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INFORMED DECISIONS ON CATASTROPHE RISK

The Psychology of Natural Hazards:
Why do few people in catastrophe-prone areas invest in risk reduction measures?

Destruction from major catastrophes will significantly impact the economic well-being of residents, businesses, local governments and general taxpayers in the United States.

- In 2008 alone, natural catastrophes inflicted $200 billion in direct economic damages worldwide, the third most costly year ever.
- An economic comparison of the benefits and costs of adopting protective measures suggests that those residing in exposed areas should invest in measures that will reduce their losses from natural hazards.
- It is imperative that we develop implementable strategies to increase protective measures, and thus reduce our nation's exposure to losses from future disasters.

More than $10 trillion of insured assets are located in coastal areas from Texas to Maine.

- Despite the increasing losses from hurricanes and other natural disasters in recent years, there has been an upsurge in the number and value of structures being built in hazard-prone areas, notably in coastal regions.
- As of December 2007, Florida and New York each had nearly $2.5 trillion of insured values located directly on the coast and subject to hurricane damage.
- With such huge concentrations of insured value, any major natural disaster that hits these regions could potentially inflict hundreds of billions of dollars of economic losses, unless property and infrastructure are more effectively protected by loss-reduction measures.

People do not undertake loss-prevention measures voluntarily.

- In a 1989 survey of 3,500 homeowners in four California counties at risk from earthquakes, only 5 to 9 percent of the respondents in these areas reported adopting any loss reduction measures.
- A survey of 1,100 adults living along the Atlantic and Gulf Coasts undertaken in May 2006 (*after* the devastating hurricane seasons of 2004-2005) revealed that only 17 percent of the respondents had taken steps to fortify their homes.

Long-term sustainable solutions can overcome myopic thinking and provide economic incentives for encouraging sound investments in risk reduction measures.

- Many property owners focus on the high upfront costs and fail to consider the long-term benefits of these investments.
- If insurance premiums were to reflect risk, and long-term loans were available for risk reduction measures, property owners will have economic incentives to make their homes safer. Well-enforced building codes, seals of approval and tax credits can complement these measures.
- Recommendations draw on insights from decision sciences, psychology and economics as to why individuals do not invest in protective measures even when the expected benefits greatly outweigh the upfront costs.

Studies have identified eleven psychological and situational barriers to how we make decisions under uncertainty and plan for the future.

1. Lack of risk awareness. The simplest explanation is that people are not aware they reside in high-risk areas.

2. Underestimation of the risk. Even when residents are aware of the risks, they often *underestimate* the risk and often believe that the future disaster "*cannot happen to me."* This bias is exacerbated if insurance premiums in hazard-prone areas are highly subsidized.

3. Budget constraints. One frequently hears the following comment: *"I live from pay-day to pay-day. I cannot afford the high costs of these measures."*

4. Difficult computations for understanding cost-benefit tradeoffs. Individuals are not skilled in or drawn to making tradeoffs between costs and benefits of these measures, which requires comparing the upfront costs of the measure with the expected discounted benefits in the form of loss reduction over time.

5. Hyperbolic discounting. People place too much weight on immediate considerations. They do not consider the long-term benefits of investing in these mitigation measures which promise to reduce losses for the life of the house, which can be many years.

6. Short planning horizons. Many homeowners think that they will move in several years, so the costs of the measures are not justified economically. These individuals reason that "*I will not live here for more than a few years, why should I spend money to make the house more resilient?"*

7. Procrastination. There is a natural tendency to postpone taking actions that require investments in time and money.

8. Learning failures. Following a disaster, people are likely to rebuild their home in the same location. People do not seem to learn from past experiences of disaster.

9. The Levee Effect. Those residing in areas built behind a levee perceive –and often are told—they are immune to future losses from floods and hurricanes. As the result, there is increased economic development in these areas and property owners see no need to invest in protective measures. When the levee is overtopped or fails, the resulting losses can be catastrophic.

10. Samaritan's Dilemma. People who expect the government to provide substantive disaster relief have a tendency to refuse to invest in risk-reduction measures because the Federal government (the Good Samaritan) will rescue them.

11. The Politician's Dilemma. An elected official who saddles its constituency with additional taxes for risk reduction measures that have long-term benefits may lose the next election. This NIMTOF (Not in My Term of Office) attitude leads to inaction. Following a catastrophic loss there is a tendency for officials to lobby for federal disaster relief, a more popular political move. Recent research actually shows that the Federal response is more generous following disasters that occur in the year of a Presidential election.

