that may push production costs up (see Chapter 2).<sup>24</sup> The protection of incumbent firms and workers, together with the restrictions to takeovers for corporate control decided during the pandemic, and with the diminished competition of emerging economies' producers because of de-globalisation, may restore some of the pricing power that firms and labour have lost over the last decades.

If this will be the case, a quick and sustained recovery may be accompanied by a pick up of inflation. A number of commentators have argued that some moderate inflation (something above the 2% threshold) should be tolerated for a while, since it would erode the real value of the huge private and public debts accumulated in these years, thus helping firms and governments to service them without jeopardising the anti-inflationary credibility of the major central banks. However, if inflation does take hold, the ECB will face the trade-off between sustaining economic activity and its primary mandate of

<sup>23</sup> Soon before the outbreak of the pandemic, in the perspective of the review of policy strategy of the ECB, the argument of the structural flattening of the Phillips Curve was put forward to suggest that the ECB should revise its inflation target downwards instead of keeping on chasing the 2% target (e.g. Gros 2019). See Bini Smaghi (2020) and Tamborini (2020) for alternative views.

<sup>24</sup> As Eichengreen (2020) writes, "supply chains will have to be restructured in ways that make production costlier. Even if they have to pay more, firms will produce closer to home, whether because of their heightened recognition of the risks of relying on far-flung operations, or in response to political arguments for achieving national self-sufficiency in the provision of essential goods. For firms, enhanced security and certainty will mean higher costs and lower productivity, which will translate into higher prices for consumers".



preserving price stability. In this case, two would be the most worrisome legacies of the pandemic programmes (EEAG, 2020, sec.3; Borio, 2020).

The first is the extra-large build-up of monetary base in the Eurosystem, that ought to be unwound at high speed. The other is the nexus between low interest rates and high public and private debts. The inevitable rise of interest rates to rein in inflation would make large fractions of outstanding debts unsustainable, with heavy negative repercussions on financial and economic stability.<sup>25</sup> Hence this scenario may turn into a **stagflationist one**, that is a situation in which some inflation coexists with a depressed activity. The conflict between primary and secondary statutory objectives of the ECB would become blatant, and quite dramatic. The continuation of broad QE programmes will be particularly controversial in such an environment. Technically, the ECB could still focus its purchases on those assets and jurisdictions that need it the most, as already done with the PEPP; politically, however, this is hardly sustainable: the economic rationale justifying the features of the PEPP will not hold anymore and concerns with moral hazard will dominate again the discourse.

## 4.2. Scenario 2: Slow recovery and stagnation

Various reasons are put forward to warn that it will take time to overcome the consequences of the pandemic, and that the post-pandemic economies will look very much like those with anaemic growth and deflationary pressures of the 2010s, if not worse, rather than those of the 1990s (Krugman, 2020).<sup>26</sup>

In the first place, it is reasonable to think that the pandemic will have persistent depressive effects on the propensity of households and enterprises to consume and invest, especially because many people will be inclined to overestimate the likelihood of a repetition of similar disruptive events. In this case, zeroing of interest rates, tax cuts and subsidies will not be enough to boost private sector's demand, whose decline can barely be offset by the increase in public spending.

In addition, there are supply-side forces that may obstacle a quick and sustained recovery:

- (i) Reopening will not find the same economy as the one before the lockdown: some of the locked down businesses may not survive (in spite of public aids), while the unlocked portion of the economy may bless some and damn others. The composition of final demand will be changed, thus leading to the shrinking of some sectors and the expansion of others. Relocation will take place on a large scale, in a vast and uncertain process of re-organisation of personal, economic, and financial networks (Barrero and Davis, 2020).
- (ii) Debt overhang, created to keep economic activity afloat, may surely be added to the forces that hinder, rather than boosting, a fast recovery of economic activity (Becker et al., 2020). Under counterparty or market pressures, debtors' priority is not to spend but to save and repay debt, feeding so-called "**deleveraging**" or "balance-sheet recessions" (Koo, 2011). This situation creates a trade-off not with inflation, but with debt restructuring (Becker et al., 2020). Pre-emptive debt restructuring may clear the stage for recovery, but if it is enacted too fast and too early it may obtain the opposite result, as warned by the 2011-12 second recession in the euro area.

Among longer-term forces, with important consequences for monetary policy, is the **tendential fall of the "neutral" rate of interest**, that is the real interest rate such that the economy enjoys full

<sup>25</sup> This situation would remind the Volcker "monetarist experiment", i.e. the sharp anti-inflationary monetary contraction that the then chairman of the US Federal Reserve enacted between 1980-81. The EZ countries with debt overhang would then find themselves in the position of the developing countries that were driven into default by the escalation of interest rates.

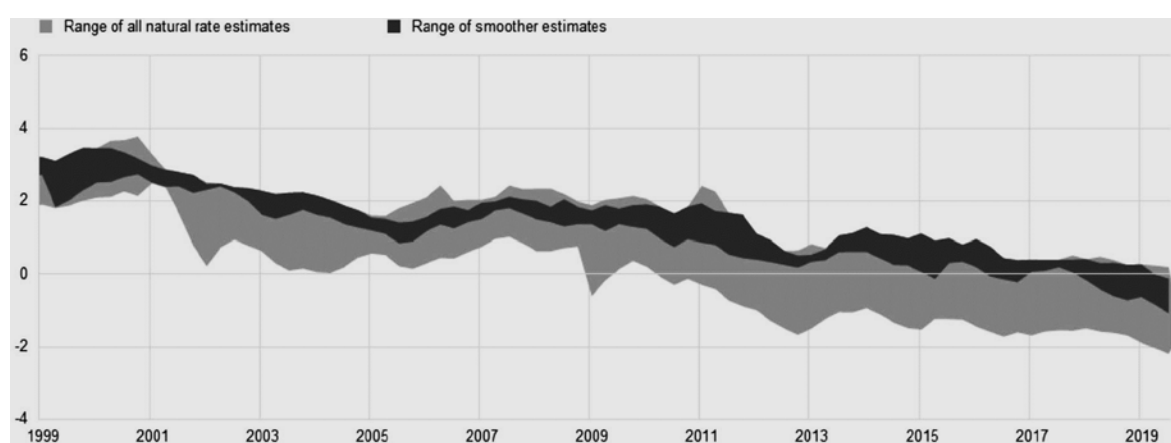
<sup>26</sup> This view relates to the debate on the so-called "secular stagnation": see e.g. Teulings and Baldwin (2014).



employment of labour and capital, and stable prices.<sup>27</sup> Given the inflation target, the policy rate should track the neutral rate, for any misalignment would destabilise output and inflation. Consequently, low or near zero policy rates are not a vagary of the central bank, but a necessity dictated by the ruling economic forces (Draghi, 2016, Yellen, 2014).

Yet this prescription encounters serious problems when the neutral rate falls into negative territory, which is confirmed by a whole strand of empirical literature exemplified by the euro area estimates presented by Lane (2020a) (Figure 4). With negative neutral rate, even zeroing the nominal interest rate may be unable to pull the economy out of depression states with output and inflation below targets (often called "**liquidity traps**" after Keynes).<sup>28</sup> If the fall of post-epidemic returns to capital found in history by Jordà et al. (2020) materialises again, then the conjecture that the pandemic will aggravate these tendencies has some grain of truth.

Figure 4: Econometric estimates of the euro area neutral rate



Source: Lane (2020a).

In this scenario in which the abundant liquidity created in these years tends to stay frozen inside the financial system, the inflation outlook remains tilted downwards, with a clear pandemic shift, as shown by Figure 3. The entrenchment of low inflation, or deflation, forecasts is a well-known problem that the ECB has been monitoring since the post-crisis depression of the mid 2010s, considering the so-called "**deanchoring of inflation expectations**" from the central bank's target as the main driver of the euro area deflationary drift (Draghi, 2014, 2016).

Such a state of affairs will call for continuation of the variety of UMP and QE programmes that we have seen hitherto. Yet, in the stagnationist view, these are not seen as extraordinary instruments for extraordinary times, but the necessary toolkit for the "**new normal**" times – at least as long as the underlying forces do not change. A further implication is that coupling monetary and fiscal policy also becomes a necessity, which gives rise to the perspective of the system becoming **addicted to permanent stimuli** (Krugman, 2005, 2020).

With regard to this, it is worth remarking that critics of QE policies emphasise that their prolonged adoption has **no positive impact on long-run growth**, since the support that they provide to the price

<sup>27</sup> This is also called "natural" interest rate, as it was first named by Wicksell (1898). A key assumption of this theory is that the central bank has no control over the neutral rate, which, at least in the medium to long run, is determined by real structural factors (such as propensity to save, factor endowments and productivity, demographic trends).

<sup>28</sup> With the inflation target at 2%, the central bank can manoeuvre the policy rate above zero only insofar as the natural rate is above -2%.

of financial assets does limit drastic adjustments of asset prices and massive defaults of highly indebted entities, but at the *cost of not encouraging investment in risky productive assets: portfolio adjustment moves money away from corporate and government bonds, but not towards investment in production and employment.*

As to the interface with fiscal policy, the abundance of cheap money and the consequent temporary softening of governments' budget constraint obtained thanks to the QE programmes is double-edged in terms of long-run growth and debt sustainability. On the one hand, governments may be allowed to undertake growth-enhancing investments (such as those in critical infrastructures or basic research) that for a long time have been postponed because of fiscal consolidations. On the other hand, they may be induced to increase public spending or cut taxes in order to avoid the social and political costs associated to bankruptcies and job losses, neglecting the longer-term and largely invisible costs due to inefficiencies and misallocation of resources, and avoiding those structural reforms that - although unpopular - have been repeatedly suggested by the European and other supranational institutions over the years.<sup>29</sup> The result would be an increase in public debt without strengthening the growth potential of the economy, to the detriment of debt sustainability. Difficult to say which of the two tendencies will prevail in any specific country, but it is likely that the outcome will be heterogeneous across the euro area countries. In Europe, it may help a severe monitoring by the EU institutions on the use that governments will do of the money they will get from European programmes. However, it will ultimately depend on a country's political system and the extent to which its public opinion is sensitive to populist arguments.

In the perspective of "addiction" to monetary-fiscal coupling, as Claeys (2020) rightly points out, the issue is not so much the build-up of monetary base in the Eurosystem during the pandemic crisis. A large balance sheet will not deprive central banks of control over short-term interest rates and their ability to influence the benchmark risk-free yield curve. What may be seen at stake is the ECB's independence *vis-à-vis* **fiscal dominance** (see also paragraph 2.5), also in consideration of the fact that for the ECB price stability is the primary objective, which may become conflictual with the pressure to avoid sovereign debt crises across the euro area. Even though macroeconomic concerns may fully justify the continuation of QE programmes in the euro area, the political economy of such interventions will likely become more complicated, because of the risks and the implicit fiscal transfers that they entail, with limited conditionality.

### 4.3. Scenario 3: The ECB's "worst-case" scenario

The ECB will face even more demanding challenges compared to those faced by other central banks, due to the fact that its jurisdiction is characterised by **deep structural disparities**, and above all (and this is unique to the ECB) that it is the monetary authority of 19 sovereign states, which makes its decisions inevitably politically sensitive and potentially divisive along national lines. If now, with the pandemic still not over, and with the PEPP and NGEU programs being implemented, differences and tensions seem to have quieted down, it is to be expected that they will re-emerge when we shall return to some normality.

This might be the case, especially if at the end of 2021/first half of 2022 there will be signs of an asymmetrical recovery, with growth in the euro area's most vulnerable countries lagging behind that in the core countries, and the necessity on the part of the ECB to start some tapering (i.e., to reduce the new purchases of assets) after the end of the COVID emergency. It is very unlikely that in this scenario

<sup>29</sup> See Bonatti and Fracasso (2019) for a formal setup modeling situations where a government may be induced to not undertake structural reforms even when the society at large would benefit from their introduction.

the countries in trouble could rely on new fiscal transfers from the European partners beyond those already included in the NGEU, due to the foreseeable opposition of the core countries to make permanent a system of substantial subsidies in favour of the peripheral members of the euro area. In these circumstances, a confidence crisis concerning the public debt sustainability of one or more peripheral countries becomes possible, with the consequent flight to safety and risk of contagion, particularly if it will be evident that in these countries there are missing the political conditions for a fiscal consolidation and the implementation of effective growth-enhancing reforms. The ECB would therefore be faced with the difficult choice of whether to support the debt of the countries in trouble, through purchases of their government bonds well beyond what the capital key prescribes, even in the absence of a clear political commitment by their governments to undertake a drastic adjustment programme (as prescribed by the OMT), or to expose the euro area to a crisis that might lead to its implosion. Obviously, there is no certainty that the "worst-case" scenario outlined here will materialise, but it is appropriate that the European policy makers be well aware that it is – if not probable – fully possible.

## 5. CONCLUDING REMARKS

If the glimpse into the future outlined above has some grain of truth, the reasons for carrying UMP forward will prevail in the advanced economies, and in the euro area, beyond the end of the pandemic, but in all cases political-economy considerations will determine the extent and the duration of QE programmes. All the scenarios that we have considered, moreover, may draw the ECB into uncharted waters. The fundamental reason being that the pandemic will hardly heal the euro area's structural and institutional weaknesses inherited from the past.

We have seen how the COVID-19 pandemic induced the ECB to adopt a set of emergency measures. In parallel, the Stability and Growth Pact was suspended, and the EU approved a number of programmes that for the first time have determined substantial fiscal transfers among countries belonging to the Union. As a result of all this, the euro area countries – even the most vulnerable among them – could enlarge their government deficits practically without limits in order to face the emergency, without losing market confidence on the sustainability of their public debt.

The monetary authority has been careful in making clear that those measures are temporary and closely linked to the COVID-19 emergency. This should be interpreted as meaning that – once the pandemic will be definitely over – the amount of government debts purchased by the Eurosystem (exceptionally large in the midst of the pandemic) will be drastically reduced, these purchases will be again strictly subject to capital keys and tightly constrained by issuer limits, interventions on the market to support the bonds issued by countries in trouble will be conditional on their formal commitment to undertake fiscal consolidations and structural reforms, and the ECB fully free to raise – if needed – short-term interest rates without being restrained by the fiscal problems of some Member States. Altogether, this would imply that the trilemma whereby we concluded Chapter 2 (one can have only two among preserving "euro area integrity", "monetary orthodoxy" and "fiscal orthodoxy"), which was deactivated because of the pandemic, will be binding again. We claim that this trilemma may become existential.

However, we are also aware that the credibility of the ECB, a central bank which has to operate in a context characterised by multiple sovereign states, hangs on the capacity of the set of formal and informal guidelines shaping its conduct to dissipate any suspicion that it could fall prey of some form of fiscal dominance. And the COVID-19 emergency has shown how essential is for a central bank to preserve this credibility: since *"it is precisely what has allowed central banks to take such extraordinary actions during this crisis"* (Borio, 2020). If it is possible – and above all how it would be possible – to set a framework more able than the current one to guarantee this credibility, minimising at the same time the risk of existential crises in the euro area, is an open question. We believe that, especially in the light of the lasting changes that the pandemic will bring about, it is worth addressing this question and rethinking guidelines and strategies shaping the ECB's policies.

Such a rethinking cannot be disjoined from a public discussion about possible updates of those parts of the EU Treaties that regulate the functioning of the euro area. It is apparent that this discussion is intrinsically political, before being technical or juridical. Intellectual contributions to this discussion are precious and urgent.

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# The ECB's Asset Purchase Programmes: Effectiveness, Risks, Alternatives

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## **Abstract**

We summarise the empirical evidence on effects of asset purchases in the euro area, including the PEPP programme launched in response to the COVID-19 crisis. We conclude that QE is particularly effective during times of high financial stress, i.e. at the peak of a crisis, but tends to lose impact over time. At the same time, QE policies come with prominent risks which may materialise only in the longer term. We suggest a scheme of rule-based intervention in sovereign debt markets that preserves the role of yield spreads as a market signal, while containing the risk of bad equilibria.

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# CONTENTS

<b>LIST OF ABBREVIATIONS</b>	<b>104</b>
<b>EXECUTIVE SUMMARY</b>	<b>105</b>
<b>1. INTRODUCTION</b>	<b>106</b>
<b>2. EFFECTIVENESS OF THE ECB'S ASSET PURCHASE PROGRAMME (APP)</b>	<b>107</b>
2.1. Estimation methods of QE effects	107
2.2. Euro area evidence: financial markets effects	108
2.3. Evidence on expectations	112
2.4. Euro area evidence: economic activity and inflation	113
2.5. Comparison to international evidence on the effectiveness of QE	115
<b>3. POTENTIAL DRAWBACKS AND UNINTENDED SIDE-EFFECTS</b>	<b>117</b>
<b>4. POSSIBLE EFFECTS OF ASSET PURCHASES IN RESPONSE TO COVID-19</b>	<b>120</b>
<b>5. THE ROLE OF ASSET PURCHASES IN THE FUTURE</b>	<b>122</b>
<b>REFERENCES</b>	<b>124</b>

## LIST OF ABBREVIATIONS

<b>APP</b>	Asset Purchase Programme
<b>CDS</b>	Credit Default Swap
<b>DFR</b>	Deposit Facility Rate
<b>ECB</b>	European Central Bank
<b>FOMC</b>	Federal Open Market Committee
<b>LSAP</b>	Large Scale Asset Purchases
<b>LTRO</b>	Longer-Term Refinancing Operation
<b>PEPP</b>	Pandemic Emergency Purchase Programme
<b>PSPP</b>	Public Sector Purchase Programme
<b>OMT</b>	Outright Monetary Transactions
<b>PELTRO</b>	Pandemic Emergency Longer-term Refinancing Operation
<b>QE</b>	Quantitative Easing
<b>SMP</b>	Securities Market Programme
<b>SVAR</b>	Structural Vector Auto Regression
<b>USD</b>	US Dollar
<b>VAR</b>	Vector Auto Regression
<b>VECM</b>	Vector Error Correction Model

## EXECUTIVE SUMMARY

- **The ECB's asset purchases have been particularly effective in stabilising financial market conditions during times of high financial distress, i.e. at the peak of a crisis. There are, however, tendencies of decreasing efficacy over time.** Asset purchases have a stronger effect on risk perception compared to inflation expectations. Effects of quantitative easing (QE) on output and inflation are highly uncertain. Effects on “periphery” relative to “core” countries seem to be larger. While there is strong evidence for a stabilising role of asset purchases in the short term, it is less clear to what extent the effectiveness of QE is lasting over time. The available APP evidence points in the same direction as the international evidence, with the effects on euro area long-term yields, output, and inflation being somewhat smaller compared to the US and the UK, but larger than for Japan.
- **Large scale asset purchases by the central bank may lead to unintended side-effects which need to be taken into account.** Important potential drawbacks of QE policies include decreasing the incentive to engage in fiscal consolidation and structural reforms, putting undue constraints on future monetary policy, encouraging excessive risk-taking in the financial sector, reducing the growth potential of the economy via a misallocation of resources, a “zombification” effect, and increasing wealth inequality.
- **First assessments of the effect of the emergency programme in response to COVID-19 suggest a substantial stabilising impact on financial market variables as well as on the outlook for economic activity and inflation but could be skewed to the upside.** While asset purchases have been instrumental to stabilise sentiment in the acute crisis, it remains unclear what the contribution of additional liquidity is once uncertainty has returned to normal levels.
- **While QE seems to have become a standard policy measure over recent years, a sustained policy of large-scale asset purchases entails substantial side effects and risks.** Asset purchases of the ECB have been successful in stabilising expectations and supporting growth in the euro area over recent years, but at the same time allowed other policy areas not to deliver on important policy challenges. A cost-benefit analysis of asset purchases and QE is complicated by the difficulty to quantify its exact effect on the economy as well as the side risks. Using asset purchases not regularly but only under extraordinary circumstances is a possible strategy to consider because of both, the emerging evidence that QE is particularly effective in times of crisis and the risk that unintended side-effects build up over time.
- **To help create an environment that would enable the ECB to exit from QE, we suggest the introduction of a rule based fiscal back-stop mechanism for sovereign debt risk premia.** Bond yield risk premia of Member States would be allowed to fluctuate freely in the capital markets, but only up to a politically chosen ceiling, of say 500 basis points, at which a common institution funded by solvent euro area Member States would intervene to cap the yield spread. This would preserve the role of yield spreads as a market signal, incentivising Member States in progressing with structural adjustments, while fully containing the risk of shifting to bad equilibria due to non-fundamental market movements.



