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Independently green?
An integrated strategy for a transformative ECB

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Abstract

What should be the role of the ECB in tackling the socio-ecological challenges related to planetary boundaries, such as climate change and loss of biodiversity? A clear answer to this question is still lacking, in spite of the strategy review of 2021. Regretfully, this review has not received the scrutiny it deserves, as the pandemic and the war in Ukraine have taken center stage. Taking these recent developments into account, we provide a critique of the new strategy. We argue that it lacks transformativity, as it subsumes climate change under the policy objective of price stability, assumes that transformations can be mastered within the structures of the past, and refrains from questioning the current institutional set up. In its main part, the paper discusses the historical relevance of what we believe is the main reason for these deficits: The fear that taking up the real issues (such as independence and accountability) would make the ECB a political football in times of rising inflation. Taking these fears seriously, we show that the institutionalization of central banking has *always* reflected the transformative dynamics of their time. Consequently, if planetary boundaries represent a transformative challenge, they <u>will</u> radically change the ECB, too. Moreover, we provide evidence that central banks' historical transformations have *always* reflected their peculiar position as mediators between the financial and the political realm. We argue that, at the current juncture, transforming central banking implies moving away from finance and towards politics. This involves risks. However, we argue that the historical experience offers few reasons to fear a closer integration of central banking into the public sphere, *as long as the latter is dominated by democratic politics*. Consequently, if one comes to the conclusion that the ECB's current corset is too narrow, it <u>can and should</u> be augmented. While we do not offer a blueprint for such augmentation, we conclude our analysis by sketching elements of a sustainable strategy for a transformative ECB.

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1. Introduction

As the Covid-19 pandemic and the war in Ukraine have taken center stage, questions about the sustainability of the ECB and its role as an agent of socio-ecological transformation have taken a back seat. That does not make them less relevant: What should be the ECB's role in Europe's fight against climate change, biodiversity loss, and other ecological problems? How should it take into account the distributional implications of a socio-ecological transformation of the economy? Should ECB policies be integrated into the Green Deal, and the Green Deal into the ECB's revised strategy? What would this imply for the institutionalization of central banking in Europe? Should a central bank, similar to other private and public financial institutions such as promotional and development banks, set itself the target to become a *transformative* or *developmental* agent, anyway?

Even though these issues have been hotly debated, they have not been resolved. The new strategy that the ECB has published in the summer of 2021 (see ECB 2021a) was an attempt to address them. But did it answer them? Or at least provide a robust framework for future analysis, for example through the ECB's new climate change center? Regretfully, the strategy review has not received the scrutiny it deserves, so its adequacy remains contested. This is partly a result of the pandemic and the war in Ukraine.[1] Both developments have absorbed much of the attention and energy of professional observers. We believe this is highly unfortunate, as recent macroeconomic developments *combine* with sustainability challenges in a way that radically question the thrust of the new strategy. The geo-political risks that have materialized in Ukraine *combine* with the geo-ecological risks related to planetary boundaries. We might face a "new age of inflation", characterized by "climateflation, fossilflation and greenflation" (Schnabel 2022) that requires an instant rethinking of the ECB's strategic framework. Such a rethinking is necessary long before the next assessment in the context of the envisioned "regular review cycle", expected in 2025 (ECB 2021a).

Against this backdrop, the starting point of this paper is a critical look at the ECB's new strategy (section 2). We show that the new framework is a step forward in terms of *policies*, but suffers from being rather backward looking. It partly solves the problems the ECB had experienced since its foundation, but does not address sufficiently the challenges that can reasonably be expected. Most importantly, the new strategy fails to recognize the need to question the ECB's *organizational* and *institutional foundations*. It is devised on the view that greening the ECB can be done within the boundaries of the current set-up. By refraining from a more systemic approach that takes into account the ECB's positioning vis-à-vis the other sectors and actors central to the socio-economic transformation, it has taken a "modernist" view of the world. To become a "transformative" central bank, therefore, a broader approach is necessary, one that takes into account the need to democratically back a credible greening of central banks.

[1] The pandemic has also left its mark on the review process itself. It has distracted central banks' attention away from mostly everything but the fight against it. The ECB's strategic review process fell victim to this development. From a procedural point of view, it is disappointing to see that there has not been much of a public, academic and political discourse. Instead of heated debates on the appropriate definition of price stability, the need to take into account a broader set of concrete secondary objectives or the dramatic challenge of climate change, we have seen rather shallow and prissy discussions. From a substantive point of view, the promise to "leave no stone unturned" has been violated, for example with respect to questions of the identification of policy goals and the cooperation with other policymakers (Angeloni 2020).

But wouldn't such a broad approach open the box of the Pandora? Opponents of a more radical rethink of central banking rightly point to the risks in politicizing monetary authorities. Indeed, we believe that the main reason for the deficits of the new strategy is rooted in fears that taking up the real issues (such as independence and accountability, the role of quasi-fiscal policies in the Green Deal, and the new hierarchy of objectives that might be warranted) would make the ECB a political football in times of rising inflation. In part 3, the paper discusses the historical relevance of these fears of "transformative" or "developmental" central banking. Taking them seriously without making them into an absolute, we show that the institutionalization of central banking has *always* reflected the transformative dynamics of their time. Historically, central banks are at least as much involved in supporting large-scale socio-economic change ("development", see Epstein 2013) as they are in ensuring monetary and financial stability.

Consequently, if planetary boundaries represent a transformative challenge, it is very likely that they will radically change the ECB, too, no matter the relevance of the fears related to such change. To shape rather than incur transformative change, it is necessary to understand its nature. The analysis in part 3 of this paper suggests that central banks' historical transformations have *mainly* reflected their peculiar position as mediators between the financial and the political realm. We argue that, at the current juncture, transforming central banking implies moving away from finance and towards politics. While this involves risks, the historical experience offers few reasons to fear a closer integration of central banking into the public sphere, *as long as the latter is dominated by democratic politics*. Consequently, if one comes to the conclusion that the ECB's current corset is too narrow, it can and should be augmented.

While we do not offer a blueprint for such augmentation, we conclude our analysis by sketching elements of a sustainable strategy for a transformative ECB (part 4). The academic and applied discourse on greening the ECB has roughly fallen into two camps. On the one hand, there are concrete ideas on the type of policies and operations that would be consistent with a greening of the ECB (see table 1 in the appendix). These range from revising rules for the collateral pool to a monetary financing of public investments in green infrastructures and technologies. On the other hand, we find suggestions for toughening up the ECB's institutional and organizational set-up against the backdrop of multiple goals and expectations (see table 2 in the appendix).

While we build on some of these proposals, we believe there is a need for a more comprehensive approach, bringing these two sides of the coin together. More concretely, we see a need to formulate an integrated green monetary policy strategy that takes into account the multiple deliverables of the ECB *as a monetary policy authority* (including price and financial stability), their relationship to each other, and most importantly, their implications for governance arrangements. In a nutshell, we argue that operational and institutional changes need to be proportional to each other: The more you want the ECB to do, the more you need to adopt governance. We therefore try to integrate the two types of proposals that have emerged recently, those on concrete policies and those on the institutionalization of a monetary policy. By doing so, we choose an approach that clearly separates itself from the idea that an independent ECB should mainly deliver on its inflation target, a position also held by some who are considered to be on the progressive side of the policy spectrum (Dullien and Tober 2021). In contrast, we set up a model of an ECB that moves from a single purpose to multiple purposes, and, as a consequence, needs political guidance. We can build on a few other works in a similar spirit, in particular Couppey-Soubeyran (2020) and Couppey-Soubeyran and Delandre (2021).

In our view, such an approach would also go some way in incorporating recent developments. The pandemic and the war have severely complicated central banks' bread and butter business: Keeping inflation in check while contributing to stable employment and growth. Inflation volatility has increased markedly, as commodity prices fluctuate in response to the deepest cuts in economic activity since World War II. Pundits on both sides of the Atlantic are painting a bleak picture of upcoming inflation risks. Supply bottlenecks, which had long been absent as a major concern for policymakers, are back on the agenda. This, in turn, is leading to heated debates on whether the ECB should react proactively when inflation creeps up, or should treat inflation pressures as expression of circumstances in which sustained reflation might actually be acceptable.

The paper proceeds as follows. In section 2, we critically review the new strategy, also against the backdrop of recent developments. Section 3 shows that the institutional set-up of central banks is historically contingent, and that mandates, governance and accountability arrangements have always been adopted to the specific historical context. While context is key, there are a number of constant struggles and conflicts that need to be taken into account to design robust frameworks. We argue that these struggles and conflicts are crucial when designing an institutional set-up, but need not to be taken to the extreme. In our view, the ECB's current institutional set-up is such an extreme, as it embodies a very radical interpretation of central bank independence. This interpretation stands in the way of a credible and democratic greening. As a consequence, making the ECB sustainable will necessarily involve a review of objectives, instruments and governance. In section 4, we sketch policies and arrangements that could strike a better balance between operational effectiveness, speedy implementation, and democratic legitimacy. We present an integrated proposal that takes into account the current macroeconomic context, including concrete changes of policy objectives, policy measures, operations, and institutional backing. Section 5 concludes.

2. The strategy review: A critical look

Formulating the new ECB strategy has been a contentious process, with strongly opposing views. Debates have been multifaceted, but German and French views of the scope and nature of monetary policies have again been a characteristic feature, in particular with respect to the incorporation of climate change. What has been achieved is a rather fragile compromise, with two main pillars (see ECB 2021a and 2021b).[2] The first pillar consists of a revision of the inflation targeting framework the ECB is following. Most importantly, the new target of a two (instead of less than but close to two) percent increase of the Harmonized Index of Consumer Prices (HICP) is now symmetric, implying some more leeway for letting inflation run its course. Moreover, the strategy recognizes the challenges of the effective lower bound, implying a rationale for a more elaborate set of instruments and a larger tolerance for periods in which inflation is moderately above target.

The second pillar is a commitment to incorporate climate change considerations. The details of implementing this commitment are not known yet, as they will be developed under the framework of a work plan, emphasizing macroeconomic modelling and assessment, statistical data for climate change risk

[2] We abstract from elements of the new strategy that, in our view, are either not of central importance or of limited novelty. This apples, in particular, to the parts of the strategy that refer to inflation measurement, integrated assessment, communication, and periodical reassessment.

analyses, disclosures as a requirement for eligibility as collateral and asset purchases, the enhancement of risk assessment capabilities, the collateral framework and corporate sector asset purchases. Some of these measures represent concrete steps to improve financing conditions for the green transformation. However, the strategy documents do not directly address the ECB's role in making sure that the transition to a sustainable economy will not founder due to inadequate finance. Rather, the language of the strategy statement hints to the fact that taking into account climate change is strictly subsumed under the primary mandate:

> *"Climate change has profound implications for price stability through its impact on the structure and cyclical dynamics of the economy and the financial system. Addressing climate change is a global challenge and a policy priority for the EU. Within its mandate, the Governing Council is committed to ensuring that the Eurosystem fully takes into account, in line with the EU's climate goals and objectives, the implications of climate change and the carbon transition for monetary policy and central banking. Accordingly, the Governing Council has committed to an ambitious climate-related action plan."*

Subsuming climate change under the primary mandate while mentioning concrete measure that are related to financing conditions in its action plan raises an important issue that the ECB does not elaborate on: What if financing conditions and inflation require different policies? Technically, the primary objective, price stability, always trumps secondary mandates, but climate change is taken on board on the back of price stability. The fact that secondary mandates are mentioned in another part of the document without any guidance with respect to their nature and prioritization adds to the confusion, rather than dissolving it.

In a similar vein, the strategy refrains from discussing concrete links between the reform of the inflation targeting framework and climate change. Though the two pillars of the strategy review are related in many ways, the relevant documents largely abstract from these relationships. Most importantly, climate change (and the political response to it) might lead to developments in goods and asset prices that might make the increased flexibility, the ECB has given itself with respect to price stability, come in handy. It is unclear, however, whether flexibility has increased sufficiently. Did the ECB add enough flexibility to its framework to accommodate the kind of shocks and secular developments that might be expected from a socio-economic, potentially "great" transformation? And is it enough to take these issues into account implicitly, rather than acknowledging explicitly that a socio-economic transformation might require a different approach towards price stability?

