



Green Central Banking:

Options for the ECB on Climate Change

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Future of the **EU27**





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Abstract

There is growing discussion about the need for central banks to tackle climate change. This paper outlines several possible options for the ECB to do so. These options include: mitigating climate-related risks as economic and financial risks; green regulatory guidance; green risk weighted assets; green quantitative easing; reducing the direct climate burden of the ECB; and greening the ECB's reserve assets. Apart from greening the ECB's reserve assets, steps have been taken on all these options. However, the idea of green quantitative easing is likely to be contested. The ECB can be a major catalyst for climate action both through its monetary policy and regulatory decisions and by leading by example on green corporate social responsibility.

1. Introduction

Anthropogenic, or human-made, climate change may well be the greatest challenge of this century. In addition to causing enormous environmental damage, climate change threatens living standards. This includes the potential for economic disruption through severe weather events, greater water and food scarcity, increased conflict and many millions more people living in extreme poverty.² There is a growing sense that we need to use all the tools available to green our economies at a sufficient pace to keep the increase in global average temperature well below two degrees.³

One aspect of this is the greening of the financial sector, in particular, greening our central banks. Economists have conventionally tended to favour a carbon tax as the best lever to optimally discourage activities that cause carbon emissions and to make green alternatives financially more viable than emission heavy ones.⁴

However, as the climate crisis becomes more urgent, there has been increased focus on the responsibilities of firms, financiers and their regulators to reduce unsustainable practices. Greening central banks has become part of the debate. The response to the global financial crisis of 2007-08 has resulted in fresh thinking about how to regulate finance.⁵ Concurrently, central banks across the EU and beyond have expanded their roles and balance sheets which gives them more capacity to influence markets and financial institutions than before.

The role of the ECB has become much larger. In the last ten years it has grown its balance sheet enormously, taken a leading role in the rescue of five euro area Member States through financial stability programmes and taken a great deal more responsibility for the financial sector through the Banking Union.⁶ It has also achieved better visibility over private banks through greater data collection requirements than before. The euro area asset purchase programme has resulted in the direct purchase of €2.5 trillion of financial assets, bringing the holdings of the Eurosystem to €4.7 trillion (just under seven percent of the financial assets in the euro area). A corresponding argument arises that if the ECB is

¹ School of Economics, University College Dublin and member of the IIEA's Emerging Voices Group. I am grateful to Mark Collier, Jill Donoghue, Diana Garcia Lopez, Brian Hallissey, Patrick Honohan, Kinanya Pijl and an anonymous reviewer for very helpful comments. The views expressed here are my personal responsibility.

² See ESPAS (2019): <https://espas.secure.europarl.europa.eu/orbis/node/1362>

³ See, for example, the Paris Agreement (2015): https://treaties.un.org/doc/Treaties/2016/02/20160215%2006-03%20PM/Ch_XXVII-7-d.pdf

⁴ Carbon pricing is seen as the main tool for tackling climate change. See for, example, Nordhaus (2008) for a conventional carbon focused approach and Bolton et al. (2020) for one that acknowledges its importance but is much less carbon focused. The latter view is becoming more common among economists. Carbon tax is a tool in the hands of national governments. Action can also be taken at the EU level on the price of carbon through the EU Emissions Trading System. The current price of carbon in the EU is approximately 25 to 30 euros per tonne. The required price of carbon for reaching carbon neutrality in the EU is probably closer to 100 euros by 2025 and even more than that subsequently (Kirkegaard, 2019).

⁵ Mark Carney, UN Special Envoy on Climate Action and Finance and former Governor of the Bank of England, has been a prominent early advocate of the relevance of climate change to central banks. See, in particular, Carney (2015): <https://www.bis.org/review/r151009a.pdf>

⁶ Banking Union refers to the transfer of direct supervision of the most important euro area banks and an indirect role in supervising the remainder to the ECB.



already influencing the market by buying so many assets and taking on such unprecedented powers and responsibilities, it should also use this wider role to support environmental sustainability.

This paper examines the main options available to the ECB to tackle climate change and how they fit with the ECB's mandate. Section 2 outlines six potential options for the ECB. Section 3 compares how some of these options have been discussed by policymakers. Section 4 concludes.

