



**Wharton Risk Management and
Decision Processes Center**
The Wharton School
University of Pennsylvania
558 Jon M. Huntsman Hall
3730 Walnut Street
Philadelphia, PA 19104-6340
215-898-5688 phone
215-573-2130 fax
<http://opim.wharton.upenn.edu/risk>

October 21, 2008

To: Commissioner Kevin McCarty
From: Howard Kunreuther and Erwann Michel-Kerjan,
Center for Risk Management and Decision Processes,
The Wharton School, University of Pennsylvania
Subject: Comment on NAIC's Proposed Natural Catastrophe Risk Plan

Dear Commissioner McCarty:

We appreciate the opportunity to provide NAIC with insights on work undertaken by the Wharton Risk Center on managing and financing extreme events. We hope it proves useful to you and your committee members as you finalize the NAIC proposal, "*Natural Catastrophe Risk: Creating a Comprehensive National Plan.*"

Over the past fifteen years the scale of damage from natural catastrophes has increased so significantly that we believe that the nation has entered a new era of catastrophes. We are now more vulnerable to catastrophic losses due to the increasing concentration of population and value at risk in high-hazard coastal regions of the country. The question is not *whether* future catastrophes will occur, but *when*, and *how frequently* they will strike, and the extent of damages they will cause.

We believe that now is the time to develop and implement economically sound policies and strategies for managing the risks and consequences of future natural disasters. The absence of leadership in this area will inevitably lead to unnecessary loss of lives and economic destruction in the devastated regions. Future decisions by the U.S. Congress and state legislatures must be based on a sound long-term conceptual framework and well-documented empirical analyses.

A recent report completed by the Wharton Risk Management and Decision Processes Center (in conjunction with Georgia State University and the Insurance Information Institute), entitled *Managing Large-Scale Risks in a New Era of Catastrophes* (to be published by the MIT Press in the spring of 2009 under the title *At War with the Weather*) provides insight into these issues. We have attached an Executive Summary of the study as well as a PDF of the document and will be pleased to mail you and other members of the Commission hard copies if you provide us with the relevant mailing addresses. Appendix 1 provides a description of the mission and research activities of the Wharton Risk Management and Decision Processes Center.

In this letter we would like to share with NAIC some of the key results of the above study, which has benefited from fruitful meetings and discussions with individuals and organizations interested in developing better risk management strategies for dealing with natural hazards. These include climate scientists, insurers, reinsurers, insurance brokers, banks, trade associations, rating agencies, modeling firms, homeowners and businesses affected by natural disasters, the real estate industry, representatives from Congress and the White House, federal, state and local agencies, insurance regulators, public interest groups, international organizations, and experts from other universities and research institutions in the United States and abroad. We have also benefited from insightful discussions at workshops hosted by the Wharton Risk Center in June and December 2006 in Philadelphia, PA, and in October 2007 in Washington, DC, and from the many comments received on preliminary drafts of the report. Appendix 2 provides a list of the organizations with whom we have interacted in writing this report.

Guiding Principles of the Study

The following two guiding principles underlie the research team's analyses and proposed strategies for using the insurance infrastructure to deal more effectively with natural disasters:

Principle 1: Premiums Reflecting Risk

Insurance premiums should be based on risk in order to provide signals to individuals as to the hazards they face, and to encourage them to engage in cost-effective mitigation measures to reduce their vulnerability to catastrophes.

Principle 2: Dealing with Equity and Affordability Issues

Any special treatment given to homeowners currently residing in hazard-prone areas (e.g., low-income uninsured or inadequately insured homeowners) should come from general public funding and not through insurance premium subsidies.

Principle 1 is important because its application would provide a clear signal of likely damage to those currently residing in areas subject to natural disasters and those who are considering moving into these regions. Risk-based premiums would also enable insurers to provide discounts to homeowners and businesses who invest in cost-effective loss-reduction mitigation measures. If insurance premiums are not risk-based, insurers have no economic incentive to offer these discounts. In fact, they prefer not to offer coverage to these property owners because it is a losing proposition in the long-run.

