

## Overall assessment

This paper is insufficiently coherent, rather confused and in many respects confusing.

## Specific comments

“no risk premium is necessary” This passage juxtaposes Nordhaus & Mendelsohn and Yohe & Tol. That juxtaposition is false. The necessity of a risk premium is not a matter of taste or opinion, but it follows from the structure of the analysis. The cited authors were working in a different framework and thus drew different conclusions.

Throughout the text, the 2 degrees / 19% target should be labeled as illustrative. It is not a revealed preference. No parliament ever voted for this. It is a consensus among a small group of civil servants and politicians. Contrary to what was promised in the introduction, risk is not priced.

The second half of Section 3 is very problematic. Why did the author use the Excel version of DICE, which is wholly unsuited for this kind of exercise, when there is a GAMS version of the same model that is specifically designed to do this? Why make up an algorithm when there is centuries of experience with optimization?

Section 4 is strange too. Having defined a risk-compliant path, the author then worries about how to allocate the cost. This is a relevant question between actors, but not over time as done here. Surely, a higher cost in the earlier periods would imply a lower bequest to later periods. The author worries about feasibility in emissions pathways, but ignores feasibility in income.

Then, Shapley is introduced but never computed as far as I can see. The title promises Shapley. The introduction promises risk pricing. These are different things, but neither is done in the paper.

Section 5 is confusing. The title has “Shapley”, the text was “willingness to pay” and the tables have “insurance price lower bound” and “lower bound insurance price”. Presumably, the last two are the same, but I fail to see how they relate to the first two concepts. Given that the uncertainty about the climate sensitivity was used to derive the emissions trajectory, I do not see how it can be used again to derive a standard deviation around the “insurance price”. If the “insurance price” is  $P$  in equation (1), then it would be incorrect to do so.

Then, marginal damages are introduced, which are irrelevant in a risk-compliance framework.