



Macro-financial policy at the crossroad: addressing climate change, biodiversity loss, and environmental degradation - introduction to the special issue

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Abstract

This special issue of the Eurasian Economic Review delves into the critical relationships between macro-financial policy frameworks and environmental sustainability, emphasizing the urgent challenges posed by climate change, biodiversity loss, and environmental degradation. These environmental crises pose significant threats to global economic and financial stability, underscoring the necessity of integrating environmental considerations into macro-financial policies to foster sustainability and resilience in economic policymaking. Through a collection of research papers, this issue explores innovative strategies for developing comprehensive policy frameworks that harmonize monetary, financial, and fiscal policies with environmental objectives. It emphasizes the need for advanced methods to assess and manage the financial risks of climate change and environmental degradation. Underscoring the need for a multidisciplinary approach, the research advocates for the collaboration of economists, environmental scientists, policymakers, and stakeholders to develop effective macro-financial policies. These policies aim to mitigate environmental risks, enhance environmental sustainability, and preserve biodiversity. The issue calls for further research to refine models that accurately predict the macro-financial impacts of environmental risks and assess the effectiveness of policy measures, paving the way for a sustainable future in the face of escalating environmental challenges.

Keywords Climate risks · Environmental risks · Financial stability · Fiscal policies · Monetary policies

1 Introduction

The escalating challenges posed by climate change, biodiversity loss, and environmental degradation threaten the foundation of global economic systems. As underscored by recent research (Myers & Patz, 2009; Tilman et al., 2017; D’Orazio, 2023a; Nyambuu & Semmler, 2023), there is an urgent need for macro-financial policy frameworks to evolve, integrating environmental considerations to ensure sustainability and resilience. The pervasive nature of climate and environmental risks implies that governments, financial institutions, and the broader global financial system are inevitably exposed and vulnerable to them (Carney, 2015). Given the significant threats these risks pose to financial stability and the conduct of monetary policies, a comprehensive and inclusive approach involving policymakers, central banks, and financial regulators is crucial for mitigating both physical and transition risks associated with climate change.

To navigate the potential financial disruptions triggered by these environmental challenges and to finance the transition towards a low-carbon economy, implementing climate-related financial policies (CRFPs) is critical (D’Orazio & Thole, 2022). Nonetheless, the current global engagement and adoption rates of CRFPs are insufficient, highlighting the need for enhanced international cooperation to facilitate a significant low-carbon transition and safeguard the financial system against climate-related risks (D’Orazio, 2023c). Similarly, the current landscape of climate policies and green fiscal initiatives exhibits a varied patchwork of progress and ambition globally, with some regions advancing aggressively towards sustainability goals while others lag in adopting and implementing comprehensive measures (Sovacool & Brown, 2009; Okereke & Coventry, 2016). This disparity underscores the need for a unified global strategy to increase the effectiveness and reach of climate-related financial and green fiscal policies, ensuring a cohesive approach to tackling environmental risks and fostering sustainability. Moreover, the latest Conference of Parties COP28 aimed to reinforce the commitment to the 1.5 °C target and adhere to the Intergovernmental Panel On Climate Change’s guidance for keeping global warming below 2 °C; however, there is still a pressing need for global cooperation in advancing these policies and green fiscal reforms.

Despite the growing research on climate-related macro-financial policymaking, there are still substantial gaps in our understanding (D’Orazio, 2023b). The Eurasian Economic Review (EAER) introduces this Special Issue as a forum for exploring how macro-financial policies can be crafted and implemented effectively to meet the challenges posed by climate change, tackle the associated risks for the economy and the financial sector and contribute to environmental sustainability and the preservation of biodiversity. This initiative represents an important move towards establishing economic policies that support long-term sustainability.

2 The dual threat of climate and environmental risks to macroeconomic and financial stability

2.1 Navigating the macro-financial implications of climate-induced risks

The link between climate risks and their effects on the economy and broader financial system is crucial for global economic stability and environmental protection (Carney, 2015; Semieniuk et al., 2021; Campiglio & van der Ploeg, 2022). This relationship emphasizes how climate change damages nature and creates significant challenges for the economic well-being and stability of countries worldwide. By closely analyzing this connection, focusing on the direct impacts of climate events (physical risks), the economic adjustments needed for a greener future (transition risks), and their wider economic effects, existing research underscores the need for a thorough understanding of how changes in the environment impact financial systems and overall economic stability.

Physical risks from climate-induced disasters such as hurricanes, floods, wildfires, and rising sea levels directly damage businesses and infrastructure, translating into profound financial losses. The exposure of sectors like insurance, real estate, and agriculture to these risks underlines the macro-financial implications, with increased insurance claims, depreciation of asset values, and elevated operational costs leading to a potential slowdown in economic growth (NGFS, 2019). Moreover, moving towards a sustainable, low-carbon economy involves several transition risks, especially from efforts to mitigate climate change through carbon pricing and promoting renewable energy. These initiatives require the financial system to adjust, leading to changes in asset values and shifts in investments away from fossil fuel-dependent sectors towards renewable energy. How well the financial sector adapts to these changes is vital for reducing credit risks, protecting investment returns, and ensuring the stability of financial markets (Carney, 2015).

