

# TO THE PRESIDENT OF THE EUROPEAN CENTRAL BANK

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\* Monetary policy must reinvent itself in the wake of the crisis. Reinvention is particularly important because the system is riddled with uncertainties and the scope for applying both conventional and unconventional instruments is limited. The architecture of Economic and Monetary Union makes the challenge even greater because alignment of preferences and policies can only go so far. The European Central Bank will have to be clearer on what it can do, while remaining flexible in order to manage current uncertainties and unknowns. While the ECB's main objective is price stability, it will also have to contribute to the identification of, and response to, financial imbalances, while preserving its independence.

- \* MONETARY POLICY
- \* FINANCIAL STABILITY
- \* UNCERTAINTY

# 1 STATE OF AFFAIRS

You take over responsibility for price stability in the euro area at a time of a slowing but continuing recovery<sup>1</sup>. Unemployment has fallen rapidly since 2015, and deflation fears have receded as headline inflation has slowly increased. However, core inflation has persisted at around 1 percent for the last four to five years, inflation expectations have renewed their downward trend and wages still only partially reflect better employment conditions. Meanwhile, digitalisation and global geopolitical risks add to the unknown. Markets have little faith that the European Central Bank will manage to bring inflation back to its close to 2 percent target in the next five to 10 years (Figure 1), believing instead that this can be achieved only in the very long run. How can you, as the new ECB president, convince them otherwise?

You begin your term with the legacy of the Great Recession. The ECB was confronted with challenges: inflation volatility, risk of deflation visible in the downward trends in both actual and expected inflation, and a break in the transmission mechanism as a result of the banking crisis and the emergence of redenomination risk. While inflation might not be as volatile today, all other issues remain very relevant.

In response to these challenges, the ECB reduced its interest rates sharply, even into negative territory, and committed, via forward guidance, to staying there. However, constrained by the lower bound on interest rates and the resulting difficulty of lowering the whole yield curve, the ECB, like other advanced-economy central banks, resorted to balance-sheet management, culminating in Quantitative Easing (QE) – the purchasing of covered bonds, asset-backed securities, public-sector bonds and corporate bonds.

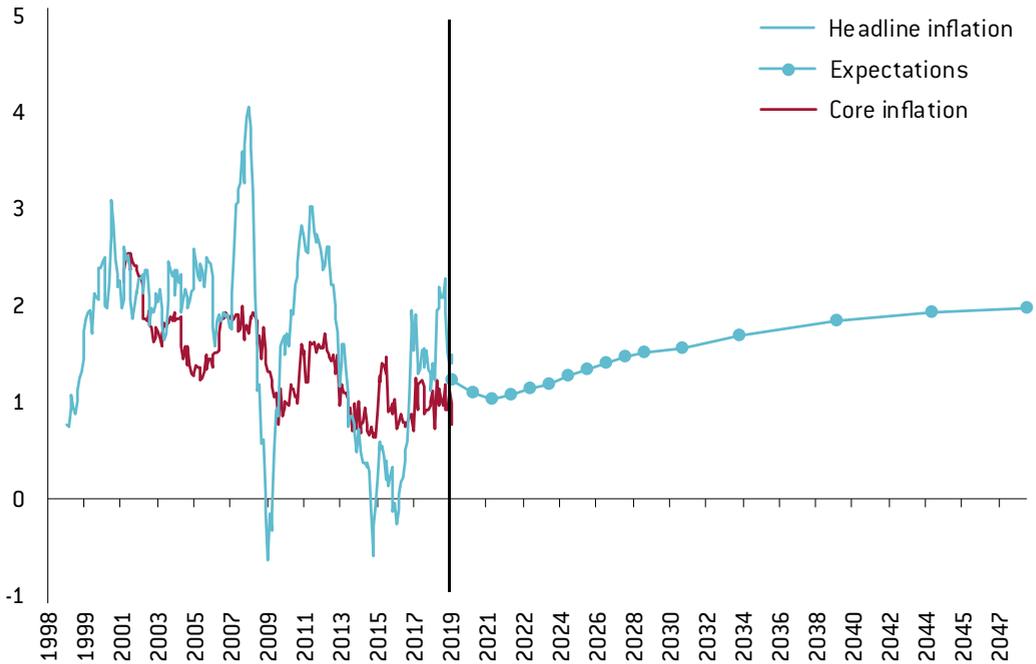
In parallel, the ECB introduced tools to restore the transmission mechanism of monetary policy, first through the Securities Market Programme (SMP) in 2010 and, second – and more successfully – through the announcement and specification of the Outright Monetary Transactions (OMT) programme in 2012.

