

# Using green credit policy to bring down inflation: what central bankers can learn from history

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## Summary

Central banks typically associate climate-supporting measures with an expansionary monetary policy stance. Accordingly, such measures are thought to be inappropriate in an inflationary context. Against this view, we highlight a longstanding tradition in central banking which held the contrary: it is desirable to protect some sectors during a tightening cycle because certain types of investment prevent, rather than cause, inflation. This view is informed by examples of policy that was made at the German Bundesbank and other central banks, and made in ways that were entirely compatible with economic liberalism and central bank independence.

There are several reasons for central banks to use green credit policy in an inflationary context. First, a lack of sufficient green investment is undesirable in terms of ensuring long-term price stability. Second, the high upfront costs associated with renewable energy production and infrastructure makes them particularly sensitive to interest rates. Third, monetary policy that seeks to bring down inflation in the short term by restricting investments in climate mitigation would make the global economy more vulnerable to future climate- and biodiversity-related economic shocks, including adverse shocks to price stability. Fourth, a lack of green investment would also expose the domestic economy to stronger price shocks to high-carbon energy or other goods whose production is affected by ecological transformation. Fifth, the failure of central banks to consider the environmental impact of their instruments can undermine the broader role for monetary policy in supporting financial stability, government economic policy, stable employment and other central bank objectives.

Giving priority to certain investments through targeted central bank refinancing is compatible with central bank independence and current mandates. It will, however, require more coordination with regard to other aspects of credit policy (e.g. sustainable finance taxonomy, financial regulation, public development banks), and a change in central bank accountability and communication with the public. There are many institutional arrangements to ensure both the effectiveness of central bank measures and their democratic legitimacy.

This paper is part of a toolbox designed to support central bankers and financial supervisors in calibrating monetary, prudential and other instruments in accordance with sustainability goals, as they address the ramifications of climate change and other environmental challenges. The papers have been written and peer-reviewed by leading experts from academia, think tanks and central banks and are based on cutting-edge research, drawing from best practice in central banking and supervision.



Eric Monnet  
(Paris School of Economics and Centre for Economic Policy Research)



Jens van 't Klooster  
(University of Amsterdam)



Centre for Sustainable Finance

SOAS University of London



Grantham Research Institute on Climate Change and the Environment

## 1. Introduction

Action taken by central banks to fight inflation is widely considered to be in tension with their role in supporting the transition to a sustainable, low-carbon economy. Critics have accused central bankers of being “distracted” by climate change and thereby missing the causes of today’s inflation (The Economist, 2022; Rajan, 2023). There is a legitimate worry that any additional investment brought about by monetary policy would only further contribute to rising prices. At the same time, a sharp rise in interest rates would disincentivise investments in clean energy production, energy efficiency and adaptation to climate change. Interest rates are a crucial determinant of the levelised cost of electricity (LCOE), i.e. the lifetime costs of generating electricity for a given technology (Schmidt et al., 2019). Monetary policy that cuts back on these investments would expose the global economy to future geopolitical and environment-related inflationary shocks. In addition to these global externalities, it exposes the economy to a surge in the price of high-carbon energy or carbon-dependent industrial inputs. In short, central banks face the difficult question of how to take climate change into account when making monetary policy.

In a 2023 speech, European Central Bank (ECB) board member Isabel Schnabel reflected on the direct implications of the energy transition for the central bank’s monetary policy. In this context, she singled out two energy-related drivers of today’s record-high inflation levels. The first is ‘climateflation’: price increases caused by the physical impact of greenhouse gas emissions, for example through the disruption of agricultural production and supply chains. The second is ‘fossilflation’, which refers to the price increases driven by the cost of oil, natural gas and other non-renewable energy inputs. She said:

*“Unless greenhouse gas emissions are cut rapidly, our economies will remain exposed to the risks of ‘climateflation’ and ‘fossilflation’. These concerns must be taken seriously. As they expose a potential dilemma directly relating to central banks’ primary mandate of price stability, we cannot ignore them on legal grounds.”* (Schnabel, 2023)

She noted the dilemma of the competitive disadvantage of renewable energy at high interest rates due to their upfront cost: “[while] the [levelised cost of electricity] of a gas-fired power plant would change only marginally if discount rates were to double, that of offshore wind could rise by nearly 45%”. However, despite acknowledging the dilemma she also expressed the view that interest rate differentiation and other unconventional tools were more appropriate in a deflationary context. According to Schnabel, low interest rates on lending programmes to support energy investments could be worth considering “when policy needs to become expansionary again”.