It is beyond the scope of this paper to critically evaluate the new strategy on the basis of a complete reading of the relevant scientific literature on best practices in monetary policy strategy, inflation targeting frameworks, and the macro-financial implications of climate change (and planetary boundaries more generally). Rather, we base our assessment on a heuristic, combining three distinctions that usually define the revision of strategies: Backward- versus forward-looking elements, changing policies versus institutions, and employing a mindset of modernization versus a mindset of transformation:

– Backward-looking elements emphasize what has been learned under the old strategy, forward-looking elements ask which new challenges and circumstances can reasonably be expected. The new ECB strategy is clearly dominated by the former, with climate change being the only major forward-looking element. All other changes to monetary policy arrangements are about learning lessons from the past, the explanatory document even speaks of departing from a "past inflation narrative" (ECB 2021b). The problem of the zero lower bound and of deflationary pressures has very much dominated ECB policies since the financial crisis of 2008. This has created pressures to adopt the inflation targeting regime and the operational frameworks to these situations, including with respect to the role of asset prices in inflation measurement.

- New policies emphasize the strategies and tactics of a concrete actor, institutions the rules of the game this actor is involved it. The new ECB strategy is focused on policies, but does change a number of rules and conventions. In particular, adopting a new definition of price stability and emphasizing a single policy issue such as the climate should be seen as a form of institutional change. This change however, is limited to those institutions that the ECB can set for itself. While the ECB did reach out to "listen" to external stakeholders, it never entered into a process in which all relevant actors (including the national European legislative and executive bodies, civil society, private and public financial market participants) would jointly discuss the arrangements of their interaction.

- Modernization is a form of change that is taking place within the boundaries of an organization or social system, transformation is a change of the way in which different social systems influence and irritate each other. The former is more incremental in the sense of updating existing strategies and procedures, the latter more disruptive.[3] Based on this definition, the new strategy cannot be easily characterized as either "transformative" or "modernist". On the one hand, a "transformative" approach would have required an acknowledgement that planetary boundaries require a more general reconsideration of central bank objectives, institutions and the interplay of the monetary authority with other actors. Such an acknowledgement is not made, at least not explicitly. On the other hand, climate change is generally considered a problem that requires transformation in the way defined above, so emphasizing it would appear as a willingness on the part of the ECB to engage with other actors to transform monetary and financial policies more radically.

From the perspective of such a three-tiered analysis, we see three main deficits with respect to the new strategy. The first deficit is related to the revision of the inflation targeting framework. While going in the right direction, it is very timid and backward-looking. It is timid because two percent is still a very low target, considering the lessons of Great Recession (see Blanchard et al. 2010), and since the new strategy does not include any "makeup" component (for a detailed discussion see Reichlin and et al. 2021). It is backward-looking, because it correctly draws some of the macroeconomic lessons from the Great Recession, but does not sufficiently take into account the challenges of the fundamental transformation lying ahead of us. In particular, the strategy incorporates the *experience* of operating at the zero lower bound and in a lowflation environment, but not the *expectation* that developments in the future might be characterized by alternating spells of lowflation and higher inflation pressures. Large transformations, as the one envisioned by the Green Deal, lead to a fundamental shift and rewiring of the economy (Land 2019b) that may result in additional inflation. A smooth transition to a sustainable economy will require the ECB to accommodate respective pressures. As a consequence, the new framework is not sufficiently robust for the macroeconomic challenges ahead.

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[3] Our definition of transformation builds on the distinction between different "futures of sustainability", as put forward by Adloff and Neckel (2019) and on the way social systems theory describes processes of modernization. Always keeping in mind Polanyi's use of the term "transformation", we envision a process that is, at least in early stages, actor-driven, but, over time, develops momentum. Social systems that have functionally differentiated in a process of modernization for some time transcend their system logic and operate in coupled modes, in a process called transition, which includes a counter-hegemonic challenge. When transition makes room for a new round of modernization, transformation has been completed. For an economist, such a transformation can be described as a switch to a new macro-regime (Klüh 2015), for example the switch from the Gold Standard to the Bretton Woods Regime.

The second deficit, which is even more fundamental than the first one, is related to the fact that every good strategy starts with a clarification of the mission and objectives of an organization. While it had to be expected that it would not be easy for the ECB to escape the trap of the single-mindedness of its current focus on price stability, the new strategy falls strongly behind of what would have been possible within the framework provided by the Treaties. For example, it would have been feasible to clarify the way in which secondary objectives factor in the ECB strategy, given that price stability is, or is expected, to be achieved over the medium term. To be able to forge a compromise with the Bundesbank, which was strongly opposed to a clarification of the fact that the ECB is indeed following multiple objectives, climate change had to be subsumed under the primary mandate. By doing so, the ECB opted for a very confusing system of objectives and targets. In the future, that will make it much more complicated to understand and communicate policies, as the statement cited above already shows.

Solving these two core issues would already go a long way in making the ECB more sustainable. By increasing the flexibility of the inflation targeting framework, the ECB would gain a substantial amount of additional room for maneuver in the uncharted waters of monetary climate policy. More clarity on the role of secondary objectives - which the ECB could provide itself - and more guidance in terms of their nature and prioritization - which would have to be provided by the Parliament and the Council - could serve as a coherent compass for the direction monetary and banking policies should take whenever the first mandate is, or is expected to be achieved.

But there is a third problem, which is perhaps the most fundamental one (apart from issues of democratic legitimacy discussed below). A successful Green Deal will require a substantial amount of coordination between fiscal, financial, banking, and monetary policies. The Eurozone has been short of sufficient coordination mechanisms between the monetary and fiscal sphere (Reichlin and Schoenmaker 2020). This lack of coordination will be felt much more strongly in the years to come, as the aftermath of the Covid pandemic and the exigencies of the Green Deal create new fiscal challenges. Moreover, the Green Deal intensifies a trend that Mertens and Thiemann (2019) describe as the emergence of a new kind of European investment state. A major element of this investment state is the increasing importance of public financial institutions, in particular development and promotional banks, but also entities such as the European Stability Mechanism (ESM). To be successful as agents of a sustainability transformation, these financial (and often quasi-fiscal) entities have to be coordinated with monetary and fiscal actors. Finally, many of the ECB's options to support a quick transition to sustainability require an alignment of the regulatory policies decided in Brussels with the supervisory and monetary policies decided in Frankfurt. For example, a powerful tool to enforce better sustainability reporting and more sustainability investment is to make eligibility to the ECB's collateral pool and asset purchase programs dependent on certain disclosure requirements. The ECB could be the stick with which the EU enforces its ambitious plans for better disclosure. This, however, requires more than mere information exchange, but joint action.

Overall, the review underlines the attachment to a narrow interpretation of the European treaty, and only corrects upon some consensuses built around the measurement and formulation of the inflation target. It leaves secondary goals without a clearer relation to the first one, also circling out environmental policies as a core concern. The evaluation of unconventional policies is kept to the ex-post political sphere of the proportionality of decisions. Putting central bank policies in their broader political and economic environment, Reichlin et al. (2021) show why understanding and incorporating the fiscal aspects of monetary policy matters so much. The strategy review could have reacted to this growing academic consensus by providing clarity about the significance of augmented balance sheets, and the risks for economic stability.

It is worth noting that the deeper reasons for these deficits do not only originate in the fissures and peculiarities of the ECB itself. Rather, there has been a lack of proactive participation of lawmakers, who should have insisted that the broad and deep type of independence, the ECB has been granted through a specific reading of the Treaties in the 1990ies, needs to be reconsidered. The deficits of the new strategy show that the ECB's *institutional* corset was not made for tackling a complex issue such as climate change or, more generally, the ecological emergencies we face:

- The corset's legal stays or boning have been made during a time in which professional views on central banking had gone to neo-liberal extremes. Rather than striking a fine balance between central bank independence, democratic accountability, and the need to have arrangements for policy coordination between monetary and other (fiscal, quasi-fiscal, and structural) policies, the ECB statues are characterized by a radical emphasis on independence and inflation aversion. This hampers an integrated approach that takes into account the interdependencies between different public balance sheets, in particular those of national fiscal institutions, financial support facilities on the European level, and the EIB and other public banks (for an example for such an approach, see Land 2019b).
- The corset's ideological fabric is an expression of a mix of Northern European and neo-liberal views towards central banking. In the ECB's case, the legitimate concern to attenuate the dangers of unlimited money have been used to foster a neglect of the fact that monetary policy has distributional and structural consequences that require a holistic approach to policy. Ironically, this is especially apparent from recent cases brought to the European Court of Justice. By naively scandalizing the fiscal impact of monetary policy actions, the German plaintiffs have unintentionally put a spotlight on a simple fact: That fighting inflation or deflation always and everywhere has distributional consequences, and that these require democratic control over monetary policy, a thing the same plaintiffs abhor.
- The corset's objective lacing has been strapped too tight. By operationalizing price stability at a level below 2 percent (or, in the case of pre-accession countries, 1.5 percent below less than 2 percent) and by not operationalizing the secondary goals mentioned in the Treaties, policymakers have chosen to excessively limit the ECB's operating range. The same holds true for governance arrangements or concepts such as market neutrality.

What can be done to tailor a new corset for the ECB? Most proposals on greening central banking take the existing corset for granted (see table 1), others largely ignore it and hope for a change of the Treaties or a completely revamped set-up of the monetary union. In the first case, the resulting proposals are often rather timid and thus not adequate to the challenge of climate change. Alternatively, they accept to hand over control over a largely fiscal and structural area to non-elected officials. In the second case, projects might be bolder, but would require a lengthy process of institutional change not consistent with the urgency of the problem. In particular, current governance arrangements in and around the ECB are insufficient to ensure the needed coordination. Moreover, the Eurozone does not have established procedures and cultural practice of coordination. A strategy that wants to green the ECB needs to take these issues of the institutionalization of macro-financial policies, in particular their relationship to each other, into account.

Such a program confronts two main challenges. First, it is unclear whether a new institutionalization of monetary policy requires changes to EU Treaties, which are generally expected to be highly unlikely. Many observers therefore hope that greening the ECB more radically can be done within the boundaries of the current legal set-up, without touching the Treaties. Others feel it will be necessary to engage in a fundamental overhaul of the Union's monetary constitution. We will return to this problem in section 4 below, by presenting a proposal that, in our view, stretches the limits of the legal foundations of the ECB, but does not violate them. We emphasize that our assessment is not based on a judicial but a common-sense economic reading of the Treaties, hoping to inspire legal scholars to join the debate.

Second, attempts to institutionalize a transformative ECB creates understandable fears to open Pandora's Box, in the sense of making the ECB a playing field for a diverse set of political interests, or even a political football. Many observers, not only but particularly in Germany, believe that central banks should be exclusively about fighting inflation, and not be burdened with a transformative or developmental role. Both would not only require compromises with respect to price stability, but also imply a loss of independence not consistent with macroeconomic stability. The kind of democratic embeddedness needed for engaging in an explicit support of a political program of structural, socio-ecological changes is not acceptable for these observers. Recent decades have made these views mainstream (see the latter part of the next section). Increasingly, however, the view that central banks should be exclusively about fighting inflation and should enjoy a rather extreme form of independence have been questioned. Some authors such as Epstein (2013) describe the recent departure from a more developmental, political central bank as the exception rather than the rule. What lessons does history offer on the consequences and nature of such forms of "transformative central banking"?

