Wharton

Snapshot – December 2000

Managing Catastrophic Risks

A Research Program of Wharton s Financial Institutions Center *and*

Risk Management and Decision Processes Center.

On Tuesday, December 12, 2000, The Wharton Managing Catastrophic Risks Project held it's fall advisory board meeting at the Inn at Penn Hotel in Philadelphia. The day's program was divided into three sessions. The first provided a summary of the program's recent activity. The second part was a presentation of the project's near term research plans. The third session was a group discussion of the long-term direction of future research.

Recent Activity

Supply-Demand Study

Paul Kleindorfer, Universal Furniture Professor of Decision Sciences and Economics, Wharton School

Kleindorfer gave an update on his study with Robert Klein and Martin Grace of the supply, demand and regulation of the homeowners insurance market in Florida and New York. This effort is being supported by extensive collaboration with the Insurance Service Offices Inc. of New York. The objectives of the "supply-demand" study are to answer the following questions:

- What is the structure and performance of the catastrophe insurance marketplace?
- What is the nature and impact of regulation of this market on pricing and financial risk?
- What is the current state of the market and what possible future states of the market are sustainable?

The ISO database used in this study has 2.6 million records from 60 companies doing business in Florida and New York. Kleindorfer outlined the history of the project and presented an update on results derived since the Bermuda meeting of the sponsors. These included some new price and income elasticity results. His conclusions were that catastrophic coverage fits the criteria for an "inferior good" (i.e. exhibits negative income elasticity), non-catastrophe coverage is a "normal good" and overall, demand for homeowners insurance, is an inferior good. Kleindorfer pointed out that this does not mean that demand for homeowner s insurance coverage declines with wealth, since the income elasticity results control for the value of housing, which can be expected to increase as wealth increases. A variety of insights can be obtained from these results, from pricing policies for firms to tax policy for reserves. These are highlighted in the most recent paper from this part of the Project.

Part of this study will be published as an ISO report and a research monograph. The latter will include the supply dynamics, demand analysis, cost structures, company strategies on exposures and pricing strategies. Future research will focus on consumers' valuation of the tradeoffs of coverage and price options, desirable directions for changes in regulatory policy, and an explanation of the extreme price dispersion observed in Florida and New York, and varying approaches to exposure management among insurers.

Aon Conference

Neil Doherty, Ronald A. Rosenfeld Professor or Insurance and Risk Management, Wharton School

Doherty summarized the multi-day conference on Capitalization of the Property and Casualty Insurance Industry held in September at Wharton and sponsored by the AON Corporation. The conference assembled a large group of academics, analysts, rating agencies and industry professionals. The goal of the conference was to examine four basic questions.

1. Is the industry actually overcapitalized as popular belief holds?
2. How does price regulation influence capital decision making?
3. Is there a discernable "rating creep" towards more capital stringency?
4. How can the best determination of optimal capital be made?

The conclusions were hotly debated. However general consensus was that the industry is indeed overcapitalized, that "regulation creep" over the last 15 years has played a major role in this and that currently no best method exists for determining optimal capital levels.

Book on New Approaches to Managing Natural Hazards ***Howard Kunreuther, Cecilia Yen Koo Professor of Decision Sciences and Public Policy, Wharton School***

Kunreuther presented a status report on the book **New Approaches to Managing Natural Hazards** currently being written by the project in conjunction with Applied Insurance Research, EQE International, and Risk Management Solutions, Inc. This book will be directed at the sophisticated risk manager and will explicitly address uncertainty in the context of formal risk assessment models. Kunreuther presented an outline of the book and solicited comments from attendees.

Suggestions included having a chapter on dynamic financial analysis and having interested advisory board members attend the next planning meeting. Steve Goldberg volunteered to send the prospectus to the Society of Actuaries to gauge their possible interest in having them include some chapters from the book as part of their syllabus. Questions were raised about the intended audience for the book and how to most effectively develop material in the book to address their interests.

Kunreuther indicated that the Joseph Henry Press was willing to publish the book if there was a financial contribution in the form of book purchases. David Cummins indicated that Kluwer Press should have an interest in this book as part of its insurance series and that he would send them a prospectus.

Other Plans and Activities for Coming Year

Wharton/World Bank Conference

Howard Kunreuther, described the planned agenda for a joint Wharton/World Bank conference to be held January 9-10, 2001 at the World Bank offices in Washington, D.C. The conference will focus on mitigation strategies for reducing disaster risk, the role of insurance/reinsurance and the capital markets in managing catastrophic risks, regulation and public-private partnerships, and finally reducing the vulnerability of the poor. Approximately 125 persons are expected to attend.