## 1. INTRODUCTION<sup>1</sup>

**Asset purchases, originally designed as an emergency measure, have become a standard tool of monetary policy in an environment of persistently low interest rates.** In response to the Global Financial Crisis, many central banks have lowered their policy rates to the effective lower bound. Subsequently, they have implemented a variety of unconventional monetary policy measures with the aims of stabilising financial markets, increasing inflation and inflation expectations, and stimulating economic growth. While these measures were initially thought as temporary departures from conventional monetary policy, in many economies the effective lower bound has been binding for several years now. In others, like the US economy, the effective lower bound has become binding again during the current recession, following a temporary return to positive though still low policy rates. One major reason for the persistently low policy rates is the series of crises that occurred over the last years, starting with the Global Financial Crisis followed by the euro area sovereign debt crisis, a period of pronounced weakness in the global economy associated with the meltdown of commodity prices in the mid-2010s, and the current COVID-19 crisis, leaving not enough time for a lasting recovery. Further, estimates of the natural interest rate have decreased since the Global Financial Crisis, so that the effective lower bound might bind more frequently in the future even in the absence of severe crises. Therefore, many economists expect the usage of unconventional monetary policy to remain an integral part of central banks' toolkits for the foreseeable future.

**The ECB's response to the ongoing COVID-19 crisis and its adverse impact on the economy includes another large increase of asset purchases.** The pandemic emergency purchase programme (PEPP) was announced on 18 March, amounting to EUR 750 billion until the end of 2020 (ECB, 2020a) on top of the asset purchase programme (APP) already in place.<sup>2</sup> In doing so, the ECB aims to “*ease financial conditions in order to avoid adverse feedback loops between the financial system and the real economy, support confidence and proactively respond to the downward shift in the outlook for growth and inflation*” (Lane, 2020).

**In this paper, we summarise the empirical evidence on the effects of asset purchases, review potential effects of the (PEPP) programme, and discuss perspectives for monetary policy as well as alternatives to QE.** We start by presenting evidence based on the ECB's APP and QE programmes of other central banks on the likely effects of such policies (Section 2). Key takeaways are that QE is particularly effective in stabilising financial market conditions during times of high financial stress, i.e. at the peak of a crisis. There are, however, tendencies of decreasing efficacy over time. Further, the effects of QE on output and inflation are highly uncertain. Overall the effects seem to be larger on “periphery” relative to “core” countries. The range of estimates and the uncertainty surrounding these is, however, large so that there is the possibility that stabilisation effects on output and inflation could be possibly low. This particularly holds for periods when the most acute phase of a crisis is over. Potential drawbacks and side-effects are discussed in Section 3. We proceed by pointing out potential effects of the PEPP (Section 4). We conclude by discussing alternatives to QE (Section 5) and propose a ceiling strategy which would allow price signals in sovereign debt markets to work in principle, but restrict bond yield risk premia of Member States to increase only up to certain level.

<sup>1</sup> The authors thank Lisa-Marie Ebner and Christina Graf for excellent research assistance.

<sup>2</sup> The Corporate Sector Purchase Programme (CSPP) was also expanded to new asset classes, such as commercial papers.



## 2. EFFECTIVENESS OF THE ECB'S ASSET PURCHASE PROGRAMME (APP)

### 2.1. Estimation methods of QE effects

**A number of studies have estimated the effects of the ECB's APP on long-term bonds and other financial variables.** Results across studies are comparable insofar as all studies investigate the same program. However, the assessment of persistency differs as some studies focus on effects around announcement dates, while others consider cumulative effects from the 2015-start of net asset purchases until its end in December 2018. This difference is based on the different methods. Two approaches prevail: event studies and vector autoregressions (VARs).

**Event studies use high-frequency data to study the effect of central bank announcements on financial market expectations and variables.** To do so, the announcement effect is captured within a short event window ranging from one hour to one or two days around the announcement. To establish causality, two key assumptions need to hold: first, the announcement is assumed to be the sole driver of changes within the chosen time window and second, the announcement was not triggered by financial market dynamics at the time of announcement (Gertler and Karadi, 2013). To ensure that the effects are not distorted by other economic news announcements within the chosen time window, one can control for these using regression techniques. While the event study approach is very useful in context of identifying causal effects of unconventional monetary policy announcements, it has important limitations. Firstly, anticipation effects of market participants are not considered so that only the surprise element of the announcement is captured which, secondly, hinders comparison across different policy measures.<sup>3</sup> Thirdly, as the identification of the causal effect only works in a high frequency environment, studying the announcement's impact on slow-moving macroeconomic variables, such as output and inflation, as well as its persistency is either not feasible or requires very strong assumptions.

**VARs, on the other hand, estimate systematic correlations between the policy instrument and relevant macroeconomic variables.** To study the effects of unconventional monetary policy, typically the volume of the central banks' balance sheet is considered as the policy instrument. Recently, shadow rates have also been used as an alternative measure (see, e.g., Elbourne et al., 2018, or Elbourne and Ji, 2019). By imposing restrictions on the relationship among the variables included in the VAR, unconventional monetary policy shocks can be identified so that the effect of these shocks on the macroeconomic variables can be assessed. While the restrictions usually stem from theory, identification remains challenging and the restrictions might remain disputable. Further challenges emerge from the relatively short sample available to study unconventional monetary policy as well as the difficulty to disentangle effects from different unconventional monetary policy measures in context of monthly or quarterly data and their distinction from anticipation effects.

**High frequency monetary policy shocks can also be included in VAR models.** Some studies have also used high-frequency comovement around policy announcements of interest rates and stock prices to disentangle different effects of monetary policy: the idea is that a surprise policy tightening raises interest rates and reduces stock prices, while a complementary positive central bank information shock raises both (Kersenfischer, 2019).

<sup>3</sup> When using high frequency data, anticipation effects can be partly included by performing regressions around a 24-hour window before and after an announcement.

## 2.2. Euro area evidence: financial markets effects

**The empirical evidence on the ECB's APP suggests that the APP significantly reduced bond yields across the euro area, with larger effects for "periphery" than for "core" countries.** We summarise the effect on 10-year sovereign bonds below in Table 1 and briefly discuss effects on the exchange rate. First, we focus on aggregate euro area effects, followed by a detailed look into Member State effects. Intra-euro area government bond spreads decreased during the APP.

**Despite using different methodologies with different abilities to assess persistency, the estimated effect sizes are similar in magnitude.** Studies are either conducted as event studies around announcement dates or are VAR-based. Event studies find that the announcements regarding the APP had a significant negative effect on long-term yields, depressing them on average between 29 to 50 basis points. Results vary due to the considered number of events ranging from just considering the main announcement and initial implementation date (Andrade et al., 2016) to the accumulated effect of a series of 48 events based on the ECB's official communications including press conferences, speeches, and interviews (Bulligan and Delle Monache, 2018). Further, studies differ with respect of measuring the effects over 1- or 2-day windows with larger effects for the latter. Though using a different framework, focusing on micro-level portfolio rebalancing, Koijen et al. (2019) estimate a similar yield compression of 47 basis points due to the APP. The studies relying on VAR or VECM (vector error correction model) techniques indicate slightly larger effects of 60 to 70 basis points. A possible reason is that these techniques can capture persistency effects beyond the short time windows typically considered in event studies. Wieladek and Pascual (2016) report a substantially larger magnitude effect based on a Bayesian VAR, approximately double the size compared to the other studies. The authors interpret these numbers as an upper bound as they note that the simultaneous implementation of TLTRO, the APP announcement, and the cut in the deposit facility rate (DFR) with all measures targeting decreasing long-term interest rates makes it very difficult to empirically estimate individual programme effects within their framework. Therefore, Hartmann and Smets (2018) do not differentiate between programmes, but estimate an aggregate effect of credit easing, the APP, and the cut in the DFR. They find a sizeable effect of 150 basis points. Finally, there is evidence that the yield compressions reported in the literature are rather persistent with Eser et al. (2019) estimating a half life time of 5 years on the 10-year term impact.

Table 1: Aggregate yield effects of the ECB's APP

Study/Method/Sample period	Impact on the Euro Area's:	
	10-year sovereign bond yields	10-year sovereign bond spreads vs. Germany
<b>Altavilla, Carboni, and Motto (2015)</b> Event Study, cumulated effect of 17 announcement events <i>Sep 2014 – March 2015</i>	-29 bp (1dw) -47 bp (2dw)	-7 bp (1dw) -26 bp (2dw)
<b>Andrade, Breckenfelder, De Fiore, Karadi, and Tristani (2016)</b> Event Study, cumulated effect on main announcement day (22 Jan 2015) and initial implementation effect (9 March 2015)	-47 bp (2dw)	
<b>Blattner and Joyce (2016)</b> Bayesian VAR with latent yield curve factors <i>Estimation period: 2000 to Apr 2013</i>	-30bp (2015) -18bp (2016) -12bp (2017)	
<b>Bulligan and Delle Monache (2018)</b> Event Study based on 48 announcement events	-50 bp (2dw)	

<b>Sep 2014 – July 2017</b>		
<b>De Santis (2016)</b> <b>Error correction model</b> <b>Sep 2014 – Oct 2015</b>	-63 bp	
<b>Eser, Lemke, Nyholm, Radde, and Vladu (2019)</b> <b>Event study building on arbitrage-free term structure model</b>	-50 bp (2dw, Sep 2014 – Mar 2015) -95 bp (by June 2018 (whole duration of the APP)) [90% confidence interval: 65bp;130 bp]	
<b>Koijen, Koulischer, Nguyen, and Yogo (2019)</b> <b>IV-regression-based risk accounting framework</b> <b>2013Q4 – 2017Q4</b>	-47 bp	
<b>Wieladek and Garcia Pascual (2016)<sup>4</sup></b> <b>Bayesian VAR</b> <b>2012M6 – 2016M4</b>	-102 bp	

Sources: Studies quoted in the table. 1 dw: 1-day window, 2dw: 2-day window.

**For the transmission of QE to long-term interest rates, the importance of the portfolio rebalancing and the signalling channel has been particularly emphasised in the literature.** Both are also explicitly targeted by the ECB (see Altavilla et al., 2016 and the institutional sources cited therein). The former affects the risk premium, while the latter lowers expectations of future short-term interest rates. The portfolio rebalancing channel works if short- and long-term bonds are imperfect substitutes, so that the purchase of long-term government bonds changes the relative supply of short and long bonds (Gagnon et al., 2010). Arbitrage processes induce investors to rebalance their portfolios, so that yields of similar long-term assets decrease as well. Some investors might subsequently switch to riskier assets, so that these yields decline as well.<sup>5</sup> Further, private sector asset purchases directly reduce market risk premia.<sup>6</sup> Yields on government bonds are additionally lowered via the signalling channel where QE is presumed to strengthen central bank credibility to keep short-term interest rates lower for longer since an early exit would trigger losses. Theoretical and economic evidence suggests that the slope of the yield curve is positively related to economic activity and bank profitability. Financial health of non-financial firms is positively affected by government bond purchases through a reduction in borrowing conditions, while the situation of banks deteriorates in the medium run after a short-lived improvement. The overall effect on economic activity is positive (Kühl, 2016). Empirically, both the portfolio rebalancing channel and the signalling channel, are of relevance for the transmission of the APP, though Wieladek and Garcia Pascual (2016) find that the portfolio rebalancing channel is more important.

**It is not straightforward to disentangle the effect of asset purchases on the expectations and term premium component, respectively.** Recent evidence suggests that the term premium can be considered as a single monetary policy instrument to foster output and prices. Eser et al. (2019) find that the contemporaneous impact of the APP flattens the yield curve and amounts to around 95 basis points for the 10-year maturity. They contribute this finding to a decreasing market price of risk which

<sup>4</sup> In the article, the authors report results for a 1% QE shock. We scale the average results across identification schemes given in Table 2 to 11% as this was the APP programme size (Andrade et al., 2016).

<sup>5</sup> Another strand of the literature focuses on portfolio-rebalancing at the micro level. Investors are found to rebalance their portfolios from domestic and other euro area debt securities purchased by the ECB towards foreign debt which is considered the closest substitute. Non-financial corporations and households have been net sellers of euro assets and especially PSPP eligible assets. Particularly households made use of investment funds to gain exposure to foreign sovereign debt (Bergant et al, 2019).

<sup>6</sup> Alongside this classical rebalancing channel, Ryan and Whelan (2019) emphasize the contribution of a 'hot potato' effect to declining European bond yields where banks manage excess liquidity via debt security purchases rather than loan creation.

compresses the term premium component of bond yields across the term structure. The findings by Lemke and Werner (2020) suggest that yield declines of around 70 basis points in German bonds almost exclusively reflect the term premium as opposed to the expectation component.

**The contribution to lower bond yields via the signalling channel is generally estimated to be modest.** Chadha and Hantzsche (2018) quantify a minor contribution of a small direct signalling effect of the PSPP, reducing the risk-free rate by only 3 basis points. Lastly, Altavilla et al. (2015) proxy the expected risk-free rate for the euro area with overnight index swap (OIS) rates to quantify the contribution of the signalling channel. They estimate that the signalling effect contributes at most 10 basis points at the 2-year horizon. Once the signalling effect is accounted for, the portfolio rebalance channel contributes another 10 basis points via the duration channel at longer maturities. Moreover, the authors estimate a substantial decline in credit risk premia, where a 100 basis point decline in sovereign bond spreads reduces corporate spreads by 75 and 34 basis points for financial and non-financial corporations.<sup>7</sup>

Comparing the APP's effects on individual Member States across studies suggests that yields and spreads decreased relatively more in "periphery" than "core" countries. Country-specific estimates of effects on bond yields are presented in Table 2. Compared to the aggregate evidence discussed above, there is, however, greater uncertainty regarding the effect size for individual Member States. Chadha and Hantzsche (2018) and De Santis (2016) find that the decrease in yields was twice as strong in Italy and Spain compared to Germany, while Altavilla et al. (2015) find an effect for Italy and Spain that is even three to four times larger than the one for Germany. The larger effects in the case of "periphery" countries are supported by the estimated reduction in spreads reported in Bulligan and Delle Monache (2018). Regarding differences within the "core" or "periphery" country groups, the studies point to larger effects in France compared to Germany, while the difference between the effects on Italy and Spain are rather small.

Table 2: Member State yield effects of the ECB's APP

Study/Method/Sample period	Impact on:	10-year sovereign bond yields	10-year sovereign bond spreads vs. Germany			
<b>Altavilla, Carboni, and Motto (2015)</b> Event Study, cumulated effect of 17 announcement events Sep 2014 – March 2015	Italy	-75 bp (1dw) -60 bp (2dw)	-63 bp (1dw) -50 bp (2dw)			
	Spain	-80 bp (1dw) -65 bp (2dw)	-54 bp (1dw) -56 bp (2dw)			
	France	-30 bp (1dw) -27 bp (2dw)	-13 bp (1dw) -13 bp (2dw)			
	Germany	-17 bp (1dw) -18 bp (2dw)	-----			
<b>Bulligan and Delle Monache (2018)<sup>8</sup></b> Event Study based on 48 announcement events Sep 2014 – July 2017			09/14 - 07/17	09/14 - 03/15	04/15 - 09/16	10/16 - 07/17
	Italy (1dw/2dw)		-104/-104 bp	-60/-58 bp	-38/-32 bp	-8/-17 bp
	Spain (1dw/2dw)		-100/-83 bp	-41/-31 bp	-47/-29 bp	-13/-27 bp
	France (1dw/2dw)		-22/-31 bp	-11/-17 bp	-9/-9 bp	-2/-5 bp
<b>Chadha and Hantzsche (2018)</b>	Italy	-42 bp (2dw)				
	Spain	-42 bp (2dw)				

<sup>7</sup> Nakamura and Steinson (2019) find that the effects of US monetary policy announcements on longer-term real interest rates is not driven by changes in risk premia, but rather reflects changes in expected future short-term real interest rates.

<sup>8</sup> We do not report the results for Germany here as they are not significant over the full sample.

<b>Event Study based on 9 announcement events Sep 2014 – Sep 2015</b>	France	-56 bp (2dw)	
	Germany	-20 bp (2dw)	
<b>De Santis (2016) Error correction model Sep 2014 – Oct 2015</b>	Italy	-80 bp	
	Spain	-75 bp	
	France	-70 bp	
	Germany	-43 bp	
<b>Lemke and Werner (2020) Four-factor term structure model 2014M9 – 2015M3</b>	Germany	-68 bp	
<b>Wieladek and Garcia Pascual (2016)<sup>9</sup> Bayesian VAR 2012M6 – 2016M4</b>	Italy	-160 bp	
	Spain	-141 bp	
	France	-122 bp	
	Germany	-100 bp	

Sources: Studies quoted in the table. 1dw: 1-day window, 2dw: 2-day window.

**Effects of the APP might have varied over time.** On the aggregate level, Blattner and Joyce (2016) estimate changes with the initial announcement being the main driver and later implementation effects being rather small (see Table 1). Moreover, Bulligan and Delle Monache (2018) show that the overall reduction in spreads was mainly driven by early QE on the country level as well, though there are some differences across countries. For Italy, the decline was significant during the first stage (September 2014 – March 2015), whereas Spanish spreads continued to decline significantly until September 2016, while later there is no evidence for further significant declines (see Table 2). Hence, not only does the effect size vary across Member States, but so does the persistence of the programme's impact.

**Evidence on earlier unconventional monetary policy programmes of the ECB suggests similar financial market effects.** Fratzscher et al. (2016) find that announcements related to the ECB's OMT (outright monetary transactions) and SMP (securities market programme) programmes reduced 10-year government bond yields in Italy and Spain by 74 and 121 basis points, respectively, as well as spreads of these two countries relative to Austria, Finland, Germany, and the Netherlands. Gibson et al. (2016) find that spreads between the GIIPS countries (Greece, Ireland, Italy, Portugal, and Spain) and Germany decreased modestly under the SMP (between 3 and 22 basis points), whereas Falagiarda and Reitz (2015) find that the ECB's unconventional monetary policy announcements have decreased these spreads substantially between 2008 and 2012. Most studies for the US suggest that large scale asset purchases (LSAPs) reduced yields on 10-year Treasuries by about 100 basis points. However, Greenway et al. (2018) argue that this consensus overstates the effect and find that the results are not persistent.

**Announcement of asset purchases may affect the euro exchange rate.** Currency markets are also affected by monetary policy announcements, but the overall evidence is inconclusive. Mueller et al. (2017) find that currency investment strategies and returns involving short positions in USD and long positions in foreign currencies exhibit distinct price patterns around scheduled FOMC meetings. Increased trading activity on foreign exchange markets at days of scheduled FOMC announcements is also observed (Fischer and Ranaldo, 2011). However, the overall evidence suggests that the euro area's asset purchases themselves have not achieved any significant additional exchange rate effects beyond announcement and expectation effects which have tended to depreciate the effective exchange rate of the euro (Deutsche Bundesbank, 2017).

<sup>9</sup> In the article, the authors report results for a 1% QE shock. We scale the average results across identification schemes given in Table 2 to 11% as this was the APP programme size (Andrade et al., 2016).

**Announcement of asset purchases are also important relative to other monetary policy effects.**

Altavilla et al. (2020) construct the Euro Area Monetary Policy Event-Study Database, which contains intraday asset price changes around the policy decision announcement as well as around the press conference. The largest QE effect is observed on 22 January 2015 – the day the APP was launched.

**Overall, while there is strong evidence for a stabilising role of asset purchases in the short term, it is less clear to what extent the effectiveness of QE is lasting over time.** Available studies strongly suggest that the ECB's APP and its previous unconventional monetary policy programmes had a stabilising effect on financial markets, offsetting large financial turbulences as argued by Karadi and Nakov (2020). However, it is less clear how persistent the impact is and whether QE remains effective if it is employed over a longer period of time.

### 2.3. Evidence on expectations

**Asset purchase programmes were originally also launched as a measure against decreasing longer-term inflation expectations.** The inflation expectations or inflation re-anchoring channel is an important part of the signalling channel and reflects the idea that asset purchases increase longer-term inflation expectations (Gambetti and Musso, 2017). This is even more important at the zero lower bound where changes in expected real interest rates are solely driven by changes in expected inflation. Purchase programmes and monetary policy announcements also have the potential to affect expectations regarding other macroeconomic variables, such as GDP growth, exchange rates, or the current account. Expectations are also an important element in the context of risk premia or expected default probability of Member States of the euro area which have been discussed in the previous section.

