Regional Macroeconomic loss Estimation of Earthquake: An Integrated Methodology – A Case Study of Tehran

Topic: Input-Output analysis of disasters 2
Author: Iman Rahimi Aloughareh
Co-Authors: Kiarash Nassersasdi, Mohsen Ghafory Ashtiany

Regional Macroeconomic loss Estimation of Earthquake: An Integrated Methodology – A Case Study of Tehran

ABSTRACT

The quantification of economic losses due to natural disasters such as earthquakes is one of the most important components of the mainstream of development theory which has been fallen outside in the most development studies. It is also necessary to gauge individual and community vulnerability, evaluate the worthiness of mitigation, determine the appropriate level of disaster assistance, improve recovery decisions, and inform insurers of their potential liability. In general, it can be stated that society has become more vulnerable. Natural disasters reveal the fact that our economic development is unacceptably brittle, too vulnerable to the normal behavior of Nature. Part of a reason for a lack of progress has been the complex manner of the interactions between physical damages and the regional economy. In many cases, this involves engineering as well as economic analysis. In this paper an integrated, operational methodology which allows a more holistic accounting for the macroeconomic impacts of earthquake considering physical damage, the dynamics of recovery, sectoral vulnerability of first-order losses, and higher-order effects which take into account the system-wide impact of flow losses through interindustry relationships is developed. In order to estimate probable future losses in an earthquake-prone region by developed methodology, a case study of Tehran is considered and the findings show that future losses caused by a severe earthquake will exceed the total damage up to 21 percent reduction in GDP. Finally, the importance of not perceiving of hazard loss estimation as a passive pursuit and major objective of actively reducing negative impacts is emphasized and a number of relatively costless mechanisms for doing so are introduced.

Keywords: Disaster losses, Economic loss, equilibrium-oriented macroeconomic models