Interactive comment on "Measuring and Characterizing Community Recovery to Earthquake: the Case of 2008 Wenchuan Earthquake, China" *by* Jie Liu et al.

Anonymous Referee #2

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This paper presents a methodology to measure community recovery using linear projections of actual recovery rates and apply it to the earthquake stricken Wenchuan area in China. On-site assessments of earthquake recovery have potential to contribute to the literature, and so do methodological developments that improve our ability to measure recovery processes. Yet, the paper has some major flaws, particularly in the methodology, which I describe below.

General comments:

Section 1 The literature review is comprehensive, although I missed some key references on concept of economic resilience, which is cited a few times but not directly tackled. For example, dynamic economic resilience (Carter et al., 2007; Hallegatte et

al., 2016; Le De et al., 2013; Rose and Krausmann, 2013) is not explicitly presented, which is not what I would expect from a paper studying recovery. Authors may alternatively refer to "ability of the economy to cope, recover, and reconstruct and therefore to minimize aggregate consumption losses" (i.e. indirect impacts) (Hallegatte, 2014). References to indirect/dynamic resilience are necessary to put your contributions into context.

Section 2 Section 2 is sufficiently informative. In general, the manuscript would benefit from revision by a native English speaker.

Section 3 -Section 3.3 is not sufficiently detailed; methods are claimed to be a relevant contribution of the paper (and are in any case necessary to understand results) but are presented in less than 1 page. -The section also fails to put methods into context. The triangle approach is but one method to assess recovery, and this should be acknowledged. Alternatives should be presented, and pros and cons described (I wonder how relevant is this approach in the literature?). Authors should conclude stating why this method is used, and what their contribution offers as compared to other alternatives. -I have the impression that the triangle method may be too simplistic for the economic analysis part I'm familiar with. There is much work in this area relying on more complex models that could be applicable to the study area (see e.g. citations above). A reader familiar with these methods may wonder: why authors do not use them? It may be due to data constraints, or to keep homogeneity in the assessment of different recovery measures, or due to some limitations of the methods, but this has to be explained. -Authors provide some thresholds to assess recovery (immediate, emergency, etc.) and seem to apply them to every recovery measure (economic, population, etc.) without explaining the motives for this, and if this is coherent with the complexity of recovery and the different implications the concept has for the economy or infrastructures, for example. Overall, assessing these complex concepts with a single method seems challenging. -The definition of economic recovery in section 3.2 is insufficient. What's the counterfactual if you address GDP growth only? The original GDP growth rate? Do

you consider any trends? What about redistribution of income? -Section 3.2 seems an extension of the literature review in Section 1 and could be better placed there.

Section 4 This section needs to categorically discuss the results shown in the figures before moving on to assess the drivers. This would help readers to understand what we can obtain from the methods and how to interpret it.

Specific comments:

-P.1, l. 7-8: "So this article proposes the concept of community recovery as the capacity to recover and rebuild after the earthquake disasters by considering the original perspective of recovery." This sentence is critical to explain the reader how you intend to implement your analysis, but remains vague and imprecise. -P. 1, l.10: "by extending the concepts of recovery triangle". Here you should try to explain the methods employed in the paper in a way that even a reader that is not used to them understands how it's done. The current version is ok for a more focused journal, but in NHESS readers come from a variety of disciplines and papers must be informative for this audience. -P1, l.19: "The damaging earthquake risk of cities as the biggest risk of all natural disasters". This needs to be referenced, although earthquakes can be devastating there are other risks that happen more frequently. You can say that they are the most devastating in terms of impact, but not in terms of likelihood, and again this should be referenced. -P2, l. 37: possibilities to instead of "possibilities o return to normal" -P2 l.58: "Disaster Recovery Framework developed by FEMA in 2011(FEMA 2011)" say instead developed by FEMA (2011) to avoid repetition. -P3., l.100 to P.4, l.105. Again, methods are barely presented, which is not sufficient provided this is the main contribution of the paper. -P. 5, l. 139: "is from ruins to prosperity (Figure 2c)". I'd rather avoid bold statements like this. As you discussed before, rebuilding the city is just one part of the recovery. What about the human, natural, social capital that was lost, was it recovered? Has the city learned the lessons and is now more resilient to earthquakes? These and other questions need to be addressed before making this statement. -P.5, l. 151: "random interview of 1000 affected families". Why did you use this method, moti-

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vate or else cite papers that used it, describe the method. -P.6, l.152: "Other statistics and description data are gathered by combining different sources (e.g. . ...)". You have to describe categorically all databases used, or where you can find them, so that your methods can be replicated. There is no reference to the data sources, and the description is insufficient. Descriptive statistics could help. Otherwise a more in depth discussion of the data, its gaps, etc. is necessary. -P.10, l. 275: "For the purpose of facilitating the calculation, we use the average linear rate to substitute the curve rate." This sounds too simplistic and needs to be reinforced. Can't you estimate a non-linear function?

The list above is not exhaustive, and authors are advised to submit the document to a native English speaker or professional proofreading services.

Literature

Carter, M.R., Little, P.D., Mogues, T., Negatu, W., 2007. Poverty Traps and Natural Disasters in Ethiopia and Honduras. World Dev. 35, 835–856. doi:10.1016/j.worlddev.2006.09.010 Hallegatte, S., 2014. Economic Resilience: Definition and Measurement (Policy report), Policy Report Working Series. The World Bank. Hallegatte, S., Bangalore, M., Vogt-Schilb, A.C., 2016. Assessing socioeconomic resilience to floods in 90 countries (No. WPS7663). The World Bank. Le De, L., Gaillard, J.C., Friesen, W., 2013. Remittances and disaster: a review. Int. J. Disaster Risk Reduct. 4, 34–43. doi:10.1016/j.ijdrr.2013.03.007 Rose, A., Krausmann, E., 2013. An economic framework for the development of a resilience index for business recovery. Int. J. Disaster Risk Reduct. 5, 73–83. doi:10.1016/j.ijdrr.2013.08.003