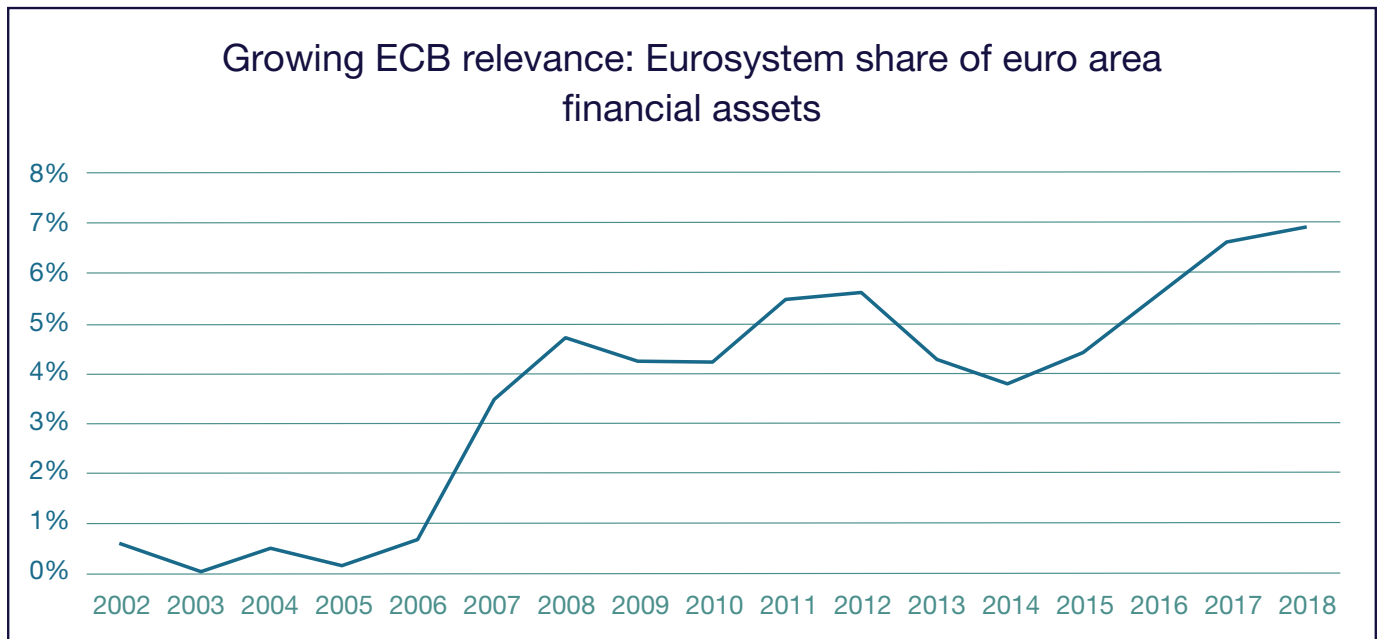


Figure 1 The growing balance sheet of the Eurosystem suggests that the ECB has increased influence on financial assets. Sources: ECB and Eurostat. Note that while monetary policy decisions for the euro area are taken by the ECB Governing Council, most of the monetary policy implementation, including the Asset Purchase Programme (quantitative easing), is carried out by national central banks. Therefore, it is more appropriate to examine the balance sheet of the Eurosystem rather than that of the ECB.

2. Options

This section outlines six potential options as to how the ECB can proceed. After its primary objective of price stability, the ECB has scope to perform other tasks. Article 127 of the Treaty on European Union states that it “shall support the general economic policies in the Union with a view to contributing to the achievement of the objectives of the Union as laid down in Article 3 of the Treaty on European Union”. Article 3 of the Treaty on European Union includes the following (emphasis added): “The Union shall [...] work for the sustainable development of Europe based on *balanced economic growth* and price stability, a highly competitive social market economy, aiming at full employment and social progress, and a high level of protection and *improvement of the quality of the environment*. It shall [...] promote *solidarity between generations*[...].” “As regards the general objectives of the EU, Article 5 of the treaty also includes that (emphasis added): “In its relations with the wider world, it shall contribute to peace, security, the sustainable development of the Earth, solidarity and mutual respect among peoples, free and fair trade, *eradication of poverty and the protection of human rights* [...]”⁷

However, this scope also has its limits. Adjusting financial regulation is not within the mandate of the ECB. The ECB can certainly give its opinion on how banking regulation should be reviewed and has the capacity to interpret banking

⁷ https://www.ecb.europa.eu/ecb/legal/pdf/oj_c_2016_202_full_en_txt.pdf



regulation. However, the power to propose new regulations lies instead within the remit of the European Commission, not the ECB. European banking and financial rules have been transformed over the last decade but these changes have come through EU legislation.⁸

i) Mitigating climate-related risks as economic and financial risks

One of the most agreed upon actions the ECB can take is to increase its focus on mitigating climate-related risks as economic and financial ones. Climate-related risks are not new but they are becoming more common. There are two main kinds of climate change risks to the economy; physical risks and transition risks. Both types of climate risks can affect both the income (such as GDP) and assets (capital stock and other investments) of the economy. Physical risks are associated with the onset of climate change. An example of this is flooding caused by sea level rises and consequent disruption to economic activity and damage to property. Transition risks are the risks of economic and financial losses associated with greening the economy. These may be due to changes in policy, technology or market preferences. For example, firms may go out of business due to government-imposed limits on carbon emissions, low carbon technologies becoming more competitive than carbon intensive ones and changes in household consumption associated with environmental concerns (Monnin, 2018).

There are three main tools for central banks to tackle such risks. To the extent that climate change affects economic and financial risks, these tools should certainly be used in tackling it. The first is monetary policy. Monetary policy is carried out by affecting the interest rates charged on loans in the economy. If inflation is too high, the ECB can cause market interest rates to rise, increasing the cost of liquidity, reducing consumer and business spending, and thus reducing inflation. If inflation is too low, the ECB can cause market interest rates to fall in order to bring about the opposite effect. In recent years, the ECB has undertaken non-standard monetary policy measures, such as the Asset Purchase Programme (its programme of quantitative easing) to reduce the cost of financing even further.⁹

Both physical and transition risks can potentially cause increases in prices. An example of a physical risk in this context would be a climate change-related drought that causes a failure of supply chains and a corresponding shock to inflation. A transition related risk could include a speculative bubble in solar panels, resulting in short term price rises and overproduction (of solar panels, electricity or both). If a shock to the economy results in a deflationary spiral, or if the euro area economy has gone into a slowdown due to either physical or transition risks, the ECB can mitigate the effect on the economy with monetary policy that keeps interest rates low and maintains liquidity. If the ECB foresees or identifies an economic bubble that will or is affecting most of the euro area, it can raise interest rates to avoid it occurring or ensure that it does not grow any further.

The second main tool is macroprudential policy. Much of macroprudential policy is in the hands of national central banks but the ECB has also had a role in euro area macroprudential policy since the financial crisis. Macroprudential policy uses measures such as limits on borrowing and capital buffers to dampen credit growth and build resilience in banks during periods of growth and potential overheating, and to loosen these constraints during economic busts to give banks greater capacity to handle asset flight and impaired loans. Unlike monetary policy, which must be set for the euro area-wide economy, macroprudential policy has the capacity to be targeted to country, region, industry and product-related risks within the euro area. Where the economic and financial risks associated with climate change have a particular country, region, industry or product-related concentration, the ECB and national central banks should certainly consider using macroprudential policy.¹⁰

⁸ In particular, the Capital Requirements Regulation and the Capital Requirements Directive IV.

⁹ Most of this description of monetary policy is based on this explanation: <https://www.ecb.europa.eu/explainers/tell-me/html/what-is-monetary-policy.en.html>

¹⁰ The ECB provides a database of most of the macroprudential policies and some of the microprudential policies implemented in the EU since 1995 here: <https://www.ecb.europa.eu/pub/research/working-papers/html/mapped.en.html>



A third tool is microprudential policy, or banking supervision. This is a new area of responsibility for the ECB.¹¹ ECB Banking Supervision focuses on the economic and financial sustainability of individual banks based on their risk management practices, their capital¹² and liquidity levels, and their remuneration policies and practices. ECB Banking Supervision has the capacity to affect banks' exposure to climate risks directly at the bank level for the top 117 banks in the euro area (which account for over 80 percent of euro area assets) and indirectly through the national central banks for the remainder.¹³