Additionally, climate risks affect inflation, government spending, and monetary policy (Krogstrup & Oman, 2019). Adapting to and mitigating these risks can strain government budgets, leading to more spending or higher taxes and driving up the prices of commodities and insurance, contributing to inflation (Pigato, 2019). To maintain financial and monetary stability and support a shift towards a sustainable economy, central banks, and financial regulators are now factoring climate risks into their policy-making and regulatory practices (D'Orazio & Thole, 2022). However, the macro-financial impacts of climate risks require a coordinated and comprehensive policy approach. Financial regulators and policy-makers are crafting frameworks to assess and reduce these risks, employing tools such as financial institution stress testing, promoting enhanced climate-related financial disclosures, and fostering the development of green finance, addressing both the direct impacts of climate events and the indirect effects of transitioning to a low-carbon economy (D'Orazio, 2022). This adaptation involves recalibrating credit and market risk assessments, revising insurance models, and incorporating climate risks into regulatory frameworks (D'Orazio, 2023a). Amid these challenges, there lies an opportunity for the financial sector to lead in green

finance, leveraging the growing demand for sustainable investment options and contributing to the broader transition to a greener economy. These initiatives aim to bolster the system's resilience to climate risks and facilitate economic activities supporting sustainable growth pathways. Nevertheless, the disparity in the impact of climate risks across developed and developing nations underscores the global and interconnected nature of these challenges. While developed countries may possess greater resources for adaptation and mitigation, they, too, face significant economic disruptions from climate risks. Conversely, despite their minimal contribution to global emissions, developing nations encounter disproportionate challenges, highlighting the critical need for international collaboration and support (Okereke, 2010; Dorkenoo et al., 2022).

2.2 Biodiversity loss, environmental degradation, and macro-financial risks

The increasing threat of biodiversity loss and environmental degradation endangers natural ecosystems and the global financial system (Tilman et al., 2017). These challenges underscore a critical reality; i.e., the health of our planet is inextricably linked to the stability and prosperity of the global economy. This connection has been highlighted in seminal works such as the Dasgupta (2021) Report and through initiatives by the Network for Greening the Financial System (NGFS, 2022b), among others. Both stress the importance of nature as the foundation for all economic activities, and the resulting discussion spurred a call for the inclusion of environmental health within the wider macro-financial framework to ensure enduring sustainability and stability (NGFS, 2022a).

The decline in biodiversity, characterized by decreasing species populations and reduced genetic diversity, has profound implications for the resilience of ecosystems and, by extension, human well-being (Wiedmann et al., 2020). The loss of biodiversity directly impacts the ability of natural systems to provide essential services such as water purification, crop pollination, and climate regulation - services that, although not always recognized, are fundamental to the functioning of the global economy and the health of human populations (Ekins & Zenghelis, 2021). The degradation of these services poses immediate and severe risks to environmental sustainability and economic growth, highlighting the need for a profound transformation within the economy and financial markets (OECD, 2021; Acheampong & Opoku, 2023). In particular, there is a compelling need to fundamentally alter the landscape of financial decision-making to confront the pressing challenges of environmental decline and biodiversity loss. This change entails a key shift towards integrating environmental risks and opportunities into the core of financial planning and analysis. This is essential for directing investments toward sectors and industries prioritizing sustainability and engaging in meaningful conservation practices. Moreover, establishing and rigorously applying international standards and regulations to preserve biodiversity is key to facilitating this shift.

Embedding environmental considerations within financial regulatory frameworks represents thus a crucial step forward in transitioning toward an economic model that is both sustainable and resilient in the face of ecological adversities. In

particular, incorporating these considerations into existing regulations might enable a systemic transformation that tackles current environmental challenges and strengthens economic systems against future vulnerabilities (NGFS, 2021).

3 Overview of the contributions to this issue

The special issue “*Macro-financial Policy at the Crossroad: Addressing Climate Change, Biodiversity Loss, and Environmental Degradation*” in the Eurasian Economic Review features a collection of research papers that emphasize the critical importance of incorporating environmental sustainability into macro-financial policy frameworks. These papers make significant contributions, highlighting the complexity of the challenge and proposing innovative approaches to advance a more sustainable future.