Although most central bankers today associate unconventional policies with a deflationary context, we show in this policy brief that targeted credit policy has historically been used by central banks at times of monetary tightening. For example, the Bundesbank and the Banque de France, the two largest central banks preceding the economic and monetary union (EMU) of the European Union, exempted export credit from monetary policy tightening. Through this action, they explicitly promoted a sector with significant benefits for price stability (and exchange rate stability, the other key objective at the time for ensuring a stable currency value), providing a historical answer to the question of how central banks can navigate the current challenge of ‘climateflation’ and ‘fossilflation’.

**This paper explores how central banks can design green credit policy instruments, with a specific focus on how this is compatible with the objective of addressing inflationary pressures in the economy.** It addresses two key questions:

**“A sharp rise in interest rates would disincentivise investments in clean energy production, energy efficiency and adaptation to climate change.”**

**Box 1. Defining credit policy**

The term 'credit policy' refers to all types of public interventions that steer the relative price and allocation of credit in the economy (Lucas, 2016; Monnet, 2018; 2023; Kedward et al., 2022). It includes many types of instruments and regulations – including some central bank actions – that have a direct or indirect impact on the volume and allocation of credit flows (e.g. usury law, consumer credit guidelines, state loan guarantee programmes, credit subsidies or tax incentives, concessional lending by public investment banks).



how can green credit policy be compatible with central banks' current mandates, independence and democratic accountability; and what are the different institutional configurations and instruments available to central banks for implementing these targeted credit policies?

There is a large literature that tackles the question of how to make central bank actions compatible with environmental objectives (Dikau et al., 2020; NGFS 2021). We focus specifically on the instruments at central banks' disposal to reconcile price stability objectives with the low-carbon transition. As we demonstrate, green credit policy is necessary, justified and feasible in the fight against inflation (van 't Klooster, 2022; Ünüvar and Yeldan, 2023).

There are two main reasons for central banks to take environmental considerations into account in the design of monetary policy.

First, failure to do so is itself often detrimental from the perspective of price stability. Investments in renewable energy production and infrastructure have high upfront costs, which makes them particularly sensitive to changes in interest rates (Schmidt et al., 2019). Monetary policy that cuts off those investments to counter inflation in the short run exposes the domestic economy to future surges in the price of high-carbon energy, food or industrial inputs. This is true as long as these goods are dependent on technologies whose price increases with the price of carbon, or with environmental disasters or climate volatility. Alternative, environmentally sustainable technologies – such as low-carbon energy sources – that are not exposed to such shocks (or exposed to a lesser extent) can contribute to price stability in the face of fossilflation. Cutting green investment would also make the global economy more vulnerable to future climate-related economic shocks (including climateflation) as environmentally damaging economic activity is allowed to continue. This is especially true in countries whose economic activity has a strong impact on carbon emissions and economic sectors with greater impacts on biodiversity at the global level. Thus, a time-consistent monetary policy, that will be sustained over time, cannot neglect the impact of today's investments on future price stability, since different technologies and products will face different price shocks due to climate change.

The second reason for central banks to account for environmental considerations in monetary policy is that failure to address climate-related impacts often conflicts

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with the broader supportive role of monetary policy for financial stability, government economic policy, stable employment and so on (although this will depend on the exact mandate and constitutional provision of the central bank). In recent years, governments have taken on strong legal commitments to achieve climate, biodiversity and other nature-related objectives. Central banks that set monetary policy in ways that lead to an undifferentiated contraction or expansion of credit directly contradict these objectives. In fact, many central banks have legally binding requirements to support the broader economic policies of governments (Dikau and Volz, 2021). Undifferentiated interest rates are far from neutral, and will often disproportionately advantage the incumbent fossil fuel industry, thereby conflicting with sustainable transition policies. Failure to use environmental policy may undermine an orderly transition, with further negative consequences for financial stability and unemployment.

