

06 Symposium - Working Agenda

**Berkeley Symposium on Real Estate, Catastrophic Risk, and Public Policy**

March 22-23, 2006, UC Berkeley

Sponsors

*Berkeley Program on Housing and Urban Policy  
Fisher Center for Real Estate and Urban Economics  
Haas School of Business  
Institute of Governmental Studies  
Goldman School of Public Policy  
Institute of Urban and Regional Development  
Federal Reserve Bank of San Francisco  
Washington Mutual Bank  
Fannie Mae Foundation*

Wednesday, March 22, 2006

➤ 5:30pm – 9:00pm

**Reception and Dinner**

Location: Main Street Dining Room, Federal Reserve Bank of San Francisco  
101 Market Street, San Francisco

Program:

Speaker: Richard Zeckhauser, Harvard University

**JARring Actions, Fate-Tempting Assets and Hefty Tails**

Discussant: Eugene Smolensky, UC Berkeley

Thursday, March 23, 2006

Location: Alumni House, Berkeley Campus

➤ 8:00am – 8:30am                      Coffee and Breakfast

1. Insurance

Chair: Nancy Wallace, UC Berkeley

➤ 8:30am - 9:20am

Howard Kunreuther, University of Pennsylvania

**The Case for Comprehensive Disaster Insurance**

Discussants: Patricia Grossi, Risk Management Solutions, Inc.  
Dwight Jaffee, UC Berkeley

Thursday, March 23, 2006

➤9:20am - 10:10am

George Zanjani, Federal Reserve Bank of New York

**How Do Public Catastrophe Insurance Programs Benefit the Insurance Industry?  
The Case of the California Earthquake Authority**

Discussants: Craig Tillman, Wyndham Partners Consulting Ltd.  
Tom Davidoff, UC Berkeley

➤10:10am - 10:30am Break

2. Catastrophe

Chair: Eugene Bardach, UC Berkeley

➤10:30am - 11:20am

Adam Rose, Pennsylvania State University

**Regional Economic Impacts of Catastrophic Events: The Influence of Resilience at  
Micro and Macro Levels**

Discussants: Stuart Gabriel, University of Southern California  
Chris Redfearn, University of Southern California

➤11:20am - 12:10pm

Kathleen Tierney, University of Colorado

**National Preparedness for Extreme Events: Where We Stand and Why**

Discussants: Todd LaPorte, UC Berkeley  
John Ellwood, UC Berkeley

➤12:10 pm -1:15pm Lunch

3. Government Policy

Chair: Robert Edelstein, UC Berkeley

➤1:15pm - 2:05pm

Howard Chernick, Hunter College, and

Andrew F. Haughwout, Federal Reserve Bank of New York

**Economic Resilience, Fiscal Resilience and Federalism:  
Evidence from 9-11**

Discussants: David Sunding, UC Berkeley  
Amihai Glazer, UC Irvine

➤2:05pm - 2:55pm

Harry W. Richardson, University of Southern California

**Modeling the Economic Impacts of Terrorist Attacks  
on the Ports of Los Angeles and Long Beach**

Discussants: Michael Nacht, UC Berkeley  
Stephen Maurer, UC Berkeley

Thursday, March 23, 2006

➤2:55pm - 3:15pm                      Break

➤3:15pm - 4:05pm

Steven Raphael, UC Berkeley

**Socioeconomic Differences in Household Automobile Ownership Rates:  
Implications for Evacuation Policy**

Discussants: Michelle White, UC San Diego

Betty Deakin, UC Berkeley

4:15pm- 6:00pm                      Reception

## **JARring Actions, Fate-Tempting Assets and Hefty Tails**

Richard Zeckhauser, Harvard University

Natural catastrophes, such as fires and floods, will always be with us. However, we regularly take actions that increase the two components of catastrophes: likelihood and consequences. This problem is compounded because we employ statistical models that underestimate both components.

JARring incorporates JAR an acronym for Jeopardize Assets that are Remote. Actions may be JARring because their effects are distant geographically or in time, or because their effects are merely probabilistic. Prior to Katrina, a portfolio of JARring actions, taken by both private parties and government, made New Orleans and southern Louisiana vulnerable. They included filling substantial wetlands; damming the Missouri, the source of much silt that nourished the Mississippi Delta; channelizing the lower Mississippi; and building canals that criss cross southern Louisiana.

The prosperity of the American economy and the growth of its population has led us to place vast assets in harm's way, tempting fate. The Great Miami Hurricane of 1926 imposed \$760 million (2004) dollars in damage. Today the same storm would impose \$130 billion in damage. Disaster-prone areas of Florida and California -- vulnerable to floods, earthquakes and fires -- continue to receive disproportionately large investments in new housing.