**Expectations are an ambiguous concept and the adopted measures depend on the variables under consideration.** Market-implied sovereign default probabilities are measured via credit default swap (CDS) spreads, based on interest rate spreads, or yield-curve dynamics. The adopted measures for inflation expectations include market-based measures based on future prices, inflation-adjusted bonds, or survey measures for households and professionals. Survey data is based on selected participants and a lower frequency, but the underlying expectations are not contaminated by term premia.

**There is rich evidence that ECB announcements of asset purchase programmes significantly increased the expected inflation based on survey data and swap rates in the euro area, but the effects are smaller compared than those on sovereign bond yields.** Rieth and Gehrt (2015) use the daily change in basis points in inflation expectations as measured by euro area inflation-indexed swap rates for different forward rate maturities and find inflation raised by 20 to 30 basis points. Bulligan (2018) and Gambetti and Musso (2017) use the ECB survey of professional forecasters as a proxy for inflation expectations. They find that an asset purchase shock had a significant impact on longer-term inflation expectations of about 10 basis points in the medium run. These results align with the findings of Ciccarelli et al. (2017) who find that the expansion of the Federal Reserve's balance sheet contributed to a re-anchoring of US long-term inflation expectations during the 2009-2014 period.

**Effects on expectations regarding other macroeconomic variables are rather small.** Market-based expectations have also been considered when it comes to the identification of monetary policy shocks in the context of announcements. While central bank announcements have strong effects on interest rates, effects on other economic expectations and stock prices are often found to be small or even counterintuitive (Kerssenfischer, 2019). Recent research has emphasised that central bank announcements simultaneously convey information about monetary policy and the central bank's assessment of the economic outlook. Kerssenfischer (2019) confirms the importance of information



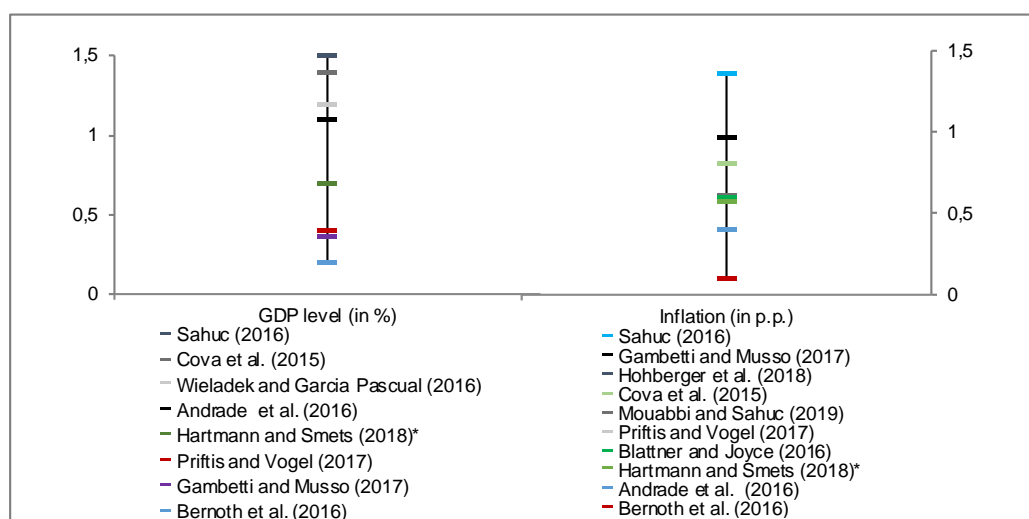
effects and finds that monetary policy announcements in the euro area affect interest rates but have small effects on professional survey-inflation expectations. Recent evidence based on household surveys in the US also shows that monetary expectations have rather small effects on private household expectations (Lamla and Vinogradov, 2019).

**All in all, the empirical evidence on survey-based expectations displays lower effects compared to studies based on sovereign bond yields.** This finding is in line with the result that effects on bond yields predominantly reflect changes in risk perception rather than effects on inflation expectations.

## 2.4. Euro area evidence: economic activity and inflation

**Beyond stabilising financial markets, the impact of QE on economic activity and inflation is of ultimate interest for economic perspectives of the euro area.** Various studies have estimated the efficacy of the ECB's APP on economic activity. Results are quite heterogeneous across studies with output and inflation effects ranging from close to zero to quite sizable effects. Figure 1 provides an overview on the range of output and inflation effects from various studies.

Figure 1: APP effects on euro area output and inflation



Sources: Studies quoted in the chart. \*Hartman and Smets (2018) report the median across various ECB calculations based on different methods (VAR, NiGEM, CMR, DKR and DSGE). Hutchinson and Smets (2017) report the same results as Hartman and Smets (2018), so that we do not include these results twice in the figure.

**Methodologically, two broad approaches are employed: VAR-based studies and model-based simulations.** The studies by Gambetti and Musso (2017), Bernoth et al. (2016), Blattner and Joyce (2016), Andrade et al. (2016), and Wieladek and Garcia Pascual (2016) rely on empirical approaches, whereas the remaining studies use model-based simulations to investigate the APP's impact on economic activity. Overall, studies relying on model-based simulations report larger effects on output (average across studies: 1.1%) and inflation (average: 0.8 percentage points) compared to purely empirical approaches, with averages of 0.7% and 0.5 percentage points, respectively. Hartmann and Smets (2018) and Hutchinson and Smets (2017) provide useful benchmarks as they report a median euro area output and inflation response of 0.7% and 0.6 percentage points, respectively, based on multiple methods and ECB calculations. These results are more in line with the empirical studies, indicating that simulation-based results might overemphasize the effects of QE on economic activity.



Further, the results indicate that the output response was somewhat stronger than the inflation response which is in line with the consensus in the (international) literature on QE effects on output and inflation (see, e.g., Elbourne et al., 2018 for a summary).

**Singling out the effect of asset purchases is challenging.** Hammermann et al. (2019) report cumulative effects of various unconventional monetary policy measures, including the APP, of 1.9% for euro area output and 1.9 percentage points for inflation. This is distinctively larger than the estimated effect of the APP alone, especially in context of the inflation response. This, again, highlights the difficulty of disentangling the individual effects of unconventional monetary policy measures in empirical and quantitative exercises. Abstracting from the signalling channel, Andrade et al. (2016) provide a quantification of the relative importance of the portfolio rebalancing channel and the re-anchoring channel, focusing on the central bank's ability to reassure the private sector to align inflation expectations and price stability. They find that the former explains around 2/3, while the latter explains 1/3 of the peak response in inflation.

**Effects on output and inflation tend to be stronger in distressed countries.** Studies investigating differences across member states such as Wieladek and Garcia Pascual (2016), Elbourne et al. (2018), or Mandler and Scharnagl (2020) find that output and inflation responses vary across countries, being stronger for vulnerable members that experienced greater financial distress during APP implementation. Moreover, Mandler and Scharnagl (2020) report positive output effects for all four countries under investigation (Germany, France, Italy, and Spain), whereas inflation responses were weaker, being strongest for Spain. This cross-country evidence is well in line with the financial market evidence summarised above which found relatively stronger stabilisation effects in “periphery” countries than in “core” countries. Hence, the APP, as previous unconventional monetary policy measures, has apparently contributed meaningfully to the stabilisation of financially stressed Member States, at least in the short to medium-run.<sup>10</sup>

**Evidence from earlier unconventional monetary policy programmes suggests similar effects.** Boeckx et al. (2017), for example, find that GDP and inflation would have been 1.2% and 1.3 percentage points lower in 2012 without the ECB's 3-year LTROs. Building on the identification strategy in Boeckx et al. (2017), Burriel and Galesi (2018) emphasize the heterogeneity in output and inflation responses to unconventional monetary policy shocks among Member States, finding that functioning banking systems are crucial in the transmission of unconventional monetary policy measures. However, Elbourne and Ji (2019) question the reliability of SVAR-based studies such as Burriel and Galesi (2018), Boeckx et al. (2017), or Gambacorta et al. (2014) in terms of the identification of unconventional monetary policy shocks. As in Elbourne et al. (2018), they use shadow rates instead of a balance-sheet-based monetary policy instrument. Both Elbourne et al. (2018) and Elbourne and Ji (2019), find very small effects of the APP on economic activity. However, as they use shadow rates, comparability and scaling of the effects is not straightforward. We, therefore, refrain from including the studies in the summarising chart above.

**All in all, the APP led to a suppression of government bond yields and also had some expansionary effects on real activity, especially in vulnerable Member States.** However, effect sizes remain rather inconclusive. The reduction in yields dominantly reflects changes in the risk perception rather than changes in inflation expectations.

<sup>10</sup> We discuss potential drawbacks and risks for the longer term in Section 3.

## 2.5. Comparison to international evidence on the effectiveness of QE

**A number of studies assess the efficacy of QE programmes of other central banks.** These are particularly interesting because central banks, such as the Fed or the Bank of England (BoE), implemented large-scale asset purchasing programmes in response to the Global Financial Crisis much earlier than the ECB, so that the evaluation sample is longer. The ECB's initial reaction to the Global Financial Crisis focused on direct bank lending to stabilise the euro area's bank-centric financial markets (Fawley and Neely, 2013), with QE being implemented only later, by the end of 2014, to counter disinflationary tendencies (Praet, 2018). Due to the differing implementation strategies, studies on the efficacy of QE on key financial and macroeconomic variables became available later for the euro area. To assess whether there are substantial and euro area-specific differences, we briefly recap the available international evidence.

**Like for the euro area, evidence on the US, the UK, and Japan suggests that the announcement of large-scale asset purchases stabilises financial markets.** Quantitatively, a USD 1 trillion QE program, for example, reduces 10-year Treasury yields on average by 40 basis points, similar to cutting the short-term interest rate by about 1.5 to 1.75 percentage points (Gürkaynak et al., 2005; Chung et al., 2012; Williams, 2014; Gern et al., 2015; Fiedler et al., 2016; Swanson, 2017). Similar results are found in studies focusing on the UK (Joyce et al., 2012) or Japan (survey in Ugai, 2007). To enable international comparison, we follow Andrade et al. (2016) and scale the results summarised in Table 1 to 10 % of euro area GDP and consider an average across studies, yielding an average compression of 10-year euro area sovereign bond yields by 54 basis points. According to the studies that are listed by Andrade et al. (2016) the respective average standardised effect of QE on 10-year bond yields was 64 basis points for the UK, 17 basis points for Japan, and 75 basis points for the US. Thus, euro area yields were compressed stronger than yields in Japan, but somewhat less than those in the UK and in the US. Extending this exercise to the individual Member States suggests that the compression for Italian and Spanish yields (76 and 73 basis points, respectively) was comparable to the average US effect. While the effect on French yields reflects the euro area average (55 basis points), German yields were, on average, only suppressed by 36 basis points.

**Effects on output and inflation tend to be smaller in the euro area than in the US or in the UK, but the range of estimates is large.** Fiedler et al. (2016) and Fiedler and Gern (2019) provide comparisons of average US output and inflation responses. Considering an average across studies indicates that a USD 1 trillion QE programme would increase output by about 0.86% and inflation by 0.55 percentage points. Compared to the average euro area effect across the empirical studies suggests that the euro area output response (0.7%) was somewhat smaller, whereas the inflation response (0.5 percentage points) was rather comparable. These figures are in line with the results reported in Hartmann and Smets (2018). Extending the comparisons to the UK, Hartmann and Smets (2018) show that euro area output and inflation responses were smaller compared to UK responses. This might likely be traced back to the ECB's later implementation of QE, during a period when market conditions were not as turbulent and disrupted as during the Global Financial Crisis (Andrade et al., 2016). Engen et al. (2015) and Wu and Xia (2016) further quantify that QE led to a reduction in the US unemployment rate by 1.2 percentage points between 2009 and 2013. The range of estimates regarding the macroeconomic effects in the literature is, however, very wide and some studies find quite large effects. According to Weale and Wieladek (2016), for example, a USD 1 trillion QE programme would increase GDP by 4% and inflation by 4 percentage points. The authors conclude that the ECB's QE was 2/3 times less effective than in the UK and the US. The estimates of Kim et al. (2020) suggest increases in US industrial production by 3% and in the level of the US CPI by 1.6%, and a reduction in unemployment by 0.8 percentage points.

**There is evidence for both, the euro area and the US, that the timing of asset purchase programmes matters.** Similar to the euro area evidence by Blattner and Joyce (2016) and Bulligan and Delle Monache (2018), studies for other economies find diminishing effects of QE over time. Kuttner (2018), for example, provides a recent and comprehensive summary that indicates that the effects of US QE were largest for QE1 (approx. -100 basis points for 10-year Treasuries yields), smaller for Q2 (-30 to -40 basis points), whereas Q3 had only minor yield impacts. This is in line with the evidence suggesting that QE seems to be most effective when market function needs restoring so that financial conditions can be kept favourable for governments, banks, firms, and households (Kuttner, 2018). For example, Cui and Stark (2019) argue based on a theoretical model that the effectiveness of US QE during the Global Financial Crisis was highest during the period of acute financial distress, avoiding an even greater slump in output and inflation. This reasoning is supported by recent empirical evidence. Dahlhaus (2017) finds that US monetary policy is more effective during times of financial distress, Jannsen et al. (2019) show that monetary policy is particularly effective during the recessionary phase of financial crises, while Bech et al. (2014) show that it is ineffective in further stabilising output in the aftermath of financial crises.

**Regarding transmission, studies on the US and the UK find that both, the portfolio rebalancing and the signalling channel, are important.** While in the euro area, studies generally emphasize that both channels are at work, the empirical results discussed above suggest that the APP was mainly transmitted through the portfolio rebalancing channel as the size of a direct signalling effect has been estimated to be rather small, mattering especially for “core” countries (Chadha and Hantzsche, 2018). For Japan the signalling channel seems to be more important (for a survey see Ugai, 2007).

**To sum up, while the available APP evidence points in the same direction as the international evidence, the effects on euro area long-term yields, output, and inflation were likely somewhat smaller compared to the US and the UK, but larger than for Japan.** The smaller effects compared to the US and the UK can possibly be explained by the later implementation of QE measures when markets were not as disrupted as during the Global Financial Crisis. Comparing effects across Member States, shows that effects were similarly strong in Italy and Spain as in the US and the UK, while the effects for Germany and France were smaller. This observation is in line with the proposition that the effects of QE are largest in times of financial distress.

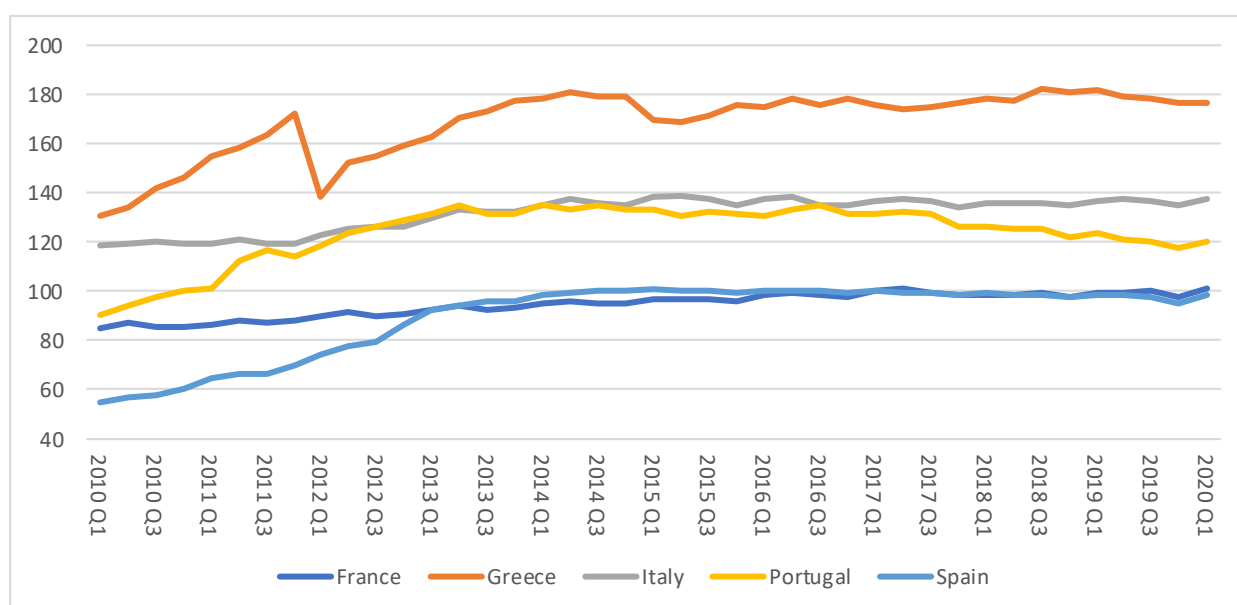
### 3. POTENTIAL DRAWBACKS AND UNINTENDED SIDE-EFFECTS

**Large scale asset purchases by the central bank may lead to unintended side-effects which need to be taken into account.** To decide whether the use of non-standard monetary policy tools, such as different forms of QE, is appropriate, one needs to weigh the potential benefits against the potential costs associated with them. This chapter provides an overview of the potential drawbacks that should be considered in this respect. These include the reduction of incentives for needed fiscal consolidation and structural reforms, the impairment of the independent conduct of future monetary policy, excessive risk-taking in the financial sector, the misallocation of resources and a “zombification” of the economy, and an increase of wealth inequality (cf. Fiedler and Gern, 2019).

**Purchase programmes under which the Eurosystem buys government bonds are in many respects equivalent to Eurobonds.** Whenever the Eurosystem implements such a purchase programme, it creates new central bank money and uses it to buy government bonds. Therefore, assets for which liability rests (at least as long as no-bailout rules are observed) with individual Member States are taken out of circulation and replaced by assets that are a common liability of the euro area.

**Reducing the risk spreads of certain government bonds decreases the incentive to engage in fiscal consolidation and structural reforms.** Fiscal as well as many economic policy decisions are the purview of individual Member States. However, as asset purchase programmes partially shift costs and risks onto other countries, each individual Member State may find it less costly to stay on an unsustainable fiscal path and to delay structural reforms, thereby reducing economic growth and employment in the longer term as well as increasing the likelihood of future fiscal crises. Despite a prolonged period of very low interest rates (and a significant debt restructuring in the case of Greece), public debt in many euro area countries did not decrease significantly over the past decade and is far from converging towards reference levels as envisaged by the Fiscal Compact (Figure 2).

Figure 2: General government gross debt in selected euro area countries in % of GDP



Source: Eurostat.

**Large-scale asset purchase programmes can put undue constraints on future monetary policy.**

For one, if monetary conditions in the future are such that the central bank should want to tighten monetary policy by reversing its asset purchases, it may nevertheless hesitate to do so, for two reasons. First, by selling the accumulated bonds, the central bank would allow risk spreads to re-emerge. With that, fiscal pressure on certain issuers would return as well. Second, if the sale became necessary at a time of rising nominal interest rates (e.g. due to rising inflation or increased risk premia after another fiscal crisis in the euro area), the central bank might have to recognise substantial losses by selling: higher interest rates mean that the value of a given fixed-rate bond will be lower. In addition, if the value of the central bank's asset portfolio falls too much (either due to adverse developments in the interest rate environment or because some creditors are unable to honour their obligations and the central bank is included in a haircut), the central bank may be unable to reabsorb enough central bank money to stabilise inflation by itself. It would then be dependent on recapitalisation by governments, and ultimately through either higher taxation or lower public spending, which may not be forthcoming, especially as this requirement is likely to arise in economically difficult times.

**Extraordinary monetary policy can encourage excessive risk-taking in the financial sector.**

Expansionary policy measures can weaken financial stability and introduce financial imbalances through an increase in risk taking (Rajan, 2005; Maddaloni and Peydro, 2011; Drehmann et al. 2012), and these risks may be higher the longer those policies stay in place (Kahn, 2010; Maddaloni and Peydro, 2012). Of course, increased risk-taking is to some degree an intended consequence of the extraordinary measures. Asset purchase programmes are supposed to work, at least in part, through the portfolio rebalancing channel: after selling government bonds to the central bank, commercial banks are supposed to invest their money into other assets, thereby providing financing to the economy. Refinancing operations of increased duration with lower collateral requirements and at potentially negative interest rates are likewise intended to increase credit provision. For the time being, the evidence for unintended side effects in the form of the excessive growth of house prices, depressed stock market volatility, or excessive credit growth is weak (Beck et al., 2019). Still, from a

macroeconomic perspective, it may be difficult to distinguish between appropriate and excessive risks in real time, to then adjust policies in such a way that allows the former but minimises the latter.