Another aspect of both macroprudential and microprudential policy is stress testing. The ECB has been undertaking macroprudential stress tests since 2009 and microprudential stress tests since 2014. Stress tests can take account of climate risks.¹⁴ For example, the Bank of England proposes to include explicit climate change risks in its next major stress test of the largest UK banks and insurance firms which will be completed in 2021.¹⁵ Its current proposals include three climate change scenarios across a 30 year horizon. This approach would attempt to take risks associated with the green transition into account.¹⁶ The ECB could account for climate risks in a similar manner during its next stress testing exercise, which may begin in 2022.¹⁷

It must be noted that climate risks tend to involve a much longer time horizon (or longer term view) than the risks that are typically considered.¹⁸ Forecasted climate scenarios feature a great deal of uncertainty, which grows over the length of the horizon. Climate stress tests, which are based on forecasted climate scenarios, will thus have greater modelling uncertainty than typical stress tests. This means that there will be much variation between the potential climate scenarios chosen in stress testing and the revised forecasts in future years.¹⁹ Despite this uncertainty, climate stress testing should shed additional light on climate-related economic and financial risks that are still relatively unexplored.

ii) Green regulatory guidance

One option that goes somewhat further than the first option is for the ECB to encourage climate change mitigation through regulatory guidance. This is in the domain of ECB Banking Supervision.

The purpose of regulatory guidance is to channel the actions of private banks towards the spirit of how the ECB wishes legislation to be acted on in practice. One example of environment-related regulatory guidance is the case of the Brazilian Central Bank. It introduced guidance that influenced banks to take account of socioeconomic risks in order to preserve the rainforest. Similarly, the ECB could require explicit targets from banks on reducing greenhouse gases for their lending.

11 ECB Banking Supervision was created in 2013, with Danièle Nouy, the first Chair of the Supervisory Board, appointed from 1 January 2014.

12 Capital refers to a bank's equity capital (shareholder investment) and certain types of liabilities that can absorb losses.

13 See: <https://www.bankingsupervision.europa.eu/banking/list/who/html/index.en.html>

14 As of July 2019, only one central bank in the world, De Nederlandsche Bank had implemented a climate stress test (Network for Greening the Financial System, 2019).

15 The Bank of England undertakes an annual 'Concurrent Stress Testing exercise' and a more detailed 'Biennial Exploratory Scenario' test that usually takes place every two years. This refers to the latter one.

16 See: <https://www.bankofengland.co.uk/paper/2019/biennial-exploratory-scenario-climate-change-discussion-paper>
<https://www.bankofengland.co.uk/prudential-regulation/publication/2018/enhancing-banks-and-insurers-approaches-to-managing-the-financial-risks-from-climate-change>

17 The ECB tends to undertake stress test every two years and had begun work on the latest stress tests in early 2020. However, this has been postponed to 2021 due to COVID-19 related factors. This could potentially mean that the next revision to ECB stress testing will be in the stress test that commences in 2023. Other possibilities also exist. See the following announcements: <https://eba.europa.eu/risk-analysis-and-data/eu-wide-stress-testing>
<https://www.bankingsupervision.europa.eu/press/pr/date/2020/html/ssm.pr200131-66073e3632.en.html>
<https://www.bankingsupervision.europa.eu/press/pr/date/2020/html/ssm.pr200312-43351ac3ac.en.html>

18 The current ECB stress testing horizon is three years. See: <https://eba.europa.eu/sites/default/documents/files/documents/10180/2419200/126521e6-613f-45e4-af84-cbd3b854afc5/2018-EU-wide-stress-test-Results.pdf>
<https://eba.europa.eu/risk-analysis-and-data/eu-wide-stress-testing>

19 This applies to broader economic analysis of the consequences of climate change. For example, Bolton et al. (2020) state that there is deep uncertainty surrounding the biogeochemical processes potentially triggered by climate change. These processes may be highly nonlinear. This means that small changes in one part of the system can lead to large changes elsewhere in the system. Consequently, some studies suggest optimal warming scenarios that could potentially cause catastrophic conditions for the future of life on Earth in practice.



Banks could also be guided to follow the nudge theory of change by applying a base lending rate for projects with low environmental, social and governance risks and a risk premium for high ones (Schoenmaker and Schramade, 2018).

The ECB could also promote sustainable finance by encouraging banks to sign up to a set of principles to tackle climate change. An example of a set of climate change-related principles is the UN Environmental Programme's Principles for Responsible Banking. The first principle is to align the bank's activity with the SDGs and the Paris Agreement. The second is to set targets to reduce negative impacts to people and the environment. The third is to work responsibly with clients to encourage sustainable practices. The fourth is to proactively consult stakeholders in doing this. The fifth is to have effective governance and a culture of responsible banking. The sixth is to be transparent and accountable in implementing these goals. Signatories of the UNEP Principles for Responsible Banking publish their first report and self-assessment on the principles after 18 months and do so annually thereafter. Signatory banks commit to within a maximum of four years from signing the document to implement the required steps associated with the set of principles.²⁰

iii) Green risk weighted assets

A more radical option is to adjust euro area risk weights in favour of green assets. This could be achieved through legislative change.²¹ The ECB could also potentially achieve the same effect by requiring that the risk ratings used by private banks must take climate change related risks into account. This could apply both if they are based on their internal risk models or if they are provided by external ratings agencies.

Risk weights are used by banks to calculate the amount of regulatory capital that they need to hold in order to survive adverse circumstances which its assets are potentially defaulted upon. The rules on risk weights are set in EU law but a certain amount of interpretation is left to statistical modelling in private banks. The role of banking regulators is to ensure that banks implement the rules in a credible manner. The set of rules on risk weights was one aspect of banking regulation that was criticised during the financial crisis as not being conducive to financial stability. However, they have been strengthened since. One argument associated with green central banking is that risk weights should be adjusted in favour of assets that have less environmental risk. A related argument is that rather than reducing risk weights for green assets, authorities should increase the risk weights for brown (i.e. non environmentally sustainable) assets (Schoenmaker and Schramade, 2018).

Understanding risk weights

Banks use their balance sheets to generate income. They typically do this by holding shorter term liabilities (such as deposits and loans from other banks) and equity capital (shareholder investment) in order to hold longer term assets (such as government bonds and loans to firms and individuals). Basel III (the set of international banking rules) requires banks to hold minimum levels of regulatory capital. Regulatory capital consists of equity capital and certain types of liabilities that can absorb losses. Banks must hold regulatory capital to the value of eight percent of the risk-weighted value of their assets.

