Assessment of ripple effect and spatial heterogeneity of total losses in the capital of China after a great catastrophe shocks

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Abstract. The total losses caused by natural disaster have spatial heterogeneity due to different economic development level inside the disaster-hit areas(Figure 1). This paper set the scenarios of direct economic loss to introduce the sectors' loss caused by 2008 Wenchuan earthquake into Beijing, utilized Adaptive Regional Input-Output (ARIO) model and Inter-regional ripple effect (IRRE) model. The purpose is to assess the ripple effects of indirect economic loss and spatial heterogeneity of both direct and indirect economic loss at the scale of smallest administrative divisions of China: streets/ (villages and towns)(Figure 2). The results indicate that the district of Beijing with the most severe indirect economic loss is Chaoyang district; Finance & Insurance industry (#15) of Chaowai Street suffers the most in Chaoyang district, which is 1.46 times of its direct economic loss. During 2008-2014, the average annual GDP growth rate of Beijing could be decreased 3.63% affected by the catastrophe. Compared with the 8% of GDP growth rate target, the decreasing GDP growth rate is a significant and noticeable economic impact, and it can be efficiently reduced by increasing rescue effort and priority supporting the industries which are located in the seriously damaged regions.