**Extraordinary monetary policy can reduce the growth potential of the economy via a misallocation of resources and a “zombification” effect.** If these policies produce excessively low interest rates for certain market participants, the share of funding going to less productive firms can increase at the expense of their more productive competitors, thus inhibiting structural change and productivity growth. The reason is that too low interest rates allow banks to “evergreen” loans: rather than face write-offs on loans to non-viable companies they will continue to renew them. For the bank, this can be a “gamble for resurrection”: if interest rates were not artificially low, debtors would be unable to make the recurring payments and they would default on their loans. If loan losses are large enough, then the creditor bank would also face bankruptcy. However, for as long as interest rates are artificially low, unproductive firms and banks can avoid recognising the inability to repay. The bank can postpone the repayment of the loan so that both, debtor and creditor, can continue on and avoid recognising their economic death (bankruptcy), thus the moniker of “zombification”, and may even hope that they get lucky and future shifts in the economic environment turn the debtor once again into a viable concern who can repay the bank (“resurrection”). Japan has had an extraordinary monetary environment even before the Global Financial Crisis, and Hoshi and Kashyap (2004) as well as Caballero et al. (2008) found some early evidence for “zombification” there. There are also some studies looking at the euro area. Here, small Italian banks seemed to engage in some “evergreening” of loans after central banks reacted to the Lehman bankruptcy (Albertazzi and Marchetti, 2010). Furthermore, the main beneficiaries of the OMT announcement by the ECB appear to have been firms in periphery countries with a low credit-worthiness, whereas investment and employment did not benefit from the additional credit provided to these firms (Acharya et al., 2019a). Excess production capacity might have also been additionally expanded via a “zombie credit channel” through the provision of cheap credit to impaired firms (Acharya et al., 2019b). Thus, while QE was introduced to meet disinflationary tendencies (Preat, 2018), it might have instead contributed to continuously subdued inflation dynamics itself. In the US, the decision of the Fed to purchase large volumes of corporate bonds in response to the COVID-19 crisis has fuelled the discussion about “zombification” in the economy, although the issue is not new. During a decade of extremely low interest rates and successive stages of QE the number of US corporations unable to earn enough profits to cover their debt-servicing costs in the long term has tripled since 2008 to more than 18%, according to Deutsche Bank estimates (Financial Times, 2020). The OECD uses a different concept of “zombie” firms, referring to low productivity growth and suggests that the increasing prevalence of weakly productive firms is a notable factor behind the productivity slowdown observed in many OECD countries. A rising share of firms that would normally be expected to be restructured or exit the market is observed in several countries and is closely related to weaknesses in the banking system and insolvency regimes (Andrews et al., 2017).

**Asset purchase programmes may have distributional consequences across groups with different incomes and wealth.** Because people differ with respect to the amounts of assets they own and their exposure to financial markets, some may be able to profit more from large-scale purchases by the central bank than others. In fact, there are some indications that wealth inequality increased because of the ECB’s unconventional policies (Horvath, 2017). However, Lenza and Slacalek (2018) argue that the effect of QE on wealth inequality is small compared to the large reduction in income inequality stemming from those low-income people who were only able to find work due to this monetary policy intervention.



## 4. POSSIBLE EFFECTS OF ASSET PURCHASES IN RESPONSE TO COVID-19

**The economic slowdown and progressive increase of uncertainty in the wake of the COVID-19 pandemic led to a pronounced tightening in financial conditions and triggered a strong reaction of the ECB.** During February and March it became increasingly apparent that COVID-19 would not be limited to China, but was spreading across Europe, with potentially dramatic effects on the economy. As a result, risk premia in financial markets shot up and stock prices collapsed. Due to the flight to safety, yield spreads in European sovereign bond markets widened massively, raising concerns that fiscally weak European countries would be unable to raise funds in the capital markets to finance appropriate policy responses. The ECB responded with a number of measures designed to support liquidity and funding conditions and shore up confidence, including (1) improvement of the conditions of its Targeted Long-term Refinancing Operations (TLRTO III) and introduction of Pandemic Emergency Longer-term Refinancing Operations (PELTROs); (2) collateral easing measures and expansion of the range of eligible assets under the corporate sector purchase programme (CSPP) to non-financial commercial paper; (3) introduction of an additional temporary envelope of EUR 120 billion to its existing asset purchase programme until the end of 2020, with the aim of ensuring a strong contribution of the private sector purchasing programmes; (4) launch of a new temporary Pandemic Asset Purchase Programme (PEPP) with a volume of EUR 750 billion until the end of 2020 and more flexible provisions with respect to the allocation across jurisdictions. In addition to asset categories eligible under the existing asset purchase programme (APP), non-financial commercial paper is also eligible for purchases under the PEPP. Under PEPP, a waiver for the eligibility requirements will be granted for securities issued by the Greek government. The envelope of the PEPP was increased by €EUR 600 billion in June and the time frame extended to at least mid-2021.

**First assessments of the effect of the PEPP suggest a substantial stabilising impact on financial market variables as well as on the outlook for economic activity and inflation but could be skewed to the upside.** After the ECB announced its PEPP on 18 March in response to increasing signs of market fragmentation, there were first indications of market stabilisation in early April that continued and became more evident during May. The ECB attributes these developments to the PEPP (Lane, 2020). Based on previous episodes for which the literature found large stabilising effects of asset purchases by the central bank on financial markets at the height of a crisis, this view is quite plausible. The ECB itself estimates that the PEPP decision together with the scaling-up of the APP have reduced GDP-weighted 10-year sovereign yields by almost 45 basis points (Hutchinson and Mee, 2020). This reduction of risk premia is in line with the existing evidence related to early asset purchases outlined previously. These estimates are based on elasticities derived from the PSPP. The authors view these estimates as being rather conservative and that estimates based on an event study approach might show a higher effect. The ECB estimates a cumulated euro area GDP growth contribution of 1.3 percentage points and an inflation contribution of 0.8 percentage points until 2022 (Hutchinson and Mee, 2020), based on average estimates from previous studies on the effects of QE in the euro area (Rostagno et al., 2019). Our take from the literature on quantitative estimates of the effects of the APP and QE programmes of other central banks is that the effects of the PEPP on output and inflation are highly uncertain (see Section 2). Estimates of the effects of previous QE programmes range from effects close to zero to quite sizeable effects. We find that in particular simulation-based studies find rather large effects, while empirical studies find lower effects. Therefore, the effects of the PEPP on output and inflation could also be quite a bit lower than the ECB estimates if one views purely empirical studies as more reliable compared to model-based simulation studies. Point estimates can, at the very best, serve as a rough guideline.



**While asset purchases have been instrumental to stabilise sentiment in the acute crisis, it remains unclear what the contribution of additional liquidity is once uncertainty has returned to normal levels.** The emergence of the COVID-19 pandemic and the measures implemented to get it under control with their massive restrictions of economic activity have been a singular event that led to an almost unprecedented surge in economic uncertainty. In such an environment, the assumption of risk by the central bank by provision of additional liquidity against unusually weak collateral and through unusual channels makes a huge difference and is an appropriate response. However, the value added of a continued expansion of the central bank's balance sheet is more questionable – especially in light of the risk of adverse side effects discussed in the previous section – in a situation of “normalisation”, with the economy recovering and experience and increased knowledge allowing a more targeted policy response to potential new increases of COVID-19 infections.

## 5. THE ROLE OF ASSET PURCHASES IN THE FUTURE

**QE has become a standard policy measure over recent years in the attempt of monetary authorities to increase inflation expectations and stimulate growth in a low interest rate environment.** While the empirical evidence supports the view that QE has helped stabilise expectations and keep inflation at positive levels, the effect on inflation has been modest, and even prolonged stretches of substantial net purchases of assets have failed to achieve a sustained increase of inflation to the target level of close to 2 percent in the medium term.<sup>11</sup>

**The monetary policy approach of the ECB has been successful in stabilising expectations and supported growth in the euro area over recent years but has at the same time allowed other policy areas not to deliver on important policy challenges.** Asset purchase programmes have helped the ECB calm investors and financial markets and ensured that the transmission of short-term interest rates to long-term interest rates was not disturbed by extraordinary risk premia. Essentially, the ECB absorbed risks associated with unsustainable fiscal policies, fiscally stretched governments, and shaky banking sectors in some countries. This had initially been imperative, given the alternative of a downward spiral in some economies and even the threat of a break-up of the euro area. In the beginning, asset purchases were considered as a limited short-term solution to fight breakup-risks and buy time to correct policies and institutional arrangements and return responsibility to fiscal policy. However, the success of the ECB masked the need for responsibility of private investors and fiscal policy and led to complacency and insufficient reform. Nowadays, with a long history of asset purchases and this policy increasingly embedded in expectations, it is much more difficult to abandon QE given that this would be considered a major adjustment.

**A cost benefit analysis of asset purchases and QE is complicated by the difficulty to quantify its exact effect on the economy as well as the side risks.** The evidence suggests that asset purchases have a stronger effect on default risk compared to inflation expectations which shows that the stance of monetary policy substantially changes the risk assessment of financial markets. Effects on consumer inflation expectations are also significant but comparatively small.

**There is no guarantee that conducting QE aligns with the price stability mandate of the ECB in the future and trade-offs between both could significantly harm the credibility of the ECB.** The assumption of risks in sovereign debt markets which resembles monetary financing of government budgets through ECB asset purchases has already resulted in the perception that the ECB is conducting policies which are outside its mandate, with the German constitutional court taking a critical approach towards the asset purchases. These discussions are likely to intensify when the economic environment normalises.

**Using asset purchases not regularly but only under extraordinary circumstances is a possible strategy to consider both, the emerging evidence that the QE is particularly effective in times of crisis and the risk that unintended side-effects build up over time.** The experience of the Fed with exiting QE prior to COVID-19 shows that a gradual return to conventional monetary policy does not necessarily coincide with turbulences on financial markets or a recession.

**To leave the current path of monetary policy in the euro area seems feasible only in a period of reduced uncertainty, a scenario which needs a credible solution to the fiscal challenges building up in the crisis.** The core problem is that there is no consensus among Member States when it comes to fiscal responsibility, the role of monetary policy, and the overall policy stance. Some members stress

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<sup>11</sup> Japan is another example of an economy where the response of consumer price inflation to massive QE has been disappointing.

the importance of fiscal responsibility of Member States as originally outlined in the Maastricht Treaty, while others argue in favour of a fiscal union and emphasise solidarity.<sup>12</sup> Given that the debt levels of (some) European countries were already critically high at the outset of the COVID-19 crisis, part of a solution could be to involve creditors, for example as part of a haircut, although this would imply also costs for the ECB.

**A fiscal back-stop mechanism for sovereign bond risk premia could compromise on the conflict between strict fiscal responsibility (Maastricht II) and a comprehensive fiscal union.** Such a mechanism would allow bond yield risk premia of Member States to fluctuate freely in the capital markets and increase noticeably if necessary, but only up to a politically chosen ceiling, say 500 basis points, at which a common institution funded by solvent euro area Member States would intervene to cap the yield spread.<sup>13</sup> This ceiling strategy would re-install market-based risk pricing and retain fiscal policy responsibility at the Member States level, while also making clear that the community would not accept excessive risk premia and is willing to act as a safety net. Within this setting, changes in bond yields would create strong incentives for fiscal consolidation and structural reforms without exposing fiscally distressed Member States to the risk of excessive refinancing costs (thus avoiding “bad” self-fulfilling equilibria in sovereign bond markets). Such a supranational mechanism would operate as part of the fiscal policy regime of the euro area outside the Eurosystem. By doing so, it exempts the ECB from making undue allowances for the fiscal situation in individual Member States such that the monetary policy stance gains substantial latitude in focussing on price stability. In this scenario, the transmission from risk-free rates to sovereign yields would account for the heterogeneous landscape of the euro area while at the same time avoiding break-up risks in times of crisis. This would enable the euro area to mitigate potential turbulences on the way from currently high sovereign debt levels towards solid territory, thus coping with the legacy problem that some Member States currently face. However, all transitory proposals require a consensus on the final target of such a process. Without such a consensus, any attempt to reduce central bank interference with government financing would be vane.

<sup>12</sup> For a discussion of the two approaches see Gern et al. (2019).

<sup>13</sup> “Accountability bonds” as proposed by Fuest and Heinemann (2017) follow a somewhat different approach but share the same logic of combining market pricing and limited fiscal support for those countries that are faced with huge debt levels.

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# This Time is Different The PEPP Might Not Work in a Sectoral Recession

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### **Abstract**

The COVID-19 recession is different from previous downturns because it originates in demand and supply disturbances which are highly specific to certain sectors (contact-intensive services). This sectoral nature renders aggregate demand policies, including monetary policy, much less effective. The PEPP was essential to prevent a financial crisis in the Spring of 2020; but there is no need to increase its size. In a sectoral recession, one should not expect much impact from central bank bond buying on inflation.

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## **CONTENTS**

<b>LIST OF ABBREVIATIONS</b>	<b>132</b>
<b>EXECUTIVE SUMMARY</b>	<b>133</b>
<b>1. INTRODUCTION</b>	<b>134</b>
<b>2. EMPIRICAL EVIDENCE ON THE EURO AREA APP</b>	<b>135</b>
2.1. Transmission mechanisms	135
2.2. Effectiveness of the PSPP in the empirical literature	137
<b>3. EFFECTIVENESS OF MONETARY MEASURES DURING A SECTORAL RECESSION</b>	<b>139</b>
<b>4. CONCLUSIONS</b>	<b>140</b>
<b>REFERENCES</b>	<b>141</b>
<b>QUESTIONS FOR MEPS</b>	<b>143</b>

## LIST OF ABBREVIATIONS

<b>ABSPP</b>	Asset-Backed Securities Purchase Programme
<b>APP</b>	Asset Purchase Programme
<b>CBPP3</b>	Covered Bond Purchase Programme 3
<b>CSPP</b>	Corporate Sector Purchase Programme
<b>ECB</b>	European Central Bank
<b>PEPP</b>	Pandemic Emergency Purchase Programme
<b>PSPP</b>	Public Sector Purchase Programme
<b>QE</b>	Quantitative Easing
<b>VAR</b>	Vector Autoregression

## EXECUTIVE SUMMARY

- **Central bank bond-buying, like the PSPP or the PEPP, is not an 'all-purpose' policy instrument.**
- **It can be very effective in reducing risk spreads when financial markets are in turmoil, like 2008/2009 or March/April 2020.** When uncertainty is very high and market participants only want the security of cash, it is essential that the central bank becomes the 'buyer of last resort'.
- **However, central bank bond buying becomes much less effective when markets are calm.** In these circumstances the main aim becomes increasing inflation. But when a central bank buys government bonds it only substitutes one form of public sector liability (government bond) with another (deposit at the central bank). This might influence (long term) interest rates but the ultimate impact on inflation is limited as can be seen from the meagre results of QE2 and 3 in the US, the failure of the monetary arrows in Japan and the fact that after years of PSPP the inflation rate in the euro area barely budged.
- **A number of studies, almost all of them by authors associated with the Eurosystem, claim that the PSPP has been effective in lowering (long-term) interest rate and lifting inflation.** However, the estimated magnitudes are in the order of at most 1 percentage point higher inflation, spread over several years.
- **QE is likely to be even less effective in today's circumstances of a 'sectoral recession'.** Rates on safe assets are already negative and risk spreads very compressed. The further minute reductions in long-term interest rates that could be achieved by any expansion of the PEPP are unlikely to have a meaningful impact on demand which is held back in some sectors by social distancing measures and lingering fears about the virus.
- **Policy-makers can react in very different ways when a policy instrument becomes less effective:** one reaction is to 'double the dose' in order to achieve the desired result. The other reaction is to use it less because collateral damage becomes more important relative to the limited results one can expect.



# 1. INTRODUCTION

The asset purchase programme (APP) was announced by the ECB on 22 January 2015. The aim of the programme consisted in achieving “a sustained adjustment in the path of inflation which is consistent with our aim”<sup>1</sup>. In a context of strong downward pressures on inflation that were jeopardising the achievement of the ECB price stability objective and a limited room to cut the policy rate further down, the Governing Council decided to implement an expanded purchase of public sector assets (PSPP)<sup>2</sup>.

The APP net purchases were carried out until the end of 2018, for a total amount of EUR 2.6 trillion. However, on September 2019, given an unexpected protracted slowdown in the euro area economy mainly due to high global uncertainty, the Governing Council decided to restart operations at a monthly pace of EUR 20 billion as from November of the same year.

Few months later, at the beginning of 2020, the COVID-19 pandemic outbreak dealt a massive shock to the global economy. After some initial hesitation, the ECB reacted in a decisive way. First, on 12 March, it expanded net purchases under APP of an additional EUR 120 billion until end-2020; then a few days later, it announced the EUR 750 billion pandemic emergency purchase programme (PEPP). This is a temporary and flexible programme designed to respond to the unprecedented nature of the shock (Lane, 2020).

The health crisis, and the following stringency measures implemented by governments all over the world to limit contagion among the population, caused a drop in GDP of unprecedented size. This recession is different from previous ones. The reason lies in the fact that the prevention (social distancing) and the lockdown measures generated a combination of demand and supply shocks, that affects different sectors of the economy in a different way. Specifically, it hits more contact-intensive services.

In this paper, we explore both the recent empirical literature on the impact of the APP on the economy and the emerging theoretical studies on the COVID-19 shock. Our goal is to understand whether the PEPP, which was crucial to prevent a financial crisis at its start, might still have an impact on the economy and specifically on inflation during the current sectoral recession.

Our main conclusion is that the quantitative easing (QE) implemented by the ECB, may have little impact on the economy today, since it mainly influences aggregate demand, while the shock is sectoral. Therefore, policymakers stand at a crossroad: they could either increase the size of the purchases hoping to increase the impact on the concerned sectors or to reduce the size, given that the problem is not one of aggregate demand.

The rest of the paper is organized as follows. Section 2 presents the empirical evidence on euro area APP. Section 3 discusses the effectiveness of the monetary policy measures in a sectoral recession. Section 4 concludes.

<sup>1</sup> Introductory statement to the press conference, Mario Draghi, President of the ECB, Frankfurt am Main, 22 January 2015.

<sup>2</sup> On 4 September 2014, the ECB launched other two purchase programmes: purchase of covered bonds (CBPP3) and asset-backed securities (ABSPP). In January 2015, these two programmes were incorporated in the broad APP. Moreover, on June 2016 the ECB announced the corporate sector purchased programme (CSPP). The APP currently includes CBPP3, ABSPP, PSPP, and CSPP.



## 2. EMPIRICAL EVIDENCE ON THE EURO AREA APP

### 2.1. Transmission mechanisms

To reach its final goal and have an impact on the real economy, the large-scale asset purchase operates through a series of direct and indirect transmission channels, as described by Cova and Ferrero (2015) and depicted in Figure 1.

At the time the decision was taken (January 2015), the German 10-year rate was already at 0.40, thus, it was clear at the time that there was little space for further downward movement.

By purchasing financial assets, the central bank tries to affect long-term interest rates. First, if investors have a preference for holding assets with the same maturity of the ones purchased by the central bank, they will be willing to accept lower yields, thus paying higher prices for those specific maturity assets (*scarcity channel*)<sup>3</sup>. Second, by purchasing long-term assets, the central bank reduces the duration risk and decreases the long-term yields with respect to the short-term ones (*duration channel*). In addition, when central banks reduce the supply of safe assets they create an incentive for investors to 'rebalance' their portfolios towards riskier, higher yielding assets, such as corporate bonds (*portfolio rebalancing channel*). Thus, decreasing the yields and increasing the prices of those other assets as well. Altavilla et al. (2015) find that this is one of the most relevant channels for transmission of the APP in the euro area. If investors buy assets denominated in foreign currency, this could lead to exchange rate depreciation (*exchange rate channel*). Empirical evidence of this mechanism activated in many countries, among which the euro area, is provided by Rogers et al. (2014).

Moreover, by announcing a bond buying programme, the central bank signals a future accommodative monetary policy, thus expected path of future short term rates and with it the risk-free component of long term assets should drop (*signaling channel*). Studies on the APP implemented in the euro area, find that this channel is small in magnitude compared to the other channels (e.g. Altavilla et al., 2015; Andrade et al., 2016; Arrata and Nguyen, 2017; and Lemke and Werner, 2020).

The reduction in long term rates should reduce the yields of government debt, thus implying a lower cost of public debt servicing and easing public finance conditions (*government budget constraint channel*).

The central bank bond purchases replace financial assets on banks' balance sheets with central bank reserves. This increases the excess liquidity, leading to a decrease of the money market interest rate towards the deposit facility rate (*excess liquidity channel*).

