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Études et Dossiers

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World Risk and Insurance Economics Congress

Inaugural Conference

7 – 11 August 2005
Salt Lake City, Utah, USA

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Working Paper Series of
The Geneva Association

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The Geneva Association Working Paper Series “Études et Dossiers” appear at irregular intervals about 10 - 12 times per year. Distribution is limited.

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Layout & Distribution: Valéria Kozakova

Foreword to the
Etudes et Dossiers Working Paper Series of The Geneva Association on the

Inaugural World Risk and Insurance Economics Congress
7~11 August 2005, Salt Lake City, Utah, USA

In keeping with one of its central goals, the bridging between insurance and risk management theory (academics) and practice (insurance professionals), The Geneva Association engaged in a unique venture with the creation of the very first **World Risk and Insurance Economics Congress** (WRIEC). The Congress was jointly organized with The American Risk and Insurance Association (ARIA), The Asia-Pacific Risk and Insurance Association (APRIA), and the European Group of Risk and Insurance Economists (EGRIE).

The purpose of the Congress was to stimulate corporate awareness and interest in risk-related research and to provide a forum for networking among academics and industry and government professionals worldwide. ARIA graciously hosted the first meeting in Salt Lake City (Utah, USA) from 7 to 11 August 2005. The Congress was open to all persons – academics, industry executives and professionals, and government officials – who share an interest in promoting research and education in the broad areas of risk and insurance. Further information can be found on the event's website at www.wriec.org.

The meeting was a success in every aspect. 328 participants from 28 countries presented 127 high-quality papers throughout the meeting. Invited speakers also participated in six plenary sessions. The following Etudes et Dossiers contains the relevant conference materials, i.e. abstracts of the papers and presentations from the different sessions.

Why was the first ever **World Risk and Insurance Economics Congress** so special?

- It was the top global event for risk and insurance academics and researchers in the current decade. No other platform will bring together as many leading scholars from so many different countries in the coming years.
- This event bridged the gap between the professional world and the academic world. It was also a prime opportunity to let the researchers know about key issues that are of importance to the industry and engage them in future projects.
- For the young academics, who have promising careers in financial services ahead of them, the congress sent a strong signal to the next generation of researchers in terms of the future direction of their careers.

The **World Risk and Insurance Economics Congress** was a fundamental step towards reuniting insurance business and academic research. The Geneva Association is proud that it could act as catalyst and joint organiser of this event. We thank the sponsors, the other joint organisers, the staff, and the many others partners for their kind support and extensive help. Without their commitment, the congress would not have been possible.

Patrick M. Liedtke
Secretary General and Managing Director
The Geneva Association

The joint organizers of the Inaugural World Risk and Insurance Economics Congress want to thank the sponsors of this event.

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ARIA:	James M. Carson	Harold D. Skipper, Jr.
APRIA:	W. Jean Kwon	Ramamurthy Vaidyanathan
EGRIE:	Christian Gollier	Achim Wambach
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Composition of the Scientific Committees for WRIEC 2005:

For ARIA:	James R. Garven	Larry Berger
	Richard MacMinn	Michael Powers
	Terri Vaughan	
For APRIA:	S. Hun Seog	Shih-Chieh Bill Chang
	Piman Limpaphayom	Ziyou Yu
	Muhammad Ziaulhaq Mamun	
For EGRIE:	Christian Gollier	Stephen Diacon
	Henri Loubergé	Achim Wambach
	Richard Watt	

Executive Director of WRIEC 2005 Secretariat: Tony Biacci

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World Risk and Insurance Economics Congress
Conference Program

Sunday, 7 August 2005	
1:00 PM ~ 5:00 PM	Registration Desk Open
8:00 AM ~ 3:00 PM	ARIA Executive Committee and Board Meetings
9:00 AM ~ 1:00 PM	APRIA Executive Committee Meeting
2:00 PM ~ 4:00 PM	APRIA Board of Governors Meeting
4:00 PM ~ 6:00 PM	EGRIE Board Meeting
5:00 PM ~ 6:00 PM	First-time Participant Welcome Reception (joint association function)
6:00 PM ~ 7:30 PM	Welcome Reception (open to all)
Monday, 8 August 2005	
7:30 AM ~ 5:00 PM	Registration Desk Open
7:30 AM ~ 8:30 AM	Continuous Breakfast Buffet
8:40 AM ~ 10:00 AM	Official Opening: Welcome Addresses Representatives of the Organizers Keynote Address Peter A. Diamond, Institute Professor, Massachusetts Institute of Technology
10:00 AM ~ 10:30 AM	Coffee & Tea Break
10:30 AM ~ 12:00 PM	Plenary Session I: Key Issues in Insurance Moderator: Gordon Stewart, President, Insurance Information Institute Panelists: • Axel Lehmann, CEO, Zurich North America Commercial • David Holland, Vice Chairman, President & CEO, Munich American Reinsurance • Stanley Tulin, Vice Chairman & CFO, AXA Financial
12:30 PM ~ 1:45 PM	Luncheon (joint association function)
3:30 PM ~ 4:00 PM	Coffee & Tea Break
4:00 PM ~ 5:30 PM	Semi-plenary Session A: Insurance Fraud Moderator: Richard Derrig, OPAL Consulting Panelists: • Elizabeth Sprinkel, SVP, Insurance Research Council • Daniel Johnston, Executive Director, Insurance Fraud Bureau of Massachusetts • Hunsoo Kim, Professor, SoonChunHyang University
	Semi-plenary Session B: Capital Adequacy and Financial Issues in Insurance Regulation Moderator: Kawai Yoshihiro, Secretary General, International Association of Insurance Supervisors Panelists: • Potjanee Thanavaranit, Director-General, Department of Insurance, Ministry of Commerce, Thailand • Ruben Mendiolaza, Intendent, Superintendency of Banking and Insurance, Peru

	• Terri Vaughan, Professor, Drake University, former Iowa Insurance Commissioner and president of the National Association of Insurance Commissioners (NAIC), USA
5:30 PM	ARIA Annual General Meeting (until 6:30 PM) APRIA Annual General Meeting (until 6:30 PM) EGRIE Annual General Meeting (until 7:00 PM)
6:30 PM ~ 7:15 PM	Poolside Reception
Tuesday, 9 August 2005	
7:30 AM ~ 5:00 PM	Registration Desk Open
7:15 AM ~ 8:15 AM	Continuous Breakfast Buffet
8:30 AM ~ 10:00 AM	Concurrent Sessions I
10:00 AM ~ 10:30 AM	Coffee & Tea Break
10:30 AM ~ 12:00 PM	Concurrent Sessions II
12:00 PM ~ 1:30 PM	ARIA Awards Luncheon Jointly with Other Organizers
1:45 PM ~ 3:15 PM	Concurrent Sessions III
3:15 PM ~ 3:45 PM	Coffee & Tea Break
3:45 PM ~ 5:15 PM	Plenary Session III: Geneva Risk Economics Lecture 2005 (Bounding Risk Measures for Portfolios with Known Marginal Risks) Moderator: Christian Gollier, University of Toulouse Speaker: Paul Embrechts, Swiss Federal Institute of Technology Discussant: Svein-Arne Persson, Norwegian School of Economics and Business Administration
6:00 PM	"Dine-Around Salt Lake City"
8:30 PM	"Social Event" at the Conference Hotel (optional)
Wednesday, 10 August 2005	
7:15 AM ~ 8:15 AM	Continuous Breakfast Buffet
8:30 AM ~ 10:00 AM	Concurrent Sessions IV
10:00 AM ~ 10:30 AM	Coffee & Tea Break
10:30 AM ~ 12:00 PM	Concurrent Sessions V
12:00 PM ~ 1:15 PM	Luncheon (joint association function)
1:30 PM ~ 3:00 PM	Concurrent Sessions VI
3:00 PM ~ 3:30 PM	Coffee & Tea Break
3:30 PM ~ 5:00 PM	Plenary Session IV: The Economics of Brokers--Current Challenges Moderator: Neil Doherty, the Wharton School, University of Pennsylvania Panelists: • J. David Cummins, the Wharton School, University of Pennsylvania • Gerald R. Ray, President, Corporate Operations • Terri Vaughan, Professor, Drake University, former Iowa Insurance Commissioner and president of the National Association of Insurance Commissioners (NAIC), USA
Thursday, 11 August 2005	
7:15 AM ~ 8:15 AM	Continuous Breakfast Buffet
8:30 AM ~ 10:00 AM	Concurrent Sessions VII
10:00 AM ~ 10:30 AM	Coffee & Tea Break
10:30 AM ~ 12:00 PM	Concurrent Sessions VIII
12:00 PM ~ 1:30 PM	ARIA Board Meeting

Concurrent Sessions I

Session 1A: Economics of Uncertainty I Moderator: Michael Sonnenholzner U of Erlangen-Nuernberg	Association	Author	Affiliation	Paper Title	Discussant	Affiliation
	EGRIE	Minh Phuong Bui	New York U and U of Toulouse	Comparative Prudence and Comparative Temperance	Jim Ligon	U of Alabama
	EGRIE	Louis Eeckhoudt, Béatrice Rey, and Harris Schlesinger	U of Alabama and U of Konstanz	A Good Sign for Multivariate Risk Taking	Christophe Courbage	The Geneva Association
	EGRIE	Christian Gollier	U of Toulouse	Optimal Expectations with Complete Markets	Alex Muermann	U of Pennsylvania

Session 1B: Efficiency Analysis I Moderator: Martin Grace, Georgia State U	Association	Author	Affiliation	Paper Title	Discussant	Affiliation
	ARIA	B. Paul Choi	Howard U	Foreign-owned Insurers' Performance in the U.S. Property-Liability Markets	Lingyan Suo	Beijing U
	ARIA	David Cummins and Xiaoying Xie	U of Pennsylvania	Is Independent Agency Distribution System More Revenue Efficient: A Data Envelopment Analysis	Martin Grace	Georgia State U

Session 1C: Insurance Economics I Moderator: Achim Wambach, U of Erlangen-Nuernberg	Association	Author	Affiliation	Paper Title	Discussant	Affiliation
	EGRIE	Pierre Picard	U Paris X - Nanterre	Costly Risk Verification without Commitment in Competitive Insurance Markets	Neil Doherty	U of Pennsylvania
	EGRIE	Henri Loubergé and Richard Watt	Universidad Autonoma de Madrid	The Effect of an Increase in the Probability of Loss When Risk is Endogenous	Marie-Cécile Fagart	Université de Rouen

Session 1D: Insurance Empirics I Moderator: Games Gaven, Baylor U	Association	Author	Affiliation	Paper Title	Discussant	Affiliation
	EGRIE	David Cummins, Yijia Lin, and Rich Phillips	U of Pennsylvania and Georgia State U	An Empirical Investigation of the Pricing of Financially Intermediated Risks with Costly External Finance	Ruediger Reissaus	U of Erlangen-Nuernberg
	EGRIE	Jim Barrese, Martin Grace, and Nicos Scordis	St. John's U	Concentration in the U.S. Property-Liability Insurance Industry	Gene Lai	Washington State U

Session 1E: Insurance Solvency Moderator: Steven Pottier, U of Georgia at Athens	Association	Author	Affiliation	Paper Title	Discussant	Affiliation
	APRIA	Liu Xiaojun and Chen Dan	Central U of Finance and Economics, and Beihang U	An Empirical Study on the Solvency of China's Insurance Companies Basing on the Financial Situation of Companies	Thomas Berry-Stölzle	U of Cologne
	APRIA	Hunsoo Kim, Soon-Jae Lee, and W. Jean Kwon	Sejong U, SoonChunHyang U, and St. John's U	Choice of Exit Forms and Firm Characteristics: Evidence from the U.S. Property-Liability Insurance Market	Harold Skipper	Georgia State U
	ARIA	Thomas Berry-Stölzle	U of Cologne	The Impact of Illiquidity on the Asset Management of Insurance Companies	Steven Pottier	U of Georgia

Session 1F: Life Insurance I Moderator: Randy Dumn, Florida State U	Association	Author	Affiliation	Paper Title	Discussant	Affiliation
	APRIA	Zheng Yu	Central U of Finance and Economics	The Focus of Life: Risk Protection or Investment--Evidence from the Empirical Study on the Demand of the Life Insurance in China Emerging Markets	Randy Dumm	Florida State U
	APRIA	Alexander Kling, Andreas Richter, and Jochen Russ	Insitut fuer Finanz- und Aktuarwissens chaften and Illinois State U	The Impact of Surplus Distribution on the Risk Exposure of With Profit Life Insurance Policies Including Interest Rate Guarantees	Chenghsien Tsai	National Chengchi U

Session 1G: Pensions I Moderator: Roland Eisen, Johann Wolfgang Goethe-U Frankfurt	Association	Author	Affiliation	Paper Title	Discussant	Affiliation
	ARIA	Marie-Eve Lachance	San Diego State U	Helping Workers Delay Retirement: Is it Worth it?	Jeff Brown	U of Illinois and NBER
	EGRIE	Miguel Romero	Universidad Autonoma de Madrid	Optimal Consumption and Investment with an Uncertain Lifetime in a Model with Two Assets	Jason Seligman	U of Georgia

Concurrent Sessions II

Session 2A: Economics of Uncertainty II Moderator: Minh Phuong Bui, New York U and U of Toulouse	Association	Author	Affiliation	Paper Title	Discussant	Affiliation
	EGRIE	Henry Chiu	U of Manchester	Skewness Preference, Risk Taking and Expected Utility Maximization	Minh Phuong Bui	New York U and U of Toulouse
	APRIA	Shih-Chieh Chang, Chenghsien Tsai and Ya-Wen Hwang	National Chengchi U	Hedging Labor Income and Inflation Uncertainties through Capital Market in Defined Contribution Pension Schemes	Snorre Lindset	Norwegian U of Science and Technology
	EGRIE	Emilio Venezian	Rutgers U	Evolving Risk Aversion and the Evidence on Constant Relative Risk Aversion	Louis Eeckhoudt	Facultés Universitaires Catholiques de Mons (retired)

Session 2B: Insurance Economics II Moderator: Marie-Cécile Fagart, U de Rouen	Association	Author	Affiliation	Paper Title	Discussant	Affiliation
	EGRIE	Jose Penalva	IAE, CSIC	Efficiency equals Full Insurance Coverage? A Study of the Interaction of Insurance and Financial Markets	Seungryul Ma	Daegu U
	EGRIE	Marie-Cécile Fagart and Bidéman Kambia-Chopin	Université de Rouen and Université de ParisX-Nanterre	Prevention in Insurance Markets	Henry Chiu	U of Manchester

Session 2C: Insurance Empirics II Moderator: Dick Butler, Brigham Young U	Association	Author	Affiliation	Paper Title	Discussant	Affiliation
	EGRIE	Jean Pinquet, Mercedes Ayuso, and Montserrat Guillen	U of Barcelona	Selection Bias and Auditing Policies on Insurance Claims	Martin Boyer	HEC Montréal and CIRANO
	ARIA	Pat Brockett, Linda Golden, and Sandra Dunn	U of Texas at Austin	Biological and Psycho-behavioral Correlates of Risk Taking, Credit Scores, and Automobile Insurance Losses: Toward an Explication of Why Credit Scoring Works	Richard Derrig	Opal Consulting
	ARIA	Richard Derrig and Grzegorz Rempala	Opal Consulting and University of Louisville	A Statistical Analysis of the Settlement Negotiation Process for Automobile Bodily Injury Liability Claims In the Presence of Suspicion of Fraud and Build-Up	Keith Crocker	Pennsylvania State U