3. Context and constant struggles: Transformative Central Banking

Recent historical research invites us to think about the relationship between broader economic transformations and central bank practices. Central banks are described as subjects and objects of transformation. In our view, this research allows us to draw a number of conclusions, which can be sketched out as follows, and will be developed hereafter:

1. **Central banking has evolved in a sometimes steady, other times turbulent fashion, but its evolution has always reflected *and* shaped the larger transformations of the socio-economic context.** Its objectives, operations, roles, and governance cannot be understood without reference to "domestic political economies" (Ugolini 2017) and the macro regime or state systems these economies operate in (Klüh 2015). Due to this contextual nature, it is inadequate to think about central banks as organizations that just target inflation and ensure financial stability. It is also naïve to assume that formal mandates hamper central banks' ability to adopt to new circumstances (Posen 6/14/2010). Rather, shifts in the global policy agenda as well as in economic and political power balances of a currency area will change central banking practices and their legal foundations, though it is unclear which change will dominate the interplay between operational realities and the law.
2. **The double nature of central banks as organizations that form an integral part of the political *and* the financial system defines the way in which practices adopt to a changing context.** These roles are mediated through state money. Central banks use their status as state institutions to preserve their privileged position aloof from other financial institutions. At the same time, they need their status within the financial sector to defend against excessive political interference (Posen 1995). Presenting the evolution of central banks vis-à-vis other state actors obscures its evolution vis-à-vis finance, and vice versa. To understand central banking, it is necessary to overcome

the usual state-market dichotomy, and to conceive markets as entities that have to be organized socially and politically, and to understand the modern state as a reflection of market societies.[4]

3. **Describing central banks in a contextual manner should not disguise the constant struggles they face.** These struggles are expressions of their unique position. In contrast to positions held by researchers from "Modern Monetary Economics", they require a logical distinction between a monetary and a fiscal sphere of statehood. The fiscal sphere is characterized by democratic deliberation and a desire to keep track of the future obligations of the state. The monetary sphere is characterized by a mix between independence from and accountability to democratic deliberation. It reflects the need to moderate a system in which the state's ability to create legal tender is technically and necessarily boundless. While state money emerges as a consequence of the sameness of fiat currency and public debt, its workings require a distinction between the two.
4. **When democratic modes of governance dominate and public accountability can be assumed, different degrees of central bank independence are consistent with stable economic development.** The constitutive role of central banks meant that they assumed the task of having to supply a set of public goods (requiring democratic control) *and* a fictitious commodity (requiring a certain independence from democratic control). The mix of public goods changed over time, but may best be described as 'supporting economic development' including lowering the interest rates on loans, universalizing legal tender, and smoothening the economic cycle. On top, central banks had to safeguard the premise that the use of a state-based and uniform credit money fulfills a core function in capitalist development, enabling and entering the accumulation process.

We go over to flesh out the reasoning behind such an account in highlighting some historical constants and contexts.

Economists' views on the evolution of central banks have long been dominated by Goodhart's account of their emergence, which focuses on the central bank as part of the financial system and banking community (Goodhart 1985).[5] Goodhart's starting point is the growing academic trend to question the rationale for central banks that started in the 1970ies. This trend builds upon earlier research on "free banking", both from the 19th century and the 1930ies (Smith and Yeager 1990). Goodhart intends to show that there is a "natural" historical tendency towards a central institution. By legitimizing a departure from a free market solution, he constitutes a private solution as the reference case. Central banks emerge from their role as guarantor of stability in an otherwise unstable, bank-dominated financial system. Even after their full-fledged institutionalization, they are not seen as public or state institutions per se, but as non-competitive, non-profit-maximizing entities. The fact that these entities have been established by state legislation is a consequence of the difficulties that come up in the course of the transition from a *member* of the banking community, to a *primus inter pares*, and finally to the regulatory *control center*.

The latest empirical research on the history of central banks (see Battilossi et al. 2020, chapter 33 to 37) has called this narrative into question by showing the deeper involvement of public policies, political economies, and state-like actors in the monetary system. Ugolini (2020) denies the existence of an

[4] Readers interested in the methodological foundations of such a conception are referred to the analytical program of the so called Économie des conventions (for an introduction see Diaz-Bone 2015). Here, the social and political organization of markets is transformed through an ongoing dispute between plural orders for the common good, or "conventions" (Boltanski and Thévenot 2018). At the center of the analytical interest are the statistical control techniques for the installation of markets, which are not understood here as neutral, but historically and politically controversial.

[5] We are mainly referring to the economics literature on central bank history, as we are not only interested in actual but also in

"evolution" altogether, emphasizing the diversity of institutional equilibria in different regions and during different times. There is neither a "survival of the fittest" nor a "one-size-fits all" institutional arrangement, nor a "holy grail" (Needham 2020). When it comes to deconstructing the historical emergence of central banks, their role for banking (emphasized by Goodhart) is often dominated by their more general role as a public agent pursuing a variety of (often) explicit policy objectives. Bindseil (2019), for example, analyzes the constitutions of several European banks before 1800 which had not earned the batch of a central bank in the common reception yet. He shows that they fulfilled central banking functions even before the foundation of the Bank of England and the Swedish Riksbank which are usually referred to as the first central banks. What sticks out in their institutional experiences is that these banks had, what you today would call, a developmental mission. They were not merely a source of war finance or a lender-of-last-resort, but a strategic element in the emergence of modern statehood. As a consequence, a diverse set of complex governance arrangements emerged, featuring representatives of the public sector, the trading sector and financiers.

Taken together, the two strands of economic research on central bank history leave us with a highly chimeric depiction of central banks as hybrids of finance and state, a depiction also backed by other accounts such as Paniagua (2021). They are state institutions mostly represented by financial sector representatives, they combine features of a company and a public administration, operate through concomitant participation in and regulation of markets, are seen as representative of a real and a financial logic. They make profits, though they are non-profit entities; they facilitate the impositions of markets and protect against such impositions; they protect both Main Street and Wall Street, though the first sees the latter as the main cause of the need for protection. How is it possible that such a conflicting and paradoxical entity enjoys such a broad reputation and credibility that makes it the source of much of the trust in capitalist modes of accumulation? More concretely, how can we explain society's trust in an institution that is part of two spheres that society often distrusts, the state and the financial system?

The analysis in Polanyi (1944) is a useful starting point to resolve that puzzle. Polanyi describes the emergence of market societies as a series of commodification processes for land, labor, and money. Central banks fortified this process from early on, but in the 19th century, the commodification of money suddenly changed its nature. Growing industrial production and infrastructural demands called for combining the credit function of money for the development of markets, with the logic of international trade and the use of metallic money. The drive towards realizing the commodity fiction then created the sometimes competing aims of developing a credit function to make money operable towards more uses, while limiting it to make it operable along more geographies. The institutional experience of central banks in Europe, as also elaborated by Goodhart (1988), mirrors these conflicting lines: Territorialization often posed a challenge to the establishment of a central bank, as did conflicts over the question who should be able to draw on the credit function of the monetary system, and who should not.

A Polanyian reading of central bank history indicates that the chimeric nature of central banking and its development over time is a reflection of its role in the double movement that characterizes the emergence of market societies (Savevska 2019). Polanyi's account of monetary history is consistent with a view that describes central banks as "double agents" of the financial system and the public sector.[6] In modern societies that have largely completed the transformation from *Gemeinschaft* to a functionally differentiated *Gesellschaft* (Dale 2008), this double agency is one between the economic and the political system. On the one hand, the central bank's legitimacy vis-à-vis *society* is founded on the protection of society against the impositions of the markets, in particular the financial markets.[7] On the other hand, the central bank also draws legitimacy from its role in protecting financial markets against a state that, from time to time, abuses its ability to issue currency, or draw on the ability of banks to create credit.

Their dual protective function puts the central bank in a delicate position. In tranquil times, both the political and the financial sphere respect this position and do their best to support it, which is also times in which the central bank's power remains uncontested. Whenever (financial) markets gain a social role that exceeds the central bank's capacity to control them (a process often called financialization), or whenever the state develops authoritarian structures that exceed the central bank's capacity to defend against it, the delicate balance is destroyed. The central bank falls prey to one of its two symbionts. In Polanyian terms, the first process can be described as a dis-embedding of markets from society. The second one often constitutes the destructive variant of re-embedding, in which radical populist ideologies *falsely* promise to bring back sovereign control over markets. Paradoxically, the fear of such destructive dis-embedding often stands behind institutionalizations of central banking that favor financialization, and, as a consequence, radicalization. With the aim to insulate central banks from authoritarian pressures, their function as protective shield is being ignored, also due to the fact that the interests supporting this role have been weakened through marketization. Constructive forms of re-embedding therefore increase democratic control over central banking, which is therefore not to be feared. In fact, democratic control is a precondition for allowing a certain amount of independence.

Up until the 19th century, central bank governance strongly reflects its dual nature, but it becomes more explicitly public over time. An important driver of this development is the fact that the universalization of money through the gold standard was state-led. Trying to acquire gold through trade during peace times, and aiming for a boost in gold resources through war and colonization was a state task. At the same time, going to war meant that the credit function was regularly drawn upon, with respective effects in the case of losing the war or the dominion over colonies. Finally, the gold standard required close international cooperation of a kind that only nation states could accomplish at the time. In parallel, and looking more closely at the relationship between public and private influence through ownership and governance structures, the developments described by Goodhart (1988) in fact did play an important role in shaping governance: To ensure the containment of banking risks and the efficient management of informational problems within the financial sector, the Bank of England was developed as a noncompetitive, non-profit maximizing entity. Other countries then copied this arrangement and realized it much more smoothly by governmental legislation (Goodhart 1985, p. 104).

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[6] In order to develop a theory of central banks as an adjunct, but separate state institution, a politico-economic account is boiled down to an analytical distinction between "the financial sector" and "the state", the latter understood as being obliged to grant certain social and participatory rights.

[7] In financialized economic systems (those in which the logic and culture of the financial system starts to dominate other economic logics, see Mader et al. 2020) this simple distinction becomes more complicated. The term "society" might then enclose segments of the economy that are positively connoted in society, such as the "Realwirtschaft" in Germany or "Main Street" in the U.S.

The 20th century then triggered a series of events which finally institutionalized central banks' position as mediator between the financial markets and the state. On the one hand, the commodification process of labor created the need and the conditions for a stronger political and economic representation of workers, resulting in a broadening of the labor movement. This triggered an institutionalization of new kinds of power relations in Europe: Liberal democracies, where they could be established, included social democratic parties in the parliament and labor unions, and their constitutions not only lent themselves to private sector freedoms, but to economic equality interests of these new social classes (Neumann 1942 [2018). On the other hand, the commodification of money reached a new peak, and waves of financialization and de-financialization swept over economies. The two waves of globalization that accompanied financialization favored state and private actor strategies which served an external money function over an internal one (Pettifor 2019).

The Great Depression is the first watershed of this development. The period leading to the Great Depression can be described as a first wave of financialized dis-embedding of markets. A dominant feature of this wave is the way in which the gold standard and thus the external money function developed into a highly powerful and highly destructive force. Polanyi (1944 [2001]) describes in detail how central banks were becoming more and more desperate in their attempts to preserve the gold standard while at the same time serving as a cushion against its destructiveness (Clar 2019). The inability to combine these two roles finally played a crucial role in causing the bouts of hyperinflation in the beginning and the Great Depression towards the end of the 1920ies. Interestingly, and especially in the German context, these experiences are often seen as evidence for the dangers of firmly integrating monetary policy with the institutions of democratic decision-making. This view, however, does not only ignore the peculiar circumstances after the First World War, which would have brought every central bank however independent to the brink of disaster. It also pays inadequate attention to the actual institutionalization of monetary policy, in particular in Germany (Marsh 1992). And most importantly, it neglects the fact that the hyperinflations of the 1920ies where not so much expressions of democracy but of desperate attempts to fulfill the Polanyian double role in the context of a Peace Treaty that made this impossible.

In reaction to the Great Depression, two forms of re-embedding were set into motion, a destructive and a constructive one. On the one hand, fascist regimes emerged, which abused the craving of the middle classes and companies for protection from the global markets to put in place aggressive forms of nationalism. On the other hand, the New Deal policies of the Roosevelt administration attempted a democratic re-embedding of markets. As the first variant soon revealed its destructiveness (finally leading to the Second World War, the Holocaust and a complete shattering of the world economic system), the second variant finally prevailed.

In its destructive variant, re-embedding led the central bank into the hands of autocratic regimes. Ironically, the fear of democratic control over central banks is often rooted in the experiences with such destructive re-embedding. One reason why the debate on "more influence of the state in central banking" often leads to a comparison with fascism in the German context is that National Socialism is conflated to mean state control over the economy. This interpretation, and if we agree to follow the sometimes misleading state-market dichotomy, is though contested. Scholars have argued that, for the most time, the Nazis left the private sector with a substantial degree of autonomy (while slashing "private" buttom-up elements such as civil society organizations and unions). Neumann (1942 [2018) shows that the initiative of the NSDAP to assume more control over the corporate sector was quickly put aside in favor of maintaining free enterprise in principle, while introducing hierarchical elements to facilitate coordinated action (see also Schönbach 2019). Similarly, the relationship between the emergence (see in particular Clar 2019) and development (as described, for example, in Marsh 1992) of the Nazi regime and the institutions of German central banking prove to be much more complicated than often portrayed. By no means, they can serve as an indication that the danger of autocracy always and everywhere implies a need for maximum central bank independence.

