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Impacts of Climate Change and Remote Natural Catastrophes on EU Flood Insurance Markets

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Flood insurance coverage can enhance financial resilience of households to changing flood risk caused by climate change. However, due to increasing risk in many areas, premiums are likely to rise, which may cause insurance to become unaffordable for low-income households. This issue can become especially prominent in high-risk areas, when premiums are risk-reflective. Consequently, increasing premiums can reduce the demand for insurance coverage when this is optional, as individuals often underestimate the flood risk they face. After a flood, uninsured households then have to rely on private savings or ex-post government disaster relief. This situation is suboptimal as households may not save sufficiently to cover the damage, and government compensation can be uncertain. Using a modeling approach we simulate unaffordability and uptake of various forms of flood insurance systems in EU countries. To do this, we build upon and advance the “Dynamic Integrated Flood Insurance” (DIFI) model, which integrates flood risk simulations, with an insurance sector and a consumer behavior model. We compute the results using various climatic- and socio-economic scenarios in order to assess the impact of climate- and socio-economic change for flood insurance in the EU. Furthermore, we assess the impact of remote natural disasters on flood insurance premiums in EU countries, which occurs through the global reinsurance market. More specifically, after large natural disasters or compound events occurring outside the EU, which are likely to occur more often due to climate change, reinsurance premiums can temporarily rise as a result of a global “hard” capital market for reinsurers. The higher cost of capital for reinsurers is then transferred to households in the EU through higher flood insurance premiums. We find that rising average, and higher variance, of flood risk towards the end of the century can increase flood insurance premiums, and cause higher premium volatility resulting from global reinsurance market conditions. The rise in premiums increases unaffordability of insurance coverage and results in declining demand for flood insurance. A proposed policy improvement is to introduce a public reinsurance system for flood risk, as governments can often provide cheaper reinsurance coverage and are less subject to volatility on capital markets. Besides this, we recommend a limited degree of premium cross-subsidization to limit the growth of premiums in high-risk areas, and insurance purchase requirements to increase the level of financial protection against flooding.