Session 2D: Life Insurance II Moderator: Mahito Okura, Nagasaki U	Association	Author	Affiliation	Paper Title	Discussant	Affiliation
	APRIA	Ghadir Mahdavi	Kyoto U	Advantageous Selection versus Adverse Selection in Life Insurance Market: The Case of Japan	Fang Li	ING Asia Pacific Regional Pensions
	APRIA	Mahito Okura and Norihiro Kasuga	Nagasaki U	Financial Instability and Life Insurance Demand	W. Jean Kwon	St. John's U
	APRIA	Yee Wah Chin, Yuan Wu, and Patrick K.P. Chan	Nanyang Technological U	Spousal Characteristics and Its Effect on Life Insurance Ownership between Spouses in Singapore	R. Suriya Narayanan	SBI Life Insurance

Session 2E: Pensions II Moderator: Vickie Bajtelsmit, Colorado State U	Association	Author	Affiliation	Paper Title	Discussant	Affiliation
	EGRIE	Christian Gollier	U of Toulouse	Optimal Portfolio Management for Individual Pension Plans	Richard Watt	Universidad Autonoma de Madrid
	ARIA	Jeffrey Brown and Scott Weisbenner	U of Illinois at Urbana-Champaign and NBER	Individual Account Investment Options and Portfolio Choice - Behavioral Lessons from 401(k) Plans	David Richardson	Georgia State U

Session 2F: Public Policy Moderator: S. Hun Seog, KAIST	Association	Author	Affiliation	Paper Title	Discussant	Affiliation
	EGRIE	Anderas Engel and Achim Wambach	U of Erlangen-Nuernberg	Risk Management in Procurement Auctions	John Marshall	U of California, Santa Barbara
	EGRIE	Sandrine Spaeter and Panagiotis Tsakiris	Louis Pasteur U and National Technical U of Athens	Environmental Risks and Financial Guarantees: Improving Prevention in the Mining Industry	Martin Grace	Georgia State U

Session 2G: Reinsurance Moderator: Bill Ferguson, U of	Association	Author	Affiliation	Paper Title	Discussant	Affiliation
	ARIA	Cassandra Cole, Ryan Lee, and Kathleen McCullough	Florida State U and U of Calgary	A Test of the Eclectic Paradigm: Evidence from the U.S. Reinsurance Market	Lars Powell	U of Arkansas at Little Rock

Ferguson, U of Louisiana at Lafayette	EGRIE	Oliver Burkart	BaFin (Federal Financial Supervisory Authority)	Are there Co-movements in the Default Risk of Reinsurance Companies?	Ran Wei	U of Pennsylvania
	EGRIE	Ruediger Reissaus and Achim Wambach	U of Erlangen-Nuernberg	The Demand for Reinsurance in the German and the European Market: First Empirical Results	Roland Eisen	Johann Wolfgang Goethe-U Frankfurt

Concurrent Sessions III

Session 3A: Actuarial Science and Insurance Finance I Moderator: Jochen Russ, Institut für Finanz- und Aktuarwissenschaften	Association	Author	Affiliation	Paper Title	Discussant	Affiliation
	EGRIE	Kristian Miltersen and Svein-Arne Persson	Norwegian School of Economics and Business Administration	Is Mortality Dead?	Jean Pinquet	Universite Paris X - Nanterre
	ARIA	Changsoo Lee and Kwangbong Lee	Soongsil U and Inje U	Risk Diversifications in Reserve Valuation: The Case of the Korean Life Insurance Industry	Chenghsien Tsai	National Chengchi U
	APRIA	Chenghsien Tsai, Weiyu Kuo, and Derek Mi-Hsiu Chiang	National Chengchi U	The Distributions of Policy Reserves Considering the Policy-year Structures of Surrender Rates and Expense Ratios	Stephen P. D'Arcy	U of Illinois

Session 3B: Corporate Risk Management I Moderator: Larry Cox, U of Mississippi	Association	Author	Affiliation	Paper Title	Discussant	Affiliation
	APRIA	J. Thomas Connelly, Piman Limpaphayom, and Thanomsak Suwannoi	Chulalongkorn University and CelestialBusiness	Are Insurance Firms Exposed to Foreign Exchange Rate Fluctuations? Evidence from Insurers in the Asia-Pacific	Christian Thomann	U of Hannover
	APRIA	Yung-Ming Shiu and Yi-Cheng Shin	Tunghai U	Derivatives Usage by Taiwanese Financial Firms	David Sommer	U of Georgia

Session 3C: Efficiency Analysis II Moderator: Gilles Bernier, Laval U	Association	Author	Affiliation	Paper Title	Discussant	Affiliation
	ARIA	David Eckles and Narumon Saardchom	Georgia Southern U and National Institute of Development Administration	Technical and Scale Efficiency in the Thai Non-life Insurance Industry	Yijia Lin	Georgia State U
	APRIA	James C. Hao	Tamkang U	Comparison of Economic Efficiency Estimation Methods: An Application to Taiwan's Life Insurance Industry	B. Paul Choi	Howard U
	ARIA	Lars Powell, David Eckles, and David Sommer	U of Arkansas at Little Rock, Georgia Southern U and University of Georgia at Athens	Internal Capital Market Efficiency within Financial Conglomerates: Evidence from Property-Liability Insurance Groups	Andre Liebenberg	Old Dominion U

Session 3D: Healthcare Economics I Moderator: Etti Baranoff , Virginia Commonwealth U	Association	Author	Affiliation	Paper Title	Discussant	Affiliation
	EGRIE	Christophe Courbage and Béatrice Rey	The Geneva Association	Prudence and Optimal Prevention for Health Risks	Emilio Venezian	Rutgers U
	EGRIE	Rod Garatt and John Marshall	U of California, Santa Barbara	The Transfer Problem in Copayment Insurance	Peter Zweifel	U of Zurich

Session 3E: Insurance Economics III Moderator: Art Snow, U of Georgia	Association	Author	Affiliation	Paper Title	Discussant	Affiliation
	EGRIE	Michael Breuer	U of Zurich	Optimal Insurance Contracts without the Non-negativity Constraint on Indemnities: Revisited	Pierre Picard	Universite Paris X - Nanterre
	ARIA	Peter S. Faynzilberg	The Aleph Group, LLC	Competitive Insurance Markets	Mahito Okura	Nagasaki U
	APRIA	Richard MacMinn and S. Hun Seog	Graduate School of Management, KAIST	Distribution of Price and Quality under Information Asymmetry	Achim Wambach	U of Erlangen-Nuernberg

Session 3F: Pensions III Moderator: David Richardson, Georgia State U	Association	Author	Affiliation	Paper Title	Discussant	Affiliation
	ARIA	James Carson and Randy E. Dumm	Florida State U	Price Indicia in the Individual Annuity Market	Jennifer Wang	National Cheng-chi U
	APRIA	Wonshik Kim	Konkuk U	The Corporate Pension System in Korea: Limits and Prospects	Hunsoo Kim	SoonChunHyang U

Session 3G: Risk Analysis Moderator: Christian Gollier, U of Toulouse	Association	Author	Affiliation	Paper Title	Discussant	Affiliation
	APRIA	Madhu Vij and Gunjan Sanjeev	U of Delhi and Institute for Integrated Learning and Management	The Determinants of Country Risk Ratings and Their Policy Implications	Martin Halek	U of Georgia at Athens
	APRIA	Neil Doherty and Rich Philips	U of Pennsylvania and Georgia State U	Does a Little Competition Improve Ratings? The Industrial Organization of Insurance Ratings	Bill Panning	Willis Re
	ARIA	Puneet Prakash	Virginia Commonwealth U	Absolute or Relative: Which Standard Do Credit Rating Agencies Follow?	Jim Barrese	St. John's U

Concurrent Sessions IV

Session 4A: Actuarial Science, Life Insurance and Mortality Moderator: Pat Brockett, U of Texas at Austin	Association	Author	Affiliation	Paper Title	Discussant	Affiliation
	APRIA	Yijia Lin, and Samuel H. Cox	Georgia State U	Mortality Securitization Modeling	Pat Brockett	U of Texas at Austin
	ARIA	Richard MacMinn, Krzysztof Ostaszewski, Ranee Thiagarajah, and Jan Frederik Weber	Illinois State U	Mortality Improvement Select Birth Cohorts and Their Effect on Pricing of Survival Bonds	Richard Butler	Brigham Young U

at Austin	EGRIE	Antoine Delwarde, Michel Denuit, Guillen Montserrat, and Antoni Vidiella	U Catholique de Louvain and U of Barcelona	Application of the Poisson Log-bilinear Projection Model to the G5 Mortality Experience	Emma Zavarrone	Bicocca U, Milan, Italy

Session 4B: Corporate Risk Management II Moderator: Martin Boyer, HEC Montréal and CIRANO	Association	Author	Affiliation	Paper Title	Discussant	Affiliation
	ARIA	Andre Liebenberg and David Sommer	Old Dominion U and U of Georgia	Effects of Corporate Diversification: Evidence from the Property-Liability Insurance Industry	Yayuan Ren	U of Wisconsin at Madison
	ARIA	J. François Outreville	UNCTAD	Players and Driving Forces in World Insurance Services	Xinyu Li	Peking U
	ARIA	Yayuan Ren	U of Wisconsin at Madison	Insurer Risk-taking Strategies in Industry Equilibrium	Michael Sherris	U of New South Wales

Session 4C: Healthcare Economics II Moderator: Mark Browne, U of Wisconsin at Madison	Association	Author	Affiliation	Paper Title	Discussant	Affiliation
	ARIA	Patricia Born, W. Kip Viscusi, and Tom Baker	California State U at Northridge, Harvard Law School, and U of Connecticut School of Law	Tort Reform in the Long Run: An Analysis of the Lasting Effects of Reform Activity on Medical Malpractice Insurance Performance	Steven Pottier	U of Georgia at Athens
	ARIA	Yu Lei	U of Hartford	Effects of Cost-Sharing in Employer-sponsored Health Insurance on Employees' Use of Health Care and Health	Helen Doerping-haus	U of South Carolina
	EGRIE	Karolin Becker and Peter Zweifel	U of Zurich	Age and Choice in Health Insurance: Evidence from Switzerland	Carlo Savino	Associazione Nazionale fra le Imprese Assicuratrici

Session 4D: Insurance Economics IV Moderator: Thomas Russell, Santa Clara U	Association	Author	Affiliation	Paper Title	Discussant	Affiliation
	APRIA	Wondon Lee	Daegu U, Korea	Costly State Verification by a Claimant	Saleem Shaik	Mississippi State U
	EGRIE	Arthur Snow	U of Georgia	On the Possibility of Profitable Self-selection Contracts in Competitive Insurance Markets	Keith H. Coble	Mississippi State U
	ARIA	Paul Thistle and James Ligon	U of Nevada-Las Vegas and U of Alabama	Moral Hazard and Background Risk in Competitive Insurance Markets	Arthur Snow	U of Georgia

Session 4E: Life Insurance III Moderator: Mike Adams, U of Wales, Swansea	Association	Author	Affiliation	Paper Title	Discussant	Affiliation
	ARIA	Helmut Gruendl, Thomas Post, and Roman Schulze	Humboldt Universitaet zu Berlin	To Hedge or not to Hedge: Managing Demographic Risk in Life Insurance Companies	Shih-Chieh Chang	National Chengchi U
	APRIA	Robert W. Cooper, Bong-Joo Lee, Kyung-Lyong Lee, and Han-Duck Lee	Drake U, Kyung Hee U, Sogang U, and Hongik U	A Cross-cultural Comparison of the Ethical Environments of the U.S. and South Korean Life Insurance Markets	Harold Skipper	Georgia State U

Session 4F: Pensions IV Moderator: Jack Marshall, University of California - Santa Barbara	Association	Author	Affiliation	Paper Title	Discussant	Affiliation
	APRIA	Seungryul Ma and Deokho Cho	Daegu U	A Lifetime Housing Asset Plan Using Mortgage and Reverse Mortgage Finance in Korea	Cassandra Cole	Florida State U
	APRIA	R. Vaidyanathan	Indian Institute of Management	Pension Reforms and Capital Market Developments in India	Byung In Lim	National Pension Research Institute
	APRIA	Sung-ho Kang and Byung In Lim	National Pension Research Institute and Andong National U	The Crowding-out Effect of the Public Pension on the Private Savings by Income Classes in Korea	Marie-Eve Lachance	San Diego State U

Session 4G: Social Insurance Moderator: Vickie Batjelsmit, Colorado State U	Association	Author	Affiliation	Paper Title	Discussant	Affiliation
	EGRIE	Catarina Goulão	CORE	The Inefficiency of a Top-up Insurance System	Xiaojun Wang	Renmin U of China
	ARIA	David Richardson and Jason Seligman	Georgia State U, and U of Georgia	Social Security: Adequacy versus Sustainability	Catarina Goulão	CORE
	EGRIE	Roland Eisen	Johann Wolfgang Goethe-U Frankfurt	Short-versus Long term Risks: Arguments in Favour of PAYG Social Security	Vickie Bajtelsmit	Colorado State U

Concurrent Sessions V

Session 5A: Agency Theory I Moderator: David Sommer, U of Georgia	Association	Author	Affiliation	Paper Title	Discussant	Affiliation
	ARIA	David Eckles and Martin Halek	U of Georgia	Insurer Reserve Error and Executive Compensation	Wei Zheng	Peking U
	ARIA	Rob Hoyt and Kathleen McCullough	U of Georgia and Florida State U	Managerial Discretion and the Impact of Risk-Based Capital Requirements on Property-Liability Insurer Reserving Practices	Larry Cox	U of Mississippi
	ARIA	Enya He and David Sommer	U of Georgia	CEO Turnover and Ownership Structures: Evidence from the U.S. Property-Casualty Insurance Industry	Qiang Liu	U of Mississippi

Session 5B: Corporate Risk Management III	Association	Author	Affiliation	Paper Title	Discussant	Affiliation
	ARIA	Marcel Boyer, Martin Boyer and Rene Garcia	HEC Montréal and CIRANO	The Value of Risk Management: A Frontier Analysis	Greg Davis	U of Cambridge
	APRIA	Mariko Nakabayashi	Meiji U	Business Scandals and Risk Management: From a Business Ethics Perspective	Terrie Troxel	AICPCU/IIA

Moderator: Richard Phillips, Georgia State U	ARIA	David Cummins, Christopher Lewis, and Ran Wei	U of Pennsylvania, Hartford Insurance Group, and U of Pennsylvania	The Market Value Impact of Operational Risk Events for U.S. Banks and Insurers	Nobuko Aoba	Naruto U of Education

Session 5C: Healthcare Economics III Moderator: Sandrine Spaeter, U of Strasbourg	Association	Author	Affiliation	Paper Title	Discussant	Affiliation
	APRIA	Carlo Savino and Dario Focarelli	Associazione Nazionale fra le Imprese Assicuratrici	Household Portfolio Diversification and the Diffusion of Health and Property Insurance in Italy	Jan Ambrose	La Salle U
	APRIA	S. Jayaprakash and S. Ganesan	Jansons School of Business	Tweaking the Corporate Health Insurance Models in Indian Scenario – An Entry Point	Jie Gao	U of Wisconsin-Madison

Session 5D: Insurance Empirics III Moderator: Gene Lai, Washington State U	Association	Author	Affiliation	Paper Title	Discussant	Affiliation
	ARIA	Steve Pottier and David Sommer	U of Georgia	On the Use of Group-level Financial Information in Insurer Solvency Surveillance	Francesco Natale	Bicocca U
	EGRIE	Emilio Venezian	Rutgers U	What Is the Property-Liability Insurance Business?	Laureen Regan	Temple U
	ARIA	Larry Tzeng, Ching-Fan Chung and Jennifer Wang	National Taiwan U, Academia Sinica, and National Cheng-chi U	Immoral Smirks	Joseph Ruhland	U of Georgia