In its constructive variant, re-embedding implied a partial but substantial democratization of central banks. In this respect, the U.S. experience of the 1930ies is exemplary. The New Deal did not only develop a focus on strengthening the organization of labor, while the corporate sector was put under control through general law, including the well-known regulations on banking. It also led to a radical departure from established views on macroeconomic policies. In particular in terms of monetary policy, Roosevelt and his team developed a rather radical view on the needed changes Pettifor (2019), finally leading to the Gold Reserve Act of 1934.[8] Against the backdrop of the dismal performance of central banks in preventing the Great Depression, they were put in the "backseat" of policymaking.

Ultimately, the constructive variant of re-embedding prevailed in form of the post-war consensus and the Bretton-Woods regime. This consensus, with all its problems in terms of its racist, sexist and extractive nature and treatment of the Global South (Burawoy 2012), holds some important lessons for the institutionalization of the financial sector in general, and central banking in particular. Most importantly, the developments from the Second World War to the 1970ies show that limited central bank independence and strong restrictions on finance do not necessarily lead to either an abandonment of democracy or hyperinflation. Financial markets and organizations were mostly instituted as mere infrastructures for more important economic players, namely real sector enterprises, unions, and finance ministries (Hütten and Klüh 2017). The internal functions of money dominated, reflecting rather strong limits to international capital mobility. Central banks were given a limited degree of autonomy, with substantial differences among the respective economic systems. Coordination between different macroeconomic policies was seen as key, to be able to deliver on a multiplicity of economic policy goals, very much in contrast to the focus on inflation and growth that has dominated recent decades. But none of these developments did lead to autocracy or a complete loss of monetary stability.

With the abandonment of the Bretton Woods system, a new wave of financialization was set into motion, accompanied by a new and radicalized version of central bank independence. Parallel to a reincarnation of ideas such as 'free banking', the political co-determination of monetary and fiscal policies was replaced by a system in which an independent central bank would form the center of gravity of macroeconomic policy. Western states settled on a monetary order with flexible exchange rates and high capital mobility, the logic which in some ways resembles that of the gold standard. As a key element, the concept of inflation targeting took center stage. While the move towards a new paradigm of monetary control first proceeded slowly, it gained surprising strength in the 1990ies. For example, in 1988, a proponent of central bank independence such as Alberto Alesina would carefully frame:

> *"This paper argues tentatively that independent Central Banks have been associated with a lower average inflation rate and may have been responsible for reducing politically induced volatility of monetary policy and inflation." (Alesina 1988)*

[8] On public spending Roosevelt uphold a number of quite orthodox views, which according to some limited the New Deal in its effectiveness (Lehndorff 2020).

In the middle of the 1990ies, this carefulness would have been replaced by much stronger statements, such as:

> *"Particularly the independence of the central bank—which had not been a major topic of academic discussion for a long time either—has since become the nucleus of a positive and normative theory of inflation. The fact that there is a close connection between the independence of the central bank and success in the field of combating inflation can be justified convincingly not only in theory. Empirical evidence is conclusive, too: … At the same time, the fact that high and volatile inflation rates are associated with high costs for the overall economy and that stable prices are conducive to the long-term growth process are, in my opinion, two of the established findings of our discipline." (Issing 2019)*

And towards the end of the 1990ies, even more progressive observers such as Dornbusch would boldly subscribe to the view that:

> *"The idea of a political body that interacts with the ECB is shocking: Europe and the world have moved a healthy distance from short-term political control of monetary policy." (Dornbusch et al. 1998)*

The ECB is by far the most radical expression of the views on independence that developed since the 1980ies. Three factors came together to boost the general trend towards independence in the case of the ECB. First, German resistance to a monetary union could only be overcome by agreeing to a set of institutions that cemented the orthodox views of the Bundesbank and the German economic orthodoxy (Needham 2020). Second, the lack of a framework for European fiscal policy created a vacuum of control that could not be filled otherwise, at least not in a democratic fashion. Third, European societies embarked on a trend that was later coined "financialization". This trend, which is described in detail in Mader et al. (2020), embodies a view of central banking very strongly centered on their role for financial markets, their technocratic competency, and their detachment from government.

The financial crisis of 2008 highlighted the fragility of a financialized economy, and has set into motion modern versions of the two variants of re-embedding described above. On the one hand, developments such as Brexit, the Trump presidency and the rise of autocratic regimes demonstrates the continuous importance of the false association between a protection from the hardships of global markets and finance and nationalistic tendencies. On the other hand, the idea of a socio-ecological transformation that combines the need for a more sustainable economy with the call for a more inclusive economy have gained in importance. The current debates on the future of central bank independence reflect these developments. On the one hand, autocratic regimes threaten their central banks with interference if they do not support their policy agenda. On the other hand, proponents of Green Deals and Green New Deals see monetary policy as a way to speed up the transition to a more sustainable society.

Against this backdrop, it is likely that the institutionalization of central banking will change in the years to come, hopefully in favor of a policy agenda determined by democratic politics. More concretely, both forms of re-embedding would reduce the scope of central bank independence vis-à-vis governments. At the same time, central banks are likely to remain entities that stand between the world of finance and the world of the political, and defend their partial independence against both worlds. Their exact fate, however, will strongly depend on which of the two forms of re-embedding will prevail. They will either be democratized or instrumentalized, and much should be done to redress the balance in the direction of the former. In contrast, radical views of a complete abolishment of the distinction between a fiscal and a monetary sphere, often voiced under the heading of “Modern Monetary Economics”, are unlikely to prevail. They are legitimate expressions of a discomfort with financialization, extreme central bank independence, and unnecessary limits to collective action, but they underestimate the need for complex institutional arrangements that position central banks in between the financial and political sphere, while ensuring democratic governance. Even doubtful observers such as Pixley (2018) maintain a hope for democratic central banking, though they are skeptical about the continuous influence of financial actors and the agenda of elected policymakers. With this in mind, she rightly points out that institutional arrangements for central banks are important, but that the decisive question is about the degree of democratic governance of the overall political system and the control of vested interests. In the current situation, this means reflecting about the relationship between capitalism and democracy (Sturn et al. 2019). The financial sector, with its continuously strong presence of public entities would be a natural starting point for a renewed democratization of the economy (Klüh 2021), and the central bank a natural starting point to initiate this process.

Re-democratized central banks with partial independence can play a very useful role in the transition to a sustainable economy. Financial markets and institutions play a key role in most political strategies to achieve an ecological transformation (Land 2019a). The future development of sustainable finance and its potential to contribute to the success of national, European, and global climate policies, however, depends on the interplay between distinct spheres: the private financial sector, the public financial sector including developmental, promotional and public banks, the so-called real economy, and the non-economic, mainly political, sphere. As public entities that partly share the institutional logic of the financial sector more broadly, central banks will be a key player in orchestrating these spheres.

The historical accounts show that central banks can assume the role of public entities with mandates that are consistent with society’s developmental agenda. This becomes apparent from the experience with early and later central banks. A single focus on inflation and extreme degrees of independence, however, are neither necessary nor sufficient conditions for functional monetary and financial system. In particular at the ECB, there is enough scope to re-integrate central banks into the democratic realm without giving up central bank independence altogether. The extreme versions of independence that emerged since the 1970ies are neither consistent with the historical accounts on central bank performance, nor with democratic principles, nor with a healthy and sustainable level of independence in the long run. Stiglitz (2001), in his foreword for the 2001 edition of Polanyi’s Great Transformation, highlights this view in the following quote:

> *“The disjunction between these more basic values [those highlighted by Polanyi] and the ideology of the self-regulated market is as clear today as it was at the time he wrote. We tell developing countries about the importance of democracy, but then, when it comes to the issues they are most concerned with, those that affect their livelihoods, the economy, they are told: the iron laws of economics give you little or no choice; and since you (through your democratic political process) are likely to mess things up, you must cede key economic decisions, say concerning macroeconomic policy, to an independent central bank, almost always dominated by representatives of the financial community; and to ensure that you act in the interest of the financial community, you are told to exclusively focus on inflation…”*

Today, the focus of the debate on central bank governance is shifting, from inflation targeting and increased independence to multiple goals and democratic governance. The strong focus on independence was born in the context of neoliberal reform and financialization which brought to the fore ideals of technocratic governance, distancing central banks from the rest of government. Moreover, their responsibilities, agendas and processes were aligned with the needs of the financial sector, sometimes in a responsible way, often excessively. In some cases, central banks have become market-makers of last resort, a legitimate role *if* the premises of financialization are accepted. In others, they themselves have illegitimately pursued an agenda of radical financialization of society. In this case, central banks have not only been de-legitimized, but openly financialized. To adhere rigidly to concepts such as "market neutrality" is an expression of such financialization. Independent from the exact nature of their financialization, and in parallel to it, central banks have been successively distanced from the rest of the public sector, and re-focused on fighting inflation.

Large-scale socio-economic transformations have been episodes in which the institutionalization and organization of central banking changes, too. In anti-democratic transformations such as the one experienced in Europe during the 1930ies, making the central bank an object of central governments can have aggravating consequences. In transformations that aim at strengthening democratic politics, including through keeping market outcomes in check and adjusting them in line with the majority's views, outcomes have been mixed, but generally in line with intentions. More concretely, there have been negative side effects such as higher inflation, but the more important goals have been reached, such as financing the war effort against Nazi Germany in the context of the U.S. and its allies, re-building economies after World War II, or stabilizing unstable economies at high employment levels in the years between the 1940ies and the 1970ies.

In a nutshell, the historical experience seems to indicate that we do need to fear the co-existence of autocracy and central bank dependence, not democratic control over central banks. At the same time, the co-existence between a *formal* democracy and excessive monetary independence can also be hazardous, as it might lead to the kind of socio-economic instability experienced during the Great Depression of the 1920ies and the Great Recession of the early 21st century. In contrast, there are few examples of bad policy outcomes when limits to central bank independence are set in an environment of democratization and stable institutions. Importantly, this statement presumes a serene attitude towards a certain level of inflation. We believe that such an attitude is backed by the literature, which generally shows that inflation in the single digits is usually consistent with growth and development, in particular when combined with measures to protect vulnerable groups from its consequences, through direct and indirect indexation of transfer incomes as well as strong unions to protect real wages.

It is worth highlighting that our reading of history seems to contradict four other influential views on the relation between the central bank and the rest of the public sector:

- Some proponents of Modern Monetary Theory deny that differentiating between the monetary sphere and the rest of government is warranted at all. They argue that the only relevant distinction is the difference between responsible and irresponsible macro-financial policies.
- Proponents of radical forms of central bank independence simply deny the existence of periods in which society has benefitted from a closer alignment between the central bank and the rest of government. Usually, such views come with a strong aversion against inflation and/or fears that compromising central bank independence is a route to an excessively powerful state.
- Others regard limited independence combined with democracy as being a recipe for problems, too, independently of the political context. These views are largely based on theoretical arguments of time inconsistent policies and a general distrust towards political interference with the macro-economy.
- Still others agree that democratic control over central banking might be beneficial, but should be avoided to guard against a *change* in government. If the power to create money changes hands

from a democratic to an autocratic regime, one would have wished to have a little less democratic control over money at the outset, the argument goes.

We would argue that the first two arguments are not backed by historical experience: Especially the decades after the Great Depression have shown that government control over money and macroeconomic stability can go hand in hand. At the same time, numerous examples illustrate the fragility of fiat money systems to capture, both from financial as well as from political personnel (Pixley 2018). After all, and on top of the Polanyian argument presented above, capitalism has to live with a fundamental monetary paradox: It only works when money is scarce and abundant at the same time. Money has to be scarce to reproduce capitalisms behavioural and informational foundations. Money has to be abundant to enable its defining Schumpeterian core, the dynamism with which resources can be divested and invested. In this situation, pressures to ease the consequences of scarce money will naturally make use of its endless availability. The distinction between the monetary and the fiscal sphere is key to moderate these pressures.

It is for this reasons that the third and the fourth argument have to be taken seriously. While much of the third argument is made on theoretical grounds, it is at least partly based on the experiences of the 1970ies. However, it seems that a shortly lived bout of inflation during that time has excessively influenced our views on the matter. It is understandable that researchers in the 1980ies have focused on the dangers of inflationary policies in democratic societies, but in the grand theme of things, these dangers seem to have been overrated. While it is indeed true that democratic pressures to use monetary policy to solve distributional problems can become overwhelming, social mobilization will also produce counter-pressures as soon as inflation becomes a real problem. In the short-term, to cite Issing, inflation might indeed share some characteristics of tooth-paste, as it is difficult to get it back into the tube. Over longer terms, however, the cost of keeping too much toothpaste in the tube might well be higher than wasting some of it for the benefit of your teeth.