The solution to these conundrums is to treat clean energy-related loans and assets differently from other investments so that they are shielded from the tightening of monetary policy. In terms of policy implementation, this does not imply a dramatic change to current frameworks, and there are many examples of central banks past and present prioritising certain collateral or types of refinancing.

The paper is structured as follows. Section 2 reviews the history of credit policy instruments and how they have been used to fight inflation. Section 3 turns to the design features of green credit policy and the important changes needed in terms of central banks' governance, accountability and economic analysis.

## 2. Disinflationary credit policy

This section reviews the history of central banking to document the wide range of instruments that could potentially be used to bring down inflation while also making allocative choices in support of the low-carbon transition. It starts with the turn away from explicit allocative choices in the 1980s and then considers the effective uses of credit policy before and during that period, focusing on the French and German central banks. This provides evidence that, in fact, targeted credit policy could be an effective and legitimate part of monetary tightening. The section concludes by reviewing both direct and indirect ways in which central banks can use credit policy in this way.

### 2.1. Central bank credit policy

While central banks were historically seen as contributors to credit policy, the financial reforms of the 1980s and 1990s created a clear institutional and theoretical separation between credit and monetary policy, particularly in the richer and more financially liberalised economies of the Global North (Goodfriend and King, 1988; Goodhart, 1989; Monnet, 2018). The predominant function of central banks became monetary policy, defined as the ability to influence macroeconomic aggregates (money, prices, GDP, etc.) by setting interest rates, regardless of the distributional effects. Increasingly, central banks developed the ambition for their financial operations to be 'neutral' with regard to the market allocation of credit (van 't Klooster and Fontan, 2020). The commitment not to engage in credit policy, which involves normative choices in relation to social values and economic priorities, became a defining feature of central bank independence and absence of coordination with other economic policies (Reis, 2013; Goodfriend, 2014; Tucker, 2018). But this has not always been the case.

There are strong theoretical and empirical reasons to doubt the possibility of maintaining a strict separation between credit and monetary policy. Many studies have shown that the actions of central banks have a strong distributional effect on

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credit, depending on the types of financial institutions, firm size and sectors (BIS, 2015; Bezemer et al., 2021; Beckman, 2022), and their detrimental impacts on the environment (Matikainen et al., 2017; Drudi et al., 2021; Colesanti Senni et al., 2023). Others find that credit policy and monetary policy do actually interact because they both have effects on interest rates or macroeconomic aggregates (Lucas, 2016; Fieldhouse et al., 2018; Monnet and Vari, 2022). Further, once the heterogeneity of agents is taken into account, monetary policy has strong distributional effects across levels of income and wealth, and optimal monetary policy cannot neglect these effects (Coibion et al., 2017; Acharya et al., 2023; Silva et al., 2022). In terms of overall policy coherence, there are good reasons for central banks to abandon their supposed neutrality in order to address social equality and environmental issues (Dikau and Volz, 2021; van 't Klooster and de Boer, 2022). In practice, the real question that central banks face is not whether to influence the allocation of credit or not, but rather how and to what extent allocative criteria are explicitly incorporated into the design of instruments. We refer to instruments that are explicitly designed to steer the allocation of credit as credit policy instruments.

## 2.2. Disinflation and credit policy

When European central banks hiked interest rates in the 1970s and 1980s, they typically exempted export credit from monetary policy tightening, thereby contributing to external stability of the currency and, as a consequence, domestic price stability.

In Europe's largest economy, Germany, for example, in 1973 the Bundesbank put hard limits – i.e. bank-by-bank discount ceilings – on the availability of refinancing credit at its discount rate. Banks that exceeded their discount ceilings were forced to borrow in the money market, including when the Bundesbank let interest rates go up to 20% (and in one case almost 40%) (BuBa, 1974). Throughout the aggressive hiking cycle, the Bundesbank rationed credit to commercial banks but exempted its volume of discounting for export credit via the *AKA Ausfuhrkredit-Gesellschaft mbH* (an export refinance bank) and the *Gesellschaft zur Finanzierung von Industrieanlagen mbH* (a bank focused on refinancing industrial projects in East Germany) (BuBa, 1974; Issing and Rudolph, 1988). In 1973, these facilities would continue to provide credit at an interest rate of 5% and, after March that year, 7% (BuBa, 1974).

