

de Mello, Luiz; Martinez-Vazquez, Jorge

Article

Climate change implications for the public finances and fiscal policy:
An agenda for future research and filling the gaps in scholarly work.
Editorial

Economics: The Open-Access, Open-Assessment Journal

Provided in Cooperation with:

De Gruyter

Suggested Citation: de Mello, Luiz; Martinez-Vazquez, Jorge (2022) : Climate change implications for the public finances and fiscal policy: An agenda for future research and filling the gaps in scholarly work. Editorial, Economics: The Open-Access, Open-Assessment Journal, ISSN 1864-6042, De Gruyter, Berlin, Vol. 16, Iss. 1, pp. 194-198, <https://doi.org/10.1515/econ-2022-0026>

This Version is available at:

<https://hdl.handle.net/10419/306066>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.



<https://creativecommons.org/licenses/by/4.0/>

Editorial

Luiz de Mello* and Jorge Martinez-Vazquez[#]

Climate Change Implications for the Public Finances and Fiscal Policy: An Agenda for Future Research and Filling the Gaps in Scholarly Work

<https://doi.org/10.1515/econ-2022-0026>

received February 11, 2022; accepted March 16, 2022

Abstract: Climate change will pose a major challenge for humanity in future decades. Central to the policy debate are its implications for the public finances and the conduct of fiscal policy more generally. This editorial outlines the budgetary effects, the regulatory and standard-setting challenges, internal governmental organisational changes, and the resource reallocation implications of policies to control climate change and their efficient implementation. The scope for further work – both theoretical and empirical – to bridge existing gaps in the related economics literature is then discussed. Finally, the editorial outlines research questions and first steps on an agenda for policy-relevant research.

Keywords: climate change, fiscal policy, regulation, resources, inter-governmental coordination, methodology, research agenda

1 The Challenges Posed by Climate Change

Climate change will pose a major challenge for humanity in the decades to come. There is, therefore, growing interest among academics and practitioners in the policy

instruments that can be deployed to deal with climate change – through mitigation and adaptation – and that are both effective and cost-efficient. Last year's COP26 conference in Glasgow¹ and the discussions among the G20² leaders at the Rome Summit are a testament to the need to respond to this challenge through collective action. International organisations, such as the Organisation for Economic Cooperation and Development, the International Monetary Fund, and the World Bank, are developing – and where applicable upgrading – their analytical tools to inform their policy advice and lending operations to deal with the climate change.

Central to the policy debate are the implications of climate change for the public finances and the conduct of fiscal policy more generally. Needless to say, these implications will vary according to initial conditions in each country, such as their economic structure and climate change policies, as well as the ability of the international community to meet agreed climate change targets through cooperation. At the same time, the world is emerging from the COVID-19 pandemic with stretched public finances. Public indebtedness has reached unprecedentedly high levels in relation to GDP, at least in the post-war period among the advanced economies. High indebtedness makes it all the more important to manage upcoming climate change-related pressures on government budgets in a cost-effective manner, since governments will also be called upon to deal with concomitant challenges related to population aging, which will also put additional claims on the public finances.

[#] The points of view expressed in this Editorial are the authors' own and do not necessarily reflect those of the Organisations they are affiliated with, their Member or Partner countries.

* **Corresponding author: Luiz de Mello**, Economics Department, OECD, 2, Rue André Pascal, Paris 75775 Cedex 16, Paris, France, e-mail: Luiz.DEMELLO@OECD.org

Jorge Martinez-Vazquez: International Center for Public Policy, Georgia State University, Atlanta, USA, e-mail: jorgemartinez@gsu.edu

¹ COP stands for Conference of the Parties, or the 197 countries that agreed to a new environmental pact within the United Nations Framework of 1992.

² The G20 stands for the Group of Twenty an intergovernmental forum comprising 19 countries and the European Union (EU).

2 Mitigation and Adaptation Will Put Claims on Government Budgets

Efforts in this area will affect the public finances in several ways. In particular, introduction and deepening of carbon pricing through market instruments, such as explicit carbon prices and/or emissions trading schemes, will generate revenue for the budget. This revenue will nevertheless dwindle over time to the extent that policies are effective in decarbonising economies and societies. The progressive elimination of subsidies and tax exemptions for carbon-intensive goods and activities will create savings.

At the same time, support for climate change-related innovation will place a claim on government budgets through spending on research and development subsidies and/or tax breaks. Careful cost–benefit analysis of government support will therefore be required to assess its merit against the multiple needs for government provision in other areas. This is important because the pace and depth of decarbonisation will depend to a large extent on the ability to incentivize and steer technological change toward greener technologies.