What should we do?

1. Allow insurance premiums to reflect the level of exposure. Property owners will thus know the risk they face. They could then receive insurance premium reductions if they invest in mitigation to reflect the reduced claims that public and private insurers will have to pay following the next disaster. When premiums are subsidized in high hazard areas, there is no economic incentive for insurers to offer such premium discounts.

2. Provide long-term loans for loss reduction measures. The loans could be tied to an existing mortgage so as to spread the upfront costs of the loss reduction measures over time.

3. Adhere to well-enforced building codes. By requiring homes inspected to meet existing building codes, property owners will have good reason to take out a long-term loan to pay for measures that will ensure that their structure meets the current standard. The concomitant reduction in insurance premiums will address the affordability issue.

4. Grant seals of approval. Place a seal of approval to indicate the property is now protected against future disasters. This seal should increase the property value of the house and encourage other residents in the community to also invest in these mitigation measures.

5. Offer tax credits. Cities, state and federal governments can offer tax credits for encouraging mitigation measures and for property that has received a seal of approval. The city of Berkeley in California and the state of South Carolina have taken a lead in this regard.

SOURCE: Howard Kunreuther, Robert Meyer and Erwann Michel-Kerjan, "Overcoming Decision Biases to Reduce Losses from Natural Catastrophes" in *Behavioral Foundations of Policy,* E. Shafir (ed.) Princeton University Press (forthcoming).

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Risk Management and
Decision Processes Center
The Wharton School
3730 Walnut Street
500 Jon M. Huntsman Hall
Philadelphia, PA 19104-6340
http://opim.wharton.upenn.edu/risk

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About the Wharton Risk Center

Established in 1984, the **Wharton Risk Management and Decision Processes Center** develops and promotes effective corporate and public policies for dealing with catastrophic events. The Risk Center research team – over 50 faculty, fellows and doctoral students – investigate how individuals and organizations make choices under conditions of risk and uncertainty under various regulatory and market conditions, and the effectiveness of strategies such as alternative risk financing, incentive systems, insurance, regulation, and public-private collaborations at a national and international scale. The Center actively engages multiple viewpoints, including top representatives from industry, government, international organizations, interest groups and academia. More information is available at http://opim.wharton.upenn.edu/risk.

About the Authors

Howard Kunreuther (Kunreuther@wharton.upenn.edu) is the Cecilia Yen Koo Professor of Decision Sciences and Public Policy at the Wharton School and co-director of the Wharton Risk Management and Decision Processes Center. He is a founding member of the High Level Advisory Board on Financial Management of Large-Scale Catastrophes of the Organization for Economic Cooperation and Development (OECD) and a Distinguished Fellow of the Society for Risk Analysis. Recent books include *On Risk and Disaster: Lessons from Hurricane Katrina* (University of Pennsylvania Press, 2006); *At War with the Weather* (with E. Michel-Kerjan, MIT Press, 2009); and *Learning from Catastrophes*: *Strategies for Reaction and Response* (with M. Useem, Wharton School Publishing, 2009).

Robert Meyer (MeyerR@wharton.upenn.edu) is the Gayfryd Steinberg Professor and Co-Director of Wharton's Risk Management and Decision Processes Center. His research focuses on consumer decision analysis, sales response modeling, and decision making under uncertainty. His work has appeared in a wide variety of professional journals and books, including the *Journal of Consumer Research,* and the *Journal of Marketing Research*. He has served as the editor of *Marketing Letters* and currently serves on the editorial review board of several major journals.

Erwann O. Michel-Kerjan (ErwannMK@wharton.upenn.edu) is managing director of the Wharton Risk Management and Decision Processes Center. His work focuses on developing strategies for managing and financing extreme events such as natural disasters and mega-terrorism. He is Chairman of the OECD Secretary-General High Level Advisory Board on Financial Management of Large-Scale Catastrophes. In 2007, Dr. Michel-Kerjan was named a Young Global Leader by the World Economic Forum, a five-year nomination bestowed to recognize and acknowledge the most extraordinary leaders of the world under the age of forty. Recent books include *Seeds of Disaster, Roots of Response: How Private Action Can Reduce Public Vulnerability* (Cambridge University Press, 2006); and *The Irrational Economist: Making Decisions in a Dangerous World* (with P. Slovic, PublicAffairs Press, 2010).