The techniques of credit discrimination were essential to fight inflation in Germany after the oil shock in the 1970s, as well as to reconcile inflation fighting with a balance of payment surplus. The Bundesbank also provided a special funding line to the *Privatdiskont AG*, which acted as a dealer for trade credit, at times buying at rates below the Bundesbank's discount rate (BuBa, 1984). These facilities would grow steadily in size throughout the 1970s and 1980s to provide generous credit to exporters when interest rates went up, and were only closed in the 1990s (Issing and Rudolph, 1988; BuBa, 1996).<sup>1</sup> Since credit was available beyond the bank's allocation under the discount ceilings, the Bundesbank's support for export credit was most favourable exactly when the Bundesbank was hiking rates.

In France, the second largest European economy, similar techniques were used to ensure that export credit – and sometimes other types of credit – was less affected by restrictive monetary policy. Various tools were used in this respect: (i) bank-by-bank discount ceilings were in place until 1971; (ii) starting in 1958, the Banque de France exempted export credit from limits on bank credit growth (*encadrement du credit*) – a tool that the Bundesbank did not use; and (iii) the central bank maintained a preferential rate for export credit (lower than the main refinancing rate) until 1996. As in Germany, providing support to export credit was justified because, in systems where the exchange rate is fixed, the rise of inflation was often associated with trade

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<sup>1</sup>The special refinancing facility to the *AKA Ausfuhrkredit-Gesellschaft mbH* closed in 1996, the *Privatdiskont AG* closed in 1991, and we suspect the same is true for the *Gesellschaft zur Finanzierung von Industrieanlagen mbH* since it was focused on the German Democratic Republic.

deficits and balance of payment problems (Monnet, 2018b). Reducing domestic demand (imports) while supporting exports was thus a policy that addressed both problems at the same time.

In 1974, in response to the oil shock, the Banque de France even exempted credit that financed energy-saving investment from credit growth ceilings (*encadrement*) (Lepetit, 2017). However, this specific measure targeted at energy-saving remained limited in scope, especially because the credit ceilings were less binding in the 1970s and – unlike Germany – France let the inflation rate reach double digits (Monnet, 2018).

As these examples illustrate, the view that monetary policy should be strictly limited to setting a single interest rate and avoid any allocative choices is a fairly recent one. The export credit refinancing facilities have been the longest-lasting credit policy instruments in Europe and were not deemed contradictory to central bank independence. In the first official report laying a path for European monetary integration (the 1971 Werner report), both credit and monetary policy were considered (Monnet, 2018a). While central bank credit policy was absent from the political ambitions of the reports and discussions in the late 1980s that led to the Economic and Monetary Union (EMU), no explicit decision was made to rule it out. Like Germany, France terminated its facility in 1996 after the Maastricht Treaty had been signed. In fact, during the drafting of its statutes, the option for the ECB to introduce preferential credit instruments of this kind was explicitly left open (van 't Klooster, 2023).

### 2.3. Instruments of central bank credit policy

Credit policy can influence credit either directly (through lending or credit guidance) or indirectly (through price incentives). The following examples focus on instruments specifically operated by central banks, and provide a high-level overview of instruments that can be used to protect specific sectors from raising interest rates.

#### Direct instruments

Direct instruments are designed to intervene in the allocation of credit by selecting borrowers or certain assets, without using price signals. The most direct way to do this is for the central bank to issue credit to non-financial firms, municipalities or governments directly, or through a dedicated financial intermediary. One example is the role the US Federal Reserve played in the implementation of emergency credit for the 2020 CARES Act in response to the Covid-19 crisis (US Fed, 2020). The purchase of assets can also involve distributive choices, although most central banks in today's 'advanced' economies claim to select these assets according to market criteria.