Two important factors contribute to our profligate disregard for risk: (1) Normal mechanisms to control risks – tort actions, contracts, within jurisdiction regulation – fail when the players are many and the connections between action and risk are distant. (2) We underestimate risks because our conventional statistical analyses employ Normal distributions and pay no systematic attention to the types of unknowable events that frequently trigger catastrophes. The real world presents us with much heavier tails, i.e., more frequent and severe catastrophes, than these models predict.

Making parties pay for the risks they impose, including costs to an insurance pool or to government reimbursement, is the route to sensible risk policy. Society's actions and risk assessment strategies indicate that we are far off course.

# The Case for Comprehensive Disaster Insurance

Howard Kunreuther

## ABSTRACT

This paper examines the role that insurance coupled with mitigation can play in reducing losses from future natural disasters while at the same time providing funds for recovery. After examining the decision processes of three interested parties who will be at the centerpiece of such a program, *residents in hazard-prone areas, insurers/reinsurers and the government*, I provide a rationale for comprehensive disaster insurance as an integral part of a hazard management program. To reduce future losses there is a need for creative private-public partnerships through economic incentives and well-enforced regulations and standards (e.g. building codes). It is also important to consider whether insurance coverage should be voluntary or mandatory, what types of special arrangements should be given to low income families in high hazard areas and whether government should have a role in providing protection against losses from mega-catastrophes.

# **How Do Public Catastrophe Insurance Programs Benefit the Insurance Industry? The Case of the California Earthquake Authority**

**George Zanjani  
Federal Reserve Bank of New York**

## **Abstract**

The insurance industry has often lobbied for greater public involvement in catastrophe insurance markets. However, a study of a recent case of such involvement (the Terrorism Risk Insurance Act of 2002, or TRIA) by Brown et al. (2004) \* suggests a mixed blessing for the industry. This argument raises questions about what segments of the insurance industry, if any, benefit from public provision of catastrophe insurance and why.

The creation of the California Earthquake Authority (CEA) in 1996 offers an interesting opportunity to study this question because participation was voluntary. Many state and federal programs (including TRIA) are imposed on the industry as a whole, while the CEA allowed companies to “opt in” to the program or to “go it alone.” Companies representing roughly 70% of the homeowners’ market in California shed the risk associated with their homeowners’ policies by opting in, while the remainder chose to stay out and to continue to underwrite earthquake risk.

This paper identifies what differentiated those who opted in from those who opted out, and uses these results to draw lessons for future public initiatives in catastrophe insurance.

\* Brown, J.R., Cummins, J.D., Lewis, C.M., and Wei, R. (2004), “An Empirical Analysis of the Economic Impact of Federal Terrorism Reinsurance,” *Journal of Monetary Economics* 51, 861-898.

REGIONAL ECONOMIC IMPACTS OF CATASTROPHIC EVENTS:  
THE INFLUENCE OF RESILIENCE AT MICRO, MESO, AND MACRO LEVELS

by

Adam Rose

The Pennsylvania State University  
University Park, PA 16802

As devastating as many recent disasters have been, their economic impacts could have been substantially worse if not for the inherent and adaptive resilience of individual businesses, markets, and the regional macroeconomy (see, e.g., Rose 2005, 2006a, 2006b). This paper will present recent developments in modeling the impacts of disasters at the micro, meso, and macro levels. This will include such resilience responses as utilizing distributed generation to minimize the risk of centralized electricity supply disruptions, the matching of suppliers without customers with customers without suppliers, and reliance on price signals to allocate scarce resources during a crisis. Results of recent studies will be summarized to measure the relative strength of various types of resilience. The paper will also evaluate the extent to which resilience is eroded by truly catastrophic events.

References

- Rose, A. and S. Liao. 2005. "Modeling Resilience to Disasters: Computable General Equilibrium Analysis of Water Service Disruption," *Journal of Regional Science* 45: 75-112.
- Rose, A. 2006. "Economic Resilience to Disasters: Toward a Consistent and Comprehensive Formulation," in D. Paton and D. Johnston (eds.) *Disaster Resilience: An Integrated Approach*. Springfield, IL: Charles C. Thomas (in press).
- Rose, A., G. Oladosu, and S. Liao. 2006. "Business Interruption Impacts of a Terrorist Attack on the Electric Power System of Los Angeles: Customer Resilience to a Total Blackout," in P. Gordon, J. Moore and H. Richardson (eds.), *Economic Costs and Consequences of a Terrorist Attack*. Cheltenham, UK: Edward Elgar (in press).

