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Interactive comment on "Regional disaster impact analysis: comparing Input-Output and Computable General Equilibrium models" *by* E. E. Koks et al.

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Summary In this paper the authors have presented three macroeconomic models used for economic risk assessment of disaster impacts. Two of these models are well known – the ARIO and the CGE models, while the third model is based on previous developments by (some of) the authors. The contributions of the paper is to mainly apply these three models on the same case study and analyse and compare the three model results in terms of the temporal nature of recovery, aggregated economic losses, and spatial distribution of losses, among others. The authors have argued at the ARIO over-estimates disaster impacts and inter-regional impacts as it is linear and does not also

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account for interregional substitution effects. The other two models take these effects in account. The paper is well-written and well presented. The structure of the paper is well organised and the messages are clear. It is a useful contribution to the research areas of natural hazard disruption analysis, as it raises the important debate about the relevance of different economic loss estimation models widely used in research and practice.

Suggested revisions: This paper would be a good fit the NHESSD, and it is recommended for publication. There are few minor edits that I think the authors should address to make some of the information and arguments more clear. 1. On main results and conclusions show the disparity between the ARIO and the other two models, highlighting the lack of substitution effects as the major cause of this disparity. But based on Hallegatte (2008, 2014) the ARIO "avoids the excessive rigidity of a classical IO framework by allowing for substitution by importations when local production is perturbed and for price-elasticity." Though the ARIO does not consider substitution for shorter time-scales as that probably might not be a case as argued in Hallegatte (2008, 2014). The authors need to clarify if they have used the ARIO in a different way than the proposed by Hallegatte (2008, 2014). This links to points 2 and 3 below. 2. The authors assume here that the readers are well aware of the three models discussed in the paper. I would assume that NHESSD has a much wider readership and familiarity with the three models cannot be assumed for the journal audiences. Sections 3.2 – 3.4 would be better explained if supported by some presentation of the general equations and structures of the three models. A suggested edit would be to modify Table 2 and provide some sort of presentation/flowchart of the steps/equations in each model. This could be referred to in the text of sections 3.2 – 3.4. There is also probably some explanation before section 3.2 to be included that provides a brief description of the basic structure of the economy assumed in these models, leading to the development of structures such as the A matrix, etc. employed in these class of models. 3. Following from point 2 above it is not clear how the recovery curves are linked to the three models. What are the durations of the recovery curves? The authors should clarify this

in the text. 4. Section 3.6 which explains the IO data used in the study needs some clarification. It seems there are 2 sources of IO data used here. Does one gives the national-level A matrix data which is regionalised and the other gives supply and use tables for regions? As the authors state the supply and use tables can give IO tables, so why have they not used them to get regional IO tables? Are there any differences in the IO tables between MRIA model and the other two? The authors should clarify these doubts in the paper. 5. Strictly speaking the 'convex' recovery curve is not convex. It is either 'convex-concave' or 'S-shaped'. This could be edited in the text. 6. The authors have not provided a list of the sectors considered in this study. It would be good to include a table showing what sectors are included in the study.

Some corrections in text are required: 1. Page 7056 – line 7: the sentences should probably read "the results of the comparison are presented and in Sect. 6 they are discussed." 2. Page 7058 – line 12: it should be 'spent' instead of 'spend'. 3. Page 7058 – line 19 – 22: Please check the two sentences as they are not clear. Should it be 'demand-determined investment-driven IO'? 4. Page 7060 – line 5: a period is missing. 5. Page 7061 – line 13: change 'mean' to 'means'. 6. Page 7062 – paragraph above Eq. (3): please check the notation as it does not match the notation used in Eq. (3).

Please also note the supplement to this comment:
http://www.nat-hazards-earth-syst-sci-discuss.net/3/C2969/2016/nhessd-3-C2969-2016-supplement.pdf

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