Session 5E: Insurance Finance I Moderator: Peter Zweifel, U of Zurich	Association	Author	Affiliation	Paper Title	Discussant	Affiliation
	ARIA	Qiming Wang and James Ligon	U of Alabama	The Underpricing of IPOs of Insurance Companies	Yong-Duck Kim	Soongsil U
	APRIA	Wen-Yen Hsu, Richard Lu, and Shu-Ying Wu	Feng Chia U	Fair Participating Life Insurance Policies: The Impact of Interest Rate Guarantees, Bonus Policies, and Investment Incentives	Jochen Russ	Insitut fuer Finanz- und Aktuarwissen schaften
	APRIA	Yu Ziyou and Xiao Yanhua	Lingnan U	Safety-first Portfolio Optimization Model: Simulating the Asset Portfolio of Chinese Insurance Funds with Direct Investment in the Stock Market	Jung Hwan Lee	Korea Insurance Development Institute

Session 5F: Taxes Moderator: Richard Derrig, Opal Consulting	Association	Author	Affiliation	Paper Title	Discussant	Affiliation
	ARIA	Andreas Milidonis and Martin Grace	Georgia State U	Tax-deductible Pre-event Catastrophe Loss Reserves: The Case of Florida	Richard Lu	Feng Chia U
	APRIA	Minglai Zhu and Yuan Yuan	Nankai U	The Impact of State Taxation on Property-Casualty Insurance Industry	Rachel Huang	Ming Chuan U

	ARIA	Rachel Huang and Larry Tzeng	Ming Chuan U and National Taiwan U	Why Does a Government Provide Tax Deductions for Net Losses?	Minglai Zhu	Nankai U

Session 5G: Terrorism Insurance Moderator: Louis Eeckhoudt, Facultés universitaires catholiques de Mons (retired)	Association	Author	Affiliation	Paper Title	Discussant	Affiliation
	EGRIE	Christian Thomann and J-Matthias Graf von der Schulenburg	U of Hannover	Corporate Demand for Terrorism Insurance in Germany	Thomas Russell	Santa Clara U
	APRIA	Tom Russell and Dwight Jaffee	Santa Clara U	Should Governments Support the Private Terrorism Insurance Market?	Neil Doherty	U of Pennsylvania

Concurrent Sessions VI

Session 6A: Actuarial Science and Insurance Finance II Moderator: Krzysztof Ostaszewski, Illinois State U	Association	Author	Affiliation	Paper Title	Discussant	Affiliation
	ARIA	Martin Grace and Tyler Leverty	Georgia State U	Property-Liability Insurer Reserve Error: Motive, Manipulation or Mistake	Krzysztof Ostaszewski	Illinois State U
	EGRIE	Maria Isabel Barao, Ser-Huang Poon, and Jonathan Tawn	Manchester Business School	A Dynamic and Multivariate Model for Risk Management and Prediction	Jose Penalva	IAE, CSIC
	APRIA	Zinoviy Landsman and Michael Sherris	U of Haifa, and U of New South Wales	An Insurance and Asset Pricing Model for Non-normal Distributions and Incomplete Markets	Ser-Huang Poon	Manchester Business School

Session 6B: Agency Theory II Moderator: Cassandra Cole, Florida State U	Association	Author	Affiliation	Paper Title	Discussant	Affiliation
	ARIA	Bum Kim	California State U, Bakersfield	Informational Asymmetry, Differential Compensation, and Imperfect Message in Demutualization	Piman Limpaphayom	Chulalongkorn U
	ARIA	Nobuko Aoba	Naruto U of Education	The Strategic Role of Information in Insurance Markets: A Vertical Integration Model	Paul Thistle	U of Nevada-Las Vegas
	ARIA	Joe Ruhland and David Sommer	U of Georgia	Information Asymmetry and Corporate Governance in the Property-Liability Insurance Industry	Bum Kim	California State U Bakersfield

Session 6C: Catastrophe Risk Moderator: David Cummins, U of Pennsylvania	Association	Author	Affiliation	Paper Title	Discussant	Affiliation
	ARIA	Carolyn W. Chang, Jack S.K. Chang, and WeiLi Lu	California State University at Los Angeles, and California State University at Fullerton	Pricing Catastrophe Insurance Derivatives in a Subordinated Binomial Tree	Andreas Milidonis	Georgia State U
	ARIA	Yves Schneider and Peter Zweifel	U of Zurich	How Much Internalization of Nuclear Risk Through Liability Insurance	Anne Kleffner	U of Calgary

	ARIA	Xuanjuan Chen, Helen Doerpinghaus, BingXuan Lin, and Tong Yu	U of North Carolina at Wilmington, U of South Carolina, and U of Rhode Island	Catastrophic Losses and Insurer Profitability: Evidence from 9/11	Faith Neale	U of North Carolina at Charlotte

Session 6D: Insurance Brokerage Moderator: Henry Chiu, U of Manchester	Association	Author	Affiliation	Paper Title	Discussant	Affiliation
	EGRIE	Michael Sonnenholzner	U of Erlangen-Nuernberg	Insurance Brokers and Advice Quality	Peter Maas	U of St. Gallen
	ARIA	Peter Maas	U of St. Gallen	How Insurance Brokers Create Value: A Functional Approach	Michael Sonnenholzner	U of Erlangen-Nuernberg
	EGRIE	Neil Doherty and Alex Muermann	U of Pennsylvania	Brokers and the Insurance of Non-verifiable Losses	Larry Tzeng	National Taiwan U

Session 6E: Insurance Economics V Moderator: Pierre Picard, Universite Paris X - Nanterre	Association	Author	Affiliation	Paper Title	Discussant	Affiliation
	EGRIE	Christian Laux	Goethe U Frankfurt	Multiline Insurance and Securitization: Bundling Risks to Reduce Moral Hazard	Harris Schlesinger	U of Alabama and U of Konstanz
	APRIA	Ziyou Yu and Wu Jianjun	Shanghai U of Finance and Economics	The Kuznets Hypothesis for the Income Elasticity of Insurance Demand and Economic Growth: An Empirical Analysis of the World Insurance Market	Puneet Prakash	Georgia State U
	EGRIE	Stein-Erik Fleten and Snorre Lindset	Norwegian U of Science and Technology	Optimal Hedging Strategies for Multi-period Guarantees in the Presence of Transaction Costs: A Stochastic Programming Approach	Svein-Arne Persson	Norwegian School of Economics and Business Administration

Session 6F: Insurance Finance II Moderator: Bill Panning, Willis Re	Association	Author	Affiliation	Paper Title	Discussant	Affiliation
	EGRIE	Francesco Natale and Emma Zavarrone	Bicocca U	Testing for Risk Sensitivity in the European Insurance Industry: Empirical Evidence from Subordinated Debt Issues	Richard Phillips	Georgia State U
	ARIA	Qiang Liu and Karen Epermanis	U of Mississippi	Debt-induced Agency Problems and Market Discipline: Evidence in Life Insurance Companies that Issue GICs	Enya He	U of Georgia
	ARIA	Hong Zou and Mike Adams	Lingnan U and U of Wales Swansea	Debt Capacity, Cost of Debt and Corporate Insurance	Rob Hoyt	U of Georgia

Session 6G: Medical Malpractice Insurance	Association	Author	Affiliation	Paper Title	Discussant	Affiliation
	ARIA	Faith Neale, Kevin Eastman, and Pamela Peterson Drake	U of North Carolina at Charlotte, Florida State U, and Florida Atlantic U	Is There a Crisis in Healthcare Professional Liability Insurance	Cuncun Luan	U of Wisconsin-Madison

Moderator: Jay Thompson, Thompson, Coe, Cousins & Irons	ARIA	Anne Carroll and Jan Ambrose	Rider U and La Salle U	Medical Malpractice Reform: The Effect on Insurer Claims Defense Effort	Lars Powell	U of Arkansas at Little Rock
	ARIA	Scott Harrington, Patricia Danzon, and Andrew Epstein	U of Pennsylvania and Yale School of Public Health	Soft and Hard Markets in Medical Malpractice Insurance	Patricia Born	California State U, Northridge

Concurrent Sessions VII

Session 7A: Agriculture Insurance Moderator: Helmut Gruendl, Humboldt Universitaet zu Berlin	Association	Author	Affiliation	Paper Title	Discussant	Affiliation
	APRIA	Chen Shu	Central U of Finance and Economics	Risk Management Model of China Agriculture Insurance Fund	Liu Xiaojun	Central U of Finance and Economics
	ARIA	Keith H. Coble, Robert Dismukes, and Joseph Glauber	Mississippi State University and U.S. Department of Agriculture	Private Crop Insurers and the Reinsurance Fund Allocation Decision	Zhang Hui	Central U of Finance and Economics
	APRIA	Saleem Shaik and Joseph Atwood	Mississippi State U and Montana State U	Asymmetric Information with Optional Units in Federal Crop Insurance	R. Vaidyanathan	Indian Institute of Management

Session 7B: Automobile Insurance I Moderator: Yehuda Kahane, Tel Aviv U	Association	Author	Affiliation	Paper Title	Discussant	Affiliation
	ARIA	Anne Kleffner, Gilles Bernier, and David Chan	U of Calgary and Laval U	Automobile Insurance in Canada: An Analysis of Costs and Premiums across Provinces	Laureen Regan	Temple U
	ARIA	Steve D'Arcy	U of Illinois	Predictive Modeling in Automobile Insurance	Jason Jia-Hsing Yeh	Chinese U of Hong Kong

Session 7C: Corporate Risk Management IV Moderator: Christian Laux, Goethe U Frankfurt	Association	Author	Affiliation	Paper Title	Discussant	Affiliation
	APRIA	Yong-Duck Kim	Soongsil U	An Empirical Analysis of Market Risks in the Korean Insurance Industry by Using the VaR Mo	Christian Laux	Goethe U Frankfurt
	ARIA	Mark Browne and Cuncun Luan	U of Wisconsin -Madison	The Bowman Paradox in the U.S. Property and Casualty Insurance Industry	Mariko Nakabayashi	Meiji U

Session 7D: Financial Services Consolidation/ Integration Moderator: Bum Kim, California State U, Bakersfield	Association	Author	Affiliation	Paper Title	Discussant	Affiliation
	ARIA	Yuan Yuan	Georgia State U	Integration in U.S. Financial System and the Role of Insurers	Qiu Peng	Central U of Finance and Economics
	APRIA	Jaehyun Kim, Sukho Lee, and Joongyoung Jeong	Seowon U	Impact of Bancassurance on Life Insurance Companies in Korea: Firm Characteristics and Performance Change	Jing Ai	U of Texas at Austin

	APRIA	M. Z. Mamun and Mohammad Aslam	U of Dhaka and Institute of Chartered Accounts of Bangladesh	Possible Synergy of Bank and Insurance in a Developing Economy: Empirical Evidence from Bangladesh	Li-Ming Han	Chinese U of Hong Kong

Session 7E: Life Insurance IV Moderator: Jim Carson, Florida State U	Association	Author	Affiliation	Paper Title	Discussant	Affiliation
	APRIA	Gene Lai and Lin Yhi Chou	Washington State U	The Impact of Organizational Structure and Business Strategy on Performance and Risk Taking: Evidence from the Life Insurance Industry in Taiwan	Jim Carson	Florida State U
	ARIA	Michael K. McShane and Larry Cox	U of Mississippi	Issuance Decisions and Long Term Care Insurance	Wonshik Kim	Konkuk U, Korea
	ARIA	Qixiang Sun, Lingyan Suo and Tao Liu	Beijing U	An Empirical Study of China's Life Insurance Demand	Fang Li	ING Asia Pacific Regional Pensions

Session 7F: Miscellaneous Risk Management Topics Moderator: Jennifer Wang, National Cheng-chi U	Association	Author	Affiliation	Paper Title	Discussant	Affiliation
	APRIA	Koji Kojima, Mahito Okura, and Yen Tong	Kwansei Gakuin U, Nagasaki U and U of Washington	Stock Analyst's Compensation Structure	H.J. Mohd Rasid Hussin	Universiti Teknologi MARA
	APRIA	SeungYoung Oh	Samsung Research Institute of Finance	A Simple Approach to Risk-based Deposit Insurance Pricing	Li Zhang	U of Calgary
	APRIA	Wenyan Shiu	Feng Chia U	Uninsured Liabilities and Market Discipline in the Property-Liability Insurance Industry	Karen Epermanis	U of Mississippi

Session 7G: Risk Management and Insurance Education I Moderator: Kathleen McCullough, Florida State U	Strickler Award Winning Paper Presentation - Risk Management Case Project
	ARIA	Rob Hoyt (U of Georgia) Kathleen McCullough (Florida State U) Randy Dumm (Florida State U)

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Session 8A: Asset/Liability Management Moderator: Rob Hoyt, U of Georgia	Association	Author	Affiliation	Paper Title	Discussant	Affiliation
	ARIA	S. Hun Seog, and Sungwhee Shin	Graduate School of Management, KAIST, and University of Seoul	Capital Allocation Using the Cooperative Game Theory	Bum Kim	California State U, Bakersfield

Session 8B: Insurance Regulation Moderator: Bill Feldhaus, Georgia State U	Association	Author	Affiliation	Paper Title	Discussant	Affiliation
	ARIA	Chu-Shiu Li, Chwen-Chi Liu, and Jason Jia-Hsing Yeh	Feng Chia U and Chinese U of Hong Kong	The Incentive Effects of Increasing Per-claim Deductible Contracts in Automobile Insurance	Jaehyun Kim	Seowon U
	ARIA	Laureen Regan, Sharon Tennyson, and Mary Weiss	Temple U and Cornell U	The Incentive Effect of Automobile Insurance Rate Regulation on Accident Frequency and Loss Costs: An Empirical Analysis	S. Hun Seog	Graduate School of Management, KAIST
	ARIA	Yi-hsun Lai, Wen-chang Lin, and Min-ming Wen	National Chi Nang U, National Chung Cheng U, and Shippensburg U	An Integrated Analysis of Regulatory Pressure and Franchise Value on the Risk-taking Behavior of a Property-Liability Insurance Firm	Soon-Jae Lee	Sejong U

Session 8C: Risk Management and Insurance Education II	Special Topic Session: Fundraising for University Programs in Risk Management, Insurance, Actuarial Science, and Financial Services
	Discussants: Debbie Babcock, Associate Director, Illinois State U Ellen C. Paxton, Director of Corporate and Alumni Relations, Indiana State U

Session 8D: Risk Management Innovation Moderator: Harris Schlesinger, U of Alabama and U of Konstanz	Association	Author	Affiliation	Paper Title	Discussant	Affiliation
	EGRIE	Greg Davies	U of Cambridge	Rethinking Risk: Aspiration as Pure Risk	Yoram Eden	College of Management, Rishon LeZion
	APRIA	Li-Ming Han and Richard MacMinn	Illinois State U	Bio-information and Insurance Markets	Kwangbong Lee	Inje U
	ARIA	Yoram Eden	College of Management, Rishon LeZion	Probability Weighting in Damage-claiming Decisions	Wondon Lee	Daegu U, Korea

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David	Brumbaugh	Congressional Research Service Library of Congress
Changsoo	Lee	Soongsil University
Aaron	Lopez	Zurich Financial Services/Farmers Insurance Group
Mark	Browne	University of Wisconsin Madison School of Business
James	Morrissey	American Reinsurance Co
Axel	Lehmann	Zurich
Edwin	Duett	University of Mississippi
Carlo	Savino	ANIA
Andre	Liebenberg	Old Dominion University
Matthias	Schulenburg	University of Hannover

SESSIONS I

Comparative Prudence and Comparative Temperance

by Minh Phuong Bui

Prudence and Temperance have been in the literature for a time. However, there has not been any study on the comparativeness of those risk attitudes in the context of lotteries. The paper will discuss comparative Prudence and comparative Temperance by means of a new concept so-called prudence and temperance premia. It also provides conditions on the distribution of the risk under which comparative risk aversion, comparative prudence and comparative temperance are preserved for all utility functions.

