Driving sustainability transitions through financial tipping points
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Reply to reviewer – R2

Here we provide our point-to-point replies to the comments raised by reviewer 2.
To better highlight the replies, we write them in italic dark blue. As we are not supposed to send over the revised manuscript at this stage, our replies are written using the future tense. Before moving to the replies, we take the occasion to thank the anonymous reviewer for her/his constructive comments.

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RC2: 'Comment on egusphere-2023-1750', Anonymous Referee #2, 25 Dec 2023

"Financial tipping points" is an interesting subject in the interdisciplinary research on critical thresholds in the climate system, and also in the fast-evolving field of climate finance. The main focus of this paper is on "positive" tipping points, in particular on how "the financial system can assume a central role in re-orienting economies onto a net-zero course".

The structure is reasonably clear. After the introduction, there is a listing of concepts on the "potential for tipping points" in finance, followed by a run-through of "empirical and modelling evidence", and some conclusions. The narratives of the 5-6 potential financial tipping points are summarized well. Readers with a certain understanding of the climate finance "jargon" can certainly learn from that.

We would like to thank the reviewer for this generic assessment of the paper. Given the nature of the journal, which is not a finance-oriented outlet, we will try to revise the text – and especially the introduction and the conclusions – to avoid giving for granted terminology and make the key messages more easily accessible to a generic/climate science oriented audience.

It is not easy to assess the scientific contribution of this summary paper. For a literature survey, it would not be critical and wide-ranging enough. It feels more like an introduction to a research agenda, with various references to scholarly work undertaken elsewhere. There is not much time spent on the definition and critical examination of concepts and insights. There are hardly any figures, stats, tables or graphs – quite striking for a finance paper. A few examples are given but it is often difficult to distinguish "positive" and "normative" statements, exemplified by the fact that the word "can", e.g., is used 44 times.

We fully understand the concerns of the reviewer. This paper is part of a special issue devoted to the analysis of tipping points across a large number of subjects and disciplines. The aim of the special issue is to consolidate the knowledge on both "good"

and "bad" tipping points that are relevant for climate change, taken at large. For what concerns mitigation, the focus is mostly on updating about positive tipping elements leading to transformative change. The full description is available here:
https://esd.copernicus.org/articles/special_issue1247.html

As correctly understood by the reviewer, this paper should be seen as an attempt to provide an introduction to a novel transdisciplinary research agenda studying tipping dynamics leading to "positive" transformations of the financial sector. In doing so we provide a critical overview of the mechanisms that may drive to such changes and survey the (limited) available modelling and empirical evidence in the field. Further, we believe our paper is definitely more "positive" than "normative": we attempt at describing mechanisms and dynamics of our system, without specifying how the system itself should be organized or modified. Sometimes we speculate on the possible effects of some policies or changes in the existing conditions, trying to back such effects with the available evidence.

We hope clarifying these background and the paper's goal can help the reviewer in her/his assessment. Further, we will modify the introduction (pag. 1) to better position our paper and specify its main goals/objectives; the same will be done for conclusions.

For my personal taste, a generic approach using the "financial system" is probably too broad a brush. Sustainable finance and impact investing have made considerable progress in recent years, and so has regulation in the field. New facts are being established, although unevenly across sectors, geographies, financial and political institutions. Academic research needs to be careful not to fall too far behind the "factual" curve.

We hope that the reply to the previous point also helps here. Though we recognize an enormous progress in the fields of sustainable finance, climate finance and impact investing across a number of specific issues (from asset stranding to ESG investments, all the way to carbon risk pricing and more), the focus of the present paper is introducing to (positive) tipping points within the financial sector. We chose to adopt a "generic" system perspective on purpose, to present and discuss a series of features and mechanisms that are good candidates to generate tipping and self-reinforcing dynamics across multiple markets and sectors of the financial systems. We believe the example of expectation alignment is a good one and may help here. As long as we agree that much of the transition will be induced by policies, aligning expectations by reducing policy uncertainty in the short and long run, has potential to catalyze financial flows, spurring physical investments and R&D, which will increase the expected return of green technologies, thereby generating a virtuous cycle. This can be relevant across different industries (e.g. renewables, batteries, electric vehicles) and types of investors (e.g. public investment banks, private investment banks, pension funds) operating through different markets. Such feedback chain builds on consolidated empirical evidence coming from other sectors and policies (e.g. Gulen and Ion, 2016; Wen et al. 2022), but has potential to apply to climate policy and many related investment channels.

We will try to reinforce the description of the mechanisms we envision with robust empirical evidence, but we would strongly prefer to keep our "system-oriented" focus. In addition, we believe the literature is not consolidated enough to clearly identify and discuss sector and geography specific tipping dynamics.

[Gulen, H., & Ion, M. (2016). Policy uncertainty and corporate investment. The Review of financial studies, 29(3), 523-564.; Wen, H., Lee, C. C., & Zhou, F. (2022). How does fiscal policy uncertainty affect corporate innovation investment? Evidence from China's new energy industry. Energy Economics, 105, 105767.]

In terms of minor comments:

- Some more definitions could be given for the non-expert readership.

We definitely agree with this comment. We will include more definitions (e.g. tipping point, sustainable/climate finance, asset stranding, prudential policy, transformative change etc).

- Careful with generic statements and consistency. For example, is the financial system "neutral" (page 9) or "conservative" (page 3)?

We apology for the confusion. In the conclusions, at pag. 9, we meant that the financial system – intended as a pool of financial actors interacting through contracts and markets – is not guided by any specific (nor shared) climate objective when conducting its operative activity, especially in absence of policies. *In this sense, it is "neutral" to climate-related goals. We will adjust the sentence accordingly and remove the term "neutral".*

- There is still a diligent job to be done at reconciling references in the text and the reading list.

Thanks for signaling this issue. We will amend the references and citations and remove the inconsistencies.

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