Book on Financing Catastrophic Risks

David Cummins, Harry J. Loman Professor of Insurance and Risk Management, Wharton School

Cummins, outlined a proposed book on the financing of catastrophic risks, which would synthesize the results of several studies already undertaken by the project. The book, to be co-edited with Neil Doherty, would include chapters on the general CAT risk financing problem, paying for really big disasters, assessing the capacity of the global reinsurance market, using index-linked CAT loss securities to hedge catastrophic risk, using CAT Bonds to hedge CAT risk, using a statistical approach to pricing CAT risk securities, and finally a policy solution to the problem of pre-tax reserving for CAT risk.

Future Role of Wharton Centers

Since its inception, the Managing Catastrophic Risks Project has been a joint venture of two Wharton Research Centers: The Risk Management and Decision Processes Center and the Financial Institutions Center. In this arrangement, the Managing Director of the Financial Institutions Center also served as the project director.

Over the summer both the Director (Anthony M. Santomero) and Managing Director (Peter Burns) of the Financial Institutions Center left the University to take senior positions at the Federal Reserve Bank of Philadelphia. They have been replaced by three Co-Directors, Professor Richard Herring, Professor Franklin Allen, and Dr. Carol Leisenring. Both Herring and Allen have been at Wharton for many years. Leisenring was formerly Executive Vice President for Strategic Development and Treasury and also Chief Economist of CoreStates Financial Corporation and has just arrived at Wharton. She has previously held academic appointments and was also a senior staff economist for the Council of Economic Advisors during the Reagan administration, and Deputy to the Undersecretary for Monetay Affairs, Treasury Department.

Howard Kunreuther and Paul Kleindorfer indicated that they looked forward to continued joint activity with the Financial Institutions Center under its new leadership.

Long-Term Direction of Project

Howard Kunreuther initiated a group discussion on the long-term direction of the project by posing the following questions:

- What are possible future research directions for the Wharton Managing Catastrophic Risk Project?
- What topics should be investigated?
- What interest do current sponsors have in continuing with the project?
- Who are other potential sponsors?

He then went on to list new research topics currently planned.

- The role of cat bonds in providing financial protection against smaller storms (e.g. tornadoes, hailstorms, thunderstorms) and weather patterns.
- An analysis of impediments to insurance securitization and how we can overcome them (e.g. the process and role of CAT bond rating, needed legislative and regulatory changes).
- A better understanding of CAT risk modeling and the uncertainties surrounding estimates of potential losses and its role in insurer/reinsurer decisions on pricing and coverage of relevant risks.
- The relationship between correlated and uncorrelated risks on the capital management and enterprise risk management of firms.
- An historical analysis of past regulatory actions, the impact that these measures have had on insurers behavior and regulatory guidelines for the future.

- A case study contrasting mitigation and risk transfer instruments in Istanbul and Los Angeles.

Discussion then ensued and the following topics of interest were suggested by Advisory Board Members.

1. CAT insurance and technology in the broader context of capital allocation.
2. "Enterprise Risk Management"; what it is, where it's going, terminology, case studies, macro-level risk.
3. Dynamic financial analysis and correlation study of loss experience and how they relate to CAT Models.
4. Uncertainty of pricing of securitized products.
5. "User-friendly" securitization - What's preventing it from taking off? What are the points of inefficiency? Why do CAT bond get such a huge haircut?
6. The role of accounting treatment in the marketability of securitized products.
7. The role of the "securitization threat" in driving innovations in reinsurance.
8. Expansion into cases studies of emerging economies.
9. Risk assessment and transfer mechanisms as they affect supply chains.
10. "Middle level" risk transfer, is there a market? How should it be modeled? Securitized?
11. How does the global diversification of CAT risk transfer depend on the development of modeling?

These topics will be discussed by the Wharton team as possible areas for future research and the Advisory Board was encouraged to provide additional input as to which projects should have highest priority and how they could contribute to these efforts.

Howard Kunreuther thanked those who attended the meeting for their helpful suggestions and constructive comments. He expressed the appreciation of the Wharton team to the modeling firms for their continued collaboration and the sponsors for their continued support. The meeting was adjourned at 3:00 pm.

Industry Advisory Board

Visit the project website at:
http://fic.wharton.upenn.edu/fic/wfic/catrisk.html

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