You therefore start your term with a big balance sheet, an interest rate with limited space for further downward movement and a system in need of reassurance that the OMT is ready to be used, if need be.

\*INFLATION

\*MONETARY  
POLICY  
TRANSMISSION

**Figure 1: Euro-area inflation, core, actual and market expectations (year-on-year, %)**



Source: Bruegel based on Bloomberg. Note: inflation expectations as of April 2019, derived from inflation zero-coupon swaps of different terms (1 year, 2 years, up to 30 years), which provide information on market expectations of average yearly inflation over the contract term. Expectations for 2020 inflation, for instance, are derived from expected inflation over the next year (2019), given by the 1-year swap, and expected inflation over the next two years (2019 and 2020), given by the 2 year swap. Expectations are related to the Eurostat Harmonised Indices of Consumer Price (HICP) excluding tobacco.

Looking back at macroeconomic policies implemented in the course of the past 10 years, it is our view that the ECB played a disproportionate role in dealing with the euro crisis. As the ‘only game in town,’ the ECB acted in ways that have arguably brought it to the limits of its competences. The borders between fiscal and monetary policy have been blurred, adding to the complexity deriving from the fact that the ECB operates in a monetary union of 19 fiscal preferences that are only partly aligned. At the same time, the persistence of low rates implies that their distributional consequences have become more visible, subjecting the ECB, its policies and even its independence to greater scrutiny.

This picture has not really changed much and you could again be confronted with fiscal ‘inaction’ in the next recession, in which case you would have to respond, again, with more force than what a fully coordinated fiscal-monetary action would dictate. Only this time, you would have limited room to manoeuvre with your current tools. You start therefore with an overextended monetary policy, in which you may need to do more to achieve less, compared to your predecessors.

## 2 CHALLENGES

You face three broad challenges.

**You will continue to operate in an incomplete monetary union.** The single currency is unique in terms of its governance and the tools available to manage it. This requires a degree of adaptability from the ECB that is not asked of other similar institutions.

The first consequence of this incompleteness is that the coordination of fiscal and monetary policy in normal times is at best imperfect, given that the former happens at national level and the latter at euro-area level. There is no tool to carry out countercyclical fiscal policy at euro-area level in combination with monetary policy to manage the cycle. This has put the burden on monetary policy, a reality you also will probably be confronted with in the next recession. But this time the space to manoeuvre with the tools currently available will be considerably more limited. Reducing this risk requires you to play an active role in Eurogroup meetings. Your challenge will be to try to inform debates in order to help align national fiscal policies with one other and with monetary policy. Meanwhile, you must safeguard your independence from political pressure that would have you deviate from your mandate.

Timeliness of decision-making is equally important. The multi-country nature of monetary union implies that policies like QE might be delayed because they are politically difficult to implement. Indeed, the ECB started its programme six years after the Federal Reserve and the Bank of England. Your challenge will be to ensure timely responses to shocks.

\*OUTRIGHT  
MONETARY  
TRANSACTIONS

The euro crisis also revealed the vulnerability of the Economic and Monetary Union architecture and the crucial role the ECB must play to deal with this. Given the prohibition of monetary financing, the issuance of debt to implement national fiscal policy comes under greater market scrutiny. We saw this during the crisis when some countries were cut out of the markets. But market scrutiny does not always differentiate between a shortage of liquidity and an unsustainable fiscal debt. Thus the provision of ample liquidity at early stages of stress, after a technical and political agreement that the debt is sustainable, is crucial to prevent liquidity shortages threatening solvency for euro-area members.

Your predecessor's 2012 "*whatever it takes*" promise, and its formalisation through OMT, has proved effective in dealing with this problem and became a pivotal piece of the euro architecture reform during the crisis. OMT has not had to be deployed so far. Nevertheless, should a euro-area country experience difficulties, the ECB must be prepared to apply it in full.

