

# ***Interactive comment on “Economic impacts of a glacial period: a thought experiment. Assessing the disconnect between econometrics and climate sciences” by Marie-Noëlle Woillez et al.***

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In order to respond to some of the points raised here above, please find below the modifications to the manuscript we propose:

- In addition to the changes in the introduction proposed in response to referee#2 to explain why we chose statistical functions and did not consider enumerative ones, we will add the following paragraph in the introduction:

“Different functional forms of statistical damage functions are available in the literature. The choice of Burke et al. (2015) and Newell et al. (2018) was based on the following

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considerations:

i) While there might be controversies related to the specification of the model, interpretation and statistical significance of results or even validity of the approach, the approach is well published in leading peer-reviewed journals. The function of Burke et al. (2015) has been cited in the literature several hundred times and has been used to compute the social cost of carbon (e.g. Ricke et al., 2018). The authors also published several other papers based on similar methodologies (e.g. Hsiang (2016), Burke et al. (2018), Diffenbaugh & Burke (2019)).

ii) The function of Newell et al. (2018) has not been published in a peer-reviewed journal, but we considered it anyway because: 1) It belongs to the family of damage functions assuming an impact of climate on GDP level rather than growth, leading to very small damages; 2) It is based on the same data and methodology than Burke et al. (2015), hence simplifying the exercise.

We are well aware of the statistical limitations of the approach, see Keen (2020, in prep.) for a recent summary of these critiques. We nonetheless decided to perform an “ad-absurdum” demonstration. We indeed believe that a more explicit demonstration of the irrelevance of the approach is a useful complementary contribution to a more mathematical/statistical critique. As documented by DeCanio (2003) for older functional forms, the literature on damage functions has had tremendous political implication, and even found its way in IPCC reports. As Keen (2020, in prep), we believe it is important to expose the limitation of the approach.”

- Concerning the issue of confidence intervals, we propose to add the following sentence to section 3, L125: “For the simplicity of the demonstration, we chose to consider only one functional form linking temperature to GDP from BHM and NPS: we use either the BHM formula with their main specification, which is the most analyzed in their work [...]”.

References

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