²⁰ <https://www.unepfi.org/banking/bankingprinciples/>

²¹ EU legislation is proposed by the European Commission but must be reviewed and adopted by the EU Parliament and European Council. See: https://euro-pa.eu/european-union/eu-law/decision-making/procedures_en



Banks' regulatory capital requirements can be understood as follows:

$$\text{Capital requirement} = 0.08 \times \text{risk weighted assets}$$

$$\text{Risk weighted asset} = \text{asset value} \times \text{risk weight}$$

Banks can apply one of two methods to calculate risk weights. One method is called the standardised approach. This approach uses external credit ratings (typically made by Standard & Poor's, Moody's or Fitch) to determine the risk weighted value of an asset. If the external credit ratings consider the asset to be risky, its risk weight will be high, and vice versa. The other method of calculating risk weights is the internal ratings-based approach. In this case, the financial institution calculates the risk weighted value of the asset itself.

Here is a simplified example. A bank has an asset valued at 100 euro. If the risk weight equals 1 then the bank must hold capital of 8 euro in respect of this asset. On the other hand, if the risk weight is 1.5, the bank must hold capital of 12 euro in respect of the asset.

Risk weights can vary between 0 and 12.5. United States government bonds traditionally carry a risk weight of 0, suggesting that there is no risk of default and therefore that banks do not have to hold any regulatory capital against them. On the other hand, if it is certain that an asset will default, it could potentially command a risk weight of 12, meaning that the bank must hold capital against it equal to 100 percent of the value of the asset.

If there is too little liquidity in the economy, firms may be unable to invest to their potential, slowing economic growth. However, too much liquidity can cause economic bubbles, increasing economic growth in the short term but slowing it in the medium term. Not everyone agrees that increasing risk weights would reduce liquidity. For example, Admati and Hellwig (2013 and 2019) argue that, like healthy firms, healthy banks can simply raise more equity capital to increase their liquidity and that Basel III already incentivises banks to be overleveraged with risky assets, increasing the risk of bubbles and thus reducing medium term economic growth.

iv) Green quantitative easing

Another more radical approach is green quantitative easing (QE). Under green QE, the ECB would favour green assets over brown assets according to pre-defined criteria rather than buying financial assets on the basis of market neutrality (i.e. proportionate to their share of the total value of assets available) in undertaking QE. The Eurosystem has currently purchased approximately €2.65 trillion of assets under the current Asset Purchase Programme. Increasing the share of its holdings of green assets by even one percent of its total holdings would result in an increase of €265 billion of its green asset holdings, making it cheaper for firms to engage in environmentally friendly activity.

Understanding market neutrality in the context of QE and climate change

Market neutrality in the context of ECB QE refers to the ECB's aim to implement its bond purchases in a way that minimises its impact on the relative prices of eligible bonds purchased.²²

22 https://www.ecb.europa.eu/pub/pdf/other/ebbox201704_02.en.pdf?13c7a8c84c1110025c94b104c4da60ad



A recent paper by former Central Bank of Ireland Governor, Patrick Honohan (2019) addresses climate change, green QE and market neutrality.²³ Dr Honohan writes that addressing climate change is within the secondary goals of central banks and can be exercised with full independence. He states that if central banks encourage private banks to exclude some assets from their holding on climate risk grounds, they would do well to exclude those same types of assets in their own asset purchases (QE).

Secondly, Dr Honohan suggests that central banks could potentially replace the principle of market neutrality with a new one in order to tackle climate change. While the approach of market neutrality is convenient for central banks, he points out how this approach is not perfect. Only a minority of companies issue bonds. Of those companies, some obtain a disproportionately large amount of their liquidity from issuing bonds and are disproportionately highly rated among bond issuers. This means that they form a larger part of market neutral purchasing programs than their share of economic activity.²⁴

Choosing an appropriate new formula to replace market neutrality is more easily said than done. This could be with the help of or endorsement of the central bank's government (perhaps the Council or Commission in the case of the ECB – this point is not made in Dr Honohan's paper). However, doing so may only have a relatively small impact on climate change but has the risk of opening a Pandora's Box of problems that could inhibit the central bank from achieving its primary mandate.

A potential short-term challenge for green QE is the fact that, since the ECB only buys assets on the secondary market, green QE may be inhibited by a lack of truly green assets available in the financial system. By one definition, it appears that there are approximately only €80 billion of green assets available.²⁵ However, one would expect supply to respond to green QE if it was to take place, increasing the quantity of such assets available over time.

Both green risk weights and green QE would require a clear market definition of what a green asset is. Such a definition does not currently exist. However, a taxonomy of green assets is currently being developed by the European Commission. This taxonomy is being described as a gold standard for green assets. The European Commission is likely to be the first to develop this taxonomy worldwide.²⁶ This taxonomy could potentially have much wider reach than the EU's borders, similar to the GDPR regulation, where companies with activities in the EU extended these rules to their global operations since it was cheaper to keep their entire group on one standard.²⁷

Understanding the EU Taxonomy

The EU Taxonomy is a classification system to determine whether an economic activity is environmentally sustainable. The EU Taxonomy is not yet in use. However, the Taxonomy Regulation was agreed at political level

23 <https://www.piie.com/publications/working-papers/should-monetary-policy-take-inequality-and-climate-change-account>

24 This limitation of market neutrality can be illustrated for the euro area. The great majority of firms in Europe tend to obtain their credit from bank loans rather than issuing corporate bonds. Thus, their corporate bonds are not available for the Eurosystem to purchase. The Eurosystem has purchased bonds from 287 of the approximately 17 million firms in the euro area under its market neutral Corporate Sector Purchase Programme. The Eurosystem has purchased the bonds of 12, out of approximately 250 thousand, firms in Ireland. See: <https://www.ecb.europa.eu/mopo/implementation/html/index.en.html#csp>

25 <https://www.ecb.europa.eu/press/key/date/2018/html/ecb.sp181108.en.html>

26 <https://www.ft.com/content/66b3a50a-0432-11ea-a984-fbbacad9e7dd>

27 <https://www.ft.com/content/fc8ac580-59c9-11ea-a528-dd0f971febbc>



in December 2019 and the EU Technical Expert Group on Sustainable Finance has published its final report on its overarching design.²⁸

The EU Taxonomy will likely define green activities as activities that can contribute to mitigating climate change and ones that can be adapted to climate change. Activities that contribute to mitigation are ones that can have net zero emissions by 2050 and a 50-55 percent reduction by 2030. These are consistent with a pathway to limit increases in temperature to 1.5 degrees Celsius above pre-industrial levels. Activities that contribute to adaptation are about reducing the risk of adverse impacts on other people, nature and assets.

