

Heterogeneous Demands for Flood Insurance against Climate Change Risk through Private Public Participation Mode: A Community-Based Survey in Tainan City

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Abstract

Climate change is expected to increase the frequency and severity of certain natural disasters and pose considerable challenges for the insurability of natural disaster risks. Located in southwest flood-prone delta area of Taiwan, Tainan City's residents in low terrain and coastal areas has experienced frequent heavy rainfalls brought by tropical storms compounded by the shallow and congested riverbeds. In the global scale, Tainan City has ranked top 10 risky cities among urban areas in the category of storm hazards (Swiss Re, 2013) for their considerable affected population and substantial economic losses in the future. It's essential for the city government to introduce risk management tools such as flood insurance against future flooding risks. However, for most governments (especially in the developing world) facing budget constraint, it is imperative to look for risk management tools those are both financially feasible and effective meeting both public and private sectors' needs.

This study examines the feasibility of a flood insurance policy through Public-Private-Participation (PPP) mode. We estimated an insurance premium scheme by an integrated flood-risk-assessment model with partial support from government catastrophe relief fund. We then conducted a survey to elicit residents' risk perceptions and demands for flood insurance using the choice experiment method among 320 homeowners in four communities selected from the hotspot areas. Our survey results find considerable gaps between risk perception and adaptive actions. The demands for flood insurance are 11%-27% while flood return period is 450 years and 13%-40% while flood return period is 100 years, reflecting limited market potentials in this city. Agricultural and fishery communities have lower demand for insurance but more residents in these communities feel distressed. A nested logit regression model is estimated to identify key determinants of respondent's decision on insurance policy selection. The economic determinant included the expected value of flood damage losses, coverage, premium, education, household income. Respondents who perceived higher risks on housing and business losses and experienced psychological distress are more likely to buy insurance. Respondents who highly agree with their responsibility are more likely to buy flood insurance. However, respondents who perceived increasingly higher risks in agriculture and fishery industry were less likely to buy flood insurance. Several reasons could account for these communities' inactiveness in insurance purchase, including insufficient knowledge and financial capacity, and over-reliance on government's post catastrophe relief, which are detrimental for future risk management.

Keywords: Private-Public-Participation Mode, Flood Insurance, Choice Experiment, Risk Perception

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