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## Discussion of: “Central bank challenges posed by uncertain climate change and natural disasters” by Lars Peter Hansen

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[Hansen \(2022\)](#) in this volume is a very thoughtful, balanced, and nuanced paper on whether and, if so, how, central banks should direct their policy efforts towards addressing climate change. It is mostly a skeptical view, but not a blanket rejection of such efforts, with subtle arguments arguing, for example, for collaboration between central banks, private banks, and academics in assessing exposure to uncertainty about climate change.

A main message throughout the paper is that fiscal policy is the proper domain of government action to redress the global negative externality caused by emissions of greenhouse gases resulting in global warming. In particular, optimal fiscal policy would impose a Pigouvian tax on such emissions, especially emissions of carbon dioxide, the most long-lasting of the greenhouse gases. Starting with Nordhaus's pioneering and Nobel-Prize-winning work, there exist good quantitative estimates of this Pigouvian tax, based on estimates of the so-called social cost of carbon (see, for example, [Nordhaus, 2007](#)). Nordhaus worked largely with deterministic models (with certainty-equivalent adjustments for possible uncertainties about economic damages caused by global warming), but there now exist estimates of the social cost of carbon that account explicitly not only for risk (e.g., probabilistic “tipping points” in the evolution of the global climate as in [Cai and Lontzek \(2019\)](#)) but also for uncertainty about key economic and geophysical parameters (see, for example, [Barnett et al., 2020](#)).

Nonetheless, central bankers around the world have turned their attention to climate change: for example, the Network of Central Banks and Supervisors for Greening the Financial System (NGFS) now includes nearly one hundred members, including the U.S. Federal Reserve. As stated on the website of the NGFS, its purpose is “to share best practices and contribute to the development of environment and climate risk management in the financial sector and to mobilize mainstream finance to support the transition toward a sustainable economy.” In a 2020 news conference (see this <https://www.reuters.com/article/us-usa-fed-climatechange-idUKKBN1ZT031> report in Reuters), Jerome Powell, the Chair of the U.S. Federal Reserve, underscored these concerns, saying that “[t]he public has every right to expect and will expect that we will ensure that the financial system is resilient and robust against the risks of climate change. [T]he Fed [has] a role in ensuring financial stability even as the climate changes.” In a *Chicago Fed Letter*, [Alarez et al. \(2020\)](#) argue along these same lines that a new framework of climate risk in financial markets is needed “because changes in climate patterns affect the interactions among the financial risks,” so that “climate change has the potential to pose a serious threat to the stability of the global financial system.”

While not disputing this possibility, [Hansen \(2022\)](#) argues for caution because models of systemic risk in financial markets need substantial further development, despite much recent progress, before they can be used seriously as quantitative guides to managing possible systemic risk stemming from climate change. Short of such models, a more compelling role for

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central banks is to improve modelling of climate-related risks at long horizons to “help smooth price adjustments as opinions change, rather than concentrating them at a single climate ‘Minsky’ moment,” as Mark Carney, then Governor of the Bank of England, stated in a speech entitled “Breaking the Tragedy of the Horizon – Climate Change and Financial Stability” on September 29, 2015 at Lloyd’s of London. Carney goes on to call for the creation of a “climate disclosure task force,” an industry-led group that would provide a “voluntary standard” for firms to assess and report risks posed by climate change. Such disclosures would then allow private investors to make properly-informed decisions about how to allocate their assets across different types of firms in light of climate change. Central banks could also play a key role in helping to create such a standard. This task is a less ambitious but more doable one than constructing a full-blown model of possible systemic risk stemming from climate change, and it is one that [Hansen \(2022\)](#) also endorses (at least in its general thrust).

To provide practical assistance in the modelling of climate risks at long horizons, [Hansen \(2022\)](#) also argues, quite compellingly, that conventional modelling of scenarios (such as those used in “stress tests” of the financial system) should be augmented with at least some attempt to attach probabilities to the various scenarios. In their absence, it is difficult to use the well-developed quantitative tools of decision-making under uncertainty—including “robust” versions of them that account for uncertainty about how the economy and climate evolve and interact (see, again, [Barnett et al., 2020](#))—to inform action.

Another possible way for central banks to combat climate change is to engage in unconventional monetary policy, such as purchases of “green” bonds, in order to shift financial flows towards investment in clean energy. But [Hansen \(2022\)](#) again urges caution in expanding the mandate of central banks in this way, citing work by [Papoutsi et al. \(2021\)](#) who show that there is no role for such unconventional policy in the presence of an appropriate tax on emissions of greenhouse gases. Even if there are, in addition, positive externalities (“spillovers”) stemming from private investment in green technology—leading then to underinvestment in the development of such technology—these too can be corrected by providing subsidies to innovative activity alongside a tax on emissions, thereby giving proper incentives for innovation while also correcting the climate externality (see, for example, [Acemoglu et al., 2016](#)).

In sum, although [Hansen \(2022\)](#) does see a role for central banks in helping to quantify the “longer term impacts of exposure to climate change uncertainty,” he argues convincingly that monetary policy is a poor substitute for properly-designed fiscal policy to combat climate change. Further research on the climate and how it interacts with the economy across both time and space will no doubt refine the design of such fiscal policy. But central banks have at best weak policy levers for addressing climate change, and risk damaging their hard-won and all-important reputations at managing monetary policy should they venture too far into trying to play a role best served by fiscal policy.

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