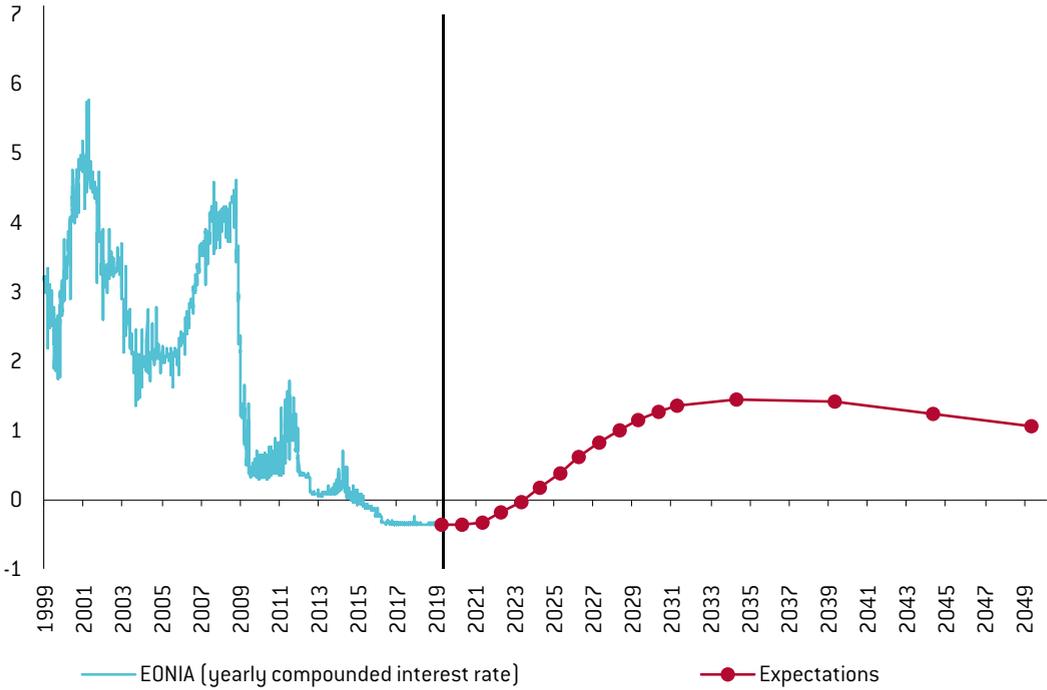
Last, the composition of the governing council and the ECB decision-making process are also direct reflections of the incomplete monetary union. Taking monetary policy decisions by unanimity, or at least by consensus, was deemed necessary at the start of the monetary union to ensure that the ECB speaks with one supra-national voice. But during the crisis, an increasing number of decisions were taken by majority (Claeys and Linta, 2019). It will be your challenge to contain disagreements so that they do not undermine your decisions.

**The second challenge you face is the significantly reduced scope to apply your tools.** In terms of tightening policy rates, there is no constraint, but there is limited room to ease monetary policy further, given that nominal interest rates are at their lowest level for more than two centuries and probably ever (Papadia and Välimäki, 2018). In addition, interest rates are expected to stay at very low levels for the next three decades. Financial market participants expect nominal short-term rates in the euro area to be still around 1 percent in 2049 (Figure 2).

It is important to try and understand the economic and financial drivers behind this situation, whether it is a short-lived

\*LIMITED  
ROOM FOR  
MANOEUVRE

**Figure 2: Short-term interest rates and market expectations (%)**



Source: Bruegel based on Bloomberg. Note: Interest rate expectations as of April 2019, derived from EONIA zero-coupon swaps of different terms (1 year, 2 years, up to 30 years), which provide information on market expectations of the compounded overnight EONIA over the contract term. Expectations for 2020 interest rate, for instance, are derived through expected compounded EONIA over the next year (2019), given by the 1 year swap, and expected compounded EONIA over the next two years (2019 and 2020), given by the 2 year swap.

\* BALANCE-SHEET  
MANAGEMENT

phenomenon or whether this long-term picture is accurate.