4. Steps towards a sustainable and transformative ECB

The aim of this section is to provide the sketch of a “strategy” to make the ECB a transformative agent with a serious ambition towards sustainability and greening the economy, while trying to avoid the pitfalls of existing proposals: First, instead of looking at all functions of the ECB, from banking supervision to macro-financial stability all the way up to monetary policy, we restrict ourselves to the latter. Even though we recognize the need to follow a more holistic and integrated approach in the end, we believe that such a narrow focus is warranted. By zooming in on monetary policy including its operational dimension, one can demonstrate that a consistent approach will require an integration of new goals, new instruments, and new governance arrangements, and thus a complete overhaul of Eurozone arrangements.

Second, rather than accepting or ignoring the fact that the ECB’s current legal, ideational, and operational corset is too tight for the purpose on hand, we intend to widen it. To do so, we stretch the corset to the extent that we believe is possible under the Treaties. As we do not belong to the legal profession, we sometimes advance rather radical, *political* interpretations of the Treaty language. We thus follow a strongly constructionist approach: Rather than (legal) originalism, we favor textualism, or better: contextualism, in the sense of allowing principles to vary with the historical context. We believe that this is not only warranted but necessary, as current views on the ECB’s mandate and governance have been evolved path-dependently from the very radical views on central bank independence and inflation prevailing in the 1990ies.

Third, we take into account, as far as this is possible in a highly uncertain environment, the current macroeconomic and political challenges resulting from the aftermath of the pandemic, the current war in Ukraine, and the fact that planetary boundaries and the finiteness of natural and atmospheric resources are increasingly priced, with ensuing consequences for inflation dynamics. In particular, we recognize the need for the ECB to react flexibly in a very volatile environment, while consistently and constantly fighting climate change. This has several consequences. First, and foremost, it requires giving the ECB sufficient policy space and discretion to follow up on secondary policy goals: The ECB's engagement in climate policy cannot pause just because inflation runs at 2.5, 4 or 6 percent, a development that is clearly possible, given the size of shocks we are observing. This, in our view, implies moving to an inflation target range, a range that has to be reached over the medium term.

Second, the shocks we have been seeing recently are part of a larger story, in which the finiteness of the planet becomes a stronger factor in political and macroeconomic developments. Partly as a consequence of policies aiming at internalizing environmental costs, partly in anticipation of future scarcity, markets are increasingly pricing in this finiteness. This might lead to a period of, on average, higher inflation. It might also likely lead to more inflation variability. Against this backdrop, monetary policy does not only need additional discretionary elements, but sufficient policy independence. The time in which one inflation rate could be considered more or less right for extended periods might be over.

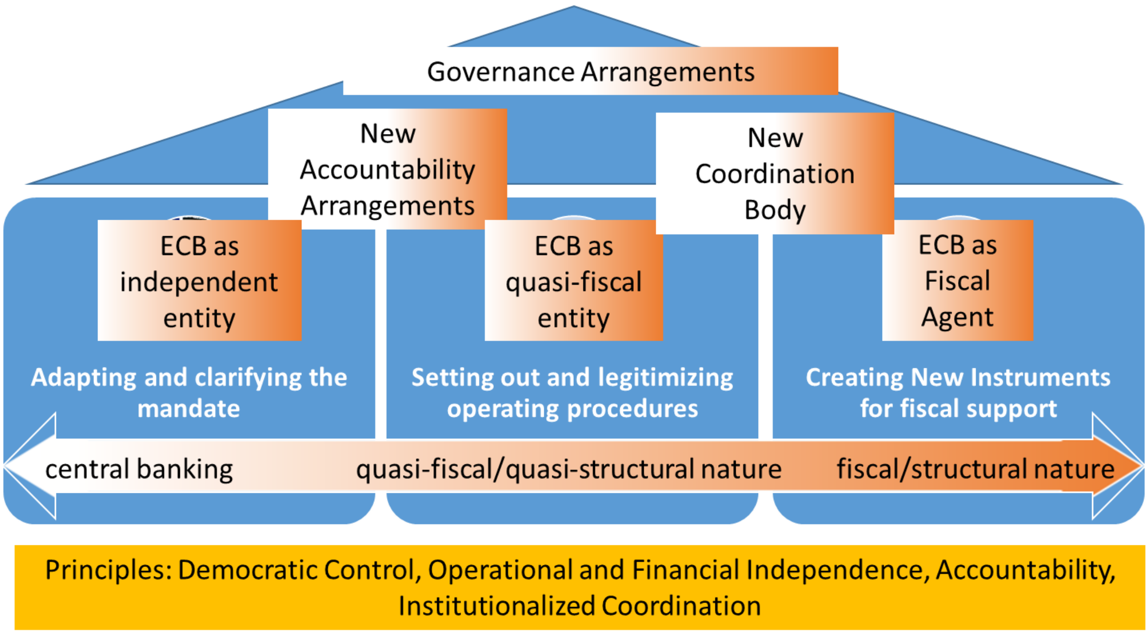
Third, financing public and private investments for a greening of the economy might face stronger headwinds when long-term interest rates adjust to the new environment. New expenditures abound, for example as a consequence of geopolitical developments. Strong sovereigns like Germany have missed out on the opportunity to issue more debt at negative interest rates. They now might be confronted with new financing conditions that are less supportive for debt-financed large public investment in sustainable infrastructures. Sovereigns like Italy might face renewed fiscal pressures exactly when large investments are needed. Central banks will need to take this into account when setting rates and choosing other measures, as the dynamics of climate change do not allow a prolonged period of consolidation to precede the massive public investments needed.

In short, European climate and environmental policy only has a small window of opportunity to take action that is radical enough to decarbonize and green the European economy. On top, the political and economic context presents unexpected challenges. These challenges require both a highly functional central bank that enjoys sufficient policy and operational independence and a bold move towards "democratically embedded central banking" (Dezernat Zukunft 2020). We recognize the need for some form of policy, operational and financial independence, but propose to provide the ECB with clearer guidelines as well as governance and coordination arrangements with respect to its role in the socio-ecological transformation. To square this circle and allow the ECB to contribute to climate policy in such an environment, we propose a three-pronged strategy. Each prong is related to one of the ECB's roles in economic policymaking (Figure 1):

- The first prong views the ECB as an entity enjoying a certain degree of necessary and justified *policy independence*. To be able to use its broad set of instruments freely while contributing to the greening of the European economy, however, *goal independence* has to give way. More concretely, we believe that both the specification of price stability and the prioritization and operationalization of secondary goals should be a responsibility of lawmakers. Moreover, the degree to which primary and secondary objectives have been reached should be regularly monitored by lawmakers. This requires, in our view, an overhaul of accountability arrangements.

- The second prong considers the ECB as an entity whose actions and instruments need to be consequentially aligned with the Green Deal and the EU taxonomy, while leaving enough room for *operational independence*. The ECB has to decide on the details of greening its operations, from the rules on collateral to the nature of its asset purchases. But it also needs clear guidelines as to how consequentially and how quickly this should take place and how these changes are to be coordinated with other agents of the transformation. Moreover, while changes to collateral rules and asset purchases appear to be rather technical, they have sizeable quasi-fiscal and structural consequences for which the ECB lacks legitimacy. While some of these consequences can be monitored within the realm of standard but overhauled accountability arrangements, others require more extensive coordination with other bodies of the executive or the public financial sector. In the latter cases, this coordination would require setting up (democratically controlled) coordinating bodies, in which strategies, tactics and operations of the financial dimension of the European Green Deal are discussed, decided, and monitored.

- The third prong considers the ECB as an entity that has the ability to carry out fiscal policies per pro of the sovereigns in the monetary union as well as the European Union. To make sure that the risks of such actions do not impair financial independence, clear rules and arrangements are necessary. As a fiscal agent, the ECB needs to be even more closely aligned with the policies agreed upon in a coordinated fashion. Consequently, they would be part of the elaborations in new coordinating bodies, and monitored accordingly.



Prong I: Adapting and clarifying the mandate

For the ECB as an entity enjoying policy independence (which largely focuses on what the literature calls central banking, i.e. steering liquidity and financial conditions such that certain macroeconomic objectives are reached), we propose an adaptation and clarification of the mandate. More concretely, we suggest three institutional innovations, all at the initiative and under the auspices of the European legislative. The latter would:

1. …clarify the primary mandate by defining and regularly re-defining the range for price stability, in consultation with an expert council consisting of representatives of the ECB, academia, and civil society. As a basis for the discussion, we suggest to define price stability as "an increase in consumer prices of not less than 1.5 and not more than 3.5 percent over the medium term, taking into account the inflationary consequences of the socio-ecological transformation resulting from climate change, decarbonization and a broader greening of the economy".
2. ...clarify, along the lines of the Green Deal, the secondary mandate by prioritizing and operationalizing the objectives the ECB should take into account whenever the primary objective is met.
3. …increase the grip of accountability arrangements, by, at a minimum, implementing the proposals laid down in Claeys and Domínguez-Jiménez (2020, p. 1), including "procedural changes to the Monetary Dialogue to increase its effectiveness" and "the release of detailed minutes and votes from ECB governing council meetings".

The three measures would constitute a bold and straightforward way to reinstate the primacy of democratic politics over central banking and accommodate the shift in the macro-regime. Moreover, they would be a very strong signal of the new priorities of the new macro-regime, avoiding the current logic in which price stability can never be seen as fulfilled. Also, they are in line with earlier proposals to increase the effectiveness of monetary policy against the backdrop of the Zero Lower Bound (Blanchard et al. 2010). Finally, and surely to the surprise of many, we believe that the required changes might even be possible without a change in the Treaties. The second and third element of our proposal has already been advanced to the European Parliament, in a study requested by the ECON committee (Kern and Lastra 2020).

Implementing the first element, which is the most controversial one, will be a difficult political *and* technical challenge. Organizing a due process that combines political with scientific expertise is thus of the essence. For example, it will be necessary to disentangle the effects of desirable increases in prices of carbon-intensive and environmentally-destructive economic activities from other inflationary developments. Closely related, distributional issues will need to be taken into account. At the same time, a constant discussion about the right inflation rate or range should be avoided. Against this backdrop, it might be sensible to work with a sunset clause, as suggested by Dezernat Zukunft (2020). The ECB would be given a clear operationalization of its primary mandate for a certain number of years, an operationalization that would then be subject to regular democratic elaboration.

It is also worth noting that a democratized operationalization of price stability would almost certainly face legal challenges, as the goal independence of ECB has been a holy grail of the European Monetary Union. Our (political) reading of the respective (legal) literature is that the ECB's right to define price stability itself stems from an assumption: That the fact that price stability is not defined in the Treaties implies that the ECB has the privilege of doing so. While this has certainly been the view and expectation during the signing of the Treaties, it remains an interpretation. In our view, the right of a subordinated entity such as the ECB to interpret a vague legal concept such as price stability only holds as long as the legislative chooses to leave it in a vague form. Should the EP and the Council decide to clarify the legal concept (for example because it is realized that the goal independence of the ECB is a rather unusual and radical construct from the heydays of neoliberalism or because there are urgent political reasons to constrict it), they can try doing so and still leave a final decision to the European Court of Justice. We even believe that our view that defining price stability is a responsibility of lawmakers and that 3.5 percent is a defendable level is indirectly backed by the Treaties. Particularly, it is in line with the convergence criteria specified *in* the Treaties *by* member countries and *not* the ECB. These define price stability as "a price performance that is sustainable and average inflation not more than 1.5 percentage points above the rate of the three best performing Member States". Taking the ECB's current definition of two percent seriously, this would imply price stability in a range up to 3.5 percent.[9] If the range we propose is deemed to be too conservative (many studies do not find any sizeable negative welfare effects of inflation below 5 percent), a reasonable alternative would be to choose 3.5 percent as the center of the range, and 2 and 5 percent as its lower and upper limits.