A Good Sign for Multivariate Risk Taking

by Louis Eeckhoudt, Béatrice Rey and Harris Schlesinger

Decisions under risk are often multidimensional, where the preferences of the decision maker depend on several attributes. Many times the signs of successive cross derivatives of the utility function play an important role in these models. However, there has not been a simple and intuitive interpretation for the meaning of such derivatives. The purpose of this paper is to give such an interpretation. In particular, we provide an equivalence between the signs of these cross derivatives and individual preference within a particular class of simple lotteries.

Optimal Expectations with Complete Markets

by Christian Gollier

Because agents have anticipatory feelings about future risks, it is optimal for them to manipulate their expectations. As in Brunnermeier and Parker (2003) and Gollier (2004), we examine the trade-off between the costs of erroneous decisions based on these manipulated beliefs and the benefits of anticipating a better future. In this paper, we assume that contingent markets are complete, with applications to portfolio choices, insurance and markets for lotteries. We show that agents will overestimate the probabilities of the good states, a form of optimism. More over, this bias in beliefs is approximately independent of the agent's degree of risk aversion.

Foreign-Owned Insurers' Performance in the U.S. Property and Liability Markets

by B. Paul Choi

The market share by foreign-owned companies in the U.S. property-liability insurance market has been gradually increased over the past decade. The general concern about the foreign direct investment is whether the foreign insurers operate with efficiency along with the issue of risk. That is, foreign-owned insurers can increase market share by either lowering price or providing high-quality services in the U.S. property-liability (P-L) insurance market, or both. This article investigates the performance and efficiencies of foreign-owned P-L insurers in the U.S. markets. The findings of this paper provide evidence that foreign-owned insurers' performance and efficiencies are significantly different from those of U.S. owned insurers. The performance measured by profitability and return on equity of foreign-owned companies is significantly lower than U.S. owned insurers. Also, strong dissimilarities of firm characteristics exist between the two groups during the sample periods. Different firm characteristics suggest a hypothesis that there will be a different level of efficiencies between the two groups. The empirical results suggest that U.S. owned insurers have higher level of cost scale-efficiency and revenue X-efficiency, while foreign-owned insurers are more cost X-efficient and revenue scale-efficient. This suggests that regulators should be aware of foreign-owned insurers' involvement in the U.S. market since the increased market share may be derived from a low price and low profitability market strategy. Regulators also need to be concerned on the dissimilarities in efficiencies between the two groups.

Is Independent Agency Distribution System More Revenue Efficient? A Data Envelopment Analysis

by J. David Cummins and Xiaoying Xie

The paper proceeds by discussing the marketing environment changes during the 1990s and early 2000s, and their potential impact on the cost and revenue efficiency of firms using different distribution systems. Section 3 describes the sample selection procedure, summary statistics of the sample, and the methodology used in the paper. Section 4 presents the efficiency differences among different distribution systems. Section 5 provides cross-sectional time-series analysis to test the efficiency difference among different distribution systems after controlling for the characteristics that may affect the choice of a distribution system such as the organizational form, firm size, product mixture and underwriting risk of a firm. A probit analysis is used to test the self-selection theory of different distribution system. The final section summarizes the results and concludes.

Costly Risk Verification without Commitment in Competitive Insurance Markets

by Pierre Picard

This paper analyzes the equilibrium of an insurance market where applicants for insurance have a duty of good faith when they reveal private information about their risk type. Insurers can, at some cost, verify the type of insured's who file a claim and they are allowed to retroactively void the insurance contract if it is established that the policy holder has mis-represented his risk when the contract was taken out. However, insurers cannot precommit to their risk verification strategy. The paper analyses the relationship between second-best Pareto-optimality and the insurance market equilibrium in a game theoretic framework. It characterizes the contracts offered at equilibrium, the individuals' contract choice as well as the conditions under which an equilibrium exists.

The Effect of an Increase in the Probability of Loss When Risk is Endogenous

by Henri Loubergé and Richard Watt

Traditional economic theory of insurance is based on several simplifying assumptions, among which one of the most restrictive is that the risk against which insurance is to be purchased is entirely exogenous. Not surprisingly, the optimal purchase of, and the comparative statics of, insurance are critically dependent upon this assumption. In particular, in this paper we consider the effect of an increase in the probability of loss when the restriction to exogenous risk is relaxed.

An Empirical Investigation of the Pricing of Financially Intermediated Risks with Costly External Finance

by J. David Cummins, Yijia Lin, and Richard D. Phillips

Under perfect market conditions, theory predicts the hurdle rate on financially intermediated products should reflect only non-diversifiable risk and be constant across all financial institutions. However, recent research by Froot and Stein (1998), among others, suggests imperfections in external capital markets can lead even completely diversifiable risks to impose internal frictional costs specific to the institution and these costs should be allocated back to the individual line of business that generates the costs. We test the costly external finance hypothesis by investigating differences in prices of insurance risks across a sample of U.S. property-liability insurers. The results provide strong evidence supporting the

theoretical propositions that the prices of illiquid, intermediated risks vary across firms depending upon the firm's access to capital markets and by the risk of the individual line of insurance relative to the riskiness of firm's entire portfolio. Specifically, insurance prices are directly related to either the marginal capital allocations as suggested by the capital allocation method proposed by Myers and Read (2001) or by the covariability of a product with the firm's overall portfolio consistent with Froot and Stein. Thus, the presence of costly capital and non-tradability implies that prices depend upon risks that are non-systematic and that price dispersion is an equilibrium outcome in insurance markets.

Concentration in the US Property-Liability Insurance Industry

by James Barrese, Martin Grace and Nicos Scordis

A history of disagreement exists between academic research and popular perception of the competitiveness of the US property-liability insurance industry. This reinvestigation of the industry reports high market share concentration levels, persistence in the market share leaders over time, and both concentrated and interlocking ownership relationships; circumstantial features of a non-competitive industry. Consistent with studies of the effect of entrenched boards performance measured by Tobin's q is shown to be sensitive to the levels of ownership concentration. We also investigate an approach provided by the new empirical industrial organization and find evidence that insurance is consistent with a Cournot model of competition in some markets.

An Empirical Study on the Solvency of China's Insurance Companies Basing on the Financial Situation of Companies

by Liu Xiaojun and Chen Dan

This paper mainly analyzes the solvency of China's insurance companies on the financial situation of these companies. The first aim of this article is to assess the financial solvency status of insurers, including non-life insurers during the past nine years (1995-2003) and life-insurers from 1997 through 2003. The second but principal focus is to analyze the impact of micro-factors (firm size, investment performance, liquidity ratios and other firm-specific factors) on solvency of non-life and life insurers, employing the Logit Model. Furthermore, the effect of macro-factors (competition, interest rate, and other exogenous factors) on financial health of insurers in China economy is also studied in this article.

Choice of Exit Forms and Firm Characteristics: Evidence from the U.S. Property-Liability Insurance Market

by Hunsoo Kim, W. Jean Kwon and Soon-Jae Lee

This paper deals with market exit issues in the insurance industry. It examines empirically, using U.S. property-liability insurance market data (1999-2004), factors affecting insurers' choices of exit from the market. The choices include voluntary liquidation, involuntary liquidation, and merger to another firm. The findings from multinomial logit regression show that non-exiting firms and merged firms show similar characteristics. We also find that asset is the most significant factor affecting not only the probability that a firm continues its operation in the market. It also affects significantly the form of exit, i.e., voluntary liquidation or merger in lieu of involuntary liquidation. Investment yields-whether based on the current year or the average of the current and the prior year-also affect the choice of exit form. Finally, premium to surplus ratio is also found affecting the form of exit that insurers may select.

The Impact of Illiquidity on the Asset Management of Insurance Companies

by Thomas Berry-Stölzle

This paper investigates the impact of illiquidity on insurance company asset allocation and selling strategy. The need for insurers to settle claims as they arise by freeing funds immediately make insurers especially susceptible to the effects of transaction illiquidity. Using a simplified model of a risk neutral insurance company, we examine the effect of permanent and temporary price impact on initial asset allocation. The optimal asset allocation and selling strategy are determined numerically. While a clear diversification benefit is evident on the basis of illiquidity, under certain market assumptions, the cash-flow matching strategy is optimal.

The Focus of Life: Risk Protection or Investment—Evidence from the Empirical Study on the Demand of Life insurance in China, an Emerging Market

by Zheng Yu

Through comparing the demand for risk protection with the demand for investment, comparing emerging markets with industrialized countries' markets, this paper evaluates the

situation of the risk protection market, and measures the degree and qualities of China citizens' true risk protection. This paper mainly uses the structure changed Cointegration analysis improvement and Error Correction Model (ECM) to carry on the positive analysis, calculates the risk protection gap, and provides some suggestions of the target choices and development strategies in the emerging life insurance markets.

The Impact of Surplus Distribution on the Risk Exposure of With Profit Life Insurance Policies Including Interest Rate Guarantees

by Alexander Kling, Andreas Richter and Jochen Rußß

This paper analyzes the impact of different surplus distribution mechanisms on the risk exposure of a life insurance company selling with profit life insurance policies with a cliquet-style interest rate guarantee. Three different types of distribution mechanism are considered: A mechanism, where the guaranteed interest rate also applies to surplus that has been credited in the past, a slightly less restrictive mechanism in which the a guaranteed rate of interest of 0% applies to past surplus, and a third mechanism that allows for the company to use former surplus in order to smoothen underperformance in "bad" years. Our study demonstrates that regulators should be very careful in deciding which design of a distribution mechanism is to be enforced. Results strongly suggest that a distribution mechanism of the third type is in many ways superior to the other two mechanisms. In particular, throughout the analysis, our representative company 3 faces ceteris paribus significantly lower shortfall risk than the other two companies. Requiring "strong" guarantees puts companies at a significant competitive disadvantage relative to insurers which are subject to regulation that only requires the company 3 type surplus distribution mechanism. This is particularly true, if annual minimum participation rates are required for long-term contracts.

Helping Workers Delay Retirement: Is it Worth it?

by Marie-Eve Lachance

For many, delaying retirement may be a solution to saving shortfalls. However, individuals may be subject to exogenous constraints that limit their ability to postpone retirement. In this paper, we examine the increase in welfare and tax revenues that could be obtained by removing some of these constraints. We use a life-cycle model where retirement is endogenous, but also subject to exogenous constraints. We conclude that it can be interesting to invest in measures that help workers delay retirement further, but not at any cost. This type of investment would be most justified for those with little savings, high earnings, who like to work, and face retirement constraints at early ages.

Optimal Consumption and Investment with an Uncertain Lifetime in a Model with Two Assets

by Miguel Sanchez Romero

This paper analyzes consumption and investment decision-making in a life cycle model without a bequest motive, where there are two different kinds of possible investments. First, bonds with a risk free or deterministic yield, and second, equities with a random yield. The results arrived at differ from the existing literature because of the introduction of both survival probabilities and consumption variance in the utility function. For this reason, the consumption function relies on age and yield assets, besides wealth. Furthermore, the paper presents explicit solutions for both consumption and risk investment functions, which confirms Harrod's saving patterns. The model leads to the result that the return of the risky asset can be shown to be bounded both above and below, according to the risk aversion coefficient. Finally, when there is more than one asset in the model, we get the result that marginal propensities to consume can be greater than one.

SESSIONS II

Skewness Preference, Risk Taking and Expected Utility Maximization

by W. Henry Chiu

Available empirical evidence suggests that skewness preference plays an important role in understanding asset pricing and gambling. This paper establishes a necessary and sufficient condition on probability distributions for any decision maker's preferences over the distributions to depend on their means, variances and, third moments only. Under the condition, an Expected Utility maximizer's preferences for a larger mean, a smaller variance, and a larger third moment are shown to parallel respectively his preferences for a first-degree stochastic dominant improvement, a mean-preserving contraction, and a downside risk decrease and are characterized in terms of the von Neumann-Morgenstern utility function in exactly the same way. The condition and its characterizations permit a rigorous evaluation of the available empirical evidence on skewness preference in the context of asset pricing and gambling. By showing that all Bernoulli distributions are mutually skewness comparable, we further show that in the wide range of economic models where these distributions are used individuals' decisions under risk can be understood as tradeoffs between mean, variance, and skewness. Our results on skewness-inducing transformations of random variables can also be applied to analyze the effects of progressive tax reforms on the incentive to make risky investments.

Hedging Labor Income and Inflation Uncertainties through Capital Market in Defined Contribution Pension Schemes

by Shih-Chieh Chang, Chenghsien Tsai and Ya-Wen Hwang

In this study, we investigate the portfolio selection problem in order to hedge the labor income and inflation uncertainties for defined contribution (DC) pension schemes. First, we extend the previous work of Battocchio and Menoncin (2004) that allowed the state variables (i.e., the risks from the financial market) and a set of stochastic processes to describe the inflation, labor income and expense uncertainties. A five-fund separation theorem is derived to characterize the optimal investment strategy for DC pension plans to hedge the labor income and the inflation risks. Second, by solving the Hamiltonian equation in the three-asset framework, we show that the optimal portfolio consists of five components: the myopic market portfolio, the hedge portfolio for the state variables, the hedge portfolio for the inflation risk, the hedge portfolio for the labor income uncertainty and the riskless asset. Then we explicitly solve the optimal portfolio problem. Finally, the numerical results indicate that the inflation hedge portfolio comprises the overwhelming proportion of stock holdings in the optimal portfolios. In addition, the inflation hedge portfolio and the state variable hedge portfolio constitute the overwhelming proportions of bond holdings.

Evolving Risk Aversion and the Evidence on Constant Relative Risk Aversion

by Emilio Venezian

Published studies based on expected utility assume that the utility function of the decision maker at the time that uncertainty is resolved is known at the time the decision is made. State dependent utility models admit that the utility function at the end may be a function of the result of the decisions. This paper begins to explore the consequences of allowing the utility function to evolve over the period from decision to resolution of uncertainty. It does so by assuming that the decision maker has an underlying utility with constant absolute risk aversion but the coefficient of absolute risk aversion at the time of resolution of uncertainty is not known at the time the decision must be made. The analysis presented assumes that this evolution is independent of the outcome of the decision. The results are that the individual behaves as though the coefficient of absolute risk aversion were decreasing as wealth increases. Different distributions of the terminal coefficient of absolute risk aversion give rise to different shapes for the effective utility.

Efficiency equals Full Insurance Coverage? A study of the Interaction of Insurance and Financial Markets

by Jose Penalva

This paper studies the interaction between insurance and capital markets within a single but general framework. We analyze insurance and investment decisions as well as insurance and investment prices in competitive equilibrium. We determine a set of conditions for agents to optimally wish to purchase full coverage and demonstrate that they are satisfied in an efficient insurance market equilibrium, even if insurance prices carry a positive loading to compensate for undiversifiable risk. We are able to characterize agent's investment strategies and determine the equilibrium price of insurance contracts and firms. We show that insurance contracts are determined by their actuarial value plus a loading reflecting the aggregate price of risk. We also show that capital markets greatly enhance the risk sharing capacity of insurance markets and the scope of risks that are insurable because efficiency does not depend on the number of agents at risk, nor on risks being independent, nor on the preferences and endowments of agents at risk being the same.

Prevention in Insurance Markets

by Marie-Cécile Fagart and Bidénam Kambia-Chopin

This paper considers a competitive insurance market under moral hazard and adverse selection, in which preventive efforts and self-protection costs are unobservable by insurance

companies. Under reasonable assumptions, the conclusions of Rothschild and Stiglitz (1976) are preserved in our context even if it involves moral hazard. The riskier agents in equilibrium, who would be also the riskier agents under perfect information, receive their moral hazard contract. For other agents, adverse selection reduces coverage, increasing likewise their preventive effort with respect to hidden action situation.