What this picture does however suggest is that the ECB will have to rely more on balance-sheet management and less on interest-rate changes to deal with the next recession. This poses two challenges: first, while QE has helped to reduce the risk of deflation, asset purchases are more difficult to calibrate than rate cuts, and their macroeconomic effects are less clear. Second, when the ECB stopped its net purchases at the end of 2018, it had reached the 33 percent issuer limit for sovereign bonds for some jurisdictions (Claeys *et al*, 2018), which it put in place when it started its sovereign asset purchase programme. The rationale for this limit was that the ECB did not wish to be in the position of having the power to block the restructuring of a euro-area country’s ECB-held



*Very low interest rates raise financial-stability concerns. Persistently low interest rates can lead financial institutions to search for yield by pursuing excessive risk taking*

debt, on the basis that not blocking such a restructuring might be interpreted as monetary financing. Combined with the rule requiring purchases to be proportionate to the shares of different national central banks in the ECB's capital, this limit reduces drastically the scope of asset purchases.

At the same time, the economy continuing to operate with very low interest rates raises financial-stability concerns. Persistently low interest rates can lead financial institutions to search for yield by pursuing excessive risk taking (Dell'Ariccia *et al*, 2017). Though the problem of non-performing loans is being reduced, households and firms in the euro area already have high levels of indebtedness. Extra debt, encouraged by low interest rates can increase the debt overhang and financial vulnerabilities, all other things being equal. There is the risk therefore that the ECB could be torn between wanting to raise rates for financial-stability reasons while needing to keep them low for price-stability purposes<sup>2</sup>.

The obvious solution to this dilemma should come from macro-prudential measures, and indeed a number of euro-area countries have resorted to such measures to deal with local issues. There are doubts, however, whether macro-prudential tools can address financial instability effectively. First, there is a cumbersome division of responsibilities between national authorities, the ECB and the European Systemic Risk Board. Second, macro-prudential measures are intrinsically prone to regulatory arbitrage. Third, the analytic apparatus guiding the

\*MACRO-  
PRUDENTIAL  
MEASURES

adoption and calibration of macroprudential measures is still under development.

\*THE NEW  
ECONOMIC  
NORMAL

**The third challenge you will be confronted with is our lack of understanding of what a new ‘economic normal’ looks like.**

Some characterise this lack of knowledge of what the new steady state is, and therefore the lack of understanding of what the new equilibrium will be, as fundamental uncertainty. How can you decide on your policy response if you do not know where you are heading? It is in the nature of fundamental uncertainty that you cannot measure it. But in your internal deliberations, your staff will confront you with a number of arguments that will point in the direction that we are indeed operating in an environment of fundamental uncertainty.

First, while most economists argue that the neutral interest rate has decreased, econometric estimates of this rate are very poor (Beyer and Wieland, 2019). This implies that underlying models – our interpretation of how the economy works – are also poor<sup>3</sup>. In fact, Figures 1 and 2 considered together indicate the unusual result that markets believe that in the long run (ie in equilibrium), the real interest rate is negative (as expected inflation is 2 percent and the nominal interest rate is 1 percent by 2049). Here your challenge is to plan for contingencies: if the low market expectations shown in Figures 1 and 2 prove wrong and inflation and policy rates move back towards 2 percent and 4-5 percent respectively, monetary policy would again have space to manage both sides of the business cycle. In this scenario, the ECB will have to manage and communicate the means and timing of its exit from negative rates and, if necessary, of a gradual reduction in the Eurosystem balance sheet.

\*MARKET  
EXPECTATIONS

However, if market expectations turn out to be correct and the neutral rate remains very low or even negative, as suggested by Holston *et al* (2017), the difficulty for the ECB will be of a different order of magnitude, as we discussed when we described the limited scope for using your tools.

Second, your staff will tell you that the link between employment and wage developments has weakened as the Phillips curve might have flattened (at least in some countries; see Bonam *et*

al, 2018), while the relationship between wage and price developments has also become less certain. Critical variables, such as that for the non-accelerating inflation rate of unemployment, have become difficult to gauge. So it appears there is both less space for monetary policy and its effect might be smaller. Darvas (2019) showed that the ECB's inflation projections in recent years have been systematically wrong. Such observations imply that we understand much less well the monetary-policy transmission channel. This could jeopardise monetary policy effectiveness and threaten the ECB's credibility.

Last, broader developments render the shape and form of this new normal unknown. The digital transformation, the emergence of China, trade wars and the risk of the collapse of the multilateral system indicate that the past is not necessarily going to be a good predictor of the future. Your challenge will be to navigate those waters, partly in the dark, to achieve and maintain price stability and contribute to financial stability.

