

Interactive comment on “Earth System Economics: a bio-physical approach to the human component of the Earth System” by Eric Galbraith

Anonymous Referee #1

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The Author proposes the "new" modelling approach that combines earth and economic systems.

Let me start with general impression. The Author takes bits and pieces from different fields of science and tries to arrange them into one coherent model. However the Authors decisions are very subjective, unsystematic and the overall model /approach makes an impression of being unnecessarily complex and very chaotic. The different variables sets represent different levels of abstraction for example things and connectome. Whereas the latter is unmeasurable and very loosely connected with the rest of the model. No evidence is provided that modelling connectome provides any value added to more traditional measures as technology, social capital etc.

There is a well known statement "All models are wrong but some are useful". I doubt
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whether this approach and example presented in the paper in particular give more insights than any of the traditional economic/demographic models that take the limited resources into account. Occam's razor principle should definitely be applied here. The Author should provide such an example that provides the evidence that the proposed approach is superior to the existing modelling approaches and not just any example.

Moreover it is not clear why the Author claims to be able to explain the complexity of the human being behavior with very simple somatic and neural variables. The example with hunger is the oversimplification when taking into account that the food expenditures constitutes only a fraction of all expenditures. How should this approach be any good to explain such phenomena as values, norms, cooperation, altruism and so forth. Not to mention that the problem of dividing the time into leisure and work is the classical example studied in microeconomics books.

The model is mostly unjustified. The economics part is based on one handbook from 1890 and one article. It is even visible in the economic terms used by the Author e.g. things instead of goods and so forth. Contrary to IAM models, mentioned by the Author that are based on classical economic growth models and have theoretical backgrounds this model is mostly unjustified.

Interactive comment on Earth Syst. Dynam. Discuss., <https://doi.org/10.5194/esd-2020-65>,
2020.