With regard to the ECB's secondary objective, the European legislative needs to establish a process by which it operationalizes its political agenda in so far as it has implications for monetary policy. Despite the fact that it is the national governments' responsibility to spell out their economic policies properly, the established practice of coordinating and deciding on common EU policies, and the current impetus to provide a political frame, such as the Green Deal and the sustainable finance agenda, already go in a similar direction. Claeys and Domínguez-Jiménez suggest that "[t]he European Parliament as representative of European citizens and the Council of the EU as representative of EU Member States should take the primary roles in determining the ranking of secondary objectives. As far as the EP is concerned, its resolution on the ECB's annual report would be a clear medium for the Parliament to make this ranking." (p. 23). Blot et al. (2021) and Reichlin et al. (2021) argue that the relationship between inflation and other objectives of economic policy should be regularly reviewed and enter the policy perspective, as many well-established relations have dissolved at the Zero Lower Bound.

The clarification of the secondary mandate and its relevance for the ECB go hand in hand with tightening the cooperation between the central bank staff and legislative bodies. The legislative would increase its governance efforts by implementing proposals as laid down in Claeys and Domínguez-Jiménez (2020) or similar proposals. For example, it might be sensible to create a body from the parliament which is especially occupied with central banking issues. Chang and Hodson (2019) call for both the Monetary and Economic Dialogues to be delegated to a new ECON Euro Area Oversight Subcommittee (EAOS).

Prong II: Setting out and legitimizing operating procedures

The discussion on sustainable operating procedures and on the appropriate way of greening ECB instruments has been at the core of the debate on a more transformative ECB (see below, as well as table 1 in the appendix). It has also been a rather technical discourse. On one side, there are good reasons to acknowledge the complex nature of the subject matter. Determining how a specific instrument or procedure should be adjusted to best support the objective of a more sustainable economy

[9] Currently, the ECB defines what "best performing" means and takes the three lowest inflation rates within the Euro Zone. It then adds 1.5 percent. During the period of lowflation in recent years, this has led to an absurdly low convergence criterion.

requires taking into account a large number of potential mechanisms and unintended consequences, for example on financial stability, and require a detailed examination of difficult questions:

- How strongly would market participants react to the different measures, also when considering the likely interaction effects between different policies? The answer to this question is much less clear than many expect. For example, an apparently strong measure such as additional haircuts for brown assets might have much less of an effect than expected, because these haircuts are intended to help manage short-term liquidity risks, not the type of medium to long-term risks associated with planetary boundaries.
- How does the effect of a certain measure depend on the action of other players? For example, using eligibility requirements might have a relatively strong effect, as the markets might interpret ECB rules as indicative for the future development of industry standards. However, this would require coordinating the actions of the ECB with those of the commission, other regulatory bodies, and standard setters, a coordination that might be complicated.
- Could a consequential application of sustainability rules have the effect that those companies are cut off the market that need green finance most desperately, because they belong to so called "brown" industries? Finding measures that do not only benefit the "best in class" but also those that need to adjust most is particularly tricky, as similar experiences in the area of sustainable finance suggest.

Answering these questions is of the essence but highly challenging. Quantification of effects and side effects is severely complicated by a lack of data, which might require an extended period of phasing-in, data collection, and learning. This might also be necessary for reasons of financial stability. Getting the answers wrong might not only render the greening exercise ineffective but also cause abrupt market movements that endanger financial stability.

The mentioned complexities suggest leaving the decision of when and how to green what instrument to the experts within the ECB. However, letting the ECB do the job alone is not possible, for three reasons. Most importantly, the technical nature of the instruments should not conceal the fact that their application has substantial distributional and structural effects. These, in turn, require a political backing. The latter is also required because the effectiveness of a certain change will strongly depend on the actions of actors outside the ECB. For example, and as mentioned above, using new eligibility requirements works through helping an emerging standard of sustainability accounting and measurement gain ground. The idea is to let ECB procedures be the stick and carrot that leads market participants to adopt the standard. The standard itself, however, would not be set by the ECB, but by different bodies, in particular the commission.

Greening instruments and procedures is thus a highly technical *and* a highly political issue. To deal with this tension, we propose to clearly delineate the responsibilities of the ECB and its counterparts whenever possible, but create coordination arrangements in others: EU lawmakers would advise the ECB to consequentially adopt *all* its instruments to the exigencies of the Green Deal, with the final aim of making the ECB *fully conformant* with the EU Taxonomy and other rules. The exact nature and timing of operational changes would be determined by ECB staff and reported regularly to EPs. At the same time, an independent expert group would prepare regular reports on the ecological, structural, social and fiscal impact of ECB operations.[10]

Put differently, we suggest that the ECB as a quasi-fiscal entity would spell out itself, and with a large degree of operational independence, the way in which it intends to support secondary objectives. In particular, it would develop taxonomy-based rules for greening the collateral pool and asset purchases as well as reforming eligibility requirements. However, it would take these decisions based on clear guidelines on *what* to achieve by *when*, and it would be monitored accordingly. Such monitoring would also involve public deliberations of situations in which a deviation from the ECB's plan of phasing-in sustainable collateral and investment rules would be necessary, should the primary mandate require such deviation.

We believe that the EU's sustainable finance taxonomy is the right basis and vanishing point for such phasing-in. One of the major mechanisms through which the ECB can support the socio-ecological transformation is by supporting the mainstreaming of common rules for what an economic entity should do and is allowed to do. Applying the taxonomy re-politicizes monetary policy decisions to a certain extent, as decisions on what counts as green are made in a political process rather than an ex-post tilting of the central bank. Taking such a reversed order in monetary policies seriously - which means to acknowledge the fiscal element in it - also has further implications: Steering economic activity according to the taxonomy transgresses a policy regime which is only centered on inflation targeting to one in which environmental factors actually count. Rather than judging this development as problematic, we see it fitting in the transformation of capitalism which is currently taking place.

Using the common rules is therefore necessary, even though they still have major caveats: To start with, many observers find it misleading that many carbon-intensive sectors, gas and nuclear power, are included, apparently motivated by the fact that reductions are expected in these areas. Moreover, there is no negative or black-list for economic activities which could also inform central banking policies. As an alternative, Battiston et al. 2017 developed the Climate Policy Relevant Sectors classification (CPRS) which looks at potential losses and gains in transition risks. We thus suggest to apply an extended version of the taxonomy to the collateral pool and QE operations, as this establishes a clear hierarchy within the ECB's secondary mandate and leaves the ECB room to provide a proper implementation strategy. Since unconventional monetary policies have become the rule rather than the exception, the ECB needs to have a well-defined set of tools from which to choose from and which are in support of the general economic policies of the EU, including the Green Deal and the goals of the Paris Agreement. That such a well-defined, but contingent plan is necessary, is underlined by a recent study published by the European Parliament: the authors suggest that a 'new normal' has been prevalent even before the outbreak of the covid-19 pandemic and that implications for monetary and fiscal policies are yet too little recognized (Demertzis and Dominguez-Jimenez 2020).

Apart from that, our proposal is very much in line with the two scenarios developed by Dafermos et al. (Dafermos et al. 2020, 2021). They apply an extended version of the taxonomy to the collateral pool and allow the central bank to only purchase collateral from green and non-carbon intensive investments. In their more ambitious version, they extend eligibility to green projects not covered by the

[10] To ensure a continued financial independence of the ECB, arrangements to deal with the potential losses related to concentrated investments in certain sectors might be necessary. One possibility would be to set up a fund that pockets parts of the profits from monetary operations and compensates the ECB in case of major market disturbances.

current collateral pool yet. An alternative policy is developed by Oustry et al. (2020) who suggest a tilting – or alignment – approach. Here, the central bank aims to adapt its collateral policies towards the overall emission path of the economy rather than applying a one-by-one classification of assets (see also Schoenmaker 2021; Hauser 5/21/2021). Schnabel (6/14/2021) expresses sympathy for the latter strategy, as the former would lack an incentive structure for the higher polluting sectors. We would expect that a well-communicated phasing-in of purchases from the taxonomy-conform collateral pool by the central bank does provide a sufficient incentive structure: Firms will know when their financing condition will tighten up, but will have time to implement reduction strategies. At the same time, the central bank will be able to show how it balances financial market stability with risks stemming from the environmental crisis. A similar combination of phasing-in and monitoring was outlined in a recent discussion paper by the Bank of England (Hauser 5/21/2021).

In a similar vein, the taxonomy should be applied to and used within the asset purchase programs, which - due to their carbon-bias and secondary effects on price developments - have already been discussed quite extensively. These discussions can serve as starting points for the deliberations within the ECB. For example, Ferrari and Landi (2020) suggest that only a green strategy, which in their study means for the ECB to add green bonds to its balance sheet, contributes to a significant decrease in the stock of pollution if applied during a period of increased QE. Dafermos et al. (2021) come to a similar conclusion, but propose to exclude the highly polluting sectors from QE programs. Depending on the need to run and renew asset purchase programs, the ECB should outline her targets of using the taxonomy for certain classes of assets. It may also be desirable to apply a “green twist” to its balance sheet: the ECB would phase out its private-issued bonds in exchange for long-term green bonds issued by the EIB (New Economics Foundation et al. 2020, p. 6). Another, potentially more promising tool from the list of unconventional monetary policy measures, is to employ targeted and longer-term refinancing operations (TLTROs). By tying central bank lending to the extension of loans to the real sector, they realize an economic stabilization function which could come in handy for realizing greening objectives. Boer and van 't Klooster (2021) suggest that the program could start of by targeting certain sectors, such as the construction sector, and continue to support existing legislation such as the Green Deal and the European Recovery Program.

Prong III: Creating and supporting new instruments for green fiscal policy

The relationship between fiscal and monetary policies is an issue that has received a huge amount of renewed attention in recent years. After several decades of monetary dominance, in which macroeconomic management has been based on the fiction that monetary policy can be conceived as a stabilization tool not much related to fiscal policy, multiple financial and other crises have highlighted the relationship between the monetary and the fiscal. A study by the Bank of International Settlement supports this assertion by showing how the pandemic has increased the use of unconventional monetary policies worldwide and that the line to the fiscal terrain gets increasingly blurred (Cantú et al. 2021). The academic discussion on this relationship is by no means completed. Some, like most proponents of Modern Monetary Theory, deny that a conceptual difference should be upheld at all, and that a separation of the two spheres is futile. Others hope that technological changes might lead to private moneys without any fiscal dimension. In between these extremes, the debate focuses on suitable arrangements to coordinate the two spheres (Reichlin and Schoenmaker 2020) and the question whether and how, in normal times and during crises, central banks should support fiscal policy more explicitly.

We do not weigh in on these debates. Rather, we suggest, that the current environment makes it highly unlikely that central banks will not need to support fiscal policy, and work together with fiscal policymakers in a coordinated manner. Even fiscally strong countries with a high degree of monetary sovereignty are currently facing the challenge to deal with multiple crises in a time in which the future path for interest rates is highly uncertain. Fiscally weaker countries might well need a continued and strong commitment of the ECB to act as Lender of Last Resort, one that is not impaired by the constant threat of judicial intervention. On top of this, and even more relevant for the purpose of this paper, the need for public investment to tackle climate change and other environmental problems is both unprecedentedly large and of a very short-term nature. Most of the needed investment will have to be upfront, and carried out in the next ten years.

Against this backdrop, the ECB needs a clear framework for its role in fiscal policy during the transformation. In this framework, the potential need to support the transition to climate neutrality and environmental sustainability through money creation should be explicitly recognized. Moreover, there should be a formal acknowledgement that the ECB can and should act as a Lender of Last Resort for national governments and the EU, which, through the Green Deal and Covid measures, is increasingly becoming a separate fiscal entity. Within such a framework, the ECB would be enabled to draw upon its capacity to make direct transfers to households and to monetize public debt spent on measures to tackle the ecological crisis. Such measures would need to be backed up by governance arrangements that ensure democratic control and legitimacy, close coordination between the different fiscal agents, and a commitment to preserve the ECB’s financial independence through risk sharing arrangements.

What would this imply more concretely? In many ways, our proposal resembles the one in Couppey-Soubeyran and Delandre (2021). However, we would not share the view that one should strive for a completely “new mode of money issuance”. Rather, we would prefer formalizing the ability of the ECB to support fiscal policy, specifically in the context of the green transformation. First, one would explicitly allow the ECB to take into account the fiscal implications of its monetary policy, for example in the context of specifying secondary objectives. Second, the ability to act as Lender of Last Resort would be sanctioned through a legal act. Finally, some form of explicit monetary financing (“helicopter money”) should be allowed under clearly specified circumstances. Among the different options available for such financing (see, for example, Belke 2018) the one most suitable for the purpose of the needed socio-economic transformation would be some form of central bank-financed public investment or tax cuts that compensate the burden of high environmental levies. All this would require setting up a separate and formalized body to coordinate respective policies and establishing parliamentary institutions to steer and control them. Moreover, a formal rule for risk sharing would need to be established, that specifies in detail who bears the costs of the measures. It is worth noting that these measures would, in contrast to many of our other proposals, require a change of the Treaties, establishing the EU as a fully legitimized fiscal entity.

