

COMPLETION REPORT

Comparison of Vulnerability of Developed and Developing Economics to Disaster Ripple Effects: The Case of Japan and the Philippines

Dr. Krista Danielle Sy Yu (+5)

Assistant Professor

School of Economics,

De La Salle University

Natural hazards have both increased in terms of incidence and intensity, which can be attributed to climate change impacts. In a globalized economy, the impacts of natural hazards are no longer confined to the locality where the natural hazard occurred. For example, a flood in the Philippines does not only paralyze business transactions in the country, but it extends through other countries as far as the United States and Europe as some business processes are outsourced to firms located in the Philippines.

The geographic location of countries along the Pacific Ring of Fire makes them vulnerable to natural hazards such as earthquakes, volcanic eruptions and typhoons. Japan, as a result, invests heavily on disaster risk mitigation to minimize the impact of such events. However, developing countries such as the Philippines, are subject to the same types of hazards but have limited resources for effective disaster preparedness and response. This study provides a comparative analysis of the disaster vulnerability between the Philippine and Japanese economies through the use of closed inoperability input-output models. Input-output models have been used to measure the economic impacts of external shocks by capitalizing on the interdependencies between each sector. Through a closed inoperability input-output model, the study is able to factor in the effects of changes in consumption patterns resulting from a natural disaster. Furthermore, the model has the ability to estimate the inoperability levels and economic losses due to natural disasters. In particular, the study takes the cases of the 2011 Great East Japan Earthquake and the 2013 Typhoon Haiyan and estimate the impact of reductions in the labor force supply resulting from deaths, injuries and missing persons. It can be drawn that the Philippines as a developing country suffers from higher levels of inoperability, however, Japan as a developed country incurs significantly large economic losses.

The model is made available to the public through a web portal with a bilingual interface for Japanese users, Disaster Risk Estimation and Analysis with Leontief Models (<http://www.disaster-realm.net>), which gives users access to the tool that estimates the economic losses and inoperability levels for different economic sectors of the Philippine and Japanese economies.

Publication of the Results of Research Project:

Verbal Presentation (Date, Venue, Name of Conference, Title of Presentation, Presenter, etc.)

November 1, 2015, Meiji University, Tokyo, Japan, Pan Pacific Association of Input-Output Studies 26th Conference, A Closed Inoperability Input-Output Model for Modeling Disaster Impact through Labor Supply Disruption (Krista Danielle S. Yu, Kathleen B. Aviso, Marites M. Tiongco, Michael Angelo B. Promentilla, Joost R. Santos, Yasuhide Okuyama, and Raymond R. Tan)

February 19, 2016, Kitakyushu Science Research Park, Measuring Strength and Weakness of the Society in Disaster Responses, Economic Impacts of Disasters: Overview (Yasuhide Okuyama)

February 19, 2016, Kitakyushu Science Research Park, Living in the “Disaster-REALM”: A Web-based Tool for Estimating the Economic Impact of Natural Disasters (Krista Danielle S. Yu)

Thesis (Name of Journal and its Date, Title and Author of Thesis, etc.)

Book (Publisher and Date of the Book, Title and Author of the Book, etc.)