Selection Bias and Auditing Policies on Insurance Claims

by Jean Pinquet, Mercedes Ayuso and Montserrat Guillén

The paper is organized as follows. Section 2 explains how fraud detection strategies for automobile insurance claims are implemented in the insurance companies. Section 3 describes the database. Section 4 presents the bivariate probit model and its application to the correction of selection bias. We consider a natural extension of the single equation probit model on the fraud variable (see Belhadji, Dionne, Tarkani (2000) and Artis, Ayuso, Guillén(2003) for the inclusion of misclassification risk in the fraud equation). Our claims data base is split into two populations. Claims selected at random (one out of five) are recommended for audit, whereas there is no specific recommendation for the other ones. We will use the latter population as the working sample since these claims are subject to selection bias. The claims selected at random will be used as a holdout sample in order to assess the efficiency of the statistical model. The estimated correlation coefficient in the bivariate probit model is found to be positive on our data. This means that, if we control for observable information on claims, fraud risk is lower for claims exempted from audit by the experts.
Optimal auditing policies which take into account selection bias are presented in Section 5, and concluding remarks appear in Section 6.

Biological and Psycho-behavioral Correlates of Risk Taking, Credit Scores, and Automobile Insurance Losses: Toward an Explication of Why Credit Scoring Works

by Patrick L. Brockett, Linda L. Golden and Sandra H. Dunn

The most important new development in the past two decades in the personal lines of insurance may well be the use of an individual's credit history as a classification and rating variable to predict losses. However, in spite of its obvious success as an underwriting tool, and the clear proof of the strong correlation of credit score with insured losses by multiple methods and multiple studies, the use of credit scoring is under attack because there is not an understanding of <u>why</u> there is a correlation. Through a detailed literature review concerning the biological, psychological and behavioral attributes of risky automobile drivers and the biological, psychological and behavioral attributes of financial risk takers, we delineate basic chemical and psycho-behavioral characteristics related to both accident propensity and credit scores, thus providing a connection which can be used to understand why credit scoring works.

A Statistical Analysis of the Settlement Negotiation Process for Automobile Bodily Injury Liability Claims In the Presence of Suspicion of Fraud and Build-Up

by Richard A. Derrig and Grzegorz A. Rempala

Third party liability insurance settlements are by their nature the result of negotiations between the claimant, or his/her representative, and a representative of the insurer, acting on behalf of the policyholder (Ross, 1980). When substantial non-economic or general damages are expected in any settlement, such as in auto bodily injury liability claims, the nature of the settlement process must differ from the simple first party reimbursement for medical bills or vehicle repair or replacement costs paid and include negotiation and bargaining strategies. Recent research efforts have noted only the outcomes of lower negotiated general damage settlements, in the form of lower settlement to special damages ratios, in the presence of suspicion of fraud (Crocker and Tennyson (2002), Loughran (2002), and Derrig and Weisberg (2004). This paper uses a unique data set from Massachusetts to investigate the negotiation process in terms of the leverage points available to each party and the sequence of claimant demands and insurer offers through settlement. A framework for the negotiation process is proposed, in terms of offer to demand ratios with the ratio value of one representing the settlement. We show that the negotiation process described in this way may be modelled as a non-homogenous Poisson process, where the differences of consecutive O/D ratios are treated as inter-arrival times. Using the example of the Massachusetts dataset, we illustrate how one can identify subsets of claims having different rate functions via a logistic regression classifier with a set of claim related covariates. We also show how the variability of the rate functions estimates may be assessed using a parametric bootstrap method. The set of covariates identified as important in the claim classification includes, among others, the initial anchoring provided by attorney demands (Wright and Anderson, 1989).

Advantageous Selection versus Adverse Selection in Life Insurance Market: the Case of Japan

by Ghadir Mahdavi

The conventional theory of adverse selection assumes no relationship between the attitude towards risk and risk exposure. The implication of such assumption will be the insurers end up with high risk individuals and the market faces the insufficient provision of the policies. This theory is not supported by most of the empirical works. The alternative advantageous selection theory, assumes a negative correlation between risk aversion and risk exposure. We show that under this assumption, insurers end up with good risks, the market offers sufficient provision of policies and, the selection effect will be propitious to insurers as risk-averse individuals are not only willing to pay more for precautionary efforts but also are more inclined to insure.

Financial Instability and Life Insurance Demand

by Mahito Okura and Norihiro Kasuga

This paper estimates private life insurance and Kampo demand functions using household-level data provided by the Postal Services Research Institute. The results show that income, children, pension and knowledge factors have a significant effect on the decision as to whether each household purchases life insurance products. The amount of income and financial assets also appear to have significant effect on the purchase of private life insurance and Kampo. However, pension and bankruptcy experience appear only to have an impact on Kampo, while aged (less than 40) and occupation (civil servant) factors affect only private life insurance. Dummy variables representing comparison, knowledge, and bankruptcy experience did not have any significant effect on decisions concerning private life insurance. Simultaneous estimations are also used to examine why households that already have one type of life insurance product (e.g. private life insurance) purchase the other type of life insurance product (e.g. Kampo). The results indicate that income, children, and bankruptcy experience variables are not significant factors when households with private life insurance product decide to purchase additional Kampo. The results also show that a knowledge dummy has a negative impact on additional purchases.

Spousal Characteristics and Its Effect on Life Insurance Ownership between Spouses in Singapore

by Wah Chin Yee, Yuan Wu and Patrick KP Chan

This study identifies and examines spousal characteristics and its effect on life insurance ownership by individual spouses in Singapore. More specifically, the study focuses on the life insurance ownership of spouses and assesses how different spousal characteristics affect the life insurance ownership in terms of the number of insurance policies and the amount insured by individual spouses in married couples. The spousal characteristics identified include income level, age, education level, and attitude towards money, life and risk. Data was collected by convenience sampling and administered through a questionnaire. A total of 200 couples (400 individuals) were surveyed. The results of this study will be beneficial to the insurance industry in helping the industry to target the spouse who is more likely to purchase life insurance within a family unit.

Optimal Portfolio Management for Individual Pension Plans

by Christian Gollier

We explore the various arguments for and against the recommendation that younger households should invest a larger share of their pension wealth in risky assets. The ability of

young agents to compensate their financial losses by saving more during their career provides the strongest argument in favor of younger people investing more aggressively on the stocks market. Mean-reversion in stocks returns yields another argument. However, the uninsurability of the risky human capital goes into the opposite direction, together with the imperfect knowledge that young investors have about the distribution of asset returns.

Individual Account Investment Options and Portfolio Choice: Behavioral Lessons from 401(k) Plans

by Jeffrey R. Brown and Scott Weisbenner

This paper examines how the menu of investment options made available to workers influences portfolio choice. Using a unique panel data set of 401(k) plans, we examine four aspects of investment behavior. First, we show that the share of investment options in a particular asset class (i.e., company stock, equities, fixed income, and balanced funds) has a significant effect on participant portfolio allocations across these asset classes. For example, our estimates suggest that by increasing the share of equity funds from 1/3 to 1/2 (such as by adding an additional equity fund option to a plan that already offers company stock, one equity fund, and one fixed income fund), overall participant allocations to equity funds increase by nearly 6 percentage points. Second, we show that investment restrictions – such as requiring a match in company stock or placing a ceiling on the fraction of assets that can be held in a particular asset – can change the overall risk/return profile of the portfolio much more than would be expected in a standard portfolio model. For example, restricting investment in company stock is associated with an overall reduction in all equities, not just company stock. This finding is consistent with a view that participants view such restrictions as a form of implicit investment advice. Third, we find that investors respond to past asset returns, such as by allocating a higher fraction of contributions to equities when past 5-year returns on equities have been high. Finally, we provide strong evidence of inertia in investment behavior, as it takes several years for participant contributions to fully adjust to the addition of a new fund. Each of these findings has important implications for the design of any individual account based investment program, including one that would be part of Social Security.

Risk Management in Procurement Auctions

by Andreas R. Engel and Achim Wambach

Governments as well as private firms face the risk that a contractor goes bankrupt before or during the completion of the work. We investigate in such an environment the bidding behavior in procurement auctions. Among other results we show that the revenue equivalence result breaks down and that in contrast to standard auction theory, multi-sourcing, rationing and other means to soften competition may fare better than a standard

auction. We also discuss commonly used methods to avoid ruinous bidding and show that these may fare quite badly.

Environmental Risks and Financial Guarantees: Improving Prevention in the Mining Industry

by Sandrine Spaeter and Panagiotis Tsakiris

This paper focuses on the financial guarantees that firms from the extractive industry must provide in order to start activities, that present a risk of pollution for Society. The government calls for these guarantees at the beginning of the firm's activity and it uses them at the end to finance the rehabilitation of the polluted site whenever the firm does not fulfil its legal obligations. Precisely, we are interested by the incentives that those guarantees yield for the firm to invest in risk-reducing activities, knowing that the remaining money after rehabilitation is refunded to the firm. We are looking at the existing system and we imagine a more dynamic situation, where regular re-estimation of the guarantee deposit by authorities after audit of the firm's environmental strategy generates incentives for better prevention. We also link our results to the financial option theory.

A Test of the Eclectic Paradigm: Evidence from the U.S. Reinsurance Market

by Cassandra R. Cole, Ryan B. Lee and Kathleen A. McCullough

This study provides a test of the eclectic paradigm with data from U.S. reinsurers. The U.S. reinsurance industry provides a unique setting to test the eclectic paradigm using financial services firms based on the extensive data available on U.S. reinsurers. The empirical framework combines several key factors hypothesized to impact the extent of internationalization of U.S. reinsurers. These include firm-specific factors as well as country-specific factors of the international markets. The study also incorporates factors related to the U.S. reinsurance industry. The paper finds support for traditional factors impacting globalization such as reduced barriers to entry and reinsurer ability to expand based on available capacity. Issues related to the competitiveness of the foreign markets and the profitability of those markets also are found to be significant. With the continued interdependence of the world reinsurance marketplace, as well as the recent expansion of the European Union, these issues are of critical importance to not only U.S. reinsurers, but U.S. insurers and regulators as well.

Are there Co-movements in the Default Risk of Reinsurance Companies?

by Oliver Burkart

This study analyses the dependence between the default risk of six of the world's largest reinsurance companies. Default risk is modelled on the basis of the structural Merton approach. A correlation analysis reveals that the dependence between the default risk of these companies covers a broad range of values from negative to positive correlation. The default risk of some of the larger reinsurers seem to be dependent. A bivariate extreme value approach shows that this seems also to hold for rare unfavourable values of default risk. Parametric and nonparametric approaches are used to estimate the dependence function which capture dependence of rare events. Test show that it seems reasonable to assume asymptotic dependence among block maxima of default risk for those cases where the correlation analysis hinted towards stronger dependence. In most cases however, there is no asymptotic dependence. These results are preliminary and must be interpreted with caution. They also need to be put into perspective as the default risk of reinsurance companies, and particularly the one of large reinsurance companies, is very low.

The Demand for Reinsurance in the German and the European Market: First Empirical Results

by Ruediger Reissaus and Achim Wambach

Empirical research on reinsurance behaviour of insurance companies has begun with the work of Mayers and Smith (1990). According to these authors, ownership structure of an insurer has a significant impact on her demand for reinsurance. Size, geographic concentration, and rating have a significant negative influence on the purchase of reinsurance. Hoerger, Sloan, and Hassan (1990) also provide empirical analyses. Given an insurer is already reinsured they demonstrate, that equity and the volume of premiums lower, while a high loss volatility raise the demand for reinsurance. Finally Garven and Lamm-Tennant (2002) show by empirical testing, that leverage has a significant positive and the correlation between the firm's investment-returns and claims costs has a significant negative influence on the demand for reinsurance. All these empirical studies were analyzed with various focuses, for special lines of business and for the US Reinsurance market only. Our paper adds in two dimensions to the existing literature. First, we intend to test for a larger variety of theoretical reasons for the demand of reinsurance. Second, we are testing reinsurance demand for the German and European insurance market, thus complementing the work done for the US market. So our work could make it more transparent, which kind of insurer purchases which volume of reinsurance and for what reason. At the end of the day it also could give new insights into the insurers´ reinsurance behaviour.

SESSIONS lll

Is Mortality Dead? Stochastic Forward Force of Mortality Determined by No Arbitrage

by Kristian R. Miltersen and Svein-Arne Persson

Our idea is to introduce the concept of *forward force of mortality* without any limitations on the dependence between the stochastic behavior of the forward force of mortality and the stochastic behavior of the forward rate. Heath, Jarrow, and Morton (1992) derive the behavior of future term structures of interest rates by no-arbitrage conditions. We use the same approach to develop the stochastic behavior of future *term structures* of forces of mortality. Relying on the insight from the Heath-Jarrow-Morton model, we back out the market price of mortality risk by assuming that we can observe the initial term structure of forward forces of mortality. This approach can be used to price force of mortality derivatives without having to make any ad hoc assumptions about the market price of mortality risk.

Risk Diversifications in Reserve Valuation: The Case of the Korean Life Insurance Industry

by Changsoo Lee and Kwangbong Lee

In life insurance practice in most countries, companies are required to calculate statutory policy reserves using a mortality table which incorporates some safety margins by sex, age, or in-force period. While considered to be prudent to hedge against adverse mortality experience, this practice ignores risk diversification inherent reserve valuation. In this paper, a statistical inference model is derived to address the nature and magnitude of risk diversification. The valuation results inferred with the highest level of confidence suggest that risk diversification is apparent especially in portfolios of relatively small numbers of in-force contracts, and stabilizes after a certain size of portfolio, approximately 200,000 in-force contracts for the sample case used in this paper. Furthermore, risk diversification is remarkably conspicuous for the portfolios of female policyholders, indicating that for some reasons in Korea safety margins applied to female mortality rates are relatively excessive.

The Distributions of Policy Reserves Considering the Policy-year Structures of Surrender Rates and Expense Ratios

by Chenghsien Tsai, Weiyu Kuo and Derek Mi-Hsiu Chiang

Quantifying the uncertainty of policy reserves is imperative to life insurers. The literature provides us with good understanding about the risk of policy reserves in an environment with stochastic mortality, interest rates, and surrender rates. We contribute to the literature by investigating how the policy-year structures of expense ratios and surrender rates affect the policy reserve distribution. Our results show that a downward-sloping expense ratio curve can reduce the mean and the risk of reserves. Such a curve however would turn higher surrender rates from beneficial to detrimental. Our results also show that a downward-sloping surrender rate curve and lower surrender rate volatilities are favorable to insurers. Therefore, considering both policy-year structures leads to the most favorable results in our simulations.

Are Insurance Firms Exposed to Foreign Exchange Rate Fluctuations? Evidence from Insurers in the Asia-Pacific

by J. Thomas Connelly, Piman Limpaphayom and Thanomsak Suwannoi

This study examines the foreign exchange exposure of insurance companies by using publicly traded insurance companies in the Asia-Pacific region. Empirical results show that the overall exchange rate exposure of most insurance firms in the sample is statistically significant. Empirical evidence also reveals that the relation between stock returns and foreign exchange returns differs systematically across nations. Further, the extent to which an insurer is exposed to exchange rate fluctuations is related to variables that are proxies for hedging activities. It is documented that large insurers tend to have low foreign exchange exposure. There is also a negative relation between dividend payout ratio and foreign exchange exposure. Financial leverage is positively related to exchange rate exposure. The finding represents the first empirical evidence of the effect of foreign exchange rate movements on risk and valuation of insurance firms.