### 3 RECOMMENDATIONS

**Our main recommendation is to start your term by reviewing the monetary policy framework.** The Bank of Canada decided to review its monetary policy framework in late 2018, ahead of the 2021 renewal of the inflation control agreement<sup>4</sup>. The US Federal Reserve Board at around the same time reached a similar conclusion<sup>5</sup>. As the ECB faces significant challenges that call for more than just small changes, it should also thoroughly review its own framework and toolbox. Your appointment as president and the renewal of two thirds of the governing council between 2018 and 2019 present a good opportunity to reflect on whether the current framework is well suited for the uncertainties of the future.

High uncertainty, in terms of both the environment in which the ECB will have to operate and the effectiveness of the available tools, requires that monetary policy design pay attention to both robustness and flexibility.

Robustness implies that policy design cannot be based solely on what is best in the baseline scenario. The ECB will rather

\*MONETARY  
POLICY  
FRAMEWORK

have to design policies that can deliver as good a performance as possible across a range of possible scenarios. In other words, the ECB should not rank its policy alternatives in terms of what performs best for the most likely circumstances, but should rather rank them in terms of whether they do well enough for the most varied circumstances (Ben-Haim and Demertzis, 2016).

At the same time, the ECB must use flexibility to adapt its operations as it increases its knowledge about the new economic environment and the effectiveness of its tools. But this must be combined with sufficient consideration for continuity, in order to make monetary policy as transparent and as predictable as possible, in order to manage expectations effectively. Last, communication will also have to reflect the lack of knowledge that uncertainty implies. More than about monetary policy intentions, communication should be about how monetary policy is able to deal with the possibility of adverse outcomes.

### **What next for monetary policy?**

If inflation convincingly moves towards its close to 2 percent target, the ECB should communicate the modalities of a return to positive interest rates, and start to plan for its optimal balance sheet size in the long run and its preferred operational framework. If, on the contrary, there is no progress towards the inflation target and, even more, if the euro area faces a new downturn, the ECB should be ready to apply a range of tools. Our main recommendations in this case are that:

- The ECB should maintain generous refinancing operations and balance-sheet management in its monetary policy toolbox.
- In order to restart its asset purchase programme, if necessary, the ECB should be ready to update its self-imposed constraints (ie the 33 percent issuer limit and/or the capital key distribution) and/or include other asset classes in its purchases, such as bank loans and possibly equities. One could consider whether the 33 percent limit achieves the right balance between the risk of monetary financing and the risk of not meeting the price-stability objective. For instance, the risk of monetary financing of an AAA-rated government appears currently to be negligible

## \*NEW TOOLS

and should not act as a constraint on the implementation of the asset purchase programme and the fulfilment of the ECB's mandate. In order to facilitate the implementation of its QE programme, should it need to use it again, the ECB should thus relax the limit, at least for highly-rated countries<sup>6</sup>.

- Last, the ECB should also start to evaluate potential new tools in case it proves insufficient to regain and maintain price stability. Direct injections of cash into the economy by the central bank (ie helicopter money) or interventions in other markets (eg the market for inflation derivatives; see Papadia, 2015) should not be discarded without careful evaluation. Given the limited space the ECB has, new tools should be studied so that, if ever needed, they can be applied with adequate knowledge of what they might achieve and at what risk.

More broadly, when reviewing its framework, the ECB should consider two issues:

- First, the ECB should reinforce the message that the 2 percent inflation objective is the best quantification of the Treaty mandate of price stability. Providing some clarity through precision is crucial. This is particularly relevant given the other uncertainties we have described. If a statistically measured 2 percent inflation means that, in reality, prices do not change, then any rate lower than that means prices are reducing. On the other hand, raising the target above 2 percent, even if it increases the policy space, would imply that the ECB would no longer aim at price stability, as required by the Treaty, not to mention that in the current circumstances a higher target seems very difficult to attain. In order to reap the benefits of an effective *focal point*, in other words an explicit, clear and well-understood numerical inflation target, the ECB should consider introducing explicitly defined tolerance bands around a precise numerical target, which has been shown to reinforce credibility via accountability (Demertzis and Viegi, 2008, 2010).
- Second, the ECB could also consider modifying other elements of its price-stability definition: it could put more

## \*INFLATION OBJECTIVE

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*An important role that the ECB has had to play and might have to play again is to provide policy certainty when other forms of uncertainty prevail*

emphasis on core inflation and consider targeting inflation on average over, say, the business cycle instead of ‘over the medium term’. This could help prevent rushed policy reversals and could have helped to avoid the erroneous interest rate increases of 2011 (Claeys *et al*, 2018).