Principle 2 reflects a concern for some residents in high-hazard areas who will be faced with large premium increases if insurers are permitted to adhere to Principle 1. Regulations imposed by state insurance commissioners keep premiums in many regions subject to hurricane damage artificially lower than the risk-based level. If insurers are permitted to charge premiums that reflect risk, homeowners residing in hurricane-prone areas would pay considerably more for coverage than they do today. Therefore, there might be a need for a transition period, so that over time (e.g., 3 or 5 years), premiums increase to the risk-based level. Doing so might actually also reduce the premiums paid by other policyholders, who are currently paying more than their risk-based exposure in order to subsidize those in highly exposed areas

Developing Premiums Reflecting Risk

To develop insurance programs that adhere to *Principle 1* it is necessary to estimate the risk-based rates that would apply to different regions of the country. Unless this is undertaken in a systematic and open manner, it will be difficult to have a meaningful discussion as to the implication and importance of *premiums reflecting risk*. Chapter 13 of our study takes a first step in this direction by presenting rates that reflect the risk of hurricane wind-related damage for counties in the four states that we studied (Florida, New York, South Carolina and Texas). We also specified how this translates into premiums when a loading factor is utilized by insurers to cover the costs of marketing policies, assessing and paying claims after a loss. An appropriate loading factor also integrates the cost of capital that private insurers need to access to cover catastrophic events and maintain their ratings while earning a high enough return for investors to want to allocate funds to the insurance company.

In Chapter 13 we also show that under a scenario where insurers are permitted to charge premiums reflecting risk, the private sector will be able to cover most (if not all) losses from severe hurricanes if homeowners mitigate their property and private reinsurance is in place. In this case, if insurers were to devote 10 percent of their surplus to provide coverage against a hurricane with a 100 year return period in a given state, they would be able to cover 100 percent of the market in all four states. For a hurricane with a 500 year return period, they would be able to cover 100 percent of the market in New York and South Carolina, 94 percent of the market in Texas, and 66 percent in Florida. If all single-family dwellings in the state were mitigated, and if private reinsurance and alternative risk transfer mechanisms were in place, based on the status quo, the percentage of insurers' surplus necessary to insure all homes against a hurricane with a 100 year return period is 1.1 percent in South Carolina, 1.4 percent in New York, 6.7 percent in Texas, and 15.4 percent in Florida.

A major issue that needs to be addressed is how to reach agreement on a given risk assessment, and the role that state regulators will play in the process. We believe that to enable insurers to charge premiums which reflect risk, regulators should **not** be involved in matters pertaining to rate setting. If a truly competitive market were allowed to operate, insurers would not engage in price-gouging since they would be undercut by another competing company that could profitably market policies at a lower price. Regulators would still have an important role to play in other aspects of the insurance operation, such as making certain that insurers have sufficient surplus to protect unsuspecting consumers against the possibility of their becoming insolvent following the next severe disaster.

Affordability of Insurance Coverage

The second step in the process relates to the affordability and equity issues indicated in *Principle 2*. The analyses in Chapter 11 of our study reveal that many homeowners who supposedly cannot afford insurance (because their income is below a pre-defined threshold; e.g., 125 or 200 percent of poverty level), *do* actually purchase coverage, and some people who can afford it are *not* buying it. In Chapter 11 we also address the question of equity and fairness. If changes in premiums are distributed very unevenly across households, one might take the view that those subject to very large increases are not being treated fairly and justly. More specifically, if premiums are raised in high-hazard areas so as to reflect risk, those residents may feel they are treated unjustly relative to others with similar homes whose premiums remain unchanged. In Chapter 13, we show that coastal communities, which have the highest risk of wind damage from hurricanes in each of the four states we study, will pay significantly more for insurance than other

regions in these states. This is particularly true in Texas, where Calhoun, Aransas and Galveston Counties would be charged over nine times the average for the entire state. The ratios for the most hazard-prone counties in each of the other three states are on the order of four to five times the average premium across the state.

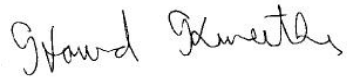
To deal with issues of equity and affordability, we recommend that some type of insurance voucher be provided by the state or federal government. This type of in-kind assistance, rather than an unrestricted grant, assures that the recipients will use the funds for obtaining insurance rather than having the freedom to spend the money on other goods and services. If this system were applied to a low-income family in a hazard-prone area, this family would pay an insurance premium to cover its house that reflects its risk, and then be reimbursed by the state in which they reside for a portion of the increased cost of insurance over the prior year's policy. The amount of reimbursement would be determined by their income and the insurance premium that they are charged. There are several existing programs that could serve as models for developing such a voucher system; *Food Stamp Program*; *Low Income Home Energy Assistance Program (LIHEAP)*; *Universal Service Funds*, each of which are described in some detail in Chapter 14 of the report.

