

# Review of: "The Uncertainty of Fairness: a Game Theory Analysis for a Debt Mutualization Scheme in the Euro Area"

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**Potential competing interests:** No potential competing interests to declare.

This paper deals with fairness approaches in strategic game settings where two agents interact looking not only at their respective interests, but also considering the other agent's interests. The authors develop three games for analysing the hypothetical interaction between the European Union and a single country in the context of a debt mutualization problem.

Generally speaking, the paper is interesting and worth reading. The technical development is quite rigorous and the results the paper provides are meaningful.

I have some suggestions, though, that may hopefully serve to ameliorate the paper, which are reported below without distinguishing between important and minor ones.

1. In the first line of the abstract, I would delete the word "briefly".
2. Page 1, line 8: "is" should be "are"
3. P 1, l 8: in general, this sentence sounds a kind of weird and I would rephrase it
4. P 1, l 15: the same as 3)
5. P 2, second paragraph: I found the content here unclear
6. P 3, l -8: the fact that  $\alpha_i$  is unbounded is not, IMHO, properly justified in that it does not seem enough for the advantageous inequity to be preferable to disadvantageous one to have that parameter to have no upper bound
7. P 4, l 2: "within" should be "among"
8. P 4, figure 1: as it is drawn, the graphics here has at least one point, the leftmost one, where  $U(x_j | x_i > x_j) < U(x_j | x_i < x_j)$ . Is this correct? I am asking since this is apparently in contradiction with (P 5, l 2)
9. P 5, l 13: "A" should be " $A_i$ "?
10. P 5, l 14: what is the semantics of  $\tau$  here?
11. P 5, Equations at lines 21 and 22: I would add a more detailed explanation of the formulae
12. P 5, last paragraph and footnote: there are some notational problems here; in detail: why a functional notation is used in  $\hat{B}_i(0)$ ? How the set B is defined? What is the meaning of the symbol  $\sigma$ ? In the footnote, if  $B_r(p)$  is a set, one expects to find "{" and "}" opening and closing its definition
13. P 6, l 12: "ruling out backward induction" is a very assertive sentence which, IMHO, should instead be justified
14. Before opening section 2.3, it would be useful to add an explanatory example
15. P 7, l 4: "wants to introduce" should be "introduces"
16. P 8, l 13: the verb is missing in the sentence here

17. P 12, section 3.2: here there is an inversion regarding which, among the EU and the country, plays as “Player 1” or “Player 2”, which can be misleading: please, let the EU and the country always play as the same player throughout the paper
18. P 14, l -12: what is “l” here?
19. P 14, l -9 and -8: again there is some apparent notational dyscrasia here regarding the names used for the material payoffs of EU and country
20. P 15, l -4: here the quota of interest are referred to but at (page 9, footnote 10) it is affirmed that “We do not consider interests on public debt, since we do not introduce a temporal dimension in our problem. This could be a further extension of this game.”