Central banks can also impose binding rules on banks as part of providing access to refinancing credit or on credit growth, as illustrated by the German and French examples above. Until the 1980s, it was common practice for central banks in Europe to have bank-by-bank rediscounting ceilings or differential credit growth ceilings according to sectors or financial institutions (Monnet, 2018a). This tradition has continued in other parts of the world. For example, the Reserve Bank of India has set out guidance on credit allocation under its Priority Sector Lending programme since the 1970s. Indian banks have to allocate 40% of adjusted net bank credit to a group of priority sectors – renewable energy being included in 2015. In the US, the 1977 Community Reinvestment Act requires the Federal Reserve and other federal banking regulators to ensure that banks provide sufficient credit to “low- and moderate-income neighbourhoods and individuals”, and limits mergers, acquisitions and branching by banks whose US supervisors fail to serve these customers (Office of the Comptroller of the Currency, 2014). More informally, window guidance can also serve to directly steer the lending behaviour of banks (Ohls, 2017; Massoc, 2021; Dikau and Volz, 2023).

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### Indirect instruments

Indirect credit policy instruments seek to steer the lending behaviour of banks and other financial institutions through the use of price signals. This can take the form of preferential refinancing conditions, but also various capital and reserve requirements, and government subsidies. Unlike direct instruments, indirect central bank interventions are neither outright investments nor binding requirements on credit flows. They affect the composition of the portfolio of financial institutions not directly but indirectly, through the use of price incentives. In other words, they steer credit allocation by making some loans more attractive to lenders than others. Indirect instruments are more compatible with financial systems that are partly or fully liberalised and where the business of a financial institution is not limited to a specific sector or area. The Hungarian central bank, for example, introduced a green preferential capital requirement programme in support of energy efficient real estate and renovations (MNB, 2019). Such instruments are not restricted to central banks and can also be incorporated into banking regulation. In 2013, the EU introduced an SME Supporting Factor, which reduces capital charges for loans to small and medium-sized enterprises (SMEs) (Article 501, Capital Requirements Regulation [CRR]).<sup>2</sup>

In recent years, after the 2008 financial crisis, monetary policy has increasingly been used to steer the allocation of credit within the real economy as a way to fine-tune the effectiveness of traditional central bank instruments on output and prices. At the ECB, the Targeted Longer-Term Refinancing Operations (TLTRO) provide cheap funding to banks conditional on a sufficient volume of new loans being allocated to consumer credit or firms. The latest TLTRO programme consists of 10 targeted longer-term refinancing operations, each with a maturity of three years, which started in September 2019 at a quarterly frequency. The UK's Funding for Lending Scheme and Term Funding Scheme function in a similar way and with similar purposes to increase credit to SMEs (Ginelli Nardi et al., 2018). While these European targeted lending schemes have kept wide objectives, other central banks, such as the People's Bank of China and the Bank of Japan, have implemented similar programmes but with a narrower target to support lending to environmentally-sustainable investment.

Finally, since holding unremunerated required reserves is a cost, reserve requirements can also be used to set price signals for banks. They are frequently used, for example, as a form of capital control to discourage the holding of foreign assets, but have more recently been used to support green investment, too (Choi et al., 2018).

### 3. Implementing green credit policy

Having considered the recent historical context, this section provides an overview of design options for green credit policy instruments.

For central banks that have a narrow monetary policy mandate, as laid out in the introduction, there are two rationales for green credit policy: the price stability objective; and the compatibility of monetary policy implementation with the environmental objectives of the government. While central banks should make credit policy considerations with respect to environmental issues, it is also important to recognise that credit policy is the domain of many more institutions besides the central bank (Monnet, 2023; Smoleńska and van 't Klooster, 2022) and that central banks cannot solve the environmental crisis alone, nor be the main financier of green investments.

The following discussion explores how central banks can address climate considerations while operating within their mandate, looking first at the governance of green credit policy before assessing the different options of credit policy instruments.

“Indirect credit policy instruments seek to steer the lending behaviour of banks and other financial institutions through the use of price signals.”

<sup>2</sup>Recital 44 Regulation (EU) No 575/2013 of the European Parliament and of the Council of 26 June 2013 on prudential requirements for credit institutions and investment firms and amending Regulation (EU) No 648/2012, OJ L 176, 27.6.2013, p. 1–337.