Derivatives Usage by Taiwanese Financial Firms

by Yung-Ming Shiu and Yi-Cheng Shin

This paper investigates the determinants of holdings of derivatives by Taiwanese financial companies, including banking firms and life and non-life insurers, in the 2001-2003 period. Using the cross-sectional and panel estimation techniques, we find that determinants

change from one epoch to another and from one sector to another. On the whole, the analysis provides considerable support for the hypothesis of informational and scale economies. We also find firms with greater foreign currency exposure are more likely to employ derivatives instruments than firms with less. Moreover, this exposure is found to be a significant determinant in the extent decision.

Technical and Scale Efficiency in the Thai Non-life Insurance Industry

by David L. Eckles and Narumon Saardchom

The Thai non-life insurance is strictly regulated in many aspects (including premium regulation). To compete in the market, non-life insurance companies in Thailand have to concentrate on production technology rather than price competition. An efficiency score measured by frontier methodology can thus provide better performance indicator than traditional measurements evaluated by financial ratios. We apply frontier methodology to the accounting data of non-life insurance firms reported to the Department of Insurance between the years of 1997 and 2002 in order to calculate efficiency scores by firm and by year. We find a wide dispersion in efficiency scores among non-life insurance firms in Thailand. Average technical efficiency scores of the Thai non-life insurance industry ranges between 0.691 and 0.791. Moreover, over the entire sample period, 41.7% of the firms are operating with constant returns to scale. 25.1% are operating with decreasing returns to scale and the remaining 33.3% are operating with increasing returns to scale. The larger the firm, the more likely they are to be operating with decreasing returns to scale.

Comparison of Economic Efficiency Estimation Methods - An Application to Taiwan's Life Insurance Industry

by James C Hao

I employ a wide range of parametric and non-parametric cost frontiers efficiency estimation methods to estimate economic efficiency and economics of scale, using panel data of 25 Taiwanese life insurance companies over the period 1980-2002. According to my empirical implementation, the two methodologies yield similar average efficiency estimates, yet they come to different results pertaining to efficiency rankings, the stability of measured efficiency over time, the consistency between frontier efficiency and conventional performance measures, and the estimates of scale economies. Thus, the choice of an estimation approach can result in different conclusions and policy implications regarding cost efficiencies and cost economies. These findings suggest that making policy decisions and evaluations relies on multiple techniques and specifications.

Internal Capital Market Efficiency within Financial Conglomerates: Evidence from Property-Liability Insurance Groups

by David Eckles, Lawrence S. Powell and David W. Sommer

We exploit the transparency of internal capital markets (ICMs) within insurance groups to test the efficiency of ICMs. Unlike firms in most other industries, insurers are required to report transactions with affiliates in statutory annual filings. We use these detailed data to execute a more direct test of ICM efficiency than currently exists in the literature. Consistent with ICM efficiency, results suggest capital is allocated to subsidiaries with the best expected performance.

Prudence and Optimal Prevention for Health Risks

by Christophe Courbage and Béatrice Rey

The uniqueness of the good "health" is such that each individual evaluates and perceives illness differently from one another. By looking at the impact of change in disutility of illness on prevention, we develop earlier results on the determinant of optimal prevention to health risks. In particular, we show that when an individual has a higher disutility of illness than another, then a lower prudence of the first individual over the second is a sufficient condition to pursue more prevention. These findings reinforce the role of prudence as a main determinant of the optimal level of prevention.

The Transfer Problem in Copayment Insurance

by John M. Marshall and Rod Garratt

The transfer problem in copayment insurance is the limited ability of price changes to transfer wealth into those health states in which the consumer has high marginal utility of wealth. The paper examines the transfer problem in the absence of, and in the presence of, the better-known substitution problem. Three contexts are considered: zero elasticity of substitution, unitary elasticity of substitution, and indivisible treatments. Adequacy of wealth transfers and health expenditures is measured by reference to the first-best optimum using complete markets in contingent wealth, and the copayment rate is always that of the second-best optimum. In every context the paper identifies inadequate expenditure on health care in case of grave illness and excessive spending in relatively healthy states.

Optimal Insurance Contracts without the Non-Negativity Constraint on Indemnities Revisited

by Michael Breuer

In the literature on optimal indemnity schedules, indemnities are usually restricted to be non-negative. Gollier (1987) shows that this constraint might well bind: insured could get higher expected utility if insurance contracts would allow payments from the insured to the insurer at some losses. However, due to the insurers' cost function Gollier supposes, the optimal insurance contract he derives underestimates the relevance of the non-negativity constraint on indemnities. This paper extends Gollier's findings by allowing for negative indemnity payments for a broader class of insurers' cost functions.

Competitive Insurance Markets

by Peter S. Faynzilberg

We show that the risk-sharing economy examined in Rothschild and Stiglitz (1976) has a unique efficient equilibrium. In terms of its sensitivity to the structure of the buyer population, equilibrium may be flexible or rigid. The solution procedure is based on the best-reply property of Nash equilibrium, expressed in terms of selective efficiency ([4]). Closed-form illustrations of the methodology and equilibria are also provided.

Distribution of Price and Quality under Information Asymmetry

by Richard D. MacMinn and S. Hun Seog

This paper presents a model in which firms compete for consumers who make repeat purchases with prices and qualities of "experience" goods. Consumers can observe price offers of firms, even though they may not observe the quality before purchase. We set up a simple two-period model and find the following results. First, the lemons market problem is partially resolved. Second, the market may observe both quality dispersion as well as price dispersion in equilibrium. In such an equilibrium, the lemons are pooled with high quality firms, while the medium quality firms, if they exist, are separated from the pool. We find that the price of the pool is higher than the price of the medium quality firms. Third, we apply our analysis to insurance markets. We show how our results can be related to the insurance cycle, catastrophe insurance, and guarantee funds.

Price Indicia in the Individual Annuity Market

by James M. Carson and Randy E. Dumm

This paper examines indicators of price in the individual annuity market. Sommer (1996) provides evidence that property-liability prices are directly related to the firm's financial strength. Doerpinghaus and Gustavson (1999), conversely, show that long-term care prices are inversely related to the firm's financial strength, and they call for future study of the relationship between life-health insurer financial strength and product pricing. Further, Warshawsky (1988) suggests that price dispersion could reflect the relative risk of asset portfolios across insurers. We use a hedonic pricing model to examine the relationship between insurance company characteristics (e.g., financial strength, asset portfolio returns, organizational form, etc.) and prices for single premium deferred annuities (SPDA). First, we find that the market for SPDAs is characterized by significant price disparity. Second, controlling for firm size and various contract-specific provisions, evidence indicates that price is positively related to financial strength, leverage, lapse rates, and investment portfolio returns. We also find that high initial interest rates (introductory or "teaser" rates) have no relation to annuity prices.

Corporate Pension System in Korea: Limits and Prospects

by Wonshik Kim

Korean government is planning to enact the Employee Retirement Income Security Act which will transform the existing mandatory severance pay to corporate pension. This paper analyzed limits of severance pay and future directions of corporate pension.
Related to the severance pay system, the followings should be reformed. First, the role of Wage Claim Guarantee Act related to existing severance pay should be reshaped so that it can be extended to corporate pension. Second, tax preferences of severance pay, especially in in-advance severance pay should be reduced. Third, the existing fund style workfare should be used for corporate pension so that workers easily secure funds for contribution to retirement annuity.
Additionally, to increase production efficiency and to provide management device for non-discrimination among workers, establishment of pension guarantee device, tax reform should be allowed. Contract out of national pension through corporate pension should also be allowed so that stable pension system can be made for the old.

The Determinants of Country Risk Ratings and Their Policy Implications

by Madhu Vij and Gunjan M Sanjeev

The paper examines the effect of various economic and political factors on country risk ratings published by Euromoney and Institutional investor. As global competition drives corporations, managers frequently rely on country risk analysis as a crucial aspect of strategic decision making. The purpose of this paper is to investigate the extent to which country risk measures can help in predicting country ratings. We examine seven widely used measures of country risk across sixty-eight countries. Results from the empirical analysis indicate that country risk ratings can be replicated to a significant degree with a few available political and economic indicators. Political risk was found to exert a significant influence on country ratings. The results confirmed that there is a definite relationship between the Euromoney and Institutional ratings in explaining the various independent variables but the measures are not perfect substitutes for each other.

Does a Little Competition Improve Ratings? The Industrial Organization of Insurance Ratings

by Neil A. Doherty and Richard D. Phillips

The purpose of this paper is to both theoretically and empirically investigate the incentives a single rating agency has to produce ratings and then ask how those ratings are likely to change when another agency enters the market.

We begin by considering the ratings process itself. First, consider that the rating agencies themselves can be judged only in reference to the quality of the models and the data employed. Better formulated models with richer data should, one assumes, outperform more primitive models. But the choice of models might be constrained by modeling technology and the data limited to what is accessible. However, within these constraints, rating agencies can choose how much they wish to invest in model building, how much invest in data and how they will interpret the results. The question we address is whether these choices are affected by competition between agencies and how that competition impacts the ultimate ratings.

Absolute or Relative? Which Standard do Credit Rating Agencies Follow?

by Puneet Prakash

In this paper I compare objective measures of the likelihood of firm default with the subjective ratings assigned to corporate debt issuers by one of the major credit rating agencies. By doing so I seek to determine whether the rating agencies use objective time invariant standards to assign credit ratings or whether the ratings can only be interpreted as relative ranking of credit quality conditional on the distribution of credit quality among issuers at a given point in time. I further seek to determine the nature of these time varying standards for different rating categories. Using a quarterly panel data set from 1986 – 2000, I first estimate an objective probability of default using a variant of Merton's market model of credit risk for all publicly traded companies in the Compustat database for which Standard and Poor's has assigned a credit rating. I then estimate an ordered probit model of credit rating standards over the same time period to determine the standards employed by the rating agency for the period of my data. Finally, I demonstrate that the estimated thresholds from the ordered probit models are directly related to the probability of default for the median firm consistent with the hypothesis that the rating standards are indeed time varying. The evidence calls into question the use of risk management models based upon Nationally Recognized Statistical Rating Organization approved ratings since the ratings standards themselves appear to vary directly with the entire distribution of default in the economy.

SESSIONS IV

Mortality Securitization Modeling

by Yijia Lin and Samuel H. Cox

After the first pure death risk deal—the Swiss Re bond was issued in December 2003, securitization of mortality risks is gaining more attention from investors. A market in which mortality risk is traded seems to be developing. As a step toward understanding these securities, we consider the problem of pricing contingent claims on a mortality bond. The mortality process is modelled as a jump–diffusion process. We price a "Swiss Re" style bond based on a US mortality index by using the two-factor Wang transform. This approach does not require the market to be complete.

Mortality Improvement Select Birth Cohorts and their Effect on Pricing of Survival Bonds

by Richard MacMinn, Krzysztof Ostaszewski, Ranee Thiagarajah and Jan Frederik Weber

This works investigates the effect of select birth cohorts on pricing of mortality-based securities, such as survival bonds, life annuities in general, or portfolios of life annuities. Existence of select birth cohorts in the United Kingdom has been indicated by works of Willets, and also shown in other countries in the recent work of the present authors. In this paper we compare and contrast the cohort effect to the influence of interest rates, and discuss their relative importance in pricing of mortality-based securities.

Application of the Poisson Log-bilinear Projection Model to the G5 Mortality Experience

by Antoine Delwarde, Michel Denuit, Montserrat Guillen and Antoni Vidiella

It is now well documented that the human mortality globally declined during the course of the 20th century. These mortality improvements pose a challenge for the pricing and reserving in life insurance. This paper aims to analyze the pattern of mortality decline in the G5 countries (France, Germany, Japan, UK and US). Assuming a further continuation of the stable pace of mortality decline, a Poisson log-bilinear projection model is applied first to aggregated and then to disaggregated data to forecast death rates.

Effects of Corporate Diversification: Evidence from the Property-Liability Insurance Industry

by Andre P. Liebenberg and David W. Sommer

We investigate the effects of corporate diversification using a sample of property-liability (P/L) insurers over the period 1995 to 2002. The richness and consistency of our data set enables us to carefully test two alternative hypotheses regarding diversification's effect on firm performance. The strategic focus hypothesis predicts a negative relation between diversification and performance while the conglomeration hypothesis predicts a positive relation. We develop and test a model that explains performance as a function of line-of-business diversification and other correlates. We consistently find that undiversified insurers outperform diversified insurers. Our results indicate that diversification is associated with a penalty of at least 1% of ROA or 2% of ROE. The diversification penalty is robust to corrections for potential endogeneity bias, alternative risk measures, and an alternative estimation technique. Our findings provide strong support for the strategic focus hypothesis. With respect to our control variables we find a positive relation between industry concentration and firm performance. We also find that insurance groups consistently underperform unaffiliated insurers and that stock insurers outperform mutuals.

Players and Driving Forces in World Insurance Services: Locations and Governance

by J. François Outreville

This paper has two objectives. The first is the documentation of the relative importance of the largest insurance or reinsurance companies in the world and changes that may have occurred in the past fifteen years. The second objective is to identify some of the factors that may explain the increased internationalization and most-favoured locations of insurance groups.

The results of this study have two important implications. First, they indicate that location-specific advantages such as size, cultural distance, does provide an explication of the internationalization of insurance firms. Second, they show that good governance has a strong impact on the choice of countries by insurance firms.

Insurer Risk-Taking Strategies in Industry Equilibrium

by Yayuan Ren

A review of the extensive literature investigating firm's risk taking behavior yields three major unanswered questions. The first is how capital structure relates to firm risk taking

behavior; the second is how market structure or competition affects risk taking behavior; and the third is whether capital adequacy regulation is effective in restraining risk taking behavior. The research reported here aims to investigate these three issues in the context of the insurance industry.

Tort Reform in the Long Run: An Analysis of the Lasting Effects of Reform Activity on Medical Malpractice Insurance Performance

by Patricia Born, W. Kip Viscusi and Tom Baker

In this article, we use a combination of OLS and quantile regression models to assess the relationships between various tort reform measures and insurer losses. To the extent that the results differ from earlier studies based on contemporaneous measures of losses and loss adjustment expenses, it is because we have additional information on (1) the true impact of the malpractice reforms on insurer underwriting performance and (2) the extent to which perceived effects of the reforms were actually borne out in the legal system. We discuss the construction of our dataset in the next section. This discussion is followed by an illustration of the substantial effect of loss development, which provides further motivation for our particular analytical approach. Our empirical approach and results of our analysis follow, along with our discussion and conclusions. We find that considering the effect of the reforms on losses using both five year and ten-year development factors shows that the long run effect of the reforms differs substantially from the short run effects. Typically the effects are greater in the long run, but the relative impact of the reforms and the distribution of the reform effects throughout the insurance market is influenced as well by our use of a longer term perspective.

Effects of Cost-Sharing in Employer-sponsored Health Insurance on Employees' Use of Health Care and Health

by Yu Lei

The steadily increasing health insurance premiums have led employers to explore various means to control health care cost. One of the major strategies is to pass on a portion of health care cost to employees. This study uses the 2000-2001 Community Tracking Study Household Survey to examine the effect of employer-sponsored health insurance cost sharing on employees' use of health care and health. Evidence indicates that low cost sharing is associated with more hospital admissions and doctor office visits, greater likelihood of seeking care, and lower chance of having to forgo or postpone getting necessary care. Our results imply that a modest increase in cost sharing may help control health care cost since it reduces health care utilization. But in the long run health care cost may go up because people who have to forgo or postpone getting needed care now may end

up using more health care later on. Therefore it is advised that employers use a combination of different cost containment methods in their health benefit design.