As a consequence, by increasing the prices of the assets object of the purchase, the central bank gives banks incentive to provide more credit to the economy (*bank interest rate channel*). There is some discussion whether lower rates improve banks' profitability. Some authors (e.g. Brunnermeier and Kobi, 2018,) argue that there is a "reversal rate" beyond which a further lowering of the interest rate damages bank profitability so much that banks will extend less credit.

It is sometimes argued that, if the announcement by the central bank is credible, it may exert a large impact on firms' and households' beliefs about the future state of the economy and particularly about inflation. This may move inflation expectations towards the 2% target (*signaling/ confidence channel*). However, this channel seems to be self-validating: if QE is successful it will be successful.

<sup>3</sup> This is in line with the preferred-habitat theory: for a theoretical example see Vayanos and Vila (2009), for empirical evidence see D'Amico and King (2013).

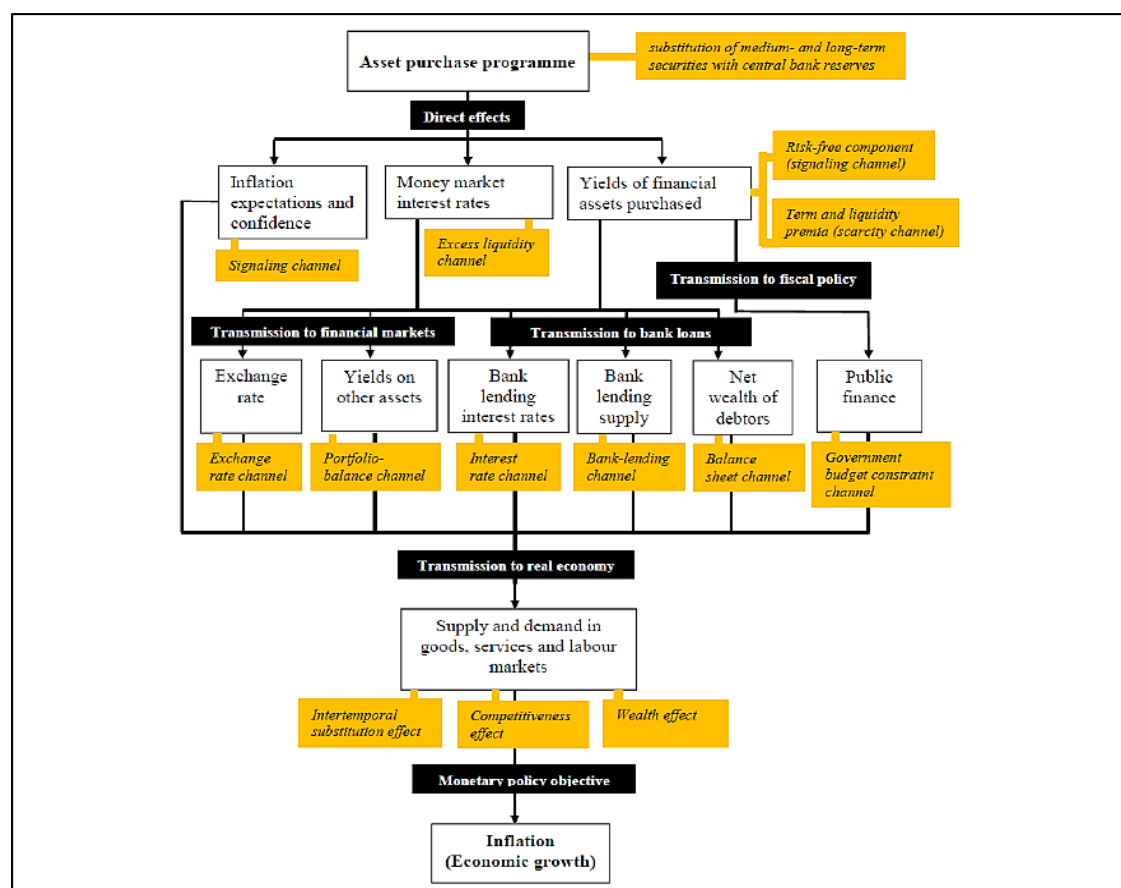
All the channels described so far allow for the purchase of assets by the central bank to have an impact on the real economy. The expansionary impact on aggregate demand is mainly driven by three effects:

- (i) lower cost of borrowing affects the intertemporal decision of household and firms, pushing them to borrow or invest more (*intertemporal substitution effect*);
- (ii) currency depreciation increases the competitiveness of goods domestically-produced (*price competitiveness effect*); and
- (iii) higher prices of financial and real assets increase the wealth of holders (*wealth effect*).

But the Eurosystem is responsible only for achieving price stability, not full employment. The ultimate step in assessing the APP must thus be the link between inflation and the state of the economy. This link is usually assumed to exist in the form of a Philips curve, although before the onset of the crisis there had been much discussion about the existence and stability of such a link between output and inflation (see Gros, 2018, Lane, 2019).

Figure 1 below, taken from Cova and Ferrero (2015) illustrates the complexity of the transmission mechanism.

Figure 1: APP transmission channels



Source: Cova and Ferrero (2015).

## 2.2. Effectiveness of the PSPP in the empirical literature

Several empirical studies in the literature focus on the analysis of the effectiveness of the APP implemented by the ECB.

In the first phase, immediately following the beginning of the programme, mainly event-study methodologies have been carried out (see Dell'Ariccia et al., 2018; Altavilla et al., 2015; De Santis, 2016; De Santis and Holm-Hadulla, 2017). Using high-frequency financial data, these works have been mainly focused on the impact of the announcement of the APP on interest rates. The common finding is that this monetary policy measure reduced yields and risk spreads, thus being effective. However, these studies have in general found little impact of the announcement on inflation expectations as measured by market indicators, such as inflation swaps. The first paper by Altavilla et al. (2015) found a small impact on short term inflation expectations, but none, or a negative one on five year forward rates. The reductions in interest rates attributed to the APP (or the PSPP) are then often introduced as a shock in macroeconomic models which then produce increases in economic activity and inflation. The higher inflation rate calculated by these models then serve as evidence that the PSPP has indeed been effective in fostering price stability.

More recently, the empirical evidence on euro area QE has been enlarged by few studies using different methodologies, which do not rely on the announcement effect, but consider the changes in the co-evolution of many economic variables over the time period of the policy considered. The main conclusion of these studies is also that the APP exerted a sizeable effect on the euro area economy.

Table 1 below summarises these empirical papers, that are mainly produced by authors affiliated with the ECB or the Eurosystem. The fact that the literature on the effectiveness of the PSPP is dominated by authors which have an institutional interest in arriving at a positive conclusion is seldom mentioned. These studies are generally of the highest academic standards and some of them have been published in peer reviewed journals. But this does not change the fact that high quality studies with different conclusions would presumably not have been published by the ECB.

Table 1: Summary of empirical findings on the euro area APP

Study	Methodology	Impact
Altavilla et al. (2015)	Term structure model Event-study	➤ 30-50 bps on 10-year bond yields bigger impact for riskier asset at longer maturities.
Andrade et al. (2016)	Event-study Daily vector autoregression (VAR) General equilibrium model	➤ significantly and persistently: - reduction in sovereign yields on long-term bonds. - increase in the share prices of banks holding more sovereign bonds. ➤ Model results: APP supported both GDP and inflation (counterfactual).
Gambetti, Musso (2017)	Time-varying parameter VAR model with stochastic volatility	➤ Significant upward effect on inflation and real GDP. ➤ Several channels activated.

Beck et al. (2019)	Augmented inverse propensity score weighted (AIPW) estimation	<ul style="list-style-type: none"> <li>➤ Sustained rise in inflation and inflation expectations.</li> <li>➤ Main transmission channel: exchange rate.</li> </ul>
Eser et al. (2019)	Arbitrage-free term structure model	<ul style="list-style-type: none"> <li>➤ Compression of 10 year term premium (from 50 to 95 bps).</li> </ul>
Koijen et al. (2019)	Sector-level demand system estimation	<ul style="list-style-type: none"> <li>➤ Declined in government yields of 47 bps on average (range -28 to -57 bps across countries).</li> </ul>

Source: Authors' own elaboration.

It is difficult to see the PEPP, with its greatly increased bond buying having a similar impact as the PSPP even if one accepts the results of these studies at face value. Today there simply little space for interest rates to fall further. The German 10-year rate is already at -0.50. It is difficult to see it falling another 100 basis points.

### 3. EFFECTIVENESS OF MONETARY MEASURES DURING A SECTORAL RECESSION

The social distancing measures put in place by many governments due to the COVID-19 outbreak dealt a massive shock to the economy everywhere. The initial reaction to the 'lockdown' decreed in many countries in Europe has been a generalised recession.

The speed of the fall in GDP has been larger than anything experienced in the past. What really distinguishes this recession is not its magnitude, but its nature. This is a recession hitting different sectors of the economy in a different way.

Two recent papers analyse in detail the sectoral nature of this shock. One, Guerrieri et al. (2020) considers the COVID-19 crisis a supply shock. Their main insight is that "a 50% shock that hits all sectors is not the same as a 100% shock that hits half the economy."

This conclusion associated with the sectoral nature of the shock has several implications for policy. One is that standard fiscal stimulus becomes less effective than usual because the sectors' shut down mutes the Keynesian multiplier feedback.

In this model, the implications for monetary policy are complex and depend on whether it operates at the effective lower bound. Its main purpose would be to prevent exits by firms which would be viable in the long run. Once this has been achieved, as it has been in Europe also thanks to rapid action by banking supervisors, there is little to be gained from macroeconomic demand management.

Another major contribution argues that the COVID-19 should not be considered only as sectoral supply shock (because of government ordered social distancing measures), but also as a sectoral demand shock as households and firms voluntarily reduce demand for travel, tourism and other contact-intensive services. Farhi and Baqaee (2020) study supply and demand shocks in a general disaggregated model with multiple sectors. A major element in their approach are the input-output linkages across sectors, which propagate these sectoral shocks (both demand and supply) to the entire economy.

Their major finding is that "aggregate demand stimulus is only about a third as effective as in a typical recession". This finding applies to both fiscal and monetary policy. The authors also argue that "[m]ore targeted forms of demand stimulus deliver better bang for the buck."

Monetary policy can only attempt to stimulate aggregate demand, it cannot be targeted those sectors in which demand is weakest. Lowering interest rates via monetary policy instruments is usually thought to induce households to bring consumption forward, to consume more today and less tomorrow. However, this mechanism works less well when households today cannot buy their normal consumption basket.

An example can illustrate this proposition.<sup>4</sup> Consider a person who wants to buy new sport equipment, which would be used on a vacation abroad. Normally, a low interest rate would make it more likely that the entire consumption basket (e.g. including vacation and sport equipment) is bought today. But if today, due to the pandemic, foreign travel is impossible, the sport equipment will not be bought. No amount of interest rate reductions will lead to higher sales.

<sup>4</sup> The extreme example made by economist is that of shoes: if today only right foot shoes are available consumers will not buy them and rather wait until again both right and left shoes are available as pairs. Interest rates will thus not have a big impact on consumption decisions.

## 4. CONCLUSIONS

The experience with the APP/PSPP should not be viewed as a useful guide for what to expect from the PEPP. Strong intervention by the ECB in financial markets was absolutely justified during the turbulent period of March 2020. However, there is weaker argument for massive bond buying by the Eurosystem now that markets have settled down and the economy is starting to recover. The PEPP is unlikely to have a major impact on the overall economy and inflation because the root cause of this recession is very different from previous ones.

This recession (and the recovery) is different because it results from very sector-specific demand and supply disturbances. The key differentiating point is the sectoral specificity, not the demand or supply nature of the disturbance. Aggregate supply shocks are known to be 'stagflationary', i.e. they should depress output while inflation increases. This is not the case today. Aggregate demand shocks are deflationary, i.e. both output and inflation falls. An easing of monetary policy is entirely appropriate in this case. However, monetary policy, which can influence only aggregate demand, can achieve little if a number of sectors are subject to both negative demand and supply shocks.

Action by the ECB through bond purchases might thus today be less effective than usual in achieving the price stability objective. Faced with this situation, the leadership of the ECB has two contrasting options: it could argue that with a lower effectiveness of its instruments; it should just increase the dose. Or, it could reduce the intensity of its asset buying until more normal times return.

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## QUESTIONS FOR MEPs

- Will the ECB take into account the specific sectoral nature of this recession?
- Does the ECB believe that its monetary policy instruments are as potent as before?
- Given that German rates are already at -0.50, do they believe they can achieve further reduction in rates?



# Theory, Evidence, and Risks of the ECB's Asset Purchase Programme

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## **Abstract**

In response to the COVID-19 crisis, the ECB has relaunched a massive asset purchase programme within its combined-arms monetary strategy. This paper presents and discusses the theory and the evidence of the central bank's asset purchases, mainly in the euro area. It analyses the role of asset purchase programmes in the ECB's toolkit and the potential associated risks, focusing specifically on the problems of the programmes' unwinding. Finally, the paper offers some possible alternatives to the asset purchase programmes.

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## CONTENTS

<b>LIST OF ABBREVIATIONS</b>	<b>147</b>
<b>EXECUTIVE SUMMARY</b>	<b>148</b>
<b>1. INTRODUCTION</b>	<b>149</b>
<b>2. THE ECB'S APP: THEORY AND MACROECONOMIC IMPACT</b>	<b>153</b>
2.1. The transmission channels	153
2.2. An evaluation of the macroeconomic effects	157
<b>3. THE LONG-RUN RISKS OF THE ECB'S APP AND PEPP</b>	<b>161</b>
3.1. The early debate on the risks of the ECB's APP continuation	161
3.2. The unwinding problem after the pandemic	164
<b>4. CONCLUSIONS</b>	<b>168</b>
<b>REFERENCES</b>	<b>170</b>
<b>QUESTIONS FOR MEPS</b>	<b>174</b>

## LIST OF ABBREVIATIONS

<b>APP</b>	Asset Purchasing Programme
<b>ABSPP</b>	Asset-Backed Securities Purchase Programme
<b>CBPP</b>	Covered Bond Purchase Programme
<b>CSPP</b>	Corporate Sector Purchase Programme
<b>EA</b>	Euro area
<b>ECB</b>	European Central Bank
<b>EC</b>	European Commission
<b>ESM</b>	European Stability Mechanism
<b>EU</b>	European Union
<b>FG</b>	Forward guidance
<b>HICP</b>	Harmonised Index of Consumer Prices
<b>LTRO</b>	Long-Term Refinancing Operations
<b>NCB</b>	National Central Bank
<b>NGEU</b>	Next Generation EU
<b>NIRP</b>	Negative Interest Rate Policy
<b>NPL</b>	Non-Performing Loan
<b>OMT</b>	Outright Monetary Transactions
<b>PEPP</b>	Pandemic Emergency Purchase Programme
<b>PSPP</b>	Public Sector Purchase Programme
<b>QE</b>	Quantitative Easing
<b>SGP</b>	Stability and Growth Pact
<b>SMP</b>	Securities Markets Programme
<b>TLTRO</b>	Targeted Longer-Term Refinancing Operations
<b>UMP</b>	Unconventional Monetary Policy
<b>UTP</b>	Unlikely-to-Pay loan
<b>ZLB</b>	Zero-Lower Bound

## EXECUTIVE SUMMARY

- **A central bank's long-term asset purchase is an unconventional monetary tool.** It represents a departure from the traditional composition of the central bank's balance sheet and utilises the monetary transmission channels in new ways.
- **We discuss the theoretical aspects and the effectiveness of three channels that can be impacted by the ECB's asset purchase programme (APP):** the interest-rate channel (either by a portfolio-rebalancing or a signalling mechanism); the credit-easing channel; the implicit-guarantee channel.
- **Almost all empirical studies agree that the ECB's APP substantially improved the euro area (EA)'s financing conditions.** The flattening of the yield curve, the increase of bank loans, and the compression of sovereign debt yields played a significant role in strengthening the economic recovery after the European crisis (2011-2013).
- **After relaunching its APP at the end of 2019, the ECB announced an unprecedented amount of net purchases to deal with the COVID-19 crisis.** This was the correct response to the economic depression, but it was only a part of a complex policy strategy. However, the novelty brings new concerns.
- **We offer a provisional analysis of the drawbacks often associated with a prolonged ECB APP** (from March 2015 to the end of 2018), the moderate APP re-starts since November 2019, and its relaunch after the COVID-19 shock.
- **Early literature stresses four potential drawbacks which relate to bank profitability, financial bubbles, social inequality, and the overlapping between monetary and fiscal policies.** These concerns are not so crucial for the case of the ECB's APP before the pandemic shock.
- **Significant risks of the ECB APPs are about their future unwinding.** In a post-COVID scenario, these risks are also related to the fiscal stance and the architecture of the EA. The **implicit-guarantee channel produces the most negative impact**, since it can lead to a sovereign debt crisis.
- **The latter channel usually covers solvency problems for the issuer of the securities involved in the purchases, most notably for the national treasuries issuing public bonds.** When the ECB APP's unwinding takes place this implicit guarantee vanishes.
- **A long-term asset purchase by the ECB can be an important complement to other unconventional monetary tools** in order to help credit easing when the banking sector is under financial stress.
- **The ECB APPs can also be used for stabilisation purposes;** and other unconventional tools can also be used to shape the yield curve (forward guidance, yield-curve targeting and long-term central bank deposit securities). These latter tools are not subject to the above shortcomings.
- **Our main conclusions are that the APP and other unconventional monetary policy (UMP) measures can become standard policy tools.** However, in normal economic times, their quantitative amount should be limited. Hence, in the post-pandemic there will be a crucial problem concerning the APP's unwinding.



## 1. INTRODUCTION

The financial crisis of 2007-2009 and the zero-lower bound (ZLB) constraint brought into question the effectiveness of conventional expansionary monetary policies. The Federal Reserve (Fed) hit the ZLB at the end of 2008, that is, a few months after the Lehman's bankruptcy and the near collapse of the international financial markets. Hence, following the initiatives already taken by the Bank of Japan and other monetary authorities, during 2009 the Fed launched a set of unconventional measures and – in particular – large-scale purchases of government bonds and other securities.

On the contrary, despite the 'doom-loop' between the sovereign debt crisis and the high insolvency risk of the banking sector (2011-2012) and the consequent recession (2011-2013), the ECB postponed the introduction of non-conventional expansionary monetary policies in the EA until the fall of 2014.<sup>1</sup> It is true that, between May 2010 and September 2012, the ECB implemented the securities markets programme (SMP), based on bond purchases covering outright public debt, to contribute to the handling of the sovereign debt crises of the EA's weakest Member States; however, the additional amount of liquidity injected into the economic system by means of the SMP was fully sterilised until June 2014.<sup>2</sup>

As anticipated by Mario Draghi in his speech in Amsterdam (April 2014), the ECB started to significantly purchase assets only in September 2014 (asset-backed securities purchase programme [ABSPP] and CBPP3), i.e., more than five years later than the Fed. The observed time lag has, at least, two rationales. i) The implementation of quantitative easing (QE) was harder in the EA than in the US, since the ECB had to harmonise the needs of multiple countries; ii) in 2009-2010, the 'sudden stop' and the related adjustments of the current account negative imbalances made it difficult to relaunch European growth through an expansive UMP. Moreover, differently from the Fed's, the ECB had to pursue a single aim, i.e., a rate of inflation lower than, but close to, 2%. Hence, given that the outright monetary transactions (OMT) (announced in August 2012) could overcome the failures in the transmission mechanisms of monetary policies, the recourse to an UMP should be justified only if there was a high probability that this objective is not attainable by means of conventional monetary policies. It would be possible to maintain that this happened only up to the fall of 2014 – as shown by the weak impact of the decrease in the policy rate close to the ZLB during the summer of 2014 as a reaction of the actual deflation risk.