Moreover, economies and societies will need to invest massively to adapt to and mitigate the adverse effects of climate change. For example, in 2018, the United Nations' IPCC (Intergovernmental Panel on Climate Change) estimated that between USD 1.6–3.8 trillion are required yearly until 2050 to reach the Paris climate goals in terms of energy investments. UNEP (United Nations Environment Programme) puts at USD 4.1 trillion the investment gap in financing nature-based solutions to reach the climate goals by 2050. Massive investment in flood control systems, for example, will be needed to adapt to climate change. These estimates are beyond the means of governments, making the private sector a crucial partner in financing needed investments.

Dealing with transition costs will also call for other government interventions. The decarbonisation drive will affect firms and workers differently. It will be particularly important to cushion the effects of the transition on vulnerable people, notably those working in low-productivity, polluting firms, and sectors of activity, as well as mining and extraction, who will be at a greatest risk of job losses during the transition. This will require investment in education and training, as well as social protection measures, through, for example, long-term unemployment insurance. Transition costs will also be asymmetrical within countries depending on the regional distribution of

economic activity and dependence on carbon-related natural resource endowments.

Adaptation efforts are often considered among the costliest to the public finances. Two aspects deserve special attention: one is related to the need to prepare for climate change, which will depend on the specific characteristics of each country, most notably geographical location and topography, while the other is related to the management of natural disasters related to climate change, when and where those risks materialize.

In particular, most adaptation measures will require investment in areas ranging from flood and drainage control systems and fire abatement services, to rebuilding physical infrastructure, including urban amenities, roads, and bridges. Typically, these expenditure responsibilities are assigned to the subnational governments, especially in fiscally decentralised systems, which will put considerable strain on intergovernmental fiscal relations. Coping with these challenges will require a reconsideration of the conventional fiscal decentralisation architectures, including the design of dedicated grant and transfer systems; the assignment of expenditure responsibilities across the different layers of administration; and the extent of subnational revenue and borrowing autonomy, including their ability to collect green taxes and borrow to invest in infrastructure adaptation.

Disaster risk management capabilities will also need to be strengthened at all levels of administration. There is great potential for the development of private insurance markets to compensate for damages incurred by private households and local governments as a result of the materialisation of climate change hazards. This will require appropriate government intervention in terms of regulation and possibly subsidisation, walking a thin line to avoid moral hazard, such as encouraging building in flood-prone areas.

3 Regulation and Standard Setting Will Also Be Needed

Government action does not stop in those areas that can be easily mapped onto revenue and spending functions. For example, decarbonisation requires appropriate regulation in areas as far apart as emissions standards, building codes, and land use requirements that do not pose direct claims on the budget but shape economic activity and behaviour, as well as the sharing of transition costs among government, firms, and households. These

regulatory and standard-setting functions are spread across the different levels of government and economic regulators, calling for effective governance throughout the policy cycle, from design to implementation and evaluation.

Regulatory action will also be needed in the financial markets to support private sector investment. To make green investments viable, there is a need to set a common international taxonomy of sustainability, and ESG (Environmental, Social, and Corporate-Governance) more generally, as well as introducing internationally accepted standards for consistent and comparable reporting frameworks for reliable disclosure of green investments, including green bonds and sustainable assets. It is also important to adopt an unambiguous definition of green bonds to promote the development of well-functioning green bond markets and avoid having different standards for each country that could lead to “greenwashing.”

4 Ultimately, Effective Decarbonisation Implies Resource Reallocation

The reallocation of resources in the economy that is underpinned by – and will be required for – effective decarbonisation will change economies and societies in a comprehensive manner. This creates the need for dealing swiftly with stranded assets, such as those related to the insolvency of low-productivity, polluting firms, and also carbon-intensive resource endowments, so that capital can be reallocated to more productive uses in a greener economy. Regulatory action will be required through effective insolvency regimes that can expedite the reallocation of capital and avoid the proliferation of “brown zombie” firms. This includes government assets themselves, especially where the state has a strong presence in the economy through state-owned and/or controlled firms.

In resource-based economies, especially those relying on the exploitation of fossil fuels, governments will need to recognise the importance of capital reallocation away from those industries, while also foregoing the revenue and income streams associated with those activities that will no longer be exploitable. Policy action in this area will be complex, calling not only for appropriate regulation of product markets and environmental standard

setting but also support for innovation, social protection reform, and enterprise restructuring.

