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WHARTON STUDY ON MANAGING LARGE-SCALE RISKS REVEALS NEED FOR
COLLABORATION BETWEEN PUBLIC AND PRIVATE SECTORS
Insurance Policies in Four Hurricane-Prone States Addressed in Report

AT WAR WITH THE WEATHER

Managing Large-Scale Risks in a New Era of Catastrophes

Howard C. Kunreuther and Erwann O. Michel-Kerjan
with Neil A. Doherty, Martin F. Grace, Robert W. Klein and Mark V. Pauly

*WINNER OF THE PRESTIGIOUS **KULP-WRIGHT AWARD** PRESENTED BY THE AMERICAN RISK AND INSURANCE ASSOCIATION
RECOGNIZING THE MOST INFLUENTIAL BOOK PUBLISHED ON RISK MANAGEMENT.*

NOW IN PAPERBACK WITH SUPPLEMENTARY EPILOGUE

<http://www.atwarwiththeweather.com/>

Natural disasters around the world were particularly devastating in 2010, beginning with the massive earthquake in Haiti in January. In February 2010, an even stronger quake hit Chile, causing \$30 billion in losses, \$8 billion of which was insured. During July 2010, there were historic floods in China that cost nearly \$30 billion. Massive flooding also occurred in Pakistan during the summer. March 2011 brought the massive earthquake and tsunami in Japan.

Is America ready? It is peak hurricane season in the Atlantic, now through November.

Today we are more vulnerable to catastrophic losses because of the increasing concentration of population in high-risk coastal regions. The question is not *whether* but *when* catastrophes will strike, and what the costs will be. *Who should pay the costs associated with catastrophic losses suffered by homeowners in hazard-prone areas?*

At War with the Weather delivers a groundbreaking analysis of how we currently mitigate, insure against, and finance recovery from natural disasters in the United States. It offers innovative, long-term solutions for reducing losses and providing financial support for disaster victims that define a coherent strategy to ensure sustainable recovery from future large-scale disasters.

Why are we not more proactive in preventing extreme events? Empirical evidence indicates that we tend to focus attention on our immediate problems to avoid thinking about the negative impacts of potential catastrophes. In the epilogue of *At War with the Weather*, we examine some major disasters that occurred in 2010 and link them to salient extreme events that have occurred since the start of the twenty-first century.

- **The Extreme Events of 2010 with a Ten-Year Retrospective**
- **Learning from a Decade of Catastrophic Events: Innovations to Overcome Myopia and Other Behavioral Biases**
- **The Importance of Understanding Behavior toward Extreme Events**
- **A Proposed Strategy: Long-Term Planning with Short-Term Rewards**

Among the key findings:

- Calculation of current risk exposure reveals a 15 percent annual probability of an insured loss in Florida of at least \$10 billion, and a 5 percent annual probability that insured losses will exceed \$25 billion.
- Today, more than 50 percent of the U.S. population lives in coastal counties. In Florida, 80 percent of insured assets are located near the coast.
- Enforcement of building codes significantly reduces damage from hurricanes. Based on a sample of more than 5,600 homeowners impacted by Hurricane Charley in 2004, residences built to wind-resistant standards enforced in 1996 had a claim frequency of 60 percent less than those that were built pre-1996.
- Despite the cost-effectiveness of mitigation measures, many homeowners do not voluntarily invest in them. Hence, there is the need for well-enforced building codes, tax rebates, zoning ordinances, and premiums reflecting risk that take the benefits of mitigation into account.
- Under a scenario where insurers are permitted to charge premiums reflecting risk (competitive market), private insurers and reinsurers would be able to cover most (if not all) losses from severe hurricanes if homeowners mitigate their property.

“*At War with the Weather* will surely become a sine qua non of every researcher, corporate analyst, and state or federal policymaker, and will be extensively cited. A spectacular work.”

—**Mark J. Machina**, Department of Economics, University of California, San Diego

“*At War with the Weather* offers more than just a detailed plan for managing weather risks. It outlines a long-overdue comprehensive, disciplined theory of risk management that applies to all manner of catastrophes.”

—**Michael Chertoff**, former U.S. Secretary of Homeland Security

“This book is essential reading for anyone searching for solutions to the problem of financing large-scale catastrophes.”

—**Terri M. Vaughan**, CEO, National Association of Insurance Commissioners

“This excellent study of disaster insurance will be valuable to readers interested in insurance of hurricanes and other catastrophic risks.”

—**James K. Hammitt**, Director, Center for Risk Analysis, Harvard University

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About the Authors

Howard C. Kunreuther is the James G. Dinan Professor; Professor of Decision Sciences and Business and Public Policy at the Wharton School, and co-director of the Risk Management and Decision Processes Center. He has a long-standing interest in ways that society can better manage low-probability, high-consequence events related to technological and natural hazards. Dr. Kunreuther is a member of the World Economic Forum’s Global Agenda Councils on *Humanitarian Assistance* for 2010-2011 and *Insurance & Asset Management* for 2011-2012, and in 2009-2010 served as co-chair of the Forum’s Global Agenda Council on *Leadership and Innovation for Reducing Risks from Natural Disasters*. He is a Distinguished Fellow of the Society for Risk Analysis, receiving the Society’s Distinguished Achievement Award in 2001.

Erwann Michel-Kerjan is an authority on the financial coverage of extreme events. He is the managing director of the Risk Management and Decision Processes Center and teaches *Value Creation* in the Wharton MBA program. Since 2008, he serves as Chairman of the OECD Secretary-General Board on Financial Management of Catastrophes, which advises its thirty-four member countries on these issues. Dr. Michel-Kerjan was named a Young Global Leader (YGL) by the World Economic Forum (Davos), an honor bestowed to recognize and acknowledge the most extraordinary leaders of the world under the age of 40. He currently co-leads the Global Risks component of the G20 YGL Paris Initiative under the High Patronage of President Sarkozy.

About 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. Risk Center research investigates the effectiveness of strategies such as risk communication, information sharing, incentive systems, insurance, and public/private collaborations.

About the Wharton School

The Wharton School of the University of Pennsylvania — founded in 1881 as the first collegiate business school — is recognized globally for intellectual leadership and ongoing innovation across every major discipline of business education. The most comprehensive source of business knowledge in the world, Wharton bridges research and practice through its broad engagement with the global business community. The School has 5,000 undergraduate, MBA, executive MBA, and doctoral students; more than 9,000 annual participants in executive education programs; and an alumni network of 88,000 graduates.