Age and Choice in Health Insurance: Evidence from Switzerland

by Karolin Becker and Peter Zweifel

Elements of regulation inherent in most social health insurance systems are a uniform package of benefits and uniform cost sharing. Both elements risk to burden the population with a welfare loss if preferences differ. This suggests introducing more contracted choice; however, it is widely believed that this would not benefit the aged. This study examines the relationship between age and willingness-to-pay (WTP) for additional options in Swiss social health insurance. Through discrete choice experiments, a marked diversity of preferences can be established. The findings suggest that the aged require less rather than more compensation for all cutbacks considered, pointing to potential for contracts that induce self-rationing, in return for lower premiums.

Costly State Verification by a Claimant

by Wondon Lee

In this paper insurance claiming environment of a risk-neutral claimant and insurer is considered. On the contrary to the usual costly state verification model and costly state falsification model, the actual magnitude of a loss is private information to the insurer and the claimant can observe the loss only by incurring a cost. The insurer's systematic underpayment phenomenon is explained in this paper.

On the Possibility of Profitable Self-Selection Contracts in Competitive Insurance Markets

by Arthur Snow

Several studies have extended the model of competitive insurance contracting with adverse selection introduced by Rothschild and Stiglitz (1976) to incorporate additional dimensions of private information, and have concluded that (jointly) profitable contracts may survive in a separating, self-selection equilibrium. In each such instance, one contract breaks

even, while the other contract not only earns a positive profit, but any alternative contract with a lower premium and comparable coverage would attract all applicants and earn negative profit. However, these profitable self-selection contracts cannot survive in a competitive equilibrium where insurers can enter and exit freely and costlessly offer as many different types of contracts as they wish. Under the competitive conditions of the Rothschild-Stiglitz environment, insurers can offer one contract that earns negative profit provided these losses are offset by positive profit earned on another contract. There always exists such a pair of defections from the profitable self-selection contracts proposed as equilibria for the modified Rothschild-Stiglitz environments, implying that these contracts cannot be sustained as Nash equilibria. In these instances, Nash equilibrium is the breakeven pooling contract identified as the strategically stable outcome of the three-stage representation of insurance contracting proposed by Hellwig (1987).

Moral Hazard and Background Risk in Competitive Insurance Markets

by James A. Ligon and Paul D. Thistle

The objective of this paper is to examine the effect of background risk on insurance markets with moral hazard. We show that, if individuals have constant or decreasing absolute risk aversion, then background risk increases the difference in utility between the loss and no loss states of the world. This implies that, for any insurance policy, individuals will choose higher effort in the presence of background risk. We then apply these results to the choice between stock and mutual insurance policies. We show that consumers are more likely to prefer mutual insurance if the productivity of effort is high.

To Hedge or Not to Hedge: Managing Demographic Risk in Life Insurance Companies

by Helmut Gründl, Thomas Post and Roman Schulze

Demographic risk, i.e., the risk that life tables change in a nondeterministic way, is a serious threat to the financial stability of an insurance company having underwritten life insurance and annuity business. The inverse influence of changes in mortality laws on the market value of life insurance and annuity liabilities creates natural hedging opportunities. Within a realistically calibrated shareholder value maximization framework, we analyze the implications of demographic risk on the optimal risk management mix (equity capital, asset allocation, and product policy) for a limited liability insurance company operating in a market with insolvency-averse insurance buyers. Our results show that the utilization of natural hedging is optimal only if equity is scarce. Otherwise, hedging can even destroy shareholder value. A sensitivity analysis shows that a misspecification of demographic risk has severe consequences for both the insurer and the insured. This result highlights the importance of further research in the field of demographic risk.

A Cross-cultural Comparison of the Ethical Environments of the U.S. and South Korean Life Insurance Markets

by Robert W. Cooper, Bong-Joo Lee, Kyung-Lyong Lee and Han-Duck Lee

This paper examines the effects cultural differences can have on two key aspects of the ethical environments of life insurance markets—the key ethical dilemmas faced by insurance professionals working in those markets and the factors that present challenges to their efforts to resolve those dilemmas in an ethical manner. More specifically, the paper compares the findings of several studies of the ethical environments in the U.S. and Korean life insurance industries to illustrate the influences disparate cultures have had on the key ethical issues and the hindrances to ethical behavior encountered in these markets.

A Lifetime Housing Asset Plan Using Mortgage and Reverse Mortgage Finance

by Seungryul Man and Deokho Cho

The goal of this study is to establish a lifetime housing asset plan through combining a mortgage system with a reverse mortgage one in the Korean housing market. Using the mortgage system will be a useful method of financing for homeowners and a reverse mortgage system may be an important financial vehicle to supplement house rich but cash poor elderly homeowners. The main findings of this research are as follows. First, the homeowners who used mortgage loans when they purchase home definitely can get more net assets than who do not use mortgage loans through the path of life cycle. Second, mortgage borrowers who decide to contract the mortgage loans and purchase home earlier can get more net assets than who decide later. Using mortgage loans, borrowers not only can realize the dream of homeownership at an early age but also increase their net assets through time. Finally, the reverse mortgage loans can conduct an important role for elderly homeowner's welfare after retirement. Therefore, by incorporating mortgages and reverse mortgages into the lifetime housing asset plan, the homeowners can realize homeownership earlier as well as stabilize the levels of expenditures through lifetime.

Pension Reforms and Capital Market Developments in India

by R. Vaidyanathan

Indian capital Markets have seen significant reforms in the last decade in terms of institutions/ instruments and regulation. The trading has moved from an out cry system to a screen based order driven single national book based system. Clearing and Settlement is

completely computerized and more than three fourth of the stocks traded [in value] are held in a De-mat form. The segmented market with 23 independent stock exchanges has moved into a consolidation phase of two major national exchanges. The settlement cycle has become T+2 from an earlier batch-wise settlement of more than a fortnight. The margining system and the circuit breakers for volatility in the market have introduced orderliness in the market. The introduction of derivative products like options and futures [both on individual stocks and on indexes] has provided hedging facilities between cash market and derivative market. The opening up of Mutual Funds market in the mid nineties for private players both domestic and international has enlarged the operations and the market for MF products. The insurance market has seen major changes after the opening up of the sector. The private players have captured a good portion of the premium in the market and also entered in to rural areas. The Banking scenario has also seen major developments like networked banks and there has been huge expansion in net-based transactions. In such a context the proposed reforms in the pension sector both of the government and those of the mandated schemes will go a long way in enhancing the availability of different schemes to investors. The decline in the joint family system coupled with increased longevity makes it imperative that India opts for a viable and sustainable contributory system backed by rigorous regulation. We argue that the investor interests should be the primary focus even though social goals may also be balanced. The proposed pension Funds Regulatory and Development Authority [PFRDA] has its task cut out for formulating the framework wherein pension products would be part of the larger financial markets and which could also facilitate investments in the infrastructure sector.

The Crowding-Out Effect of the Public Pension On the Private Savings by Income Classes in the Korea

by Sung-ho Kang and Byung-In LIM

This study shows how different the public pension system crowds out the private savings by income classes-the poor class, the middle class, and the rich class, through a saving function and panel regression method. The empirical evidences say that the public pension crowds out the private savings in both the middle class and the rich class, except for the poor class. The coefficient magnitude implies that the crowding-out effect may be decreasing in accordance with the income increase, because there is an earnings cap in the rating structure of the public pension. Also, the effect of other variables on the private savings varies with the income class, implying that the private savings decision of the household depends on the income level.

The Inefficiency of a Top-up Insurance System

by Catarina Goulão

We address the question of the design of public insurance when individuals risk the loss of income. The degree of redistribution of income and risk, as well as the level of

benefits of public insurance, are chosen by majority rule. Efficiency criteria require the existence of public insurance in the form of flat benefits (proportional to income) if the covariance between income and risk is negative (positive). We examine the effects of topping-up public insurance in a competitive insurance market. We find that the efficient policies are not altered by this, but that a topping-up system is inefficient because it becomes less likely that the efficient policy will become implemented. Additionally, welfare is likely to be lower than in the exclusively public system.

Social Security – Adequacy versus Sustainability: A Framework for Considering the Viability of New and Existing Public Pension Systems

by David Richardson and Jason Seligman

Considering the creation of a public pension system which relies on intergenerational transfers, “PAYGO” might be seen as moving against the tide of recent global trends. Nonetheless for developing countries with current high rates of productivity, and population growth, such a system remains a means by which to alleviate poverty amongst the current aged. Those who may consider implementing such a system however would do well to consider the impact of any such program on fertility, and national savings, and to develop their program, and benefit level accordingly. This paper uses a simple two period overlapping generations (OLG) model to provide an endogenous framework for considering these impacts, including consideration of the distortion introduced by a tax bourn by labor in the formal sector of the economy.

Short- versus Long-Term Risks – Arguments in Favour of PAYG Social Security

by Roland Eisen

In the following I will take up this problem: Markets and institutions (or intermediaries) are alternatives performing almost the same functions, but in different manners and with very different results too. And as a subordinate problem, the question for long run solutions is posed, for which insurances represent the conventional (traditional) alternative. To do this I will proceed in three steps. First, the normal short run insurance contracts are considered and I will seek for possibilities to extend them with the aim of adjusting to the environmental conditions and to the risk situation. In the second step the question is how to make such long run insurance contracts safe. To do this, there are two alternatives: On one side, the spot allocation by markets and, on the other side, the intertemporal risk sharing by the accumulation of reserves, as it is generally done by the private insurance, to the point of mutual solutions or even “generational contract” of social insurance.

SESSIONS V

Insurer Reserve Error and Executive Compensation

by David L. Eckles and Martin Halek

While there is a substantial literature investigating insurance earnings smoothing for regulatory compliance or tax minimization and a substantial literature investigating managers' use of accounting discretion to affect total compensation, to the best of our knowledge there has been no research linking these two literatures. We investigate the broader incentive of insurance executives to possibly increase their total compensation through the manipulation of accounting results. We extend the loss reserve error methodologies of Petroni (1992) and Gaver and Paterson (2004) to determine the relationship between the compensation of insurer managers and their reserve estimation practices.

Managerial Discretion and the Impact of Risk-Based Capital Requirements on Property-Liability Insurer Reserving Practices

by Robert E. Hoyt and Kathleen A. McCullough

The study analyzes the loss reserving patterns of property-liability insurers in the period surrounding the implementation of Risk Based Capital (RBC) requirements. The goal of the study is to assess whether firms manage earnings to meet specific thresholds rather than merely to achieve broad goals. While the incentives to manage loss reserves have been clearly documented in the literature, this study aims to test whether a move to a single threshold with defined regulatory action systematically alters the behavior of insurers. Insurers are categorized either as being within the ranges of the threshold that would trigger regulatory actions (scrutinized firms) or as being outside of the binding range of the threshold (non-scrutinized firms). In the case of RBC, an increased incentive for under reserving, especially for firms already considered high risks for insolvency, undermines the ability of the regulators to accurately detect financially troubled insurers and take corrective action. The results of the study indicate that insurers under regulatory scrutiny did reduce their incurred but not report (IBNR) loss reserve levels in the post-RBC period, even when controlling for other factors likely to impact loss reserve levels. We do not find evidence of a similar drop in IBNR by insurers not facing regulatory scrutiny following the implementation of RBC requirements. These results have important public policy implications for regulators tasked with creating thresholds designed to accurately measure the financial strength of insurers. Further, they highlight the limitations associated with regulatory methods that define explicit thresholds, since regulated firms may tend to manage their reported financial results to surpass these explicit thresholds.

CEO Turnover and Ownership Structure: Evidence from the US Property/Casualty Insurance Industry

by Enya He and David W. Sommer

This article extends existing research on CEO turnover in three primary ways. First, we are able to derive a richer understanding of the CEO turnover issue in general by exploring the implications for corporate control of various ownership structures (in particular, mutual firms versus stock companies) present in the property/casualty insurance industry. Second, our research helps to expand the very limited current understanding of how CEOs are disciplined in the insurance industry. Finally, by focusing on a single industry, our sample is relatively homogenous compared to those of most other studies on CEO turnover. As such, the likelihood that our results are due to the spurious correlation caused by unobserved heterogeneity is significantly reduced [Blackwell et al. (1994), p. 333].

The Value of Risk Management: A Frontier Analysis

by Marcel Boyer, M. Martin Boyer and René Garcia

To address the value of risk management, we adopt a new perspective. We characterize the relationships between operations management and real risk management activities by postulating a transformation possibility frontier for the cash flows of the firm. We show how external changes in the market parameters defining the price of risk can affect the optimal levels of the two types of real activities within the firm. The typical separation of operations management and real risk management is a potential source of organizational inefficiency. We show that the role of financial risk management is to create flexibility to alleviate this inefficiency problem. In so doing, it does contribute indirectly to the value of the firm. An important role of the CEO is then to coordinate operations and real risk management activities as well as financial risk management activities.

Business Scandals and Risk Management From a Business Ethics Perspective

by Mariko Nakabayashi

There is increasing recognition of the fact that a business needs to consider all risks involved in its operations in order to be sustainable. Issues in business ethics are considered essential in order to avoid serious risks to businesses. If managers fail to pay sufficient attention to ethical issues, it may result in damage to the organization's reputation, a drop in stakeholder confidence, financial losses and, ultimately, business collapse. Specifically,

business scandals can cause huge losses to businesses; therefore, adherence to ethical codes of conduct by every business forms the very bedrock of a healthy business community. However, the revelation of a business scandal can also prove to be a major risk associated with issues of business ethics. From the perspective of risk management, it is important for businesses to conduct themselves ethically and not merely to conceal their misconduct. The aim of this paper is to first contribute to the understanding of the relationship between business scandals and the primary goals of business ethics and, second, to indicate the methods to be adopted by businesses in order to reform unethical practices in accordance with the risk management process. Risk management and business ethics should be disciplines whose results can be mutually useful in coping with ethical issues as a business risk.

The Market Value Impact of Operational Risk Events For U.S. Banks and Insurers

by J. David Cummins, Christopher M. Lewis and Ran Wei

This paper conducts an event study analysis of the impact of operational risk events on the market values of banks and insurance companies, using the OpVar database. We focus on financial institutions because of the increased market and regulatory scrutiny of operational losses in these industries. The analysis covers all publicly reported banking and insurance operational risk events affecting publicly traded U.S. institutions from 1978-2003 that caused operational losses of at least $10 million – a total of 403 bank events and 89 insurance company events. The results reveal a strong, statistically significant negative stock price reaction to announcements of operational loss events. On average, the market value response is larger for insurers than for banks. Moreover, the market value loss significantly exceeds the amount of the operational loss reported, implying that such losses convey adverse implications about future cash flows. Losses are proportionately larger for institutions with higher Tobin's Q ratios, implying that operational loss events are more costly in market value terms for firms with strong growth prospects.

Household Portfolio Diversification and the Demand for Health and Property Insurance in Italy

by Dario Focarelli and Carlo Savino

The diffusion of health and property insurance policies across Italian households appears limited, if compared with other industrialised countries. Italian families still prefer to self-insure through precautionary saving. Alongside, only a small percentage of families enter the financial markets to invest their savings. We aim to reconcile these two observations arguing that families that allocate their financial wealth in a diversified portfolio find precautionary saving a less efficient insurance instrument with respect to private insurance policies. We estimate the relationship between insurance diffusion and degree of portfolio

diversification using the data collected in Survey of Household Income Wealth run by the Bank of Italy over the period 1989-2002. The estimation's results confirm a positive relationship between degree of portfolio diversification and inclination to purchase property analysis. We obtain less mileage from the estimation of the health insurance equation, although they seem to confirm, at least to some extent, our conjecture. As a by-product, we present a detailed account of the diffusion of health and property insurance across Italian household grouped by socio-economic, demographic and territorial characteristics.