Here we are interested in the ECB's APP centred on the large-scale purchase of long-term government and private bonds. In January 2015, the ECB announced a monthly purchase of EUR 60 billion starting in March 2015 for at least 19 months. This was equivalent to stating that the APP's overall amount was at least equal to EUR 1.14 trillion. However, since its beginning, the ECB had taken into account the time and size of potential extensions in the event the inflation rate did not approach 2%. In other words, the program was open-end. A large part (88%) of the APP was devoted to the public sector purchase programme (PSPP). The 20% of the purchases under the PSPP was subjected to a loss sharing, while the remaining 80% was carried out by the NCBs without any risk sharing. NCBs largely purchased bonds

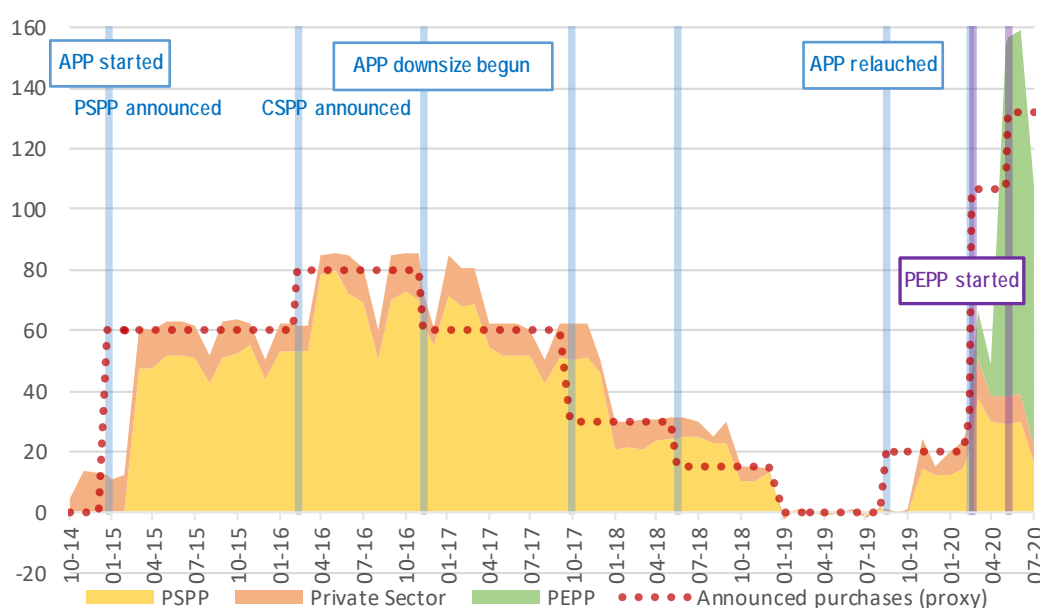
<sup>1</sup> At the end of 2008, the ECB's policy rate was still at 2.5%. It reached 0.15% only in June 2014, despite two astonishing upward adjustments in the spring of 2011. At the peak of the 'doom-loop' (December 2011 and February 2012), the ECB implemented two extreme re-financing operations towards the European banking sector (LTROs), implying the 'full allotment' of the borrowers' total demand at a fixed and low interest rate and poor collaterals. After the financial crisis, however, a limited use of purchases of private long-term assets was also launched by the ECB (covered bond purchase programme [CBPP1] between July 2009 and June 2010; CBPP2 between November 2011 and 2012).

<sup>2</sup> As part of the SMP, the ECB spent about EUR 218 billion between May 2010 and September 2012, with an average monthly purchase of about EUR 12 billion (Eser and Schwaab, 2013).

that had been issued by their central governments. In any case, the total amount of the monthly purchases of the government bonds of each country should be proportional to the ECB capital key.<sup>3</sup>

As stated in Figure 1 and Box 1, the ECB's APP and the PSPP have been modified several times. For instance, in March 2016 the ECB decided to increase the monthly average of the APP to EUR 80 billion (including the new programme for corporate securities, CSPP).<sup>4</sup> Then, after several decreases in the monthly purchases, the APP temporarily ended in December 2018. From March 2015 to December 2018, the total amount of the APP reached EUR 2.59 trillion – excluding the full reinvestment of the 'principal payments from maturing securities held in the APP portfolios.' However, in one of the last meetings chaired by Mario Draghi (12 September 2019), the ECB's Governing Council decided to restart the QE from November 2019 with a monthly purchase of EUR 20 billion. Hence, when the pandemic shock hit the EA, the QE was still in action. After the COVID-19 crisis, the programme was determinedly relaunched, first, with the early announcements of purchases and, then, with the announcement of the PEPP.

Figure 1: ECB's net asset purchases (billions of euro)



Source: Authors' elaboration of ECB data ("Private Sector" includes ABSPP, CBPP3 and CSPP).

<sup>3</sup> These proportions were adjusted to account for the participations of EU Member States outside the EA which do not participate in the PSPP.

<sup>4</sup> The ECB also strengthened the targeted longer-term refinancing operations (TLTRO) by allowing bank refinancing at zero or negative rates.

## Box 1: ECB's announcements: a roadmap

This box describes the dynamics of the asset purchases implemented by the ECB, reporting the most significant European central bank announcements in the 2015-2020 period.

**22 January 2015.** The ECB announces an expanded APP involving bonds issued by euro-area central governments, agencies, and European Institutions, which, together with ABSPP and CBPP3, implies a monthly purchase of EUR 60 billion.

**10 March 2016.** The APP is enriched by corporate sector purchases (CSPP). The overall monthly purchases increased to EUR 80 billion starting from 1 April 2016.

**8 December 2016.** The ECB announces that the EUR 80-billion purchases will continue until March 2017 and will be reduced to EUR 60 billion from April 2017 until December 2017 or beyond in case of necessity.

**26 October 2017.** The monthly purchase will continue to be EUR 60 billion until the end of December 2017 and starting from January 2018 will be reduced to EUR 30 billion per month until the end of September 2018.

**14 June 2018.** After September 2018, the monthly net purchase will be reduced to EUR 15 billion until the end of December and after the purchases will end.

**12 September 2019.** The APP will restart at a monthly amount of EUR 20 billion from the beginning of November.

**12 March 2020.** A temporary additional purchase of EUR 120 billion will be added to the APP until the end of 2020.

**18 March 2020.** The ECB announces the PEPP with an overall amount of EUR 750 billion until the end of 2020.

**4 June 2020.** The total amount of purchases under the PEPP is increased to EUR 1.35 trillion at least until the end of June 2021.

Source: ECB's press releases.

The dynamics of the ECB's net asset purchases from 2014 to 2020 is summarised in Figure 1. The figure also includes a proxy of the announced monthly amounts of purchases (red dotted line) and the timeline of the most relevant ECB announcements related to the APP (blue lines) and the PEPP (purple lines), as listed in Box 1.<sup>5</sup> The figure shows the impact of ABSPP and CBPP3 announced in September 2014 and the upward discontinuity induced by the PSPP with the beginning of the ECB's APP.

Despite Christine Lagarde's mistaken statement concerning the ECB's indifference towards 'spreads' inside the EA on 12 March 2020, the ECB decided to temporarily increase its asset purchases by adding EUR 120 billion to the APP until the end of 2020 as a response to the COVID outbreak.<sup>6</sup> Then, in March

<sup>5</sup> The path of monthly amounts of purchases is built on the ECB's announcements reported in the Box 1. It includes both APP and PEPP. The ECB's APP announcements report monthly resources, while the PEPP ones report the total resources. Therefore, the PEPP's monthly average amount between March and April 2020 is obtained averaging from the March announcement of EUR 750 billion until the end of 2020 (18 March 2020 announcement). The PEPP's monthly average is obtained considering the 4 June 2020 announcement of the increase to EUR 1.35 trillion until the end of Jun 2021 – adjusted by the PEPP resources already used at the time of the announcement.

<sup>6</sup> As noted by Messori (2020), the ECB also decided to significantly strengthen the TLTRO3 (June 2020 to June 2021) and announced a new LTRO to incentivise banks to finance the economic system due to the refinancing at negative rates.

2020, the ECB announced the implementation of an additional temporary programme, the pandemic emergency purchase programme (PEPP), until the end of 2020. The resources for the PEPP amounted to EUR 750 billion. In June 2020, the total amount of resources for the PEPP was increased to EUR 1.35 trillion and its use extended until, at least, the end of June 2021. It is worth noting that the PEPP introduced a higher degree of flexibility into the constraint of capital keys, assuming that the capital key ratios should be satisfied only at the end of the programme.

The rest of our paper is organized as follows. The next section (Section 2) discusses the theory of the central bank's APPs and the empirical evidence of their macroeconomic effects – focusing on the EA. Section 3 looks at the potential risks and side effects associated with APPs. On this basis, it also closely analyses the unprecedented amount of net purchases announced by the ECB in response to the COVID-19 crisis. Section 4 concludes by providing some final remarks.

## 2. THE ECB'S APP: THEORY AND MACROECONOMIC IMPACT

### 2.1. The transmission channels

APPs have been classified as part of the set of **unconventional tools** available to central banks. To understand their effectiveness, it is important to describe the features that characterise them as unconventional with respect to the conventional monetary policy framework in use at the ECB before fall 2014.

In a nutshell, the conventional monetary policy framework was characterised by three main features: 1) the specification of the short-term policy rate, eventually through a corridor system, to determine the short-term risk-free rate of the economy and therefore to activate the transmission mechanism of monetary policy with the objective of controlling the inflation rate and indirectly influencing economic activity; 2) open-market operations to provide liquidity to the banking sector on an ordinary basis, in combination with more direct liquidity operations (i.e., banks' window), and the accounting management of banks' withdrawals and reserves through the lending and deposit facility, respectively; and 3) a composition of the balance sheet of the central bank with assets that include gold, foreign reserves and short-term treasury bills and with liabilities that include cash and reserves held by commercial banks.

In the above framework, APPs represent a clear departure from feature 3) and aim at providing a complement to feature 1) in activating the transmission mechanisms of monetary policy.

APPs clearly change feature 3) because they imply a different composition of the assets of the central bank by including long-term securities issued by the government and/or the private sector as opposed to the standard composition of short-term government securities only. At the same time, asset purchases can also change the size of the central bank's balance sheet and therefore the amount of reserves held by the central bank that are supplied by depository institutions. Through these two different features, APPs might provide an additional tool with respect to the specification of the short-term policy rate in order to influence the transmission mechanisms of monetary policy. However, the feature of expanding reserves is not peculiar to APPs and can also be accomplished by just purchasing short-term securities. Therefore, the key aspect to examine in order to determine the effectiveness of APPs, as opposed to other conventional tools, is the purchase of long-term securities.

We discuss three channels that can be impacted by the APP: the **interest rate channel**, which operates through either a portfolio-rebalancing or a signalling mechanism, the **credit easing channel**, and the **implicit guarantee channel**. It is worth noting that the APP's transmission channels are also well-described by other studies, which stress their different aspects by using, sometimes, slightly different taxonomies and terminologies.<sup>7</sup>

Let us start our analysis with the **interest rate channel**. Portfolio rebalancing considerations have often supported the effectiveness of APP on the basis that purchases by the central bank should create an excess demand of certain securities in the secondary security market, bringing down their yield. At the same time, investors could rebalance their portfolio towards other securities; and this additional

<sup>7</sup> See, e.g., Andrade et al., 2016; Neri and Siviero, 2018. One could also consider the direct effect of the central bank's announcements of long-term asset purchases in orienting private sector self-fulfilling expectations to a 'good' equilibrium in a multiple equilibrium context (Benhabib, et al., 2001; Gurkaynak et al., 2005). In the ECB's case, many authors refer to this channel as the re-anchoring one since it anchors the private expectations to the ECB's long-run target avoiding deflationary traps (e.g., Andrade et al., 2016). A similar argument can be extended to the idea that the ECB's APP announcements may orient private sector's expectations to the 'good' equilibrium avoiding public defaults (Corsetti and Dedola, 2016) or bank runs (Gertler and Kiyotaki, 2015).

demand could lower yields in other markets too. By these means, the central bank should be able to lower yields in many securities markets and, in particular, in the long tail of the interest rates' curve.

This might be seen as the only possible tool to affect the yield curve in the case the central bank has already reached the ZLB on the short-term interest rate, as it happened in the US and other economic areas after the Great Financial Crisis. At the ZLB, interest-rate policy can only be exerted by acting on long-term rates. One way to act in this direction is through forward guidance (FG), i.e. by providing clear and transparent guidance to future short-term interest rates. This policy by itself could be sufficient to control long-term rates in one way or another. However, according to the portfolio-rebalancing theory, APPs could represent a more effective and direct way to lower long-term yields.

This view does not find much support in standard economic theory. Actually, one result, thanks to Wallace (1981), illustrates an irrelevance theorem for which any open-market operation does not provide an additional tool to the monetary policymaker, and therefore APPs are irrelevant.<sup>8</sup> Wallace's theoretical argument is based on two simplifying assumptions: (i) investors can purchase arbitrary quantities of the same assets at the same prices (frictionless asset markets); and (ii) the assets involved in the open-market operations provide only pecuniary returns. Under these two conditions, the APP amounts to a mere reallocation of assets from private investors to the central bank without any effect on the inflation rate and economic activity. There is a specific reason behind this neutral impact: risk is not really reallocated from the private sector to the central bank. When the central bank purchases some assets from the private sector, it will bear some gains or losses depending on the contingencies. However, these gains or losses are in the end transferred back to the private sector through remittances given to the treasury, so that the risk goes back to the private sector in a different form. Therefore, the reallocation of assets between different economic agents should not necessarily produce any change in inflation rates and economic activity.

In some respects, the peculiar institutional setting of the APP implemented by the ECB seems to apply to Wallace's neutrality result. We recall that 80% of the purchases of government bonds are carried by the NCBs mainly with respect to the sovereign debt of their national jurisdiction. Hence, it could be the case, given the institutional specification of the treasury's remittances policy, that risk goes back to the source. However, more in general, by breaking the two assumptions behind Wallace's argument, it will be possible to obtain some significant results on the effectiveness of APPs on interest rates through the portfolio-rebalancing mechanism for, at least, three reasons.

First, financial frictions such as transaction costs break Wallace's irrelevance theorem by limiting the ability of private investors to arbitrage assets in their portfolio. Among others, Vayanos and Vila (2009) argue that investors may have preferences for assets of different maturities following a 'preferred habitat' motive. In such a case, by altering the relative demand for long-term versus short-term assets, a central bank's asset purchases may then affect bond returns and flatten the yield curve.

Second, the assets purchased by the central banks can have a value not only for their pecuniary return but also because they provide additional services or benefits, such as their usefulness for liquidity purposes. This is often the case of high-quality assets that provide collateral services or can be used in exchange for other assets or goods. Central bank purchases of such securities can change the convenience yield, lowering it and therefore producing other impacts on the financial markets.

Third, central bank's asset purchases are effective when the central bank bears the losses/gains on the securities purchased without transferring them back to the private investors through the treasury.

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<sup>8</sup> It is worth mentioning that Wallace's proposition rests upon a no-arbitrage argument mutated from Modigliani and Miller (1958). Hence, as stated in the following, it is subject to analogous restrictive assumptions.

However, losses should be significant enough to be resolved through the inflation rate (Benigno and Nisticò, 2020).

Let us emphasise that, from the point of view of monetary policy's effectiveness, the third reason becomes crucial when the central bank's purchase of government assets is not a perfect substitute for the private demand for these assets but covers a potential lack of net demand at current market prices.<sup>9</sup> Let us also add that, if the central bank can affect the market prices of assets, the interest-rate channel can be activated by APPs also through a different signalling mechanism. In this case, APPs can become an effective way to signal a change in the monetary policy stance itself (see, among others, Bhattari et al., 2015; and Jeanne and Svensson, 2007).

In this last respect, consider Wallace's irrelevance environment where what matters as a tool of monetary policy is just the specification of the current and future policy rates. When the economy reaches ZLB, what the central bank is left with is the specification of the path of future short-term rates, a policy that has been labelled FG. If there were no credibility issues, a clear and transparent announcement of future policy actions would be immediately incorporated in market forward rates, and therefore it would lead to some control of the yield curve by the central bank (in particular, of the long-term tail). However, promises of future policies will be subject to a credibility problem, especially if there is no history of fulfilled action. Therefore, a policy announcement would become ineffective in affecting market forward rates and shaping the yield curve. By implementing APPs, the central bank may instead strengthen its credibility and enhance FG policies in keeping interest-rate low for a long period of time. Indeed, deviations from the desired path of future policy rates can be costly when the central bank purchases long-term assets. If rates are raised earlier than promised, the central bank will experience losses on the securities purchased. Therefore, by purchasing long-term assets the central bank strengthens its commitment to maintaining a desired path for interest rates.

A second channel through which APPs could be effective is the credit-easing channel, according to which the central bank acts directly on credit markets, and therefore on the supply of credit in the economy.<sup>10</sup> Financial intermediaries face notable problems of limited capital which constrains the size of the risk-weighted assets in their balance sheets for a variety of reasons. For instance, there can be a limit due to regulatory measures on the losses that these intermediaries can bear and on the minimum capital ratios that they must meet. This limit can influence the amount of borrowing and the funds they can raise under adverse market conditions. During a financial crisis, the intermediaries' assets may become riskier and therefore the capital ratios' constraints can become tighter, forcing these same intermediaries to sell their assets, thus bearing losses. If these sales involve many intermediaries, then losses in the overall financial system can have multiplicative effects, tightening further capital ratios' constraints for each single intermediary. All these effects induce an increase in credit spreads which also signal a worsening in borrowing and lending conditions. As a consequence, intermediaries may need to borrow at higher rates since their riskiness has increased; therefore, they have to lend at higher rates to keep their expected profitability constant or – at least – to protect their future profitability.

The central bank can lower the policy rate to the ZLB. However, this latter accommodation would be ineffective, if spreads in the credit market widened. APPs could, instead, directly purchase intermediaries' impaired assets, and thus it could counteract the tightening in lending conditions and reduce the credit market spreads. In principle, the central bank would then improve the transmission mechanism of monetary policy by acting directly on the functioning of credit markets and by softening

<sup>9</sup> It must be noted that, in this case, the distinction between the interest-rate channel, here under scrutiny, and the implicit-guarantee channel (see below) vanishes.

<sup>10</sup> See, among others, Curdia and Woodford (2011), Gertler and Karadi (2011, 2013). For a more theoretical approach, see Woodford (2012).



financial distress. This kind of policy, which acts through the credit channel, has been labelled **credit easing**, as opposed to the QE that is instead supposed to work more through the portfolio-rebalancing channel analysed above.

It is worth noting that the ECB's APP has never made direct recourse to the credit easing channel. However, the ECB indirectly implemented this channel mainly through the purchase of government bonds held by European banks in the secondary markets,<sup>11</sup> although this purchase involved all the holders of government bonds as potential sellers, thus implying a direct utilisation of the interest rate channel (see above). Moreover, the ECB activated the credit easing policy by utilising different tools (LTRO and TLTRO); and, in this respect, the ECB's Governing Council rightly maintains that both the APP and TLTRO are UMPs and activate complementary market mechanisms.

The third channel is the **implicit guarantee channel**. The central bank, unlike any other agent in the economy, is not subject to any insolvency risk. By purchasing risky securities, the central bank could signal that it is extending an implicit guarantee on the issuer of these securities. Note that central banks should not be involved in addressing solvency problems but just illiquidity problems. However, APPs could implicitly extend a guarantee on the issuer's solvency, especially if the purchases occur in periods of financial stress.

The ECB's purchases of government bonds and private assets thus provide a stable financing, albeit an indirect one (that is, on the secondary market), for the relative issuers; moreover, it guarantees that the private investors acting as potential buyers on the primary market will find an institutional and strong buyer on the secondary markets. If APPs are perceived this way, they could reduce the issuer's default risk, therefore lowering the yields concerning the risk premium component.

The duration of these purchases, whether temporary or permanent, is an important ingredient to reduce or, conversely, enhance this channel. However, even temporary purchases, and therefore a short-term guarantee, could represent a relief for the issuer and an incentive for the potential private buyers under adverse market pressure, thus allowing better allocations and a consequent reduction of the default risk.

The above-described implicit guarantee channel is important in the EA, where there is no strict relationship between the central bank and the treasury. In other countries, such as the United States, treasury debt is considered risk-free because it is understood that the Fed is ready to provide this guarantee to the treasury. Through this backing, the risk-free properties of any central bank's liabilities are extended to the treasury's debt, which is therefore also (at least, partially) free of the default risk. If substantial in size and prolonged in time, the ECB's APP can be perceived to fill this gap.

In conclusion, in the EA, the first and third channels, underlined above, point in the direction of lower yields at different maturities, in particular between the medium- and long-time horizons, for a number of government and private securities. Spill-overs occur in other securities markets and in markets for real assets. It is worth noting that the effectiveness of these impacts does not require, at least from a theoretical point of view, the economic system to be at the ZLB. Although the central banks' APPs are usually implemented when the ZLB is reached for obvious policy reasons, there are a few exceptions. For example, the SMP was implemented by the ECB in 2010 and 2011, when policy rates in the EA were well above the ZLB.