### 3.1. Making green choices: democratic and accountability challenges

Due to its allocative and selective nature, key challenges for the design of green credit policy relate to its governance. Institutional conditions need to provide the central bank with sufficient legitimacy and an adequate legal basis for making overt allocative choices.

#### Democratic legitimacy and central bank independence

The central bank should avoid selecting which assets or loans are green or not without having democratic legitimacy or coordinating with other bodies (governments, parliaments and supervisory agencies) that use a green taxonomy.

There are two distinct approaches for safeguarding democratic legitimacy of central bank credit policy, which vary in terms of the degree of policy coordination required (van 't Klooster and de Boer, 2022; Monnet, 2023; Smoleńska, 2023). The first is a central bank-based approach, where the governance of credit policy takes place inside the central bank. This requires an adequate legal basis for the central bank to act, such as a mandate with environmental objectives, and existing economic policy that provides the basis from which to select what counts as green, e.g. a relevant taxonomy or another piece of broader climate policy. Central banks may want to start with this taxonomy then exclude certain types of investment in light of price stability considerations (e.g. sectors that are already at full industrial capacity). In designing the instrument, the central bank should minimise discretion, by explicitly considering and modelling the monetary effects of green investment on long-term inflation.

A second approach involves explicit coordination with governments and other policymaking bodies. Central banks can directly coordinate the selection of green investments via the creation of a new agency or by supporting existing public development banks. Beyond such ad hoc measures, coordination between organisations can also be formalised through standing bodies such as 'credit councils' (van 't Klooster and de Boer, 2022; Smoleńska, 2023; Monnet, 2023). Such bodies can ensure that credit policy decisions of central banks take into account all relevant points of view and are subject to various evaluations of the central bank measures (e.g. on social equalities and bank profits, as well as their effect on credit and investments). This second approach, which values deliberation and legitimacy based on delegation, is in principle better equipped to tackle public policy issues that are more complex and require a greater diversity of expertise.

Both approaches are entirely compatible with central bank independence. Control over the overall level of interest rates, the volume of asset purchases, and other variables would remain with the central banks. Neither approach involves financial transfers to the government and the central bank can choose its monetary policy stance without pressure. The normative choices involved in credit policy, however, are left to political authorities, who are properly equipped to decide upon the legitimacy of such allocative policies.

#### Changes to central bank economic models, communication and accountability

Beyond favouring investments that contribute to environmental sustainability, a central bank green lending scheme should also contribute to price stability in the medium term and be effective and fair (in particular, minimising windfall effects and rents). While defining green investments is chiefly the domain of government responsibility, safeguarding price stability and ensuring effectiveness and market fairness can (at least in part) be safeguarded by the central bank.

Using green credit policy to bring down inflation will have further implications for current central bank practice and democratic accountability. Central banks may need

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economic models that are able to handle prices depending on the type of investment and on several scenarios of carbon prices and environmental changes. Second, the scenarios and hypotheses underlying these models for price determination and inflation forecasts will likely require interdisciplinary scientific knowledge (recognising uncertainties and controversies where they exist). They should also be compatible with choices made by other public authorities concerning environmental sustainability. Third, central banks need to run ex-ante and ex-post evaluations on the lending scheme's effectiveness and fairness: specifically, how it avoids undue subsidies (rents) to financial intermediaries or ultimate borrowers.

A central bank-based approach would make decisions related to price stability and effectiveness and fairness the sole responsibility of the central bank, while accountability is primarily about being transparent about choices made on these matters. A coordination-based approach would, on the other hand, institutionalise these decisions in formal bodies. The ex-post evaluation of the measure could be conducted by an independent authority that reports to the legislature (like the Office of Inspector General to Congress in the United States) or through an inter-institutional committee (like the Pandemic Response Accountability Committee in the US).

The discussion of different modelling strategies and scenarios would also benefit from external expertise and coordination with other public agencies or executive bodies that face similar modelling challenges, as has been done for macroprudential policy. Such coordination can take place under parliamentary oversight, as suggested by proposals for credit councils (Monnet 2023). Central bank reports, interviews and speeches should explain that – while the central bank makes decisions based on the objectives in its mandate, including price stability – distributive choices are based on the coordination of expertise and environmental objectives with the government, parliament and other independent agencies.