Rather than going over specific points in the NAIC draft "*Natural Catastrophe Risk: Creating a Comprehensive National Plan*", we raise a set of questions that we feel the NAIC proposal needs to address before it is released officially:

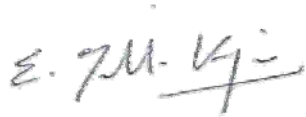
- How well does the proposed legislation in the proposal conform to the principle of premiums reflecting risk (*Principle 1*)?
- How will the proposed legislation deal with the equity and affordability issues (*Principle 2*)?
- What impact would utilizing Principles 1 and 2 have *on the private* reinsurance markets and the future development of insurance-linked securities?
- Would the U.S. Treasury be financially responsible for claims that might arise from truly extreme events in the first years of the operation of the State Catastrophe Funds should it not have sufficient reserves to pay for the losses from a large-scale disaster?
- Who will ultimately pay for the losses of these State Catastrophe Funds if they don't have enough reserve to pay for their claims. In Chapter 13 of our report we document that in Florida it would take until 2023 for the Florida Hurricane Catastrophe Fund (FHCF) to recover from a single hurricane with a return period of 100 years through ex post recoupment.
- What should be the dollar threshold levels where the State Catastrophe Funds and National Catastrophe Fund would be triggered?.
- Does it make sense to finance predictable risks such as hurricane losses through debt schemes rather than by holding reserves? If so, what is the basis for this type of program?

We look forward to interacting with you and other interested parties in the coming weeks and months. We would be more than happy to meet with you and other members of your working group to elaborate on the above points if this would be useful.

Regards,



Howard Kunreuther
Cecilia Yen Koo Professor and Co-Director Wharton Risk Management and Decision Processes Center



Erwann Michel-Kerjan
Managing Director Wharton Risk Management and Decision Processes Center

Appendix 1: The Wharton Risk Management and Decision Processes Center

Established in 1984, the Wharton Risk Management and Decision Processes Center develops and promotes effective corporate and public policies for low probability events with potentially catastrophic consequences through the integration of risk assessment, and risk perception with risk management strategies.

Natural disasters, technological hazards, and national and international security issues (e.g., terrorism risk insurance markets, protection of critical infrastructure, global security) are among the extreme events that are the focus of the Center's research.

The Risk Center's neutrality allows it to undertake large-scale projects in conjunction with other researchers and organizations in the public and private sectors. Building on the disciplines of economics, decision sciences, finance, insurance, marketing and psychology, the Center supports and undertakes field and experimental studies of risk and uncertainty to better understand how individuals and organizations make choices under conditions of risk and uncertainty. Risk Center research also investigates the effectiveness of strategies such as risk communication, information sharing, incentive systems, insurance, regulation and public-private collaborations at a national and international scale. From these findings, the Wharton Risk Center's research team – over 50 faculty, fellows and doctoral students – is able to design new approaches to enable individuals and organizations to make better decisions regarding risk under various regulatory and market conditions.

The Center is also concerned with training leading decision makers. It actively engages multiple viewpoints, including top-level representatives from industry, government, international organizations, interest groups and academics through its research and policy publications, and through sponsored seminars, roundtables and forums.

More information is available at <http://opim.wharton.upenn.edu/risk>.

Appendix 2 - Organizations Interacting with Research Team in Preparing the Report on *Managing Large Scale Risks in a New Era of Catastrophes*

A.M. Best	Organization for Economic Cooperation and Development (OECD)
ACE-INA	Partner Reinsurance Company
Adams and Reese, LLP	Portland Cement Association
Allstate Insurance Company	Property Casualty Insurers Association of America (PCIAA)
American Insurance Association (AIA)	Public Entity Risk Institute
American International Group, Inc. (AIG)	Real Estate Roundtable
Associated Industries of Florida	Reinsurance Association of America
Carnegie Mellon University	Risk Management Solutions (RMS)
Citizens Property Insurance Corporation	Santa Clara University
Department of Homeland Security	Société Générale Bank
Federal Insurance Administration	Standard and Poor's
Financial Services Roundtable	State Farm Fire and Casualty Company
Fireman's Fund Insurance Company	Swiss Reinsurance Company
First American Flood Data Services	Travelers Companies
Florida Hurricane Catastrophe Fund (FHCF)	Texas Windstorm Insurance Association (TWIA)
George Mason School of Public Policy	U.S. Census Bureau
Guardsmark	U.S. Chamber of Commerce
Guy Carpenter (Marsh McLennan)	U.S. Congressional Budget Office
Harvard University	U.S. Department of Homeland Security
Host Hotels & Resorts, Inc.	U.S. Government Accountability Office
Institute for Business & Home Safety (IBHS)	U.S. House of Representatives
International Association of Emergency Managers	University of New Orleans
Jade Risk Solutions, Inc.	V.J. Dowling
K&L Gates, LLP	WeatherPredict Consulting, Inc. (an affiliate of Renaissance Reinsurance Ltd.)
Liberty Mutual	White House
The Lovell Group	World Economic Forum
Munich Re America	Zurich NA
National Association of Insurance Commissioners (NAIC)	
National Association of Mutual Insurance Companies (NAMIC)	
National Association of Realtors	
National Research Council	
National Flood Insurance Program (NFIP)	