There are two likely thresholds for an activity to be counted as green in the taxonomy. The first is that the activity must make a substantial contribution to climate mitigation or adaptation. The second is that the activity does no significant harm to climate mitigation or adaptation, or to four other EU environmental objectives. These four other objectives are; conservation and sustainable use of water and marine resources, transition to a circular economy, pollution prevention and control, and protection and restoration of biodiversity and ecosystems.

One hypothetical example of the EU Taxonomy in action is that of a cement company renovating two of its plants that produce 50 percent of its turnover. This renovation includes retrofitting to reach high energy-efficiency levels, increasing the use of blended intermediate materials to reduce the clinker-to-cement ratio to below 0.65 (clinker is the main component of cement and a large contributor to global carbon emissions). This can be considered to be action towards climate mitigation. Furthermore, the company increases the capacity of its drainage systems to make the facilities resilient to flooding. This can be considered to be action towards climate adaptation. The overall renovation of the facilities amounts to €500 million. This represents 80 percent of the company's capital expenditures.

The company issues a green bond on the capital markets. This bond is based on the EU green bond standard following best practice. This bond complies with the EU Taxonomy's criteria for doing no significant harm in both climate mitigation and adaptation. Thus, the bond will be Taxonomy-aligned, that is, defined as green according to the EU Taxonomy on green finance. Once the works related to climate change mitigation are finalised, the company can correctly claim that 50 percent of its turnover and 80 percent of its capital expenditures are Taxonomy-aligned.²⁹

Green risk weighting would cause private banks to treat the hypothetical cement company's bonds, and potentially its shares, to be treated more favourably than a similar cement company undertaking similar activities without these green characteristics. Similarly, green QE involving private sector asset purchases would also favour such a company over its non-green counterpart, reducing the green company's cost of financing.

We may already have some indication of what the effect would be of incorporating climate risk into risk weights and green QE. The ECB has a set of criteria for corporate bonds being purchased as part of QE. Its corporate bond holding was €200 billion, as of 20 March 2020. The key requirement for QE is minimum credit quality. The ECB only purchases assets that are rated at least BBB- or equivalent by a credit ratings agency. However, credit agencies currently do not include climate-related criteria in their ratings. Applying alternative climate-change transition risk adjusted asset ratings created by environmental fintech and data analytics firm Carbon Delta, Monnin (2018), estimates that close to five percent of its holdings of €179 billion of corporate bonds at the time would not be eligible for its purchase if the ECB took account of transition risks.³⁰

28 EU Technical Expert Group on Sustainable Finance, 2020. See: https://ec.europa.eu/info/files/200309-sustainable-finance-teg-final-report-taxonomy_en

29 EU Technical Expert Group on Sustainable Finance (2020). See: https://ec.europa.eu/info/files/200309-sustainable-finance-teg-final-report-taxonomy_en

30 Further information on green QE can also be found in Schoenmaker (2019). See: <https://www.bruegel.org/wp-content/uploads/2019/02/Greening-monetary-policy.pdf>



v) Reducing the direct climate burden of the ECB

Perhaps the least controversial action that the ECB can take is to ensure that its direct climate impact is minimised. The ECB can ensure that its operational impact is minimised through better energy efficiency of its buildings and through reducing carbon intensive activities, such as by ensuring its staff take fewer work-related flights and take more sustainable methods of transport such as trains. Similarly, it can reduce or eliminate investments in brown assets from its own funds portfolios and from any other source of its employees' pension funding.³¹ The ECB could also potentially become a signatory of the UN Principles for Responsible Investment.³² At least two national central banks in the Eurosystem have already signed up to these; Banque de France and De Nederlandsche Bank.³³ Taking such actions can help raise the standard for green corporate social responsibility in the public and private sector.

vi) Green reserve assets

A rarely discussed option for the ECB is to allocate part of its reserve assets to green bonds. Central banks hold reserve assets (often called foreign reserves or foreign exchange reserves), mainly to ensure exchange rate stability.³⁴ The ECB holds €75 billion of reserve assets (five percent of its total assets).³⁵ The wider Eurosystem holds €866 billion of reserve assets (16 percent of its total assets).³⁶ A recent paper by Fender et al. (2019) states that central banks could potentially include environmental sustainability into their objectives for holding their reserve assets and therefore include green bonds as part of their reserve assets.³⁷ The ECB or the wider Eurosystem could potentially follow this approach. While De Nederlandsche Bank has gone so far as to include these assets within its responsible investment goals, no central bank has taken this step to date.

vii) Green regulatory planning

One final option that is included here, for completeness rather than as a serious option for the ECB, is green regulatory planning. For example, the Chinese Ministry of Environmental Protection, the Bank of China and the China Banking Regulatory Commission have implemented a green credit policy since 2006. This has caused banks to offer adjusted interest rates based on the environmental performance of borrowers' industries (Schoenmaker and Schramde, 2019). This approach would hardly receive serious consideration in the EU. Such a model would require a radically different role for the ECB and central planning across the euro area. It is well outside the Overton window of policy options for greening the ECB.

3. Implications

ECB central bankers and commentators on the ECB have approached these options in different ways. Perhaps the most common theme present in ECB speeches on climate change is to use existing policy to mitigate climate risks to finance

31 More information on financial assets held by the Eurosystem that are not related to monetary policy can be found here https://www.ecb.europa.eu/explainers/tell-me-more/html/anfa_qa.en.html

Further information on greening central banks' portfolios can be found in Network for Greening the Financial System (2019b): <https://www.ngfs.net/sites/default/files/medias/documents/ngfs-a-sustainable-and-responsible-investment-guide.pdf>

32 See: <https://www.unpri.org/>

33 See: https://www.banque-france.fr/sites/default/files/media/2018/03/29/818080_-charte-invest_en_2018_03_28_12h12m41.pdf
https://www.dnb.nl/en/binaries/DNB%20Responsible%20Investment%20Charter_tcm47-382883.pdf

34 A recent example of the use of these reserves is the ECB and the Bulgarian National Bank setting up a swap line to ensure that the lev (the Bulgarian currency) does not deviate too far from the euro during the current COVID-19 crisis. See: <https://www.ecb.europa.eu/press/pr/date/2020/html/ecb.pr200422-962a743486.en.html>