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### 3.2. Technical design options

The different ways in which central banks can implement green credit policy are illustrated in four suggested design options outlined below. For a detailed overview of these options, see NGFS (2022) and Colesanti Senni et al. (2023).

#### Dedicated agency-based and government-coordinated design

Central banks can coordinate with other policymakers on the choice of green investments in various ways. One option is for a dedicated agency to screen each application for green credit from banks. In Europe, this task could be done by the European Investment Bank, for example. Similarly, the Federal Reserve's implementation of the emergency credit lines as part of the CARES Act was done in agreement with the Treasury (benefiting from the latter's fiscal backing). The Fed provided liquidity to participating financial institutions through term financing backed by Paycheck Protection Program loans to small businesses, which were implemented by the US Small Business Administration. Post-war monetary policy also often involved extensive coordination between the central bank and other state-led financial institutions, as the Bundesbank example illustrates (see Section 2.2).

#### Public policy or taxonomy-based design

Short of explicit coordination, the central bank can also incorporate existing climate and financial policies into the design of monetary policy operations. In most jurisdictions, a wide range of policy initiatives exist to identify both green and polluting economic activities (NGFS, 2022). In the EU, the 2020 EU Taxonomy Regulation and its delegated acts set detailed criteria for economic activities to count as green. The European Banking Authority has a Green Asset Ratio disclosure requirement for European banks that relies on this taxonomy. Similarly, the Association of Southeast Asian Nations (ASEAN) has developed the ASEAN Taxonomy for sustainable finance.

Within individual countries, including China and India among many others, central banks, financial regulators and finance ministries have developed taxonomies. For some sectors the criteria are relatively simple. For example, almost all investments in renewable energy production typically count as green. Relying on clear criteria, the external auditor could be tasked with verifying reported lending patterns.

### Bank-based design

The selection of green investments can be left to banks and external providers. However, this requires strict supervision of the relevant framework. One way to do this is to make participation in green credit policy conditional on banks developing internal systems to screen bank loans based on external standards. In Japan, the Climate Response Financing Operations of the Bank of Japan (BOJ) provides low refinancing costs for banks but it requires eligible counterparties to select adequate “targets and actual results for their investment or loans” (BOJ, 2022). The BOJ demands disclosures from participating banks and assesses their systems, but lets the banks decide which loans to approve. This option can be combined with a government policy-based design, where green credit policy is conditional on the bank having adequate internal systems to identify loans that are green. Here, the central bank’s role would be merely to evaluate the adequacy of bank screening criteria. An external auditor could be asked to certify reported lending.

### Supervisory expectations-based design

Credit policy could be designed by relying on the supervisory evaluation of a bank’s internal capacities for climate and environmental risk screening. It is increasingly clear that banks lack adequate internal systems (ECB, 2022; Beltran et al., 2023). Banking supervisors currently scrutinise bank risk management to assess their ability to navigate climate and environmental risks. Such supervisory evaluations could be used as a precondition for eligibility for a green credit programme. For example, the ECB’s guide on climate-related and environmental risks sets out detailed standards for bank lending practices, business strategy, management expertise and incentive structures, as well as the disclosure of risk to investors (ECB, 2020). This could be done taking into account both single and double materiality (Boissinot et al., 2022).

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## 3.3. Instruments

Below we discuss examples of individual monetary policy instruments that central banks could use to support the green transition in an inflationary environment while raising interest rates. These are just some of the possible instruments; we do not claim to provide a complete list.

### Lending to investment bank or government vehicle, or creating a special status for debt guaranteed by these institutions

Where the central bank explicitly coordinates green credit policy with the government to set up an agency, the main monetary policy instrument is a credit line to that agency. The central bank could then accept green loans issued by the agency as collateral. Such a scheme was implemented in the US during the Covid-19 pandemic: the Paycheck Protection Program authorised companies to borrow at a concessional rate and with full state guarantee. The scheme is very similar to what was used by European central banks until the 1990s, especially (but not only) for export credit. The advantage of this scheme is that it pushes the central bank to coordinate with other state agencies in charge of credit policy, while allowing it to retain full control of the stance of its refinancing policy and interest rates. Moreover, it is possible to have a uniform collateral policy even if the definition of green loans and state subsidies varies across countries or regions.