- Last, you will have to manage decision making in the governing council. In doing this you should try as much as possible to foster convergence in the governing council, free from national considerations. However, you should not try to reach unanimity or consensus at all costs, as this could lead to timid or late decisions that could damage the euro-area economy.

#### **The ECB’s crucial role in the euro-area architecture**

An important role that the ECB has had to play and might have to play again is to provide policy certainty when other forms of uncertainty prevail. The “*whatever it takes*” speech of President Draghi provided this clarity when the level of uncertainty threatened the euro’s existence. While the announcement of OMT convinced the markets that the ECB had both the tools and the willingness to intervene, the ECB needs to re-examine the framework behind this programme and ensure that it serves its purpose of reducing uncertainty as much as possible.

Our main recommendations here are that:

- The new ECB leadership should reconfirm that it is ready to use OMT to avoid liquidity crises in the sovereign debt markets of euro-area members.

\*EURO-AREA  
ARCHITECTURE

\*COLLATERAL  
FRAMEWORK

- Important steps have been taken to ensure the soundness of the OMT's architecture: the involvement of a European Stability Mechanism (ESM) programme as a precondition necessary to avoid moral hazard requires a neutral assessment by the European Commission of the sustainability of the fiscal position, and the political commitment to back it up provided by the ESM board, ie the euro-area finance ministers. In further considering the role of the ESM, the ECB should clarify the unnecessary ambiguity in its original OMT press release (ECB, 2012) and state that an ESM Precautionary Conditioned Credit Line, which is the natural candidate to be used in liquidity crises, should be considered sufficient as a pre-condition to access an OMT programme (Claeys and Mathieu Collin, 2018).
- Another important element to reduce the fragility of sovereign debt in the euro area would be for the ECB to re-examine its collateral framework to make sure it does not participate in compromising the safe-asset status of the sovereign bonds of euro-area members (Claeys and Goncalves Raposo, 2018) and also increase its transparency when it comes to these potentially controversial and crucial decisions.

### **The ECB's role in promoting financial stability**

Low interest rates for a long time might contribute to the build-up of financial imbalances<sup>7</sup> that might be difficult to identify in real time but proliferate in very unpredictable ways. As we have noted, there is a risk that policy and market rates in the euro area will remain low for a very long time. This implies that financial instability will remain a significant threat to the system, even if we cannot precisely predict in what form. It is doubtful that, with the current institutional framework and given the uncertainty about their effectiveness, macro-prudential measures can provide effective protection against financial instability. While we do not believe that monetary policy should directly target financial stability at the detriment of price stability (Agur and Demertzis 2019), the ECB does have a role to play in the pursuit of financial stability.

We recommend that:

- The ECB should contribute to deeper analytical foundations for macro-prudential policies as a first line of defence against the build-up of financial stability risks; cooperation with the European Systemic Risk Board should be enhanced on this issue.
- The ECB should make proposals for the establishment of a better institutional set-up for the use of macro-prudential tools, so that it can act in a timely and effective way.
- The ECB should monitor carefully financial stability risk in the euro area, and alert the relevant institutions responsible for implementing macro-prudential policies when it identifies signs of build-up of financial imbalances.

## NOTES

- 1 We focus in this memo on your responsibility for monetary policy, not on your supervisory role.
- 2 This dilemma becomes even more acute if one also considers that the ECB, through the Single Supervisory Mechanism, is the supervisor of systematically relevant banks in the euro system.
- 3 And there is even a view that the neutral rate is not even relevant for policy (Borio *et al*, 2017).
- 4 <https://www.bankofcanada.ca/2018/11/bank-review-monetary-policy-framework-ahead-2021/>.
- 5 <https://www.federalreserve.gov/monetarypolicy/review-of-monetary-policy-strategy-tools-and-communications.htm>.
- 6 The Court of Justice of the European Union in 2018 seemed to imply that the relevant limit of the public sector purchase programme is not to buy all the bonds issued, as it states that the European System of Central Banks (ESCB) is “*not permitted to buy either all the bonds issued by such an issuer or the entirety of a given issue of those bonds*” and that monetary financing is avoided when “*a private operator necessarily runs the risk of not being able to resell them to the ESCB on the secondary markets, as a purchase of all the bonds issued is in all cases precluded*”. See the judgement in case C-493/17, 11 December 2018, available at: <http://curia.europa.eu/juris/document/document.jsf?text=&docid=208741&pageIndex=0&doclang=EN&mode=req&dir=&occ=first&part=1&cid=6032640>.
- 7 Zero interest rate means that asset prices become very volatile as any change in future returns of these assets, even if 20 years ahead, is not discounted. So, volatility necessarily increases for rates equal to zero.