Tweaking the Corporate Health Insurance Models in Indian Scenario - An Entry Point

by S. Ganesan and S. Jayaprakash

Unless some new models are thought of, to create a proper entry point, it is impossible to achieve the estimated 130 billion health insurance market in future. For creating such models, there should be an experimental framework, which has not been thought of so far. Such experimental framework should be vibrant enough to test innovative plans and processes, which can be extended to the whole of the country. This paper suggests that it is possible to create such experimental framework by tweaking the corporate health insurance models. This paper also stresses that such experimental framework can act as an effective entry point for the health insurance sector, which is much lagging currently. Supportive arguments for such experimental framework are briefed in this paper.

On the Use of Group-level Financial Information in Insurer Solvency Surveillance

by Steven Pottier and David Sommer

Initially, a standard insolvency prediction model is run using typical company-level variables, including a group dummy variable to test whether group membership in general has a positive or negative impact on insolvency risk. This model (absent the group dummy) is then run separately for a sample of single unaffiliated insurers and a sample of group-affiliated insurers. Then, for the sample of group-affiliated firms, variables based on characteristics of the group with which an insurer is affiliated are added to test whether group-level variables are statistically significant and improve the predictive ability of the model. The results indicate that group membership itself does not have an unambiguous impact on insolvency risk, but that group-level variables have a highly significant impact on the probability of insolvency, and the inclusion of such variables substantially increases the accuracy of the insolvency prediction model for group-affiliated insurers. In fact, the group-level variables are found to be dramatically more powerful than the individual company variables in predicting individual insurer insolvencies.

What Is the Property and Liability Insurance Business?

by Emilio Venezian

This paper presents data on the property and liability insurance business in the United States as reported by various sources often used by scholars for empirical research. There are substantial differences in the numbers of companies, the premiums written, the liquid assets, and the admitted assets. In some instances the differences are attributable to the ways in which the sources classify insurance. In other cases the reasons for the differences are not clear. The analysis shows that no one source can be said to be more complete or comprehensive than the others.

Immoral Smirks

by Larry Y. Tzeng, Ching-Fan Chung and Jennifer L. Wang

Using information on timing as well as number and amounts of claims in a unique data set of automobile comprehensive insurance in Taiwan, we propose new approaches to distinguish the effect of adverse selection from moral hazard. In particular, we are able to estimate time-varying correlations between the choice of insurance coverage and the occurrence of the claims, which are significantly positive and exhibit a smirk pattern across policy months. This empirical finding supports the existence of asymmetric information in the insurance market. Through a subsample estimation we find further evidence supporting the insured drivers' responses to the increasing deductibles from which we could more forcefully infer the existence of moral hazard.

The Underpricing of Insurance IPOs

by Qiming Wang and James Ligon

We investigate the first-day returns of 6597 IPOs, including 193 insurance IPOs from 1980 to 2003, to answer two empirical questions. First, are insurance IPOs less underpriced than non-insurance IPOs? We might expect this to be true because insurance firms are monitored by regulatory agencies and therefore have less information asymmetry and lower ex ante uncertainty about the issuing firm's valuation. Second, is the underpricing level of converting mutual insurance IPOs higher than stock insurance IPOs? We might expect this to be true because of the distinct ownership structures of the two insurer types prior to their public offerings.

We find that the aftermarket daily return volatility, our proxy of ex ante uncertainty, is significantly lower for insurance IPOs. Insurance IPOs are significantly less underpriced by 4% after controlling for firm and offer characteristics previously shown to be related to IPO

underpricing. Finally, we document that the aftermarket daily return volatility for converting mutual insurance IPOs is no different from that of stock insurance IPOs, but they are significantly more underpriced than stock insurance IPOs after controlling other factors.

Fair Participating Life Insurance Policies: The Impact of Interest Rate Guarantees, Bonus Policies, and Investment Incentives

by Wenyen Hsu, Richard Lu and Shuying Wu

By extending the work of Grosen and Jørgensen (2000), this paper incorporates an equity-like asset as well as an interest-rate sensitive security in modeling. By using the Monte Carlo simulation, the efficient frontiers of a participating policy for policyholder and insurer are then derived. In addition of using the traditional standard deviation as a risk measure for the risk-return frontier, the Value-at-Risk is also used as the other risk measure. Because of the participating policy's asymmetric payoff, the Value-at-Risk is more appropriate than the standard deviation to be a risk measure. After incorporating efficient frontiers into the insurer's decision, we find the asset allocation compositions alone capital allocation lines (CALs), drawn from the risk-free rate. The tangent of CALs and efficient frontier provides insurers with the highest return-to-risk ratio, and thus, a most efficient asset portfolio. Our simulation results indicate the slope decreases with higher participation level. This implies that the reward of bearing more risk deteriorates as the policyholder's share increases. Under this circumstance, the insurers may implement more conservative investment policy as participation level rises.

Safety-First Portfolio Optimization Model: Simulating the Asset Portfolio of Chinese Insurance Funds Direct Invest in Stock Market

by Yu Ziyou and Xiao Yanhua

The Safety-First Portfolio Optimization Model (S-F Model) was first discovered by Roy in 1952, further developed by followers and highly valued by Markowitz in 1999. We used the S-F Model and the traditional Mean-Variance Portfolio Optimization Model (M-V Model) for a simulation analysis on China insurance fund investment into the capital market of mainland China and Hong Kong, respectively. We found that, analyzed by the S-F model, the proportions of investment into Hong Kong capital markets in all of the optimal investment portfolios are always less than that predicted by the M-V Model. Based upon the analysis of these different simulation results, we extended the hypothesis boundaries of both S-F Model and M-V Model to the reality of today's fast-developing global capital markets, especially the possibility of the portfolio loss associated with infrequent catastrophic events. Thus finally, we will present a general framework of Safety-First Mean-higher-Moments Portfolio Optimization Model (SFMM Model), which is of great significance for China insurance fund to make full

use of overseas capital markets to diversify the domestic systematic risks so as to increase its return of investment. The theoretical analysis of this research will offer suggestions to the China insurance industry about the optimal capital structure after direct investment into China mainland stock market and Hong Kong stock market. The research outcome will provide important references for China financial authorities and insurance industry for their relevant decision-making.

Tax-deductible Pre-event Catastrophe Loss Reserves: The Case of Florida

by Andreas Milidonis and Martin F. Grace

After Hurricane Andrew the NAIC and the Congress investigated the establishment of tax-deductible reserves by insurance and reinsurance companies that could only be used to pay for future catastrophes. In this paper we estimate the savings from the proposed legislation to the insurance industry by evaluating a one period market model for the state of Florida. Assuming a competitive market where all savings are passed onto the consumer, we then estimate the expected increase in the quantity of homeowners' insurance demanded by Florida homeowners. Finally we calculate the value to the Federal government from this legislation.

The Impact of State Taxation on Property-Casualty Insurance Industry

by Minglai Zhu and Yuan Yuan

The state premium tax is the primary method of taxing insurers, but there has been little empirical analysis of the impact of this tax. We estimate the effects of premium tax on the property-casualty insurance industry and the premium tax incidence using data from 1998-2001. We provide evidence consistent with earlier research and we are able to begin the process of describing the overall effect of the premium tax more broadly. We find that the premium tax reduces asset growth and surplus growth, and has little effect on the growth of employee salary and agent commission. We also find some evidence about the tax incidence of policyholder, which implies that the insurers cannot transfer the tax burden to consumer by higher pricing.

Why Does a Government Provide Tax Deductions for Net Losses?

by Rachel Huang and Larry Y. Tzeng

This paper shows that providing tax deductions for individuals' net losses could be socially optimal when (1) the insurer faces an insolvency risk, (2) the government's aggregated utility function is more risk-averse than that of the representative individual, or (3) the insured is overly optimistic with regard to the loss probability.

Corporate Demand for Terrorism Insurance in Germany

by Christian Thomann and J.-Matthias Graf von der Schulenburg

Different countries have chosen different strategies of providing insurance protection against terrorist attacks. The German method is the foundation of a new insurance company by the insurance industry and a backup protection of the top layer by the German government. Characteristics for the German method are the uniform calculation formula for the premium and that coverage is not mandatory. In this paper we examine the efficiency of the German strategy and try to provide explanations for the large variation in the demand for terrorist insurance. We conclude that the German strategy is not successful and that it is very likely that the German terrorist insurer will not survive until the end of this current decade.

Should Governments Support the Private Terrorism Insurance Market?

by Dwight M. Jaffee and Thomas Russell

We begin by revisiting the question of why the private terrorism insurance market fails. Clearly, if terrorism insurance is really an "uninsurable risk", the question of an optimal government alternative needs to be raised. However, if the private market, after a period of temporary stress, is independently viable, a long term program of government support is not only unnecessary, but it may actually crowd out the private market recovery. Secondly, we examine the question of how GDP might be expected to develop in the worst case in which no private terrorism insurance is available. Lastly, assuming that some form of government intervention is desirable, we examine the efficiency of various forms of government support.

SESSIONS VI

Property-Liability Insurer Reserve Error-Motive: Manipulation, or Mistake

by Martin F. Grace and J. Tyler Leverty

The literature provides various incentives for why insurers might mis-estimate loss reserves. The principal reasons are rational profit maximizing motives (minimization of taxes or the smoothing of income), manipulation (to avoid regulatory scrutiny or justify premium rates), or mistake (the impact of general economic conditions or the types of business written). We simultaneously consider the extant theories of claim manipulation using the two main loss reserve "error" definitions found in the literature. The paper makes a number of additional contributions. First, we add new institutional constraints to the manager's ability to manage loss reserve estimates for solvency purposes. Using better measures of firm weakness we find little evidence supporting the conjecture weaker firms under reserve to a greater extent. Second, we include a proxy for managerial efficiency. Third, we examine whether IBNR reserves are the sources of claim manipulation. Overall we find that the principal motivation for loss reserving errors is related to rational profit maximizing behavior rather than solvency manipulation. In addition, contrary to previous findings, we discover that insurers with a relatively higher percentage of premiums in regulated lines in prior approval states tend to over-reserve relative to other insurers.

A Dynamic and Multivariate Model for Risk Management and Prediction

by Maria Isabel Barão, Ser-Huang Poon and Jonathan Tawn

Although extreme value techniques are now common in many insurance and finance applications, the modelling of the joint occurrence of extreme events is still at its infancy. Most multivariate extreme value models concentrate on the region where all variables are extreme. This is appropriate only when all variables are asymptotically dependent, which is very rare. Hence, the use of such multivariate extreme value models for risk management and catastrophe prediction will neglect the important cases where one of the variables, either the predictor or the predicted variable, is not in the joint extreme region. By adopting a conditional multivariate approach, we allow the model and the prediction to be based on the given value of the predictor. Our method opens the door to the dynamic analysis of many important issues such as the risk management of a multi-asset portfolio, the investigation of the cause and the prediction of stock market contagion, and the modelling of flooding that are related to a combination of extreme conditions, fully exploit all current information including stochastic volatility.

An Insurance and Asset Pricing Model for Non-Normal Distributions and Incomplete Markets

by Zinoviy Landsman and Michael Sherris

A new model for pricing asset and insurance risks in incomplete markets using prices for traded assets and based on elliptical distributions is developed. The pricing model involves an application of a generalized variance premium principle from insurance pricing to the pricing of a portfolio of non-traded risks relative to a portfolio of traded risks. This pricing model for a portfolio of insurance or asset risks reflects preferences for features of the distributions other than mean and variance, including in particular kurtosis. The model is equivalent to the CAPM for multinormal portfolios and to a form of the CAPM where the traded and non-traded assets have the same elliptical distribution.

Informational Asymmetry, Differential Compensation, and Imperfect Message in Demutualization

by Bum J. Kim

Demutualization is a complicated conversion procedure whereby an insurance company changes its form of business organization from mutual to stock company. Historically, much research was performed to explain the rationale of the conversion, but mainly relied on empirical analyses. Our contribution on this issue is to develop a game-theoretical background for the demutualization process, understand the rational behavior of policyholders about the managerial decision, help policyholders to design a different demutualization procedure in order to encourage managers to act for the owners' best interests, and furnish insurance regulators with more insight into maintaining the fairness of the procedure.

The Strategic Role of Information in Insurance Markets: A Vertical Integration Model

by Nobuko Aoba

Most insurance contracts are sold through independent agents and brokers, but individual life-health insurance contracts are sold through exclusive agents, known as career agents. This paper is concerned with the informational role of agents in the insurance market. It is proved that equilibria exist in which independent agency and direct writer marketing systems coexist. It is argued that independent agency offers advantages to

insurers when coverage includes savings elements (whole life or cash value insurance) or possibly dividend elements (participating options).

Information Asymmetry and Corporate Governance in the Property-Liability Insurance Industry

by Joseph S. Ruhland and David W. Sommer

In this study, we examine information asymmetry between insiders and the market by examining the spread set by the market maker, a member of a stock exchange, who is responsible for setting bid and ask prices for individual firms' shares and providing market liquidity for trading in those shares. Previous research has demonstrated that bid-ask spreads can be used to construct measures of asymmetric information. We use such measures, along with variables representing various aspects of corporate governance, to test whether corporate governance mechanisms are effective in mitigating information asymmetries. We conduct our tests on an intra-industry sample of property-liability insurers.

Pricing Catastrophe Insurance Derivatives in a Subordinated Binomial Tree

by Carolyn W. Chang, Jack S.K. Chang, WeiLi Lu

In this article a generalized tree framework is developed for pricing catastrophe insurance derivatives as a random sum. We employ a doubly-binomial process to model catastrophe claim arrival and claim size changes. Subordination of claim-size changes to claim arrival leads to a trinomial claim-size change process in calendar time but a stochastic time change from calendar time to claim-arrival time restores the binomial process. Using the discrete-time martingale pricing methodology, we risk-neutralize the trinomial/binomial process and then price a standard catastrophe cash option as a binomial sum of binomial arithmetic Asian option prices. Applications to the CBOT PCS cash option, the CBOT CAT futures call spread, and the OTC CAT bond are also demonstrated. Numerical results demonstrate that the standard binomial formula that ignores random claim arrival produces largest undervaluation error for out-of-money short-maturity options when a small number of significant catastrophes may strike during the option's maturity.

How Much Internalization of Nuclear Risk Through Liability Insurance?

by Yves Schneider and Peter Zweifel

An important source of conflict surrounding nuclear energy is that with a very small probability, a large-scale nuclear accident may occur. One way to internalize the associated financial risks is through mandating nuclear operators to have liability insurance. This paper presents estimates of consumers' willingness to pay for increased financial security provided by an extension of coverage, based on the 'stated choice' approach. A Swiss citizen with median characteristics may be willing to pay 0.14 US cents per kwh to increase coverage beyond the current CHF 0.7 billion (bn.) (US$ 0.47 bn.). Marginal willingness to pay declines with higher coverage but exceeds marginal cost at least up to CHF 4 bn. (US$ 2.7 bn.). An extension of nuclear liability insurance coverage therefore may be efficiency-enhancing.

Catastrophic Losses and Insurer Profitability: Evidence from 9/11

by Xuanjuan Chen, Helen Doerpinghaus, Bingxuan Lin and Tong Yu

We examine two potential effects of the World Trade Center (WTC) attack on the insurance industry, a short-run negative claim effect and a long-run positive growth effect. We hypothesize a short-run claim effect, resulting from insufficient premium ex-ante for catastrophic losses, and a long-run growth effect, resulting from ex-post insurance supply reductions and potentially increased insurance demand due to policyholder risk updating and other factors. Following Yoon and Starks (1995) we use short-run and long-run abnormal forecast revisions as measures of the claim and growth effects, analyzing both as functions of firm-specific characteristics. Our empirical findings support our hypotheses. We find that firm type, estimates of firm losses, and the firm's tax position are statistically significant determinants of an insurer's short-run position. We find that firm type, financial strength, and underwriting risk are statistically significant determinants of an insurer's long-run position. The results of the study should be of interest to analysts, regulators, shareholders, and industry participants considering the effects of a catastrophe on