Does the relationship between economic development and natural disaster risk follow a 'U'-shape pattern? Evidence from India

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Abstract

The present paper attempts to study whether development reduces damage risk from extreme climatic events such as flood. The study is based on the data set of reported loss and damage from major flood-affected Indian states between 1981 and 2019. There are many research papers which talks about specific climate extremes and its adaptation measures but there are limited empirical studies which focus on sub-national level data set. Especially by considering the economic growth rate and different loss and damage indicators, we have divided the major Indian states in to two different groups' i.e., low-income group and high-income group. Using Zero-inflated negative binomial and negative binomial regression techniques, the study produces three major findings. First, there is an increased trend of loss and damage indicators across the states. Second, high income states are better flood- resilient as compared to low-income states. Third, there exists a 'U' shape pattern between the real economic growth rate and the natural disaster risk. Real per capita GSDP and urbanization rate reduces the loss and damages due to natural disaster while rise in density of population, more flooded areas and heavy rainfall enhance the damage risk due to natural calamity. Further, our study supports the economic growth theory of J. S. Mill that there is a negative association between natural calamities and economic growth. There is also a greater need to increase the expenditure under the Disaster Risk reduction (DRR) program to reduce the disaster risk. Therefore, the paper advocates some policy suggestions that the state planning should aim at achieving the sustained economic growth rate which, in turn, will reduce the economic loss and damages. Further, both the central as well as state governments must work together to frame policies that will lead to more urbanization which can on the other hand will reduce the natural disaster risks.

Key Words: Economic Development, Climate Change, Disaster Management

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