## **National Preparedness for Extreme Events: Where We Stand and Why**

**Kathleen Tierney  
University of Colorado**

### Abstract

The Hurricane Katrina disaster vividly demonstrates the extent to which the nation is unprepared to respond to catastrophic and near-catastrophic extreme events. The Katrina debacle is rooted in the current state of emergency management and homeland security policies and programs that are incapable of making the nation safer and that actually have the opposite effect. The roots of the nation's lack of effective response capability can be traced to several factors: (1) institutional changes that accompanied the "war on terrorism"; (2) the "9-12" syndrome, one of the characteristics of which is the assumption that knowledge and practices developed prior to September 11, 2001 have no relevance in the post-9-11 world; (3) accompanying changes in the manner in which consequence management for extreme events is framed and conceptualized; and (4) the creation of organizational forms and frameworks that are divorced from the realities of extreme event management.

In discussing these factors, the paper will focus on perverse and negative outcomes stemming from the creation of the Department of Homeland Security; the framing of domestic crises in terms of law enforcement and national defense; the myopic focus on terrorism at the expense of other perils, a comparable myopic focus on tactical issues of consequence management at the expense of policy and strategic issues, programmatic initiatives that ignore what is known about the sociobehavioral dimensions of extreme events, "new players" in the domestic crisis management domain; and the error of creating large, unresponsive bureaucratic structures to manage dynamic crisis conditions that are best handled through network responses, flexibility, adaptability, and improvisation.



## **Economic Resilience, Fiscal Resilience and Federalism: Evidence from 9-11**

By Howard Chernick, Hunter College  
and  
Andrew F. Haughwout, Federal Reserve Bank of New York

### **Abstract**

The terrorist attacks of 9-11 exacted a terrible human toll on New York City, and early estimates suggested that the city's economy also suffered a severe negative shock. We provide evidence that while the short-run effect of the attack was substantial, the city economy demonstrated substantial resilience over the longer run. This resilience was anticipated by market actors and reflected in strong prices for the city's stock of assets – land and structures. Nonetheless, the short run impact of the attacks on city government revenue, combined with very strict borrowing constraints, led to a serious, albeit transitory, fiscal problem for the city. At the same time, the importance of the city economy to New York state revenue and institutional peculiarities of the state's personal income tax meant that the state also faced a serious revenue shortfall. In the end, the city dealt with its fiscal problems with little cash from the state, relying instead on its own tax base and federal aid. We use these observations to develop a simple fiscal model of an environment with geographically concentrated shocks, and discuss its implications for tax base sharing and, more generally, fiscal policy making in a federation.

## Abstract

# **Modeling the Economic Impacts of Terrorist Attacks on the Ports of Los Angeles and Long Beach**

by

**Harry W. Richardson, University of Southern California (based on research by the USC CREATE [Center for Risk and Economic Analysis of Terrorism Events] Economic Modeling Team)**

This presentation sums up some of the recent research by the USC group on the economic impacts of terrorist attacks on the twin ports of Los Angeles-Long Beach. The research considers two types of attack (radiological bombs in the ports and conventional bombs to blow up access freeway bridges), either together or in isolation. The analysis uses the Southern California Planning Model (SCPM), a 3,000+ zone input-output model of the five-county Southern Californian region with an endogenous transportation network. The research measured the business interruption losses associated with alternative scenarios that vary with port closure periods, bridge reconstruction and the duration of radiation plume evacuations. They could range up to \$35 billion, of which about two-thirds are intraregional.

## **Socioeconomic Differences in Household Automobile Ownership Rates: Implications for Evacuation Policy**

Alan Berube  
The Brookings Institution

Steven Raphael  
Goldman School of Public Policy  
University of California, Berkeley

The devastation wrought by hurricane Katrina laid bare many of the disparities that continue to separate Americans by race and class. One disparity that was immediately apparent in Katrina's aftermath concerned the size and composition of the area's populations that lacked access to an automobile. These households, largely dependent on the limited emergency public transportation available to evacuate the city in advance of the storm, were the most likely to be left behind. In New Orleans, this population seemed quite large in size – and overwhelmingly black.

In this paper, we use data from various years of the U.S. Census of Population and Housing to characterize trends in auto ownership rates and current disparities along dimensions defined by race and other measures of socioeconomic status. We present estimates of the population of the nation's metropolitan areas that do not own a household automobile, as well as a simple spatial analysis of the concentration within specific metropolitan areas of such households. We also review current policy in several metropolitan areas regarding the provisions for the emergency evacuation of those without access to private transportation.