35 As of March 2020, the ECB's reserve assets were mostly in assets denominated in foreign currencies (€51 billion) and gold (€24 billion). See here: https://www.ecb.europa.eu/stats/balance_of_payments_and_external/international_reserves/templates/html/202003ecb.en.html

36 As of March 2020, the Eurosystem's reserve assets were mostly in gold (€508 billion) and assets denominated in foreign currencies (€277 billion). See here: https://www.ecb.europa.eu/stats/balance_of_payments_and_external/international_reserves/templates/html/202003eur.en.html

37 See: https://www.bis.org/publ/qtrpdf/r_qtr1909f.pdf



and to the wider economy. A speech by ECB President Christine Lagarde in February 2020 almost exclusively focuses on climate risk.³⁸ Similarly, ECB Vice President Luis de Guindos announced in November 2019 that the ECB is currently carrying out a climate risk stress test analysis for the euro area banking sector.³⁹

This should not be surprising, since mitigating risks is central to the ECB's mandate. These comments by ECB Executive Board members are also similar to central bankers' speeches on climate change elsewhere. For example, a recent speech by Lael Braenard, member of the Federal Reserve Board of Governors, entirely focused on the effects of climate change in terms of the risks it presents to the economy, and how monetary and financial stability policy can respond to it.⁴⁰

Given its closeness to the ECB's mandate, green regulatory guidance is likely. The ECB is working in this area, including engaging with national central banks, but has not issued detailed supervisory expectations or guidance on climate-related risks to date.⁴¹ The ECB Banking Supervision's annual Risk Assessments first mentioned climate-related risks in its report for 2019 (published in 2018). This focuses on banks' exposure to physical and transition risks.⁴² The assessment for 2020 also focuses on banks' exposure to physical and transition risks, as well as mentioning how the ECB and other central banks and supervisory authorities are increasingly focusing on climate change-related risks and collaborating with each other through the Network for Greening the Financial System.⁴³

Another frequently mentioned topic is how the ECB includes climate change in making corporate social responsibility-related decisions. For example, the ECB's pension fund follows a sustainable approach⁴⁴ and its buildings are designed and maintained with sustainability-related features.⁴⁵ The direct impact of these actions is tiny in comparison with the ECB's broader influence on the euro area economy. However, such actions can set the standard for green corporate social responsibility in the public and private sector.

While senior policymakers, including Commission Vice President Valdis Dombrovskis, have suggested lowering capital requirements for green assets, ECB Executive Board members have not yet spoken about green risk weighted assets.⁴⁶ Similarly, there appears to have been no discussion of the possibility of the ECB the greening its reserve assets.

Several central bankers have discussed green QE in recent speeches. However, none of the current Executive Board members have argued in favour of green QE. ECB Chief economist Philip Lane states that due to QE, the Eurosystem balance sheet currently affects the market for green bonds.⁴⁷ Nonetheless, he does not commit or suggest any action on green assets that changes the principle of market neutrality. Former ECB Executive Board member Benoît Cœuré emphasises the quantity of green assets already purchased by the ECB but points out that the Governing Council concludes that the best way to achieve its monetary policy objective was to follow the principle of market neutrality. He does not hint at going any further than this.⁴⁸

Ms Lagarde has perhaps been most ambitious about the possibility of green QE. In her hearing with the European

38 https://www.ecb.europa.eu/press/key/date/2020/html/ecb.sp200227_1-5eac0ce39a.en.html

39 https://www.ecb.europa.eu/press/key/date/2019/html/ecb.sp191121_1-af63c4de7d.en.html

40 <https://www.federalreserve.gov/newsevents/speech/brainard20191108a.htm>

41 https://www.bankingsupervision.europa.eu/press/publications/newsletter/2019/html/ssm.nl190515_3.en.html

42 <https://www.bankingsupervision.europa.eu/ecb/pub/pdf/ra/ssm.ra2019.en.pdf>

43 <https://www.bankingsupervision.europa.eu/ecb/pub/ra/html/ssm.ra2020%7Ea9164196cc.en.html#toc3>

44 <https://www.ecb.europa.eu/press/key/date/2018/html/ecb.sp181108.en.html>

45 See, for example, the ECB Environmental Statement for 2019: <https://www.ecb.europa.eu/ecb/orga/climate/green/pdf/ecb.environmentalstatement201910-5da457479d.en.pdf>

46 https://ec.europa.eu/commission/presscorner/detail/en/SPEECH_17_5235

47 [https://www.centralbank.ie/docs/default-source/publications/economic-letters/vol-2019-no-1-climate-change-and-the-irish-financial-system-\(lane\).pdf?sfvrsn=2](https://www.centralbank.ie/docs/default-source/publications/economic-letters/vol-2019-no-1-climate-change-and-the-irish-financial-system-(lane).pdf?sfvrsn=2)

48 <https://www.ecb.europa.eu/press/key/date/2018/html/ecb.sp181108.en.html>



Parliament for the role of ECB President, she talks about the possibility of weighting QE towards green bonds but emphasises the risks associated with this. At the time, the European Commission's work on a taxonomy of green assets was still at an early stage. She suggests that, once this is agreed, the ECB should assess whether it can apply this taxonomy to the ECB's Asset Purchase Programme. However, she points out that green assets are a very small proportion of assets and purchasing them could lead to several distortions. She also caveats her remarks by stating that the green transition is primarily a job for political authorities to take the relevant regulatory and fiscal measures and that 'the most appropriate, first-best policy response and initiatives primarily fall outside the realm of central bank policies'.⁴⁹

However, this sense of caution about green QE does not mean that it is off the cards. Bundesbank President, Jens Weidmann, made a speech in October 2019 in which he criticises the idea of green QE or privileging green assets within the monetary policy framework.⁵⁰ He argues that explicitly pursuing environmental policy objectives risks overburdening the monetary policy objective.

Dr Weidmann's criticism of the idea is notable in and of itself, and suggests that the idea may at least be under discussion. There are many ideas one may oppose but it is only those of current relevance that one might address in a public speech. Ms Lagarde's comments appear to have raised expectations for the role of central banks in addressing climate change. In late November 2019, 62 organisations and 164 individuals (including academics, trade union leaders and entrepreneurs) from across Europe called on Lagarde to act now on climate change.⁵¹ This included calls for the ECB to gradually eliminate carbon intensive assets from its portfolios (without waiting for the EU Taxonomy to be developed) and for QE that supports the green transition.