### Green refinancing credit

The central bank can set a price incentive for banks to finance green investment. Banks have access to refinancing at a lower interest rate if they lend to companies and households to finance green projects. An example of such a scheme is the aforementioned Bank of Japan's Climate Response Financing Operations. If the purpose of the central bank is to steer credit allocation for price stability objectives and compliance with the long-term environmental objectives of the government, these loans should be granted at a long maturity. This is different from changing the collateral eligibility for short-term refinancing operations.

### Green asset purchase programmes

Asset purchase programmes serve to directly steer prices in capital markets. They are most prominently used in a deflationary context, but can also be used to protect specific sectors during a hiking cycle. For example, the current ECB corporate sector purchase programme reinvestments are subject to increasingly stringent climate-related risk measures. A targeted asset purchase programme can be used to support green bonds even if the overall monetary policy stance remains restrictive (by reinvesting the principal payments from maturing securities for example). However, such programmes are limited in that they target a small subset of activities, since not all companies issue bonds.

### Green reserve requirements

Many central banks require their banks to hold some of their assets as central bank reserves. If left unremunerated, reserve requirements not only make central banks more profitable, but also make banks less profitable. A central bank can set differentiated deposit rates based on the volume of green lending by its counterparty, as has been done by the People's Bank of China, for example (Choi et al., 2018). A tiered reserve requirement calculated as a share of non-green assets would help reduce inflationary lending while promoting sustainable investments.

## 4. Conclusion

We have explained how central banks can explicitly design green credit policy instruments in the context of today's inflationary pressures in the economy. There are many ways in which central banks can deliberately shape the allocation of credit in the economy in order to reconcile price stability with environmental objectives. To be fully consistent with price stability in the medium run, a monetary tightening must consider the differential impact of investment on the environment and thus on price shocks related to climate events and carbon-dependent inputs.

Each of the approaches we have distinguished for implementing a special green credit policy scheme reflects a different view of who should decide allocation criteria with the central bank. A full assessment of the economic consequences and potential drawbacks of each of these plans would require in-depth economic analysis and modelling, which is beyond the scope of this paper.

A green credit policy scheme has strong effects on the allocation of credit and, potentially, on the profits of financial institutions. There is a greater need for ex-ante and ex-post accountability in central banking to avoid the misuse of instruments. Cooperation with other institutions can improve procedural quality by providing a statutory basis for choices that go beyond narrow monetary and financial considerations as well as adequate accountability, transparency and anti-corruption systems. For ex-ante accountability, central banks should aim to spell out the potential trade-offs between their traditional macroeconomic objectives (in particular, price stability) and environmental objectives, which would require

**“History reminds us that central banks have not hesitated to give priority to certain loans when they felt that it was absolutely necessary for the economy.”**

new modelling techniques plus coordination with environmental experts. Central banks should also make clear how their instruments are chosen to increase the effectiveness of credit policy measures while minimising subsidies to financial intermediaries. Turning to ex-post accountability, there is a need for independent evaluations of central bank actions and parliamentary discussion of their consequences, especially regarding their impact on credit, balance sheets and profits and losses account of financial intermediaries.

When it comes to democratic accountability and integrating climate into macroeconomic models, we should look to the future and consider devising new institutions and new ways of thinking. The environmental and democratic challenges of today are very different from what they were in the past. However, the credit policy of central banks remains the same and, as we have shown, history reminds us that central banks – even independent ones – have not hesitated to give priority to certain loans when they felt that it was absolutely necessary for the economy. We also showed that it was possible and legitimate to coordinate priority refinancing to fight inflation with other state policies. Given today's challenges it is difficult to argue that green credit policy is any less important for the future than export finance was in the second half of the 20th century.

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## About the authors

**Eric Monnet** is Professor at the School for Advanced Studies in the Social Sciences in Paris and the Paris School of Economics, and a Research Affiliate at the Centre for Economic Policy Research (CEPR).

**Jens van 't Klooster** is Assistant Professor for Political Economy at the University of Amsterdam and a Visiting Fellow at the Grantham Research Institute on Climate Change and the Environment at the London School of Economics.

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