## REFERENCES

- Agur, I. and M. Demertzis (2019) 'Will Macroprudential policy Counteract the Monetary Policy Effects on Bank Behavior?' *North American Journal of Economics and Finance* Volume 48, 2019: 65-75
- Ben-Haim, Y. and M. Demertzis (2016) 'Decision Making in Times of Knightian Uncertainty: An Info-Gap Perspective', *The Open-Access, Open Assessment e-journal*, 23
- Beyer, R.C.M. and V. Wieland (2019) 'Instability, imprecision and inconsistent use of equilibrium real interest rate estimates', *Journal of International Money and Finance*, Volume 94, June: 1-14
- Bonam, D., J. de Haan and D. van Limbergen (2018) 'Time-varying wage Phillips curves in the euro area with a new measure for labor market slack', *DNB Working Paper* No. 587, De Nederlandsche Bank
- Borio, C., P. Disyatat, M. Juselius and P. Rungcharoenkitkul (2017) 'Why so low for so long? A long-term view of real interest rates', *BIS Working Papers* No. 685, Bank for International Settlements
- Claeys, G. and A. Mathieu Collin (2018) 'Does the Eurogroup's reform of the ESM toolkit represent real progress?' *Bruegel Blog*, 13 December, available at: <http://bruegel.org/2018/12/does-the-eurogroups-reform-of-the-esm-toolkit-represent-real-progress/>
- Claeys, G. and M. Demertzis (2017) 'How should the ECB "normalise" its monetary policy?' *Policy Contribution* 2017/31, Bruegel
- Claeys, G., M. Demertzis and J. Mazza (2018) 'A monetary policy framework for the European Central Bank to deal with uncertainty', *Policy Contribution* 2018/21, Bruegel
- Claeys, G. and I. Goncalves Raposo (2018) 'Is the ECB collateral framework compromising the safe-asset status of euro-area sovereign bonds?' *Bruegel Blog*, 8 June, available at: <http://bruegel.org/2018/06/is-the-ecb-collateral-framework-compromising-the-safe-asset-status-of-euro-area-sovereign-bonds/>
- Claeys, G. and T. Linta (2019) 'Decision making in the ECB Governing Council since 1999', *Bruegel Blog*, <http://bruegel.org/2019/06/the-evolution-of-the-ecb-governing-councils-decision-making/>
- Darvas, Z. (2019) 'Forecast errors and monetary policy normalisation in the euro area', *Policy Contribution* 2019/24, Bruegel
- Dell'Ariccia, G., L. Laeven and G. Suarez (2017) 'Bank leverage and monetary policy's risk-taking channel: Evidence from the United States', *Journal of Finance* 72(2): 613-654
- Demertzis, M. and N. Viegi (2008) 'Inflation Targets as Focal Points', *International Journal of Central Banking* 4(1): 55-87
- Demertzis, M. Viegi, N (2010), 'Inflation Targeting: a Framework for Communication', *B.E. Journal of Macroeconomics* (Topics), Vol. 9, 1.

ECB (2012) 'Technical features of Outright Monetary Transactions', 6 September, European Central Bank, available at [https://www.ecb.europa.eu/press/pr/date/2012/html/pr120906\\_1.en.html](https://www.ecb.europa.eu/press/pr/date/2012/html/pr120906_1.en.html)

Holston, K., T. Laubach and J.C. Williams (2017) 'Measuring the natural rate of interest: International trends and determinants', *Journal of International Economics* 108(1): 59-75

Papadia F. (2015) 'A help for the ECB from the derivative market', blog post, 23 February, available at: <http://moneymatters-monetarypolicy.eu/a-help-for-the-ecb-from-the-derivative-market/>

Papadia, F. and T. Välimäki (2018) *Central Banking in Turbulent Times*, Oxford University Press

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