Where such expectations of central banks relate to green QE, Dr Weidmann's speech may be an attempt to dampen them. Green QE requires violating the principle of market neutrality. Thus, it may be seen as opening the back door to even looser monetary policy that facilitates income transfers from the north to the south of the euro area. Dr Weidmann argues that the principle of market neutrality is in Article 127 of the EU Treaty. While this is debatable,⁵² his view is likely to be shared by other euro area national central bank governors and conforms to the perspective that the ECB should hold a narrow, independent and apolitical role.

We are likely to see the next steps towards greening the ECB in developments associated with the current review of its monetary policy strategy. This review was launched in late January and is expected to be concluded by the middle of 2021. It promises to 'leave no stone unturned' and engagement with all stakeholders. This is the first full review of the ECB's monetary policy strategy since it was adopted in 1998. The ECB gives several reasons for the review, including declining global economic growth associated with slowing productivity and an ageing population. The announcement also refers to the threat to environmental sustainability and promises to examine how environmental sustainability can be relevant in following the ECB's mandate.⁵³

Giving the ECB a greater role in asset purchasing would bring its mandate closer to the European Investment Bank (EIB).

49 https://www.europarl.europa.eu/doceo/document/ECON-PR-639816_EN.pdf

50 <https://www.bundesbank.de/en/press/speeches/climate-change-and-central-banks-812618>

Note, however, that Weidmann does support central banks doing considerably more about climate change, including taking climate risks into account when implementing monetary policy and ensuring financial stability. See: <https://www.bundesbank.de/en/press/speeches/introductory-comments-at-the-press-conference-to-present-the-annual-accounts-826490>

51 <http://www.positivemoney.eu/wp-content/uploads/2019/11/Open-Letter-to-Christine-Lagarde-on-climate-change.pdf>

52 For example, this view is not held by Schoenmaker (2019).

53 <https://www.ecb.europa.eu/press/pr/date/2020/html/ecb.pr200123-3b8d9fc08d.en.html>

<https://www.ecb.europa.eu/home/search/review/html/index.en.html>

The review has been postponed by six months due to the COVID-19 pandemic, resulting in the conclusion of the review being postponed from end of 2020 to the middle of 2021. Euro area citizens are invited to submit their written proposals and comments about the ECB's monetary policy strategy until the end of August 2020. See:

<https://www.ecb.europa.eu/press/pr/date/2020/html/ecb.pr200402-942a1358ee.en.html>



Giving the ECB a mandate closer to the EIB or doing the same at Member State level could potentially speed the transition towards a greener economy. However, it could also potentially undermine central banks' main roles to safeguard financial stability and regulate, and could create unnecessary rivalry between publicly owned institutions.

A less-discussed option in relation to green central banking is to instead adjust the role of public investment banks. It may be more appropriate to give more responsibility and lending capacity to public investment banks rather than to central banks. Public investment banks may well be better equipped for greater public financial investment in green assets. Excessive public support for private initiatives without considerable oversight can increase the risk of bubbles. The more the ECB directs investment towards specific types of assets, the closer it comes to being a public investment bank. If it is desirable to fund green assets at a more direct level, this role could be better served by public investment banks.

The most prominent of these is the EIB. The role of the EIB is to finance sustainable projects and develop the economy. Its remit already includes, and it is already one of the largest investors in, climate finance.⁵⁴ The balance sheet of the EIB is €565 billion. This may seem small compared to the combined Eurosystem's €4.7 trillion balance sheet. However, the EIB is the largest public investment bank in the world (larger than, for example, the World Bank), and, prior to the financial crisis it was the EIB's balance sheet that dwarfed that of the Eurosystem. The EIB is often also mirrored by similar public investment banks at the national level such as KfW in Germany, Caisse des dépôts et consignations in France and Cassa Depositi e Prestiti in Italy.

Another possibility is to set up a separate EU, or euro area, green investment bank. One of the strongest features of the EIB is that it lends in a financially sustainable manner and consequently can raise funds very cheaply. If it is desirable to maintain the EIB's stellar reputation but invest much more proactively in green assets with public money, the EU could potentially set up a separate EU green investment bank instead. A potential model for such a bank is the Green Investment Bank, launched by the UK government in 2012 (although it was subsequently privatised in 2015). Current discussion on EU green investment banking can be found in a recent report for the Council of the European Union.⁵⁵

The ECB already supports public investment banks, including the EIB, through its Public Sector Purchase Programme (a sub programme of the ECB's Asset Purchase Programme).⁵⁶ There may also be capacity for the ECB to fund public investment banks more extensively to address climate change. However, the details relating to the strengths and weaknesses of this approach go beyond the scope of this paper.

4 Conclusion

In conclusion, climate change and ecological decline is an enormous challenge and there is a growing understanding that central banks need to take action to address this. Many European central bankers, most prominently ECB President Christine Lagarde, have spoken about the need for central bankers to tackle climate change. This paper has outlined several possible options for the ECB to do so. These are mitigating climate-related risks as economic and financial risks, green regulatory guidance, green risk weighted assets, green quantitative easing, reducing the direct climate burden of the ECB and greening the ECB's reserve assets. Apart from greening the ECB's reserve assets, steps have been taken on all

⁵⁴ It has also recently committed to further sustainability targets including aligning all financing activities with the Paris Agreement from the end of 2020. See: <https://www.eib.org/en/press/all/2019-313-eu-bank-launches-ambitious-new-climate-strategy-and-energy-lending-policy.htm>

See also Rossi (2019): <https://www.iieta.com/publication/greening-the-european-investment-bank/>

⁵⁵ A recent report for the Council of the EU by a committee chaired by Thomas Wieser, former president of the Eurogroup Working Group, recommended a set of three options for aligning EU interests on financing investment on climate change and extra-EU development. One is to turn the European Bank for Reconstruction and Development (EBRD) into a European Climate and Sustainable Development Bank by transferring the extra-EU activities of the EIB to the EBRD. The second is to create a new mixed-ownership bank with the EIB, the EBRD, Member States and the European Commission as shareholders. The third is that the EIB creates a subsidiary for its extra-EU activities and participates in it as a minority shareholder alongside Member States, the European Commission and national development banks.

