Weather or Wealth?
Property Damage from Flooding in the Context of Climate Change and Economic Growth

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Motivation
Flooding from extreme rainfall events leads to significant economic damages. Concerns over the cost of flooding have grown recently as extreme weather becomes both more frequent and intense. However, the outcome of a disaster depends also on the value of assets at risk and the vulnerability of these assets, each of which may either exacerbate or buffer the impact of natural hazard. In this study, we disentangle the contribution of flooding hazard from that of the other social and economic risk factors. This permits us to evaluate the likely variation in the magnitude of future flood damages in the context of economic growth and climate change.

Methodology and Major Findings
Compared to previous work on this topic, the data we use provides for much more refined measurement of the three dimensions of flooding risk, namely: hazard, exposure and vulnerability. Flooding hazard is measured by the frequency and magnitude of extreme stream flows. Exposure is measured by the flood zone population and property, which is materialized by combining census block population and housing unit counts and the FEMA National Flood Hazard Layer (NFHL). Vulnerability, or the resistance against natural hazards, is composed of physical and institutional vulnerability. The dependent variable is the county-level per capita property loss caused by flooding during 1993-2009 provided by the SHELDUS dataset. We estimate the marginal effects of the risk factors using a fixed-effects Tobit model with corrected spatial autocorrelation. Preliminary results indicate that compared with climate, growing population and property exposed to disaster risk are more influential factors in determining the magnitude of flood-related property damages.