5. Conclusion

Based on a critique of the recent strategy review, we set out a draft agenda for the ECB that would enable it to fulfill a transformative role in the current ecological and socio-economic emergency. Moreover, we provide a set of ideas on how legislative bodies on the European level can adequately respond to the exceptional challenges ahead, by “democratically embedding central banking” (Dezernat Zukunft 2020). Our aim was to first highlight how central banking, in its public-private shape, acts like a magnifying glass for socio-economic transformations that have taken and are taking place, and that in order to discuss their constitution and strategy, this perspective needs to be taken into account. Secondly, we wanted to bring together two strands of literature, one on the greening of central bank operations, the other on improving its governance, to point out concrete possibilities of central bank reform which are informed by history and the workings of money as a malleable institution.

We showed that the long-standing view that central banks originated from private financial networks and should have a large enough distance to the public sector needs to be challenged, both on the grounds of more recent historical accounts of central banking and on the ground of current necessities. Due to the exigencies of planetary boundaries and due to the evidently greater political role they have taken on in the past decades, the question of how to re-embed the central bank as a democratically legitimized state institution needs to be answered promptly. We provided an overview of the historical changes in their embeddedness, in Polanyian terms. The special danger a central bank runs in modern times is that pressures to provide excessive monetary expansion can originate from different groups, or classes. This means that concerns about an over-expansion of money have to be taken seriously. But rather than implying that these expansions originate from the institutions of (social) democracy, the historical record shows that embedding the central bank in robust democratic institutions helps rather than endangers good policy over the longer term. It might lead to a little more inflation, but stabilizes the political economy in a more fundamental sense. This implies that more democratic control over central banks would not only be justified, but expedient, especially under the conditions of an ecological emergency. In resemblance to the New Deal and the Bretton Woods regime, the EU Green Deal and recovery programs such as Next Generation EU might provide an opportunity to map out a more active role of the central bank as a state institution. EU lawmakers and other political actors seem to be increasingly aware of that, but may lack the instruments and the ideological neutrality to transcend the neo-liberal origins of the current set-up. A paradigm shift seems to be ongoing, but the language of neoliberalism has not yet been unlearned.

The result of such an ongoing paradigm shift in central banking, with sticky past ideologies and contours of new ones, is reflected in the ECB strategy review which was published in July 2021. While acknowledging the ubiquity of ecological factors, it sticks to a tight frame of inflation targeting, and forwent the opportunity to establish the secondary mandate as an anchor for political checks and balances. The displacement of an ecological agenda to the sphere of measurement and indicators leaves the direction of travel of the ECB with regard to combating further multi-layered crises unclear. We argue, as others have done, that the strategy will not only cause higher economic costs, as the ECB policies will continue to operate in a mismatch with its political foundations. It will almost certainly prevent a more effective reduction of ecological instability as much as social inequality, and thereby fail to solve the problems it is ought to address along-side legislative bodies. This, then, would be a bane rather than a boost for ECB credibility.

By focusing on monetary policy, contextualizing institutions and strategies, and taking into account current challenges, we have formulated a proposal that we believe to be both bold enough (to really make a difference in terms of the European and global efforts to tackle climate change) and democratically legitimized (by taking into account issues of accountability and governance). Most importantly, this requires recognizing the political nature of both climate change and central banking. As a consequence, we do neither deny the need for a reasonable amount of central bank independence, not do we fall into the trap to making it an absolute principle that stands in the way of reasonable policies. Instead, we believe our proposal is principles-based, as it emphasizes the need for (1.) democratic legitimacy, political control and accountability; (2.) policy, operational and financial independence; (3.) a bold, quick and coordinated response of EU institutions to the pressing problem of climate change.

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Appendix

Table 1: Proposals to Green ECB Instruments and Operations

Proposal	Main Instruments Discussed	Main Policy Approach	Quotes
Couppey-Soubeyran (2020)	MROs, collateral, TLTROs, or QE, public asset purchases, green helicopter money	• Objective of environmental sustainability should be included in the ECB's mandate • Gradually move from "light green" (MROs, collateral, TLTROs, or QE) to "brighter light green" (public asset purchases) to "bright green". • Adjust institutional set-up accordingly	"It is not up to the central bank to define the route to ecological transition. Neither is it up to States alone, since the coordination needed for the ecological transition will involve new institutional structures to enable joint decisions to be taken by all stakeholders: States, central banks, NGOs, scientists and civil society. Institutional changes will be necessary and the independence of central banks will undoubtedly be called into question." "In order to move towards the "bright green" option, it will probably be necessary to pass through the shades of "light green" first, less for substantive reasons than due to the institutional and political blockages that are not easy to dislodge. As such, this note presents "small steps" within a constant institutional framework"
Dafermos et al. (2021)	Collateral framework	• Adjust the collateral list alongside a climate-aligned haircut framework • Rewrite eligibility criteria and replace dirty bonds with greener bonds, including those issued by carbon-intensive companies • Do take into account incentives of carbon-intensive industries and funding needs of financial and real sector entities	"…even an aggressive calibration of haircuts to reflect the relative greenness/dirtiness of collateral will not reduce significantly the carbon intensity of the ECB's collateral list." "…for the ECB to seriously tackle the carbon bias hardwired into its collateral rules, it needs to adjust the collateral list alongside a climate-aligned haircut framework. The ECB has to rewrite eligibility criteria and replace dirty bonds with greener bonds, including those issued by carbon-intensive companies." "Critically, even our more climate-friendly scenario does not eliminate carbon-intensive companies from the list of eligible issuers…. This encourages companies to accelerate the transition to low-carbon activities. "These scenarios preserve banks' access to central bank money…"

ETUC position on the European Central Bank Strategy Review Adopted at the virtual Executive Committee Meeting of 9-10 December 2020	Green QE, collateral framework, TLTROs, capital requirements	• Suggest a bold plan to institutionally overhaul central banking, including in the areas of green asset purchases, collateral pool and refinancing operations	"The ECB to reorientate its asset purchase towards bonds issued by companies respecting just ecological transition purposes;" "The ECB to: • target assets and collaterals in line with the Paris Climate Agreement and issued by businesses satisfying strong social standards and working rights, to support the low carbon transition; • Make refinancing operations replacing the old bonds come to maturity with environmental bonds issued by business respectful of good social and work practices, and implement a green and social TLTRO; • Coordinate and support its market operations for sustainable investment with the European Investment Bank; Develop a new system of financial regulation based upon asset-based capital requirements for green and social investment; • And to lead by example on climate disclosures and transparency by assessing and regularly communicating to elected officials the alignment of its operations with the Paris Agreement and that of the European banking sector. We strongly support the role of the ESCB in providing the public with reliable and detailed data that help to better analyse economic activity. This does not only include of macroeconomic data, data on MFIs, but also data on households as the HFCS.
Jourdan and Kalinowski (2019)	Green QE	• Reinvest revenues from programs such as the CSPP	"This policy note suggests a way to integrate carbon emissions as a criterion in its own right, shaping central banks' investment decisions and the collateral framework used for refinancing purposes. As the ECB intends to maintain its balance sheet volume at its current level even after the Quantitative Easing officially ends, the most urgent decisions concern the reinvestment of revenues from programs such as the CSPP. We consider that the technical difficulties related to estimating carbon emissions for different financial assets are real but surmountable and should not justify inaction."
New Economics Foundation and Positive Money (2020)	All existing and new ones, including Green TLTROs (targeted longer-	• Take a holistic approach • Coordinate with other public players, in particular EIB • Lead by example	"The ECB must: 1. Align its asset purchasing programmes and collateral frameworks with the Paris Climate Agreement, to support the low carbon transition. 2. Align its refinancing operations to the banking sector with the Paris Agreement to encourage more sustainable bank lending and fill the green investment gap. 3. Support asset markets for sustainable investment and coordinate operations with the European Investment Bank (or other equivalent European institutions) to ramp up green investment and lock-in a low carbon future. 4. Implement prudential measures to increase the resilience of the European banking sector to

	term refinancing operations)		climate risks and reduce brown financial flows (e.g. financing of fossil fuels). 5. Lead by example on climate disclosures and transparency by assessing and regularly communicating to elected officials the alignment of its operations with the Paris Agreement and that of the European banking sector.”
Oustry et al. (2020)	Collateral framework	• Focus on climate-related financial risks, aim for aggregate alignment of collateral pool with climate targets • Take into account limits of asset-by-asset approach • Recognize that ECB is already exposed to climate risk, but preserve “market neutrality” and “residual risk equivalence”	“Generally speaking, applied to a central bank’s collateral policy, this approach would entail: i. Identifying and selecting existing “alignment” methodologies and metrics that capture the extent to which assets and issuers contribute to meeting the Paris Agreement’s target limit of 2°C (or 1.5°C); ii. Considering the collateral a counterparty pledge to participate in liquidity providing operations as a portfolio of assets; and iii. Measuring and monitoring its “temperature” over time by reference to a benchmark value.” “The numerical experiment using Eurosystem marketable criteria data suggests that, in aggregate, neither the Eurosystem eligible collateral universe nor the collateral pledged is “aligned” with the climate targets of the European Union”
Schnabel (2021)	Collateral Framework & QE	• Move from market neutrality to market efficiency, recognizing that a supposedly “neutral” market allocation may be suboptimal in the presence of externalities • Consider a wide spectrum of instruments (including asset purchases, broadening or constraining collateral framework) and supervisory stress tests • Take into account alternative implementation strategies, including tilting • Tendency to adopt a more data-driven gradualism	“There is a wide spectrum of other possible avenues that the ECB and other central banks could pursue to contribute to the global fight against climate change. […] Any climate change policy hinges on the availability of **reliable data.**” “… We could amend our **collateral framework**, for example by including innovative financial products as eligible collateral, as we have recently done with the acceptance of sustainability-linked bonds, or by linking the eligibility as collateral to more comprehensive disclosures…” “In greening its asset portfolio, the ECB could pursue several alternative strategies. Some have argued that we should implement outright exclusion policies – also known as negative screening policies – by stopping purchases of bonds issued by polluting sectors. … Such policies have the drawback that they would eliminate incentives for firms in carbon-intensive sectors to reduce their greenhouse gas emissions.” “However, the consequences of any potential policy initiatives need to be thoroughly evaluated against the limitations stipulated by the Treaties. Our measures must always remain without prejudice to our primary mandate of safeguarding price stability.”

Schoen-maker (2019)	Green QE/ collateral base	• Tilt asset and collateral base for monetary policy operations towards low-carbon assets • Recognize that portfolio is currently overweight in high carbon companies. • Take a modest approach at first	"Central banks have a long-term perspective (often making reference to sustainable economic growth) and are therefore mindful of the impact of climate change on stability. They have already started to examine the impact of climate change on the stability of the financial system from a risk management perspective. On the monetary side, there is no comparable direct impact on price stability, which has a medium-term horizon." "The Eurosystem could support the EU's climate policy by greening monetary policy operations. The basic idea would be to tilt the asset and collateral base for these operations towards low-carbon assets."
UNEP (2017)	Green QE + Regulation	• Use menu of greening options, including regulation and QE • Take a green asset management approach • Take into account need for institutional reform	"At a more general level, central banks could manage their assets according to social impact investment standards." "While making the case for a pro-active, 'sustainable development role of central banks, the paper also discusses the risks of overstretching central banks' mandates and vesting too much power in unaccountable institutions as well as the division of labor between central banks and other institutions."
van 't Klooster and van Tilburg (2020)	Green TLTROs (targeted longer-term refinancing operations)	• Provide cheap funding if banks lend in accordance with EU taxonomy of green activities • Use this as entry point to a more general greening • Take into account side effects of other (banking regulation, collateral framework, QE)	"Green TLTROs will contribute to achieving the ECB's primary mandate by addressing market failures that undermine the broader economic preconditions of monetary stability;" "Green TLTROs will support the ECB's efforts to reduce environmental and climate-related financial risk built up in banks' balance sheets and thereby contribute to financial stability;" "Green TLTROs will help to align monetary policy with the ECB's secondary mandate, which requires it to support the EU's environmental objectives where this is possible without prejudice to price stability."
Weidmann (2021)	Collateral framework & QE	Focus on climate-related financial risks and enhancing transparency Proceed slowly Refrain from making adjustments due to climate policy considerations	"That is why I have recommended that, in future, the Eurosystem should only purchase securities or accept them as collateral if their issuers meet certain climate-related reporting obligations" "In the end, these two measures could change the composition of our monetary policy portfolios – always under the premise that those bond holdings are needed for price stability. But the measures cannot be introduced immediately: issuers need time to provide the necessary information…"

			“If no adequate solution can be found here, the Eurosystem would have to adopt alternative measures to properly incorporate climate-related financial risks into its risk management, for example by limiting the maturities or the amount of corporate bonds of certain sectors and issuers in the Eurosystem’s monetary policy portfolio. Such risk-oriented tilting should not be confused with suggestions to steer the behavior of companies and financial institutions for political reasons.”