⁵⁶ See discussion by Campiglio et al. (2018) on this. More detail on the Public Sector Purchase Programme can be found here: <https://www.ecb.europa.eu/mopo/implement/omt/html/pspp.en.html>



these options. However, the idea of green quantitative easing is likely to be contested. The ECB can be a major catalyst for climate action both through its monetary policy and regulatory decisions and by leading by example on green corporate social responsibility.

Nonetheless, even if the ECB takes an active approach, the most important policy actions in this area still fall beyond its mandate. There are other public institutions in the euro area also placed to mitigate climate change through environmental and economic regulation and fiscal policy. These include the European Commission, national governments and, if further public financial investment is desirable, public investment banks. It should also be noted, as a final point, that the current COVID-19 pandemic will have consequences for the ECB's capacity for climate action. The consequences of this ongoing crisis fall outside the scope of this paper.

This briefing is part of the Future of the EU27 Project, supported by the Department of Foreign Affairs and Trade. The author is a member of the IIEA's Emerging Voices Group, a cornerstone of the Future of the EU27 Project.

The views expressed in this publication are those of the author, and not the IIEA.

References

- Admati, A. and Hellwig, M., 2013. *The Bankers' New Clothes: What's Wrong with Banking and What to Do about It*. Princeton University Press.
- Admati, A.R. and Hellwig, M.F., 2019. *The Parade of the Bankers' New Clothes Continues: 34 Flawed Claims Debunked*. Rock Center for Corporate Governance at Stanford University Working Paper, (143), pp.15-58.
- Banque de France, 2018. *Responsible investment charter of the Banque de France*. Banque de France.
- Bank of England, 2019. Enhancing banks' and insurers' approaches to managing the financial risks from climate change. *Policy Statement 11/19*. Bank of England.
- Bank of England, 2019. The 2021 biennial exploratory scenario on the financial risks from climate change. *Bank of England Discussion Paper*. Bank of England.
- Bolton, P., Despres, M., da Silva, L.A.P., Samama, F. and Svartzman, R., 2020. *The green swan: Central banking and financial stability in the age of climate change*. Bank for International Settlements.
- Brainard, L., 2019. *Why Climate Change Matters for Monetary Policy and Financial Stability: Speech at conference on "The Economics of Climate Change"*. Board of Governors of the Federal Reserve System.
- Budnik, K.B. and Kleibl, J., 2018. Macroprudential regulation in the European Union in 1995-2014: Introducing a new data set on policy actions of a macroprudential nature. *ECB Working Paper Series (2123)*.
- Carney, M., 2015. *Breaking the Tragedy of the Horizon – climate change and financial stability: Speech given at Lloyd's of London*. Bank of England.
- Campiglio, E., Dafermos, Y., Monnin, P., Ryan-Collins, J., Schotten, G. and Tanaka, M., 2018. Climate change challenges for central banks and financial regulators. *Nature Climate Change*, 8(6), pp.462-468.
- Cœuré, B., 2019. Monetary policy and climate change: Speech at a conference on "Scaling up Green Finance: The Role of Central Banks". European Central Bank.
- De Guindos, L, 2019. Implications of the transition to a low-carbon economy for the euro area financial system: Speech at conference on "Creating sustainable financial structures by putting citizens first". European Central Bank.
- De Nederlandsche Bank, 2019. *Responsible investment charter*. De Nederlandsche Bank.
- Dombrovskis, V., 2017. *Greening finance for sustainable business: Speech at the One Planet Summit*. European Commission.
- ECB Banking Supervision, 2018. *Risk Assessment for 2019*. European Central Bank.
- ECB Banking Supervision, 2019. *Risk Assessment for 2020*. European Central Bank.

European Central Bank, 2019. *ECB Environmental Statement 2019*. European Central Bank.

European Strategy and Policy Analysis System, 2019. *ESPAS Report 2019: Global Trends to 2030*. European Commission.

European Union, 2016. Consolidated versions of the Treaty on European Union and the Treaty on the Functioning of the European Union. *Official Journal of the European Union, C, 202*, pp.1-388.

EU Technical Expert Group on Sustainable Finance, 2020. *Taxonomy: Final report of the Technical Expert Group on Sustainable Finance*. European Commission.

Fender, I., McMorow, M., Sahakyan, V. and Zulaica, O., 2019. Green bonds: the reserve management perspective. *BIS Quarterly Review*, September.

High-Level Group of Wise Persons on the European financial architecture for development, 2019. *Europe in the World: The future of the European financial architecture for development*. Council of the European Union.

Honohan, P., 2019. Should Monetary Policy Take Inequality and Climate Change into Account? Peterson Institute for International Economics Working Paper, (18-18).

Lagarde, C., 2020. *Climate change and the financial sector: Speech at the launch of the COP 26 Private Finance Agenda*. European Central Bank.

Lane, P.R., 2019. *Climate Change and the Irish Financial System* (No. 1/EL/19). Central Bank of Ireland.

Kirkegaard, J.F., 2019. *An EU "Green New Deal" Requires a Far Higher Price on Carbon*. Peterson Institute for International Economics.

Monnin, P., 2018. Integrating Climate Risks into Credit Risk Assessment-Current Methodologies and the Case of Central Banks Corporate Bond Purchases. *Council on Economic Policies, Discussion Note*, 4.

Network for Greening the Financial System, 2019a. *Macroeconomic and financial stability Implications of climate change: Technical supplement to the First comprehensive report*. Banque de France.

Network for Greening the Financial System, 2019b. *A sustainable and responsible investment guide for central banks' portfolio management*. Banque de France.

Nordhaus, W.D., 2008. *A question of balance: Weighing the options on global warming policies*. Yale University Press.

Ramirez, J., 2017. *Handbook of Basel III Capital: Enhancing Bank Capital in Practice*. John Wiley & Sons.

Rossi, C., 2019. *Greening the European Investment Bank*. Institute of International and European Affairs.

Schoenmaker, D. and Schramade, W., 2018. *Principles of Sustainable Finance*. Oxford University Press.

Schoenmaker, D., 2019. *Greening monetary policy*. Bruegel Working Paper Issue 02.

United Nations, 2015. *Paris Agreement*. United Nations.

Various, 2019. *The ECB must act now on climate change: Open letter to Christine Lagarde*. Positive Money Europe.

Weidmann, J., 2019. *Climate change and central banks: Welcome address at the Deutsche Bundesbank's second Financial Markets Conference*. Deutsche Bundesbank.

Weidmann, J., 2020. *Introductory comments at the press conference to present the annual accounts*. Deutsche Bundesbank.

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