Governments can support change in habits and behaviour that can underpin the transition to low-carbon economies. Raising awareness about the decarbonisation needs of economies and societies is an important step in this direction. Encouraging energy efficiency in homes is a case in point, given the importance of the residential sector as an emitter of greenhouse gases. The development of energy performance certification can help in this area by drawing the attention of homeowners and renters alike to the scope for improvement in this area. Households will realize the pay-off of improvements in the energy efficiency of their homes to the extent that investments deliver lower utility bills and mortgage borrowing costs. The transport sector is another large energy user, making it another area where changes in habits and behaviour can support decarbonisation, reducing to some extent the related investment needs.

5 Governments Will Also Need to Adapt Their Internal Structures

Climate change will affect the public finances not only in those aspects mentioned earlier that are related to how the government performs its key functions of allocation, distribution, and stabilisation but also in how governments are structured internally. In particular, the scale of economic and social transformations associated with effective decarbonisation will call on governments as ultimate managers of the transition. Political leadership will need to come together with technical expertise and effective communication about policy plans and strategies.

Governments will need to develop and/or acquire the appropriate skills to deal with the emerging challenges of the carbon transition. This requires investment in human capital, planning, and budgeting capabilities at all levels of administration.

Also, fiscal relations across the different layers of government will be affected. An important question is whether decentralised governance facilitates, or poses obstacles to, the effectiveness of whole-of-government climate change policies. Most national governments fail to engage the subnational governments in their climate change strategies, yet the subnational governments are at the forefront of climate adaptation policies, as noted earlier. Another important question is how, or if at all, the

proximity of citizens to government through decentralised governance can shape climate change policies.

6 What Can Scholarly Work Do to Inform Policy Choices?

There are several avenues for further work – both theoretical and empirical – providing an agenda for future scholarly work and helping to bridge existing gaps in the literature. For example, the direct effects of mitigation and adaptation policies on the public finances need to be estimated empirically so that (partial or general equilibrium) economic and forecasting models can be calibrated. This includes, for example, estimating the elasticities of the main taxes to climate change-related shifts in output and income, as well as the key determinants of government spending.

The design of methodologies to deal with climate change-related risks to fiscal policy and the sustainability of the public finances are additional areas for scholarly work. So is further analysis on how reforms and advances in public financial management (PFM) can help prioritize effective government action to fight climate change. Further work on green public procurement to combat climate change would also be welcome.

The multiplicity of instruments available to policy-makers as well as the different objectives of climate change-related policies call for careful empirical analysis of trade-offs and complementarities. Analysis is therefore needed on the relative effectiveness and cost-efficiency of policy instruments in terms of emissions reduction potential and associated abatement costs so that decisions can be made on the basis of the trade-offs and complementarities that may exist among these different policy tools. Policy choices also need to take account of social preferences, which calls for additional empirical analysis of attitudes regarding climate change policies that could provide useful insights into the political economy aspects of decarbonisation.

Given the transition costs associated with decarbonisation, conceptual work will be required on the design of social protection programmes that can be targeted to the workers and social groups affected most adversely by the transition. Special attention will need to be placed on links to active labour market policies that can facilitate labour transition and avoid potentially adverse effects on labour supply in the course of the transition. Energy poverty is an area of rising concern in many countries that would

benefit from scholarly work on trends, drivers, and policy instruments. The distributional considerations of climate change also deserve special attention in the policy analysis.

The governance aspects of intergovernmental relations and climate change need further analysis in areas related not least to mitigation and adaptation, as well as natural disaster risk management. The literature on comparative federalism and multilevel governance has much to gain from further analysis of the mechanisms that can be designed to foster vertical and horizontal cooperation among jurisdictions, as well as from more granular documentation of policy experiences through case studies. A related area of work concerns the potential role of inter-city cooperation across national boundaries to stimulate climate change policies and lead national government collaboration and coordination at the international level. Cross-country empirical work would greatly benefit from data collection in this area.

Given the vast worldwide externalities involved in climate change, more work is welcome on the multilevel governance aspects of international cooperation, including on the institutional arrangements that can foster collaboration and coordination among national governments. Of special relevance at the international level are issues related to the 2030 Agenda and attainment of the Sustainable Development Goals, the introduction of cross-border carbon pricing and/or the design and administration of border adjustment mechanisms, and financial regulation of green investment.

Because the investment needs related to adaptation and mitigation are large, scholarly work would do well to target empirical analysis on the opportunities and perils of green bond and equity financing. Of particular interest is the regulatory aspects that can foster the development and deepening of these markets, as well as the links with other investment instruments, and implications for financial market sustainability and resilience.

