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

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



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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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LIST OF ABBREVIATIONS

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

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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 2014.¹ 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 2014.²

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

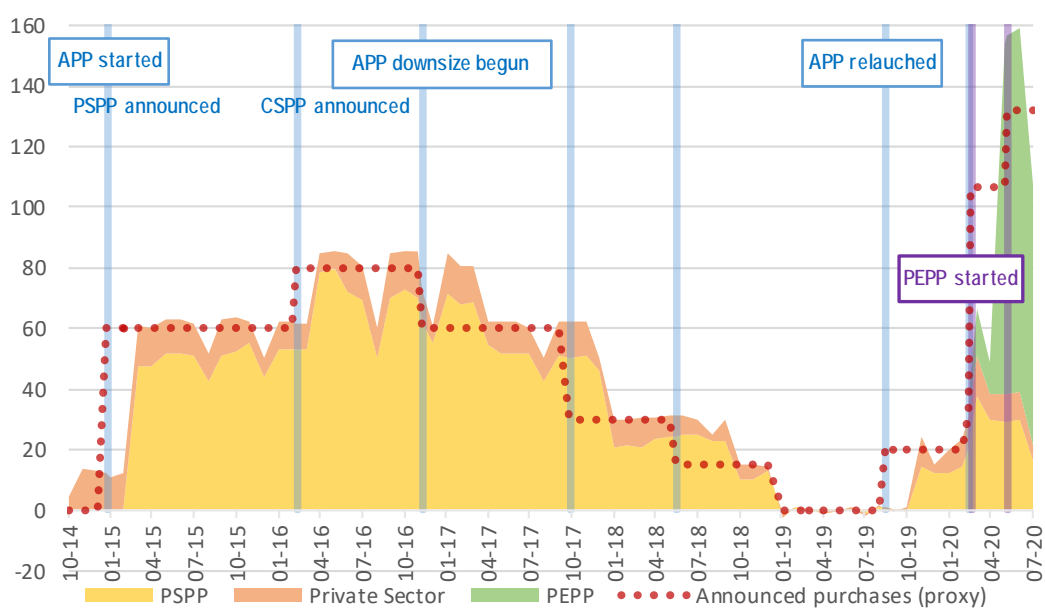
¹ At the end of 2008, the ECB's policy rate was still at 2.5%. It reached 0.15% only in June 2014, despite two astonishing upward adjustments in the spring of 2011. At the peak of the 'doom-loop' (December 2011 and February 2012), the ECB implemented two extreme re-financing operations towards the European 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).

² 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.³

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).⁴ 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).

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

⁴ 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 1.⁵ 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.⁶ Then, in March

⁵ 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.

⁶ 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.⁷

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

⁷ 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.⁸ 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.

⁸ 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.⁹ 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.¹⁰ 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

⁹ 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.

¹⁰ 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,¹¹ 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.

¹¹ 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.¹² 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.

¹² 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).

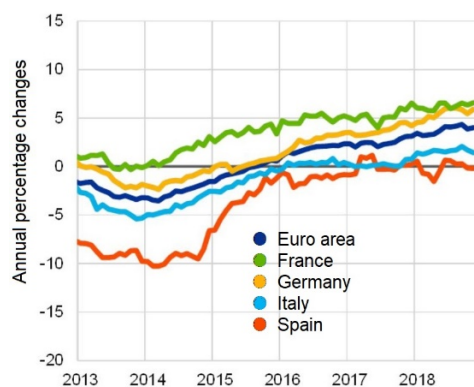
The ECB estimates that the compression in sovereign yields due to its policies was around 100 basis points for the ten-year maturity, with a confidence interval between 70 and 130 bps (Eser et al., 2019; Hammermann et al., 2019). Figure 2(a) shows the relative importance of the APP compared to other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

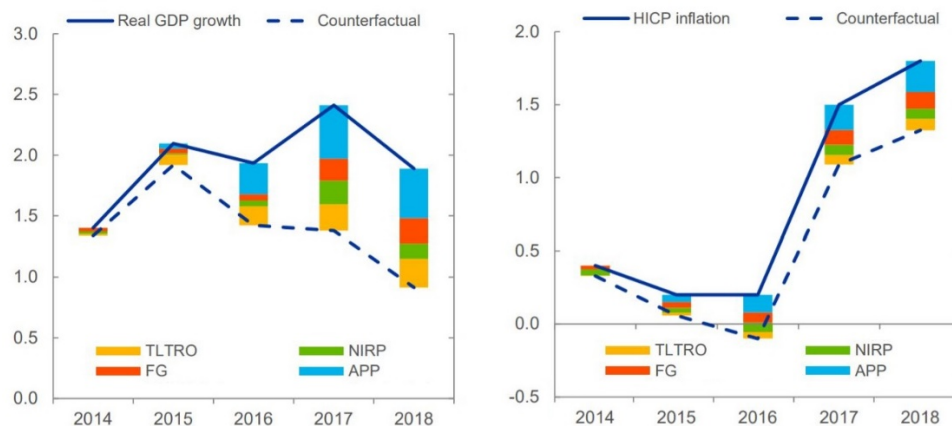
The European banking sector also played a crucial role in the transmission of the ECB’s APP to financing conditions (Hammermann et al., 2019). After mid-2015, growing increases of loan volumes to non-financial corporations were observed (see Figure 2(b)). As already stated, the ECB’s asset purchases 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).¹³

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.¹⁴

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 3.¹⁵ 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).

¹³ 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.

¹⁴ 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).

¹⁵ 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.¹⁶ 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.¹⁷

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).¹⁸

¹⁶ The assumption is that assets of different maturities provide different liquidity services.

¹⁷ 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.

¹⁸ 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.¹⁹ 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.²⁰ 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.²¹ 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.

¹⁹ 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.

²⁰ 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.

²¹ 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.²²

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.²³ 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.²⁴ 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

²² 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.

²³ 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.

²⁴ 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).²⁵

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.²⁶ 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

²⁵ 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).

²⁶ 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?²⁷

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.²⁸ 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.²⁹

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

²⁷ The latter option is supported by Bundesbank chairman, Jelis 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),

²⁸ 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.

²⁹ 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%.³⁰ 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

³⁰ 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?

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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