Review of: "Research on the uncertainty of low-carbon environmental governance system and its impact on the dual goals of carbon emission reduction"

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Potential competing interests: No potential competing interests to declare.

Taking China as an example, this paper explores the influence of the low-carbon governance environment uncertainty on carbon emissions and carbon emission intensity by using Sys-Gmm and PSTR models, which is of certain practical significance in combination with realistic hotspots. The research method and conclusion are reasonable. But I think the following modifications need to be made.

1. Why did you choose China for the study?

2. Entering the "14th Five-Year" period, low-carbon environmental governance will face the inflection point of the environmental Kuznets curve. Is there any basis for this conclusion?

3. The late industrialization, the information revolution, and the new urbanization will have a coupling effect (Ayostina et al., 2022). What is the significance of this phrase here?

4. The uncertainty of low-carbon policy environment has some problems in the mechanism of carbon emission reduction, and does not reveal how the policy directly affects carbon emissions. The environmental uncertainty of low-carbon economy is incorrect and lacks sufficient theoretical support. What is the mechanism by which low-carbon technology innovation directly affects carbon emissions? How does the Carbon trading market directly affect carbon emissions?

5. In this paper, the hierarchical analysis method is used to determine the index weights and the fuzzy synthesis method is used for the level evaluation, partly because of the large lack of index data, and how the entropy value method is used to correct the weights. When applying the hierarchical analysis method to measure the weights, the consistency test of the matrix is missing.

6. In the Fuzzy comprehensive evaluation section, it is recommended to use a table with formulas to present the measurement method in a visual and clear way.

7. Does the selection of FDI indicator as the control variable and the duplication in the evaluation indicators create an endogeneity problem in theory?

8. Is it reasonable to standardize the control variables?

9. There is a strong correlation between energy structure and the low-carbon governance environment uncertainty, which

is not consistent with the exogeneity hypothesis of indicator selection.

10. Why is the PSTR model? What are the advantages of the PSTR model compared to the PTR model?

11. Therefore, the uncertainty of the low-carbon governance environment is not conducive to the control of total carbon emissions but has a significantly positive impact on carbon emission intensity. For every unit increase in the uncertainty of a low-carbon governance environment, the decline in carbon emission intensity increases by 0.0931 units. This partial explanation is inconsistent with the conclusions presented in the table 4.

12. In the Nonlinear test part of the PSTR model, the table conclusion is correct, but the determination of r=1 should be verified mainly by LM, LMT, and LMR tests, combined with AIC and BIC.

13. In general, robustness tests require 2-3 different models to be tested, and changing the time width window is only one of them.

14. The language rigor needs to be strengthened, and there are a lot of illogical statements in the text.