Table 2: Proposals for Institutional Change

Policy field	Core topics	Main Policy approach	Quotes
Claeys, G.; Dominguez-Jimenez, M. (2020): How Can the European Parliament Better Oversee the European Central Bank?	Mandate, Monetary Dialouge, accountability	• The competences of the definition of price stability and introducing of more transparency lie at the ECB • A ranking between the first and the second ECB objective would be sensible, and a role for the European Parliament in the latter • Toughen up the Monetary Dialogue for improved accountability to the parliament	.. the ECB has the competence to set its own quantitative target in order to comply with its mandate. .. the ECB, unlike other major central banks like the Fed, the Bank of England (BoE), and [..] the Bank of Japan (BoJ), publishes neither the detailed minutes of its monetary policy meetings nor the votes of Governing Council members. [..] the Treaties leave open the possibility of greater transparency, but the decision lies entirely with the ECB. “[..] Article 127 of the TFEU adds that the ECB should also contribute to the achievement of the EU objectives (as long as it does not endanger price stability). The ECB is thus entitled to pursue these objectives as secondary aims, but has little guidance on their respective priority. [..] We believe this ranking should be decided at the political level and not by the ECB itself. “[..] the EP should also use the occasion of the ECB strategy review to push the ECB to adopt a clearer and better definition of price stability, []” “In order to ensure the focus of the EP on the ECB’s mandate, it could become customary for the Chair of the ECON Committee to ask an agreed set of questions that remain constant at every hearing.” “Second, the number of MEPs that participate in the dialogue should be reduced, so that participants can have a real dialogue with the ECB President with the opportunity to ask follow-up questions.” “Third, the experts participating in the preparatory meeting and writing briefings to advise MEPs on pertinent topics regarding monetary policy and recent ECB performance could be better used.” “It is legally at the discretion of the ECB to decide to publish more detailed minutes. […] Without transparency on votes, incentives at the individual level become weaker, especially in a large decision-making body such as the ECB Governing Council.” “difficult negotiations […] This is not what we observe at the BoJ, the Fed or the BoE, where members of monetary committees have genuine discussions during their meetings, even if they know they are going to be quoted in the minutes.”

De Boer & van t'Klooster 2020. The ECB, the courts and the issue of democratic legitimacy after *Weiss*	Mandate, operational targets	• Institutional possibilities for greening central banking explored and room for maneuver is regarded as rather limited • Parliament could review how operational targets are met on a middle-term basis	"The legal mandate of the ECB is broad and contains only a few provisions that provide targeted guidance on how to implement monetary policy (Smits 1997; Gortsos 2020) Article 127 (2) TFEU leaves it to the ECB itself to "define and implement the monetary policy of the Union"" "To address how the ECB should deal with the economic policy effects of its operations, the Council can set out broad economic policy guidelines in accordance with the procedure of Article 121 (2) TFEU and articulate how it sees the role of the ECB in realizing its secondary mandate." "Operational targets and specifications of how they are achieved could be reviewed on a five-year schedule. Such a procedure exists in the United Kingdom where Article 12 of the Bank of England Act 1998 requires that the Treasury spells out the price stability objective and the government's economic policy at least once per year."
Demary, M. & Hüther, M. 9. Dezember 2020. ECB Strategy Review - The New Pillars: Communication and Climate Change	Inflation targeting regime, communication to public, the ECB's role in climate change	• Ricardian equivalence is relevant for potential change in inflation target(ing regime) • Rating agencies as effective agents to assess climate risks • ECB to take climate risks into account in collateral framework, but in a reactive manner, and in its role for financial stability and monetary policy transmission channel	"We advise the ECB to strengthen its communication especially with social groups unfamiliar with monetary policy. … The Fed switched to average inflation targeting. As a consequence, the strategy change to average inflation targeting could be interpreted as a justification for a longer period of expansionary monetary policy by the broader public." "When it comes to climate change, the ECB should be responsive, but not activist. … Climate risks are becoming increasingly relevant for the financial sector. The rating agencies are taking climate risks into account in their ratings and, increasingly, rating downgrades due to weather risks are taking place instead." "If climate risks cause the creditworthiness of companies to fall and thus credit risks to rise, the ECB must address this in its collateral framework. In this way, the ECB is quite capable of accompanying the general trend towards sustainable finance; it must even do so in its role as supervisor (if, for example, credit risks from green projects are underestimated). Moreover, a change in investment behavior can influence the transmission process, which would be relevant for the ECB. But it can do so from an observing and reacting position. However, it is not the task of a central bank to support or slow down a structural change. That is the task of development banks."

Dezernat Zukunft. 2020: 14 ideas for after Corona	Inflation targeting regime, inflation measurement, mandate sunset clause, mandate	• Broader changes to ECB institutions are desirable • Institutional changes could be backed by experiences from other countries international • Establish a Euro-Parliament to fill the secondary mandate	"Using an average inflation target may increase long run prosperity without endangering long term price stability, by preventing premature rates increases like in 2011." "Current version, the HICP does not consider the carbon footprint of products. In light of the desirability of higher prices for 'brown' consumer goods and services (e.g. petrol, air travel, or meat), 'greening' the HICP would be one way to take the bite out of the price stability mandate, while at the same time making it more consistent with the ECB's secondary objective." "A shift from consumer price inflation targeting towards wage bill flooring can also be contemplated, in line with similar proposals advanced in the US." "ECB's mandate could be given an automatic 10-year sunset clause. Written mandate requires consent from 68 distinct political bodies, among them all EMU member states, so that no gap will be closed if it benefits just one of these bodies." "No concerted effort has yet been made to establish clear priorities for the ECB under its secondary objective. Spelling out the content of the ECB's secondary objective. [..] Euro-Parliament could be created, elected or selected by sortition, either from among the demos at large or from among member state parliamentarians. This parliament, supported by specialist staff to provide expert input, would substitute for the Eurogroup, appoint the ECB governing council, and conduct the 5- and 10-year revisions of the ECB mandate and tool.
Dullien, S. & Tober, S. 2021. ECB Strategy: best practice and new frontiers. IMK Policy Brief No. 105	Inflation target regime, inflation measurement, mandate, monetary-fiscal link, monetary policy considerations	• Favor the use of core inflation as anchor for price stability • Suggest to include climate change considerations into the definition of price stability • Remain timid on institutional changes, but stress policies which	"Within the framework of the ECB's strategy of targeting a specific inflation rate – after the current review presumably 2% - in the medium term, core inflation serves as an indicator for underlying inflation. …the use of core inflation as an important indicator emerged only during Draghi's presidency. One-off price shocks do not require a monetary policy response (Tober/Zimmermann 2009). Unless they trigger second-round effects … Housing prices as a measure for macroprudential, not monetary policy "Proportionality considerations [like in the Weiss case] combined with an overly narrow interpretation of the ECB's mandate would unduly limit the scope of monetary policy. For example, it is

		take into account different potentially diverging logics and refer to fiscal policies as a core tool	possible to justify including climate change considerations in monetary policy decisions with reference to price level stability. However, arguing that monetary policy should be greener because of the negative impact of climate change on consumption (Lagarde 2020c) is needlessly roundabout and less intelligible than coherently spelling out the ECB's support of overall EU policies geared towards averting the existential threat of climate change." "Monetary and fiscal policy aims will remain intertwined even when economic growth is more vigorous and the inflation target is within reach. Given its responsibilities as laid down in the EU treaty, the ECB will have to exercise caution in raising rates and test the limits of inflation-free growth in an effort to reduce unemployment and underemployment, thereby reversing past hysteresis effects. Since EU policymakers have prioritized the reduction in greenhouse gas emissions, the ECB needs to ensure that its policies do not counteract but rather reinforce the EU's climate policies." …fiscal policy may be more effective than monetary policy in certain circumstances
ETUC position on the European Central Bank Strategy Review Adopted at the virtual Executive Committee Meeting of 9-10 December 2020	Politicized ECB, monetary-fiscal link, inflation measurement, helicopter money	• Bold plan to institutionally overhaul central banking, but without details how to match this with the Treaties • Clarity on the monetary-fiscal link needed, so that government bonds yields remain stable • Helicopter money to be considered	…given the uneven recovery expected in the different Member States - and their difference in public finance management and levels of debts and deficits - a more politicised ECB would be needed, without impairing in any way its independence. "Full employment and ecological transition objectives to be on a par with price stability in the ECB's mandate; • The ECB not to tighten monetary policy just because a decrease in unemployment is in view; • The ECB to support, through expansionary monetary policies, the increased needs for public investment, through some kind of yield control; • The ECB to revise its inflation methodology for better including housing prices developments; • The ECB to consider the possibility of helicopter money; • The ECB to increase financial regulation as a way to improve monetary transmission mechanisms;

			• The ECB to continue to show willingness to intervene including with unconventional monetary tools in a flexible manner to prevent debt crisis in Europe and allow economic and social upward convergence;
Lastra, R. M. (2020): Accountability Mechanisms of the Bank of England and of the European Central Bank	Monetary Dialouge, accountability, Committee for Euro Area Oversight (suggested)	• Monetary Dialogue, annual report and parliamentary written questions can be used to improve accountability, but there is no obligation of the central bank to do so • Founding of a ECON Euro Area Oversight Subcommittee (EAOS) could improve parliament's expertise of oversight	"On monetary policy, the European Parliament holds the ECB accountable through the following activities: • Monetary Dialogue • Annual Report "The primary law basis for the presentation of annual reports is Article 284(3) TFEU." • Parliamentary written questions "There is no legal basis in the Treaty for these written questions. The applicable norm is Rule 140 of the Rules of Procedure of the European Parliament." President Lagarde [..] emphasises the central role that the dialogue with the European Parliament plays in the design of the accountability of the ECB. Yves Mersch [..] notes that that "[..] the ECB – which is exclusively subject to the jurisdiction of the Court of Justice of the European Union and accountable to the European Parliament supports the Deutsche Bundesbank in its cooperation with the German Federal Government and the Bundestag." But there was and there is no obligation." "Chang and Hodson call for both the Monetary and Economic Dialogues to be delegated to a new ECON Euro Area Oversight Subcommittee (EAOS). I second the establishment of a euro area specialized subcommittee to scrutinise monetary policy. Size is an important consideration."
Whelan, K. (2020): Accountability at the Fed and the ECB.	ECB Directorate appointment procedure, meeting minuted, Monetary Dialogue	• Link between powers of central bank and accountability needed • Appointment procedure to account for the preferences of the parliament • From Monetary Dialogue to Hearing	.. while monetary policy is seen as a more sensible candidate for technocratic control, it is still the case that monetary policy decisions can have distributional effects. This has always been the case. .. the correct forms of accountability may depend on the extent of the powers central banks are given beyond monetary policy. "The starting point for accountability of a central bank should be the process by which central bankers get appointed. [..] While it is not easily possible to change the Treaty to make this requirement explicit, the European Council should take up the Parliament's request for a dialogue about the appointments process. … there are still a number of aspects of ECB communications that could be improved. Emergency Liquidity Assistance: One area where there have been serious problems with transparency and accountability has been emergency lending to banks in distress

			Voting: The motivation for not holding explicit votes and revealing the outcomes is likely to reduce controversy over difficult decisions and to prevent media coverage that emphasises which countries' representatives support or oppose particular policies "First, the committee should consider changing the "culture" of the Dialogue to be closer to US Congressional hearings Second, it may be preferable to facilitate more intense questioning by having a smaller number of MEPs ask questions in any given session .. Fourth, the dialogue could benefit from themed sub-sessions."

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