In “*Ecological Transition in a Monetary Economy of Production: A Heterodox Approach*”, Solari et al. (2024) lay the groundwork for the special issue by addressing the central role of the monetary economy, specifically the banking system and central banks, in driving economic activities that contribute to global warming. It criticizes the traditional environmental and ecological economics approaches for overlooking the monetary essence of our economic system. By introducing heterodox economic concepts, it proposes four axes of intervention to green central bank actions, emphasizing the need for a profound structural change in our economic system to ensure sustainability and the preservation of life on Earth. This contribution is crucial for framing the discussion around the necessity of rethinking macro-financial policies in the context of environmental sustainability.

Amidst the backdrop of rising inflation and interest rates, the paper “*Greener and Cheaper: Green Monetary Policy in the Era of Inflation and High-Interest Rates*” criticizes existing monetary policy for failing to take environmental factors adequately into account. Aguila and Wullweber (2024) argue for a green monetary policy approach that could address both the environmental crisis and inflation by supporting sustainable investments and fostering decarbonization. This paper’s proposal for central banks to adopt green financing measures represents an important shift towards integrating environmental considerations into the core of monetary policy-making, aligning with the special issue’s theme of reevaluating macro-financial policies.

In the article “*Macroeconomic Effects of Green Recovery Programs*”, Schratzenstaller and Köppl (2024) delve into the impacts of green recovery initiatives following major economic downturns like the global financial crisis and the COVID-19 pandemic. Through a comprehensive review of existing literature, the authors conclude that investments in renewable energy and energy efficiency are particularly effective in driving positive macroeconomic outcomes. Furthermore, they draw from empirical evidence to suggest that green recovery measures tend to produce more substantial macroeconomic benefits than traditional, non-green recovery efforts. The study synthesizes key findings from previous research and outlines the necessary conditions for successfully leveraging green recovery measures to achieve macroeconomic goals.

In her work “Climate Change, ESG Criteria and Recent Regulation. Challenges and Opportunities,” Oliver Yébenes (2024) emphasizes the significance of environmental, social, and governance (ESG) criteria as crucial indicators in the existing financial sector. The paper argues for the importance of understanding the risks associated with these criteria and evaluating their impact on product or investment decisions. Specifically, the article examines how credit rating agencies incorporate ESG risks into their evaluations and discusses the differences in time frames between financial profitability and sustainability indicators. Given the current trend and high demand for non-financial indicators - which lack the depth, framework, and tradition of financial indicators - Oliver Yébenes (2024) suggests the need to converge these “two worlds”. This convergence would highlight the mutual dependence of sustainability and financial profitability, underscoring the necessity to integrate them for future success.

The article “The importance of the greenium: Experimental evidence on the role of certification” by Colasante et al. (2024) examines the effectiveness of tools in enhancing the credibility of Environmental, Social, and Governance (ESG) criteria, with a specific focus on certification’s role in green investment decisions. Through a laboratory experiment, the study evaluates how varying degrees of certificate reliability influence investment in green bonds and affect the green premium. The results reveal that dependable certifications motivate investors to accept lower returns to conserve natural resources. Additionally, it demonstrates that such certifications can mitigate the negative impact on investment levels caused by greenwashing practices.

Mutarindwa et al. (2024) highlight in their research “Certification against Greenwashing in Nascent Bond Markets. Lessons from African ESG Bonds” the certification’s significance in differentiating genuine sustainability efforts from greenwashing. By presenting econometric evidence on the benefits of certified ESG bonds over self-labeled green bonds in the African ESG bond market, they demonstrate the tangible benefits of ESG bonds for issuers and investors in terms of lower spreads and volatility. They also underscore the importance of regulatory oversight and green macro-financial policies in developing sustainable bond markets. Both contributions on the role of certification to avoid greenwashing are vital for understanding how financial instruments can be better regulated to support environmental goals.

By examining the impact of corporate governance on green bond yield spreads in emerging markets, Frecautan (2024) adds a crucial dimension to the discussion on sustainable finance in the paper “Is Corporate Governance Important for Green Bond’s Performance in the Emerging Capital Markets?”. This research provides new evidence of the positive impact of strong corporate governance on green finance, highlighting the role of CEO power and board size in influencing green bond yields. Furthermore, it identifies government effectiveness and the rule of law as significant drivers of green bond spreads, pointing to the broader institutional context as a key factor in the performance of green financial instruments. This contribution emphasizes the importance of corporate and regulatory frameworks in enhancing the efficacy of green bonds as tools for environmental sustainability.

The article by Hasan et al. (2024) “Exploring the determinants of green bond market development in Bangladesh” investigates the major factors that affect the growth of the green bond market in Bangladesh. This study gathers insights from fifteen local experts and uses the Analytic Hierarchy Process (AHP) methodology to identify and rank the most important determinants. The research reveals that infrastructure and financial elements are key drivers that significantly influence the country’s green bond market development. Furthermore, the study highlights the monetary policy of the Central Bank of Bangladesh, institutional infrastructure, and fiscal policies as critical factors contributing to the market’s expansion.

