

**Referee's report on the paper entitled
"Polarization Measurement and Inference in Many Dimensions
When Subgroups Cannot be Identified"**

I have now carefully read this paper which is quite interesting. While I have no suggestions concerning the methodological section where the author extends to multiple dimensions his very interesting "trapezoidal" interpretation of polarization which he previously analyzed in the uni-dimensional case, I would like to make some recommendations for the empirical section.

I think that it would be good to extend a bit the analysis of the results which, at this stage, is very succinct. While the analysis of univariate polarization gives clear results, polarization having increased significantly in almost all cases, for each of the three dimensions taken into account (equivalized income, equivalized living space and education of household) and whatever the value of the sensitivity parameter, a few words of interpretation in the Chinese context of the changes that occurred there between 1987 and 2001 would be useful.

The results of the multivariate polarization paired comparisons are even more interesting since at low levels of the sensitivity parameter polarization (mainly when $\alpha=0.25$) polarization increased significantly while at higher values of the parameter it decreased, whatever the pair of dimensions considered. This result is stressed by the author but no interpretation in the Chinese context is given so that I find the presentation of these results quite "dry".

Finally the results seem to indicate depolarization over time but here again I would have liked to see some interpretation of the results.

More specific remarks:

- page 3, line 11: the item Anderson, Linton and Leo does not appear in the bibliography
- page 3, 3 lines from bottom; the item Esteban and Ray, 2007, does not appear in the bibliography
- page 4, 5 lines from bottom: suppress the period before "flipping"
- page 5, 2 lines from bottom: write "which" and not "Which"
- footnote 4, end of first line: write "a non parametric" and not "an non parametric"
- footnote 6, second line: I would write "This can be accommodated..." as a new sentence.
- page 10, second sentence of the section **An Application**: a verb seems to be missing.
- Page 11, first line after Table 2a: write "increases" and not "increased"
- In the bibliography the article Anderson (2010) has been published and year volume and pages should be given.
- In the bibliography the article Anderson, Crawford and Leicester (2011) has been published and year volume and pages should be given.