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<sup>11</sup> It is well known that the EA's banking sector held and still holds an excess of government bonds in its balance sheets (Véron, 2017). The main problem is the home bias: national banking sectors, in particular those of the most fragile EA Member States, concentrate their holdings on national government bonds, thus strengthening the doom-loop between a possible new sovereign debt crisis and the liquidity or solvency crisis of the banking sector (Dell'Ariccia et al., 2018).

## 2.2. An evaluation of the macroeconomic effects

At the end of the chain, APPs ultimately provide households and firms with better financing conditions for their consumption and investment plans. The rise in the prices of financial and 'real' assets increases the nominal wealth of the holders of these assets and, if APP policies are believed to succeed in jump-starting the economy, it also increases their expected real wealth. Agents may then be induced to spend more (**wealth effect**). The effectiveness of this mechanism mainly depends on the size and composition of the portfolio of financial assets held by households. Indeed, if successful in anchoring long-term inflation expectations, APPs can make sure that a fall in long-term yields will directly translate into a fall in the real interest rate. The latter is the intertemporal price that activates the **intertemporal substitution mechanism**. Households are encouraged to borrow more or to save less by increasing their current consumption. Simultaneously, firms are induced to invest more. The overall effect is an increase in aggregate demand.

Consumption and investment plans are stimulated not only by the conditions at which ultimate borrowers can raise funds or wealth owners can sell assets, but also by the supply of lending provided by financial intermediaries. The implicit guarantee channel and the other expansionary UMP tools work to avoid disruption in the credit markets by improving the balance sheet of financial intermediaries in credit markets. This **balance sheet mechanism** operates not only in favour of intermediaries but also in favour of borrowers, since the implied improvement in the economic activity and the lowering in interest rates reduce the risk for the various borrowers. Therefore, the balance sheet mechanism enhances the intermediation activity and increases the probability that credit will flow into the economy. Moreover, the implicit guarantee and the interest rate channels lead to a decline in government bond yields, therefore lowering the servicing costs of the government debt and relaxing the budget constraint of the public sector. Additional resources are then available to boost the economy and inflation (**government budget constraint mechanism**).

The reduced availability of securities to be sold in the domestic financial markets implies a portfolio rebalancing also toward foreign denominated assets, thus implying an exchange rate depreciation (**exchange rate mechanism**). In the case of the euro, its exchange rate depreciation increased the EA's competitiveness, making domestically produced goods relatively less expensive than those offered by foreign competitors.<sup>12</sup> The result is an expansion of domestic and foreign demand towards these goods.

Almost all empirical studies agree that the ECB's APP substantially improved financing conditions and aggregate demand inside the EA. Several transmission mechanisms appear to have been activated within the channels described in the previous sub-section, reducing yields and supporting bank credit. By means of alternative methodologies (e.g., event studies, structural VARs, DSGE models), empirical evidence also suggests a significant upward effect on aggregate demand, economic activity and price dynamics. It is not our purpose here to fully review the empirical literature (see Hammermann et al., 2019; Rostagno et al., 2019). We merely focus on certain selected issues which relate to the transmission mechanisms analysed above and summarise the impact of the ECB's APP on macroeconomic variables. As a consequence, our empirical references do not allow us to prove our previous statement, that is, that the ECB's APP utilised the credit channel only indirectly. On the other hand, as already noted, we do not neglect the fact that the ECB's APP is part of a combined-arms strategy which also includes TLTROs and FG; therefore, it is difficult to apply the empirical evidence only to the APP's impacts.

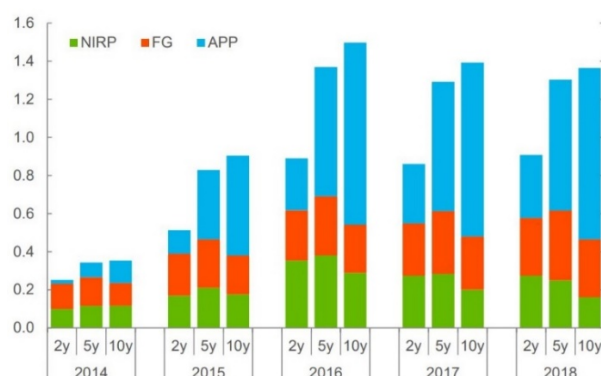
<sup>12</sup> This mechanism was particularly effective at the beginning of the process, that is, when the APP was announced at the end of 2014 (Bundesbank, 2017; Cecioni, 2018).

In any case, the existing evidence suggests that the ECB's APP signalled that lower policy rates would have continued until at least 2017 – enforcing the negative interest rate policy (NIRP) and FG, which are the main drivers of the ECB's signal (Rostagno et al., 2019). After the programme announcement and in almost all the 2015 quarters, policy rate forecasts decreased for almost all the time horizons: the average expectation of future policy rates declined from 11 to 6 bps for 2016 and from 43 to 31 bps for 2017 (Andrade et al., 2016, Fig. 4; see also Altavilla et al., 2015). Moreover, Andrade et al. (2016) document that the private sector's expectations on the future monetary stance were based on policy accommodation after the beginning of the ECB's APP. Finally, during the 2015-2018 period, the portfolio rebalancing contributed to compressing yields across a wide range of assets, and – due to the existing market segmentation – it also decreased yields in other market segments not targeted by the ECB's purchases. As far as the PSPP is specifically concerned, there was the activation of the portfolio rebalancing channel with large effects on longer maturities and risky assets (see Altavilla et al., 2015; and Zaghini, 2019).

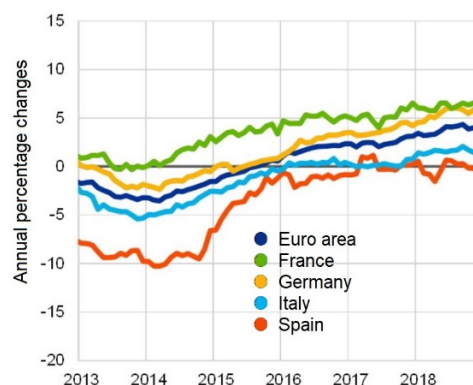
The ECB estimates that the compression in sovereign yields due to its policies was around 100 basis points for the ten-year maturity, with a confidence interval between 70 and 130 bps (Eser et al., 2019; Hammermann et al., 2019). Figure 2(a) shows the relative importance of the APP compared to other ECB policies. For long maturities, the relative contribution of the ECB's APP is more than half.

Figure 2: Compression of the sovereign yield curve and the evolution of bank loans

(a) Compression of the euro-area sovereign yield curve due to the ECB's non-standard measures.



(b) Loans of main financial institutions to non-financial corporations.



Sources: Rostagno et al. (2019) [Panel (a)], and Hammermann et al. (2019) [Panel (b)].

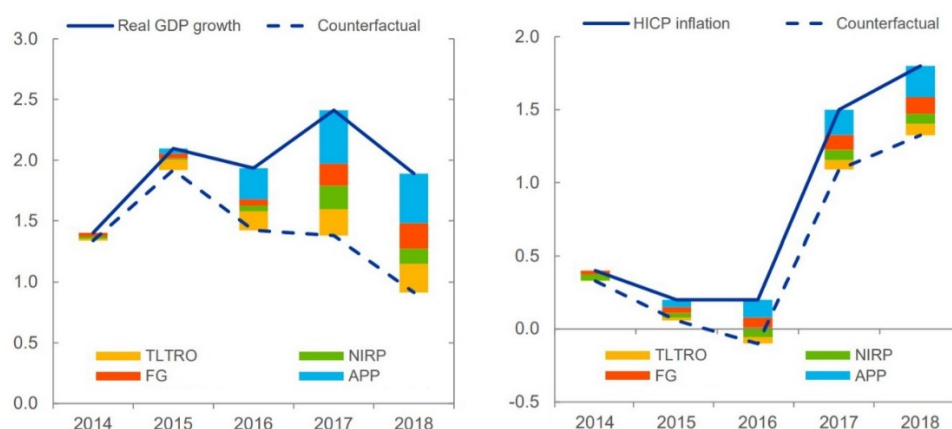
The European banking sector also played a crucial role in the transmission of the ECB's APP to financing conditions (Hammernann et al., 2019). After mid-2015, growing increases of loan volumes to non-financial corporations were observed (see Figure 2(b)). As already stated, the ECB's asset purchases increased bank liquidity directly (through the banks' sales of bonds) as well as indirectly (through the bonds' sales of their depositors). Hence, together with other unconventional monetary instruments, the ECB's APP induced a marked decline in bank lending rates and a credit expansion. It is difficult to disentangle the relative contribution of the different policy instruments from the observed dynamics. However, according to granular data, on average the ECB's APP had a strong impact on the liquidity of

20% of EA banks; and, by focusing just on banks with higher holdings of sovereign bonds before the APP started, this figure increased to 30% (Altavilla et al., 2018).<sup>13</sup>

This empirical evidence shows that the flattening of the yield curve and the increase of banks' loans played a significant role in strengthening the economic recovery; and the same could be repeated with respect to the compression of sovereign debt yields due to the ECB's APP. However, quantifying the actual impact of the APPs on the macroeconomic variables is subject to several layers of uncertainty related to, e.g., the methodology used, the model specification, the estimation window and the measures for quantification.<sup>14</sup>

By analysing the possible macroeconomic impact of all QE policies by means of a large suite of different models based on various methodologies, a coordinated Eurosystem staff assessment group estimated a median of 2.2 percentage points for EA real GDP growth and 1.9 percentage points for the EA inflation rate over the 2015-2018 period (Rostagno et al., 2019: 306). By using a BVAR approach, Rostagno et al. (2019) decompose the effects of TLTRO, NIRP, APP, and FG on these same variables. The results are illustrated in Figure 3.<sup>15</sup> The importance of the ECB's APP is quite evident, in particular on GDP growth in 2017 and 2018.

Figure 3: The impact of QE measures on real GDP growth and HICP inflation



Source: Rostagno et al. (2019).

More empirical evidence is provided by Hohberger et al. (2019). They estimate a state-of-the-art dynamic stochastic general equilibrium (DSGE) model with Bayesian techniques, assuming imperfect substitutability between assets of different maturity along the lines of the already mentioned preferred habitat's model (Vayanos and Vila, 2009). Considering the 2015-2018 period, Hohberger et al. (2019) find that the ECB's policies contributed for 30 bps to the average annual growth rate of the EA's GDP; they also estimate a 50 bps contribution of the APP to the EA's harmonised index of consumer prices (HICP) inflation. According to this model, the APP displayed the peak of its effectiveness in 2016 (not 2017, as stated by Rostagno et al. 2019).

<sup>13</sup> According to Hammermann et al. (2019), almost half of the growth in loan volume can be attributed to the effects of the APP in 2018Q3.

<sup>14</sup> Hutchinson and Smets (2017) provide a clear discussion on the reliability of the different methodologies and discuss the empirical evidence for the Fed's and Bank of England's policies. See also Borio and Zabai (2016), Neri and Siviero (2018), and Carlson et al. (2020).

<sup>15</sup> Compared to the average of the Eurosystem-staff assessment group, these results lie in the upper (lower) part of the range for real GDP growth (inflation rate). Compared to DSGE, time-series models, including BVARs, tend to produce higher (lower) estimates for the impact on output (inflation rate).

Significant quantitative effects are also documented by studies which adopt calibrated DSGE models. Cova et al. (2015) build and calibrate a five-country dynamic general equilibrium model of the world economy assuming, as do Hohberger et al. (2019), imperfect substitutability between assets of different maturities.<sup>16</sup> Concerning the ECB's APP, they consider monthly temporary sovereign bond purchases in the euro area of EUR 60 billion lasting for 7 quarters with a gradual exit in the other additional 7 quarters. By inducing a fall in the long-term interest rates and an increase in liquidity, they document that, after two years, the APP would generate an increase in real GDP and in the inflation rate in the EA of approximately 100 bps compared to the benchmark (i.e., model predictions without policy intervention). They also document non-trivial expansionary international spill-overs, which depend on the monetary policy stances and the response of international relative prices.

Andrade et al. (2016) use the model of Gertler and Karadi (2013) adapted to the EA. With a preliminary evaluation of the expanded APP effects on the financial markets, they document that the ECB's announcement in January 2015 reduced sovereign yields on long-term bonds and raised the share prices of banks holding sovereign bonds. In their stylised model where the APP operates through the relaxation of the duration risk and leverage constraints for financial intermediaries, they find the ECB's APP to increase inflation rate by 40 bps and output by 101 bps after around 2 years, when the peak was reached.<sup>17</sup>

Gambetti and Musso (2017) estimate a vector auto-regression (VAR) with time-varying parameters and stochastic volatility, which is identified by using a proxy variable that captures the unexpected component of the APP announcements. The APP announcements had a significant and positive impact on the inflation rate, on output growth, and on financial variables. In fact, these announcements affected the yield curve through changes in the long-term interest rates: a flattening in the short term, but a steepening in the medium term. These empirical results are consistent with the implementation of the portfolio rebalancing and, as far as we know, with the indirect utilisation of the credit channels (see the previous sub-section). They also stress the importance of the euro depreciation – as it is argued by the Bundesbank (2017) and Cecioni (2018).<sup>18</sup>

<sup>16</sup> The assumption is that assets of different maturities provide different liquidity services.

<sup>17</sup> The model of Gertler and Karadi (2013) is also used by Sahuc (2016), who finds significant effects of the ECB's APP. Considering a one-year policy, the study shows an impact of 20 bps and 10 bps on output and the inflation rate, respectively. A two-year policy leads to an increase of the average growth and inflation rate by 60 bps. Finally, Mouabbi and Sahuc (2019) formalise a shadow EONIA rate in a DSGE model. Focusing on the APP in the EA (2014-2017), they show that year-on-year average GDP growth and inflation rate would have been lower by 110 bps and 60 bps, respectively, in the absence of this policy.

<sup>18</sup> Belke and Gros (2019) maintain, instead, that the impact of the ECB's QE was moderate. Their results represent a minority position.

### 3. THE LONG-RUN RISKS OF THE ECB'S APP AND PEPP

In the previous section, we emphasised that a central bank's APP can positively affect the functioning of the economy through different transmission mechanisms, and that these effects are confirmed by rich empirical evidence concerning the EA from 2015 to 2019. However, it would be a mistake to interpret these results by concluding that the ECB's asset purchases did not determine any drawback during the past five years, or that the observed positive macroeconomic impact will be mechanically reproduced in the current situation and in the near future.

As is well known, since the first quarter of 2020, the pandemic shock has caused the worst worldwide economic depression of the last ninety years. Hence, the post-pandemic recovery will have to be based on radical changes in the organisation of production processes, in the architecture of the global value chains, in the combination of public and private investments, and in the working of the labour market. What is still unclear, however, is the role that the ECB's APP could play in this changing economic environment and the consequences of its unwinding.

In the following two subsections, we will offer a provisional analysis by focusing on two aspects: i) the potential drawbacks due to the continuation of the ECB's APP until the end of 2018 and its relaunch in November 2019 in combination with other conventional and unconventional monetary policy tools (Section 3.1); ii) the consequences of the strengthened APP and the introduction of the PEPP that the ECB implemented as a response to the pandemic shock and that will increase the risk of these programmes' unwinding (see Section 3.2).

#### 3.1. The early debate on the risks of the ECB's APP continuation

Recent economic literature stresses at least four potential drawbacks of the prolonged central bank's APPs. Concerns are related to the possible negative effects of asset purchases on bank profitability, future bubbles due to an overvaluation of private securities and government bonds, inequalities in income distribution, and the blurring distinction between monetary and fiscal policies.

**Bank profitability** can be negatively affected by the ECB's UMP since the latter aims at lowering the interest rate structure and eventually flattening the yield curve so that, with everything being equal, banks' net interest income on new short-term and long-term loans falls. This impact is significant in the EA due to the large dependence of non-financial firms on banks' lending and the consequent banks' business models (mainly after the international financial crisis). Furthermore, this same impact was strengthened by two additional elements. Firstly, the ECB's conventional monetary policy fixed negative interest rates on the EA banks' reserves in excess of the minimum requirements (since June 2014); and banks had difficulty in absorbing the losses by applying equivalent negative rates on households' deposits. Secondly, combined with the ECB's APP, these policy rates led to negative interest rates on a large component of European government bonds, which are purchased, for a significant part, by the European banking sector and other financial intermediaries (mainly, insurance companies).

However, it must be noted that the ECB's APP and the utilisation of other unconventional tools (TLTRO) can have positive consequences on banks' balance sheets, as we noted in Section 2.1. They improve the macroeconomic conditions so that the insolvency risk of borrowing firms decreases and banks are less exposed to non-performing loans (NPLs) and unlikely-to-pay loans (UTPs); moreover, the APP and the PSPP increase the market values of financial assets and – in particular – of government bonds so that the asset side of banks' balance sheets incorporates capital gains which can more than compensate the low or negative interest rates. These positive effects are particularly important for



those banks which are deeply exposed to the borrowers' insolvency risk and which hold a large amount of national government bonds accounted as 'bonds held to be sold.'

In principle, it is difficult to assess the relative influence that the above-mentioned opposite impacts can have on the average European banks' profitability. In fact, this influence will depend on a number of different factors: the macroeconomic trend, the phase of the economic cycle, the prevalent composition of the banks' balance sheet. Moreover, these impacts are not independent.<sup>19</sup> In the long-term, the fall in interest rates and even the negative interest rates are not just determined by a series of low or negative policy interest rates, but mainly, they depend on recessionary macroeconomic trends. In fact, at least in the EA since 2011, recessions have implied growing negative gaps between aggregate investments and aggregate savings, so that the long-term equilibrium interest rate has had to fall. Hence, even if the ECB's APP and PSPP contribute to lowering and flattening the yield curve in the short-term, they can contrast the decreasing and negative interest rates in the long-term by improving the macroeconomic conditions, and hence by promoting increases in investments relatively to savings and reducing the downward pressure on long-term equilibrium interest rates.

Empirical evidence suggests that the positive impacts tend to prevail (see for instance: Bouchina and Burlon, 2020). After verifying the endogeneity of the policy measures with regards to the expected macroeconomic and financial conditions, Altavilla et al. (2018) find that the positive effects on loan loss provisions and non-interest income largely offset the negative effect on the net interest income.<sup>20</sup> Similar results are shown in an earlier evaluation by Demertzis and Wolff (2016), who focus on NPLs and report that bank profitability had increased at least until the end of 2015.

A second cause for concern is that the ECB's APP could lead to an overvaluation of financial assets and government bonds, which in turn could imply a **financial bubble** bursting in the future. However, the bank-centric structure of the EA's financial markets apparently weakens the significance of this risk. In fact, the empirical evidence shows that equity valuations were in line with historical standards in the first stage of QE and that the data did not signal exuberant price dynamics for government bonds also in more recent years (see Blot et al., 2017; Cecchetti and Taboga, 2017; Droes et al., 2017; ECB, 2018). Hence, at least in the phases preceding the peak of European recovery and – then – the pandemic shock, the risk of asset price bubbles was not a major concern.<sup>21</sup> However, the empirical studies could underestimate the consequences of the changes in European banks' business models. The falling net interest incomes and the possibility to be re-financed at negative interest rates could make it worthwhile for European banks to 'bet' on the increases in financial market prices due to the ECB's purchases in the secondary markets. Analogous bets could be made by insurance companies and pension funds on the portfolio components that exceed the regulation constraints. These financial choices could push European financial intermediaries to dramatically increase the riskiness of their balance sheets.

<sup>19</sup> Let us add two points that make the assessment still more complex. First, in launching its new APP programme (Sept 12, 2019), the ECB tried to mitigate the effects of its decision to increase the negative interest rate on banks' reserves in excess of the minimum requirements (from -0.40% to -0.50%). The ECB adopted a two-tier system which applies to the excess liquidity held by banks in their current accounts with the Eurosystem, but not to banks' holdings of the ECB's deposit facility. This system has replaced the -0.50% interest rate with a 0 rate for a multiple of 6 of each of the bank's minimum reserve requirements since Oct 30, 2019. Secondly, banks are not the financial intermediaries most hit by the negative interest rates. At least in the EU countries, where insurance contracts are largely based on a minimum positive returns clause (e.g., in Germany), insurance companies and pension funds are experiencing difficulty in meeting this clause and, at the same time, in allocating a large part of their financial portfolios to safe assets, as required by the EU regulation, if these safe assets have a negative return.

<sup>20</sup> These authors consider the impact of ECB's policies on bank profitability by using, both, accounting data for a cross-section of European banks and bank-level data (focusing on the impact on profitability components using a dynamic multivariate macro model). They also assess the impact of the ECB's policies on banks' market valuations and credit risk.