Overall, these papers contribute significantly to the discourse on reevaluating and reforming macro-financial policies to incorporate environmental sustainability, offering innovative solutions and highlighting the importance of regulatory oversight, strong corporate governance, and credible certification mechanisms in achieving a sustainable economic future in developing and developed countries.

4 Concluding remarks and suggested future research

The special issue “Macro-financial Policy at the Crossroad: Addressing Climate Change, Biodiversity Loss, and Environmental Degradation in the Eurasian Economic Review brings together an essential collection of research papers that explore the intersection of environmental sustainability and macro-financial policies. This body of work underscores the critical need for a paradigm shift in how economic policies are formulated, taking into account the pressing challenges of climate change, biodiversity loss, and environmental degradation. Key contributions include Solari et al. (2024)’s exploration of the monetary economy’s impact on environmental sustainability proposes a heterodox approach to greening central bank actions. Aguila and Wullweber (2024)’s discussion on green monetary policy highlights the potential for such policies to tackle both environmental crises and inflation. Schratzenstaller and Köppl (2024) analyze the macroeconomic effects of green recovery programs, emphasizing the greater benefits of such initiatives compared to traditional recovery measures. Oliver Yébenes (2024)’s paper on the significance of ESG criteria and recent regulations offers insights into the integration of sustainability and financial profitability. Colasante et al. (2024)’s and Mutarindwa et al. (2024)’s research into the role of certification against greenwashing provides evidence of how reliable certifications can encourage investment in green bonds and differentiate genuine sustainability efforts in the market. Frecautan (2024)’s study on corporate governance in green bond performance and Hasan et al. (2024)’s exploration of the determinants of green bond market development in Bangladesh shed light on the institutional and financial drivers that can support the growth of sustainable finance markets.

This special issue covers a broad area of research that requires further research and focus on several important topics. A key challenge emphasized by the research collected in the special issue is the development of comprehensive policy frameworks that merge monetary, financial, and fiscal policies with climate and environmental goals to address global challenges effectively. There is also an urgent call

for improved methods to understand and measure the financial risks of climate change and environmental degradation. This requires enhancing models to predict the macro-financial impacts of environmental risks more accurately and evaluate the effectiveness of different policy measures.

Several aspects of green prudential macro-financial regulation have been addressed in this issue and should be further addressed in future work. First, the mobilization and direction of investments towards sustainable and eco-friendly initiatives presents a crucial area of research. This includes a detailed examination of green bonds, sustainable finance, and the crucial role of private investment in environmental conservation efforts. Equally important is developing methodologies for the economic valuation of biodiversity, which is fundamental for informing policy decisions that reflect the true worth of ecosystems and biodiversity. Second, the socio-economic impacts of climate change and environmental degradation, especially on vulnerable populations, require thorough investigation. Research must focus on crafting policies that are both inclusive and equitable. Moreover, the need for global cooperation and policy coordination cannot be overstated, as environmental challenges are inherently international in scope, calling for collaborative efforts across borders. Third, another critical research avenue is exploring the potential of technology development and innovation in mitigating environmental issues. This encompasses developing and adopting green technologies and sustainable practices involving emerging technologies based on Artificial Intelligence.

Fourth, it is essential to examine current regulatory frameworks, their effectiveness in addressing environmental challenges, and recommendations for enhancements or new regulations. This includes conducting long-term impact studies essential for comprehending the future implications of present policies and environmental trends. Finally, understanding the behavioral economics behind environmental decision-making at the individual and institutional levels is crucial for promoting sustainable actions through policy and societal norms.

Fifth, the complex interplay between climate change, biodiversity loss, and their macro-financial impacts demands an urgent, holistic, and integrated approach to problem-solving. Building our understanding and taking proactive measures to address these risks are crucial steps that allow stakeholders, including policymakers, financial institutions, and the private sector, to play an effective role in ensuring economic stability while preserving the environment.

Finally, innovation, international cooperation, and a dedicated effort to merge economic policy with climate science are critical to this process. Cross-border collaboration and dialogue between various institutions and countries are essential for developing effective strategies to combat the dual crises of climate change and biodiversity loss. By combining these efforts, we can mitigate the negative effects of climate change and uncover new opportunities for sustainable economic growth. This collaborative approach promises a prosperous future for our planet and its inhabitants, ensuring that economic development proceeds harmoniously with preserving the natural world, as underscored by the insights and recommendations from leading environmental and financial institutions.

Overall, the papers in this issue highlight that addressing these urgent topics necessitates a multidisciplinary approach that bridges economic, environmental, and

social sciences. The advancement of the field depends on research and collaboration among economists, environmental scientists, policymakers, and various stakeholders, including policymakers and regulators. Together, these efforts are fundamental for paving the way toward effective solutions and fostering a sustainable future facing complex environmental challenges.

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Declarations

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