7 Getting Started

We cannot do justice in a few paragraphs to the outburst of scholarly work in recent years on different aspects of the interface between climate change and the public finances. A few recent references can nevertheless be made to the literature as useful background discussions of many of the issues discussed earlier and which also point to different avenues for further research.

One of the biggest challenges in fighting climate change is that this is a worldwide problem that requires the cooperation and coordination of just every country on the planet. However, despite the very significant international multilateral efforts undertaken in the past decades, from the Paris Agreement to the more recent Glasgow Conference, the necessary cooperation and agreements have remained elusive. Thus, one question is what individual countries can do by themselves in the absence of those international agreements. In a recent paper, Kortum and Weisbach (2021) study the possibility of optimal unilateral policy to fight climate change, where one country or one region of the world imposes a climate policy and the rest of the world does nothing. Their analysis shows that combinations of supply-side and demand-side taxes can ensure optimality.

What is the set of fiscal instruments at the disposal of governments? And what are the actual country practices in the international field? In a comprehensive review paper of those instruments and practices, Heine, Norregaard, and Parry (2012) conclude that there is still much scope left for climate change reforms, including imposing equivalent tax burdens across emissions sources causing the same damage, better aligning tax instruments with the external damage caused by the different activities, and simplifying and unifying redundant tax instruments. However, more research is needed on the measurement of pollution from emissions in different countries in support of appropriate evidence-based policies.

Often, fighting climate change is not so much about technical solutions, as for example using carbon taxes to reduce greenhouse gas emission. The technical solutions can be readily available, but still policymakers may be reluctant to introduce those types of measures because of concerns about the potential regressive effect on income distribution, more adversely affecting low-income households. Distributional issues related to climate change policies are still underresearched. Jacobs, Quack, and Mechte (2021) demonstrate how policymakers can address the distributional effects of carbon-based fuel taxation without causing an overall disproportionate tax burden on low-income households.

Although many policy instruments designed to fight climate change have focused on how the behaviour of private agents can be changed in the various economic activities via subsidies and taxes, there are other policy options regarding the behaviour of governments themselves. For example, Ramsden and Grafl (2021) focus on the inter-

linkages between public financial management and climate change, especially focusing on greening public procurement. Certainly, there are many other areas of PFM that deserve attention for how public sector activities and the public finances may affect the fight against climate change.

There are many unexplored or unanswered questions on the role of subnational governments in fiscally decentralized settings in fighting climate change through mitigation and adaptation policies. Many of these issues related to fiscal decentralisation and climate change are explored by Martinez-Vazquez (2021). Another important related question is how, or if at all, the proximity of citizens to government through decentralised governance can shape climate change policies (de Mello & Jalles, 2022a) and improve resilience to natural disasters (de Mello & Jalles, 2022b).

Conflict of interest: Authors state no conflict of interest.

References

- de Mello, L., & Jalles, J. T. (2022a). Decentralisation and the environment: Survey-based and cross-country evidence. *ISEG working paper*. Lisbon: ISEG.
- de Mello, L., & Jalles, J. T. (2022b). Natural disasters, pandemics and intergovernmental relations: More or less decentralisation?." *Paper prepared for the conference on "Decentralised Governance and Reaction to Shocks," Santiago de Compostela, Spain, 12–13 May 2022* (forthcoming).
- Heine, D., Norregaard, J., & Parry, I. W. H. (2012). "Environmental tax reform: Principles from theory and practice to date," *IMF WP/12/180*. Washington, D.C.: International Monetary Fund.
- Jacobs, L., Quack, L., & Mechte, M. (2021). Distributional effects of carbon pricing by transport fuel taxation. *University of Lüneburg working paper series in economics, No. 405*. Lüneburg: University of Lüneburg. www.leuphana.de/institute/ivwl/working-papers.html. ISSN 1860-5508.
- Kortum, S., & Weisbach, D. A. (2021). Optimal unilateral carbon policy. *COWLES foundation discussion paper, No. 2311*. Yale University.
- Martinez-Vazquez, J. (2021). Adapting fiscal decentralization design to combat climate change. *Climate governance working papers*. Washington, DC: International Bank for Reconstruction and Development/The World Bank. (Also International Center for Public Policy Working Paper 21-05, Georgia State University.)
- Ramsden, A., & Grafl, A. I. (2021). The interplay of climate change and public financial management: Greening public procurement. *PEFA research paper series*, Atlanta, GA.