<sup>21</sup> Even in the case of a country-specific asset overvaluation, there is no need to depart from the monetary stance as financial tensions can be solved by region-specific macroprudential policies designed to stabilize the financial allocation of private wealth (Burlon et al., 2018).



A third worry is that, by increasing financial and real asset prices, the ECB's APP may cause undesirable **income and wealth redistribution effects**. Increases in financial market prices favour financial asset holders, who are obviously concentrated in the income and wealth upper deciles. This reverse 'Robin Hood effect' can lead to the allocation of a part of the increased financial wealth in additional 'real' or financial assets with a consequent rise in their prices. Moreover, if prolonged over a significant but temporary span of time, the ECB's APP tends to imply perverse distributional effects across generations since young people – differently from the elderly – need to buy assets for their retirement so that their future real wealth will be negatively affected by the current asset price increases. Finally, low-income pensioners will suffer an erosion of their financial rents due to the low (or even negative) interest rates.<sup>22</sup>

However, the APP may have opposite effects on income and wealth inequalities for three reasons. First, it implies a reduction of the long-term interest rates which tends to favour people with high debt service to income ratio; and these people are usually low-income households.<sup>23</sup> Secondly, the abovementioned fact that – *ceteris paribus* – house prices are positively affected by the ECB's APP can favour the middle class. A significant part of the income and wealth of middle-class people is devoted to serving debt mortgages; hence, these people benefit from a reduction in mortgage interest rates as well as from positive collateral and wealth effects. Thirdly, as already stated, UMPs stimulate economic activity and employment; and these macroeconomic effects are particularly positive for poorer people, whose main source of income comes from wages and whose employment positions are low-skill and – as such – less stable.

It follows that, although inequality is not a target for central banks, the ECB should take it into account as a side effect of its policies since increasing inequality can be detrimental for long-run growth and the inflation rate (Darvas and Wolff, 2014). However, even in the case of income and wealth distribution, it is difficult to assess the net impact of the ECB's APP.<sup>24</sup> Available evidence argues that this impact is non-negative. Focusing on micro data from the four largest euro area countries, Ampudia et al. (2018) point out that the APP led to a modest reduction in income inequality, which was mainly driven by its impact on the unemployment rate of low-income households. Similar results are obtained by Lenza and Slacalek (2018), who find that QE compressed income distribution, while it had only negligible effects on wealth inequality. Similar results are documented, e.g., by Casiraghi et al. (2018) for the Italian case.

The main cause for concern about the ECB's unconventional expansionary monetary policies is the fourth effect listed at the beginning of this section: the ECB's asset purchases and its other tools tend to **blur the distinction between monetary and fiscal policy** and to allow for a set of national fiscal policies incompatible with the corresponding national fiscal capacity. In this respect, it has been argued that the ECB's APP has encouraged moral hazards in national governments, delayed the implementation of structural reforms, and slowed down the efforts for fiscal consolidation in countries with huge government debts. However, most of these concerns are not supported by a well-founded theoretical apparatus and strong empirical evidence.

From a theoretical point of view, the border between monetary and fiscal policies would blur if monetary policy decisions were not inspired by the need to have transmission mechanisms function

<sup>22</sup> Apparently, the European welfare system should protect young people as well as pensioners from these distortions, which are implicitly based on a 'life-cycle model' conditioned by the US institutional setting (see Modigliani 1986; Deaton 2005). However, it must be noted that social protection is decreasing even in the EU and in the EA.

<sup>23</sup> In the EA, according to the ECB's Household Finance and Consumption Survey, this ratio is decreasing in income distribution. The ratio is about 0.24 for the bottom 20% of the distribution, whereas it is around 0.10 in the top 10%. The ratio is instead hump shaped in wealth distribution. In fact, a peak (0.18) is observed in the range 40%-60% of the distribution. See Claeys et al. (2015: Figure 6) for further details.

<sup>24</sup> See Claeys et al. (2015) and Ampudia et al. (2018) for detailed reviews on how monetary policy directly and indirectly affects income and wealth inequality.

properly. In this respect, it is true that APPs can have a risk sharing impact (even if limited and temporary) and can, thus, can produce a ‘public good’ in the EA. However, these results do not improperly occupy the space of fiscal policies; they simply aim at transmitting the monetary impulses to the real economy by reducing the risk of bank hoarding and of new forms of the ‘liquidity trap’. APPs thus emphasise the complementarity between monetary and fiscal policies, in the sense that the effectiveness of the monetary policy is an essential condition for an efficient national fiscal policy.

By reducing the uncertainty on price dynamics, the ECB’s APP strengthen the confidence of different agents regarding the evolution of European economy, and it improves the political consensus to reform implementation (Visco, 2015). As clarified by Corsetti et al. (2006), this result specifically applies to negative economic phases through the confidence channel: by avoiding self-fulfilling sovereign debt crises and deflationary spirals, an expansionary UMP is more likely to support than to disincentivise the implementation of national reforms by increasing their expected benefits. It follows that, in a monetary union, this UMP tends to support efforts aimed at consolidating the fiscal balances of some members because it operates as a sort of risk sharing mechanism reducing the probability of contagion and domino effects (Canofari et al., 2019).

Along these lines, empirical evidence shows that the downward shift of the interest rate structure tends to promote national reforms (Dias Da Silva et al., 2017). This evidence is strengthened by the opposite mechanism: the lack of reforms increases the probability of sovereign debt crises and requires monetary and fiscal policy adjustments with huge potential costs (e.g., Neri and Ropele, 2015; Del Giovane et al., 2017).<sup>25</sup>

We can conclude our theoretical and empirical analysis of the possible negative effects of the ECB’s APP on the real economy by maintaining that the various concerns do not appear so analytically solid and practically important. However, we have to stress that this conclusion is based on an implicit but very strong assumption, i.e., that the ECB’s expansionary UMPs are temporary, since they were launched to overcome contingent deflationary risks and to support the European recovery after a heavy double dip. The abandonment of these policies should be gradual (to avoid negative consequences on agents’ confidence and expectations), but it would signal no more than a return to normality. Nevertheless, the APP’s unwinding is not without risks, as we will discuss in the next sub-section.

### 3.2. The unwinding problem after the pandemic

Now, after the pandemic shock has occurred, it is easy to congratulate the ECB’s Governing Council for its far-sighted decision in September 2019. However, it would be more interesting to recall that – at that time – this decision had raised harsh objections in Germany and other EA ‘core’ countries along the lines discussed in the previous sub-section. Our belief is that, essentially, the dispute was due to interpreting the ECB’s move as an attempt to transform the APPs into a standard monetary tool appropriate for managing significant business fluctuations. From a theoretical point of view, this transformation appears to be well-founded.<sup>26</sup> However, due to the difficulties the EA’s economy is experiencing in sustaining stable growth, this normalisation of the APPs and possibly of the other UMPs would have implied that the standard tools of the ECB’s monetary policy should include a sort of ‘permanent’ QE. As a result, according to the ‘core’ approach, the QE’s possible drawbacks would have worsened. The compromise was found in maintaining that the ECB’s monetary policy is constrained to

<sup>25</sup> Fiscal consolidation plans without monetary policy support may be very costly in terms of output and employment reduction (e.g., for the Italian case see Acocella et al., 2020).

<sup>26</sup> In our analysis of the transmission mechanisms, there are no reasons to limit the APP’s effectiveness to extraordinary contingencies such as, e.g., the ZLB.

a systematic recourse to unconventional tools due to the lack of a European fiscal policy and the limits of the national fiscal policies of EA Member States.

Apparently, the COVID-19 shock made the above discussion a purely theoretical dispute. Since late February or the beginning of March 2020 the emergency has in fact become the new norm. Hence, the ECB decided that the only possible solution was to strengthen its UMPs – at least temporarily. However, in a longer-term perspective, this unavoidable reaction deepened the core of the dispute about the nature of the ECB's APP: could this policy be considered *a fortiori* a standard policy measure even in the post-pandemic economy of the EA; or, on the contrary, would its emergency strengthening require a more rapid unwinding during the next post-pandemic recovery phase?<sup>27</sup>

As already stated, our interpretation is that the ECB's decision to restart the ECB's APP in 2019 already signalled that asset purchases could be transformed into a 'standard' monetary tool to manage business fluctuations, especially in the face of significant recessions.<sup>28</sup> However, the pandemic shock implied a robust unforeseeable relaunch of the ECB's long-term asset purchases in a combined-arm monetary strategy. Since mid-March 2020, the ECB has implemented expansionary monetary policies that, in the following three years, could enter more than a EUR 4.5 trillion flow into the EA's economic system. Moreover, in the face of the pandemic shock, this ultra-expansionary EA monetary policy was accompanied by an extraordinarily expansionary fiscal stance. The European Commission (EC) and the Eurogroup, in fact, took important initiatives, including the *de facto* suspension of the SGP and the approval of the Next Generation EU (NGEU). These crucial policy changes have created new complementarities between the EA's monetary and fiscal policies.

The consensus reached on the EA's expansionary fiscal stance has strong implications for the ECB's policies. For instance, it implies that the controversy over the NIRP has become much more limited. The need to move from emergency to recovery, in fact, requires a large amount of public investments and government support for private ones. Therefore, the NIRP can weaken the constraints put by the limited fiscal capacity of the most fragile EU Member States and incentivise private investments. The controversy around the NIRP is further weakened by the growing awareness (especially in Germany) of the fact that the EA's development can no longer be export-driven but should focus on a stronger internal market supported by increases in aggregate demand.<sup>29</sup>

This new picture underlines that, even if the ECB's Governing Council agreed to transform the APPs into a standard monetary policy without causing an excessively negative reaction in the EA's 'core' countries, ECB's current expansionary UMPs could not last forever. It would be necessary to weaken the expansionary stance of the ECB's monetary policy during the post-pandemic recovery. Our conclusion raises a crucial question with respect to the near future: what are the risks of the unwinding of the strengthened ECB APP and PEPP in the post-pandemic EA architecture, where – in principle – QE and TLTRO could become standard monetary tools and some countries will face huge public debts?

The right answer to this question will depend on several unknown factors, such as the post-pandemic economic and productive organisation of the EA, the related degree of progressive centralisation of the European fiscal policies, the process of convergence between different Member States, and the evolution of the European financial markets. We are obviously unable to elaborate a clear-cut forecast

<sup>27</sup> The latter option is supported by Bundesbank chairman, Jais Weidmann, who maintained that "after the crisis the emergency monetary policy measures would have to be scaled back again." (see M. Arnold, "Bundesbank chief calls for scaling-back of crisis aid," *Financial Times*, 3/9/2020),

<sup>28</sup> In September 2019, after the recovery of 2014-2018, the perception was in fact to face the beginning of a cyclical recession, especially in Germany and Italy.

<sup>29</sup> It is worth noting that the still generous European welfare systems reduce the need for private rents in the retirement period. Low or even negative interest rates could, then, incentivise the relaunch of aggregate demand.

about these factors and to offer a related analysis of the intensity of the ECB's APP and PEPP's unwinding. Hence, we are also unable to propose an educated guess on the macroeconomic impact of this unwinding. Our contribution consists in focusing on some specific points that re-elaborate the previous considerations and could open a theoretical and empirical discussion on the APP's evolution in the EA.

The contemporaneous expansion of fiscal and monetary policies implemented during the current crisis satisfies a recurrent ECB claim and is the fundamental ingredient for relaunching the EA's economy. However, it cannot last beyond the new impact of a possible COVID-19 resurgence at this quantitative level. We know that the NGEU will continue at least until 2026; and we forecast a consolidated European recovery in 2022-2023. In this new framework, economic agents will regain confidence and put into circulation the huge amounts of liquidity that was locked up in financial circuits during the crisis; and the ECB's problem will be keeping the inflation rate below the target threshold of 2%.<sup>30</sup> Hence, the adjustment in the monetary policy will be the first step towards a new 'normality'. Starting in 2022-2023, the ECB will likely have to reverse the 'new' APP and the PEPP from the current scale.

Considering the channels through which APPs can operate (see sub-section 2.1.), two issues arise. The first concerns the unprecedented size of the ECB's balance sheet and its problematic harmonisation with the **return to normality of the monetary policy stance**. The second issue regards the **consequences of the unwinding of the ECB's APP**.

**The return to normality of the monetary policy stance**, when the ZLB is no longer binding, implies that the ECB starts to raise the policy rate as economic activity peaks and the inflation rate must then be put under control. At first, the huge stock of long-term securities held by the central bank can mitigate the effects of the new contractionary monetary policy stance. This stock was the result of the past purchases of long-term securities that made the interest rate channel in lowering long-term interest rates effective. Therefore, despite the increase in the short-term policy rate above the ZLB, the ECB's past asset purchases could still calm the rise in the long-term interest rates. In principle, the central bank could continue using FG to direct market expectations on future rates in a way as to control the long-term tail of the yield curve. However, if the new stance on monetary policy persists through time, the ECB will have to sell – even gradually – a non-negligible part of its existing stock of securities. These sales should produce a more significant rise in long-term yields and, therefore, result in a more contractionary monetary policy in the medium-long term.

The latter effect cannot be compensated by the credit easing and implicit guarantee channels. At first, the existing stock of assets purchased in the past by the ECB could calm the securities and credit spreads even through these two channels. However, if the spreads are 'normal' for 'normal' times, in the medium-long term this effect will vanish or will not necessarily produce a more expansionary policy than the one the central bank aims to implement.

The **consequences of the unwinding** can be even worse for strengthening the contractionary impact of the new monetary stance through the interest rate and the credit easing channels. The effectiveness of these two channels in transmitting the expansionary APPs was largely due to the fact that the central bank also purchased securities under stress, which unveiled a default problem rather than a liquidity problem for the issuer. When the central bank starts to sell these securities, if the old default problems concerning a given country and/or its companies have not been solved, there is a substantial and multiplied increase in the related yield curve and spreads. Moreover, the increase in credit spreads

<sup>30</sup> At the 2020 Jackson Hole Economic Symposium, Fed Chairman Jerome Powell stated that the 2% threshold in the US inflation rate can be conceived as an average level through time. Hence, the Fed would comply with its target even if it pursued an expansive monetary policy in presence of an inflation rate higher than 2% in the next years as the average inflation rate was around 2% through time.

would directly affect the banking sector of this country, worsening the banks' balance sheets and restricting lending.

The above concerns are broadened by the implicit guarantee channel. During the expansionary APPs, this channel signals to the market that the central bank is providing implicit backing to the issuer of the security, therefore extending the risk-free properties of central bank's liabilities to those of the issuer. The unwinding of the APP could change the market perception of whether this implicit backing is really in place. Hence, the impact of the unwinding could also result in a loss of access to the market for issuers (government or private agents) with a potentially unsustainable stock of debt. In other words, the likely unwinding of the ECB's APP could be accompanied by a substantial rise in spreads for countries that – at that time – still have not achieved a significant adjustment in their balance sheets to fully restore their solvency. Consequently, a financial crisis could not be ruled out and could require recourse either to OMT facilities or to the European Stability Mechanism (ESM)'s aid programs with the appropriate conditionality. In such a case, the usefulness of the APP as a monetary policy tool, through the interest rate and credit easing channels, can be offset by switching on and off the implicit-guarantee channel.

The previous analysis emphasises that the possible negative impacts of the APP's unwinding are directly related to the intensity of the ECB's expansionary UMP. In this sense, the PEPP substantially contributes to the effectiveness of the interest rate and the credit easing channels during the expansionary stance; and it significantly reinforces the perception of an implicit guarantee extended by the ECB on the EA's government debts. As observed, a direct effect of this perception has been the significant fall in the sovereign spreads among the EA's more indebted countries, on the one hand, and the EA's 'core' countries, on the other, since the second half of March 2020. However, it is also obvious that a strong and prolonged PEPP tends to worsen the consequences of the ECB APP's unwinding mainly through the implicit guarantee channel. In particular, together with the national expansionary fiscal policies implemented also by EA countries with low fiscal capacity thanks to the *de facto* suspension of the SGP, the ECB's extraordinary expansionary monetary policy could result in a high risk of a new and worse sovereign debt crisis in the post-pandemic European economy. To avoid this consequence, it is necessary that the process of the ECB APP unwinding put all the potential negative effects under strict control.

The nexus between the ECB's APP and the sovereign debt crisis emphasises the well-known fragility of the EA architecture, in which there is one central bank and many fiscal authorities and no single debt that the central bank is implicitly backing, unlike in countries such as the US and the UK. To limit this fragility, it would be necessary to coordinate the APP's gradual unwinding with a gradual centralisation of the EA and EU's fiscal policies. The NGEU initiative could be the first step in that direction.



## 4. CONCLUSIONS

Our analysis has argued that the APP and the PEPP have become a part of a complex combined-arms strategy, which also includes LTROs and FG, in the face of huge adverse events such as the beginning of the EA depression triggered by the COVID-19 shock. However, the novelty raises new potential concerns. Significant risks may be associated to the way the purchase programme operates in the EA. In particular, the implicit guarantee channel is problematic, especially in the EA's current architecture, due to the absence of fiscal backing in normal time.

The latter channel could lead to some sovereign debts deleveraging. In an inflationary environment, the ECB in fact cannot – and should not – solve long-term structural fiscal imbalances with prolonged unconventional expansionary monetary policies. Alternatives to unfeasible debt monetisation include costly debt restructuring or, more likely, gradual systematic deleveraging supported by the EU institutions. In this scenario, the ECB should play an important role by strengthening its FG and indicating the steps of debt reduction to the Member States, especially to those with limited fiscal spaces. This implies a sort of ECB guidance in the unwinding of the QE and the European fiscal support programmes.

Our analysis has pointed out that the APP can become a “standard” tool for stabilisation purposes according to the interest rate channel since it can affect long-term yields across various securities market. Along this dimension, other policy instruments can be used to shape the yield curve in the desired direction and can replace the APP to avoid the problems brought about by the implicit guarantee channel.

The first policy alternative to the APP is enhancing current FG policies. Note that by paying the interest rate on reserves the central bank determines the short-term risk-free interest rate. However, specification of policy is not constrained to the short-term rate but should involve all the future paths of policy rates. This could be done through FG by transparently communicating the contingent path of future policy rates. Ideally, if communication is effective and credible, market participants could incorporate this contingent path into the price of long-term securities. Therefore, the risk-free long-term rate captured by the swap rate at the relevant maturity could be controlled by the central bank. In this way, the central bank can also exert its influence on long-term rates in other securities market by directly affecting the risk-free component of these rates. There is room in the ECB's communication strategy for improving FG by communicating the interest rate projections after Board meetings that discuss the Governing Council's view. The overall inflation targeting communication could also be improved by providing projections for the relevant inflation index and clarifying then what “achieving the inflation target at the medium horizon” means, as well as the related interest rate path underlining it.

A second alternative that can be used to control the yield curve is yield curve targeting, according to which the central bank clearly communicates a cap or a target for long-term rates at a certain and defined maturity. This control may or may not involve purchases of securities. Indeed, in accordance with the same principle for which FG can be effective for controlling long-term rates, yield curve control can happen without any market intervention, given that the central bank can specify and control current and future policy rates. Adding purchases of securities could further improve the control of market yields by also influencing the risk premium component embedded in them. An advantage of this policy with respect to the APP is that it can be delivered without generating much volatility in the interest rate and, at the same time, it can eliminate the uncertainty about the size, frequency of purchases and the tapering process that the APP necessarily involves.

A third alternative that can be used to control long-term rates is to issue the central bank's deposit with longer maturity. The interest rate set on this long-term deposit will determine the risk-free long-term rate at the same maturity. In this case, appropriate asset purchases can be useful to reduce any resulting variability in the central bank's profits generated by this policy.

Overall, existing evidence tends to stress that the EA is not only facing a huge economic crisis, but it is also preparing a change in its paradigm and, perhaps, in its architecture. In this respect, all types of fiscal and monetary tools are needed to overcome the emergency and promote recovery. However, these tools also need to be adapted in order to be feasible for the new post-COVID-19 development model, which seems to be emerging as a break with the past, being more oriented to the internal than the external market. The EU will then need to deal with several unsolved 'old' gaps to adapt its architecture to the new conditions.



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## QUESTIONS FOR MEPS

- Can the ECB's APPs and – more generally – the ECB's UMPs be considered standard policy measures in the post-pandemic economy of the EA?
- How can the ECB manage an orderly unwinding of APPs in the event that some governments' debts are not on a solvency path?
- Can the ECB consider other tools to control long-term rates (i.e. yield-curve targeting, forward guidance or long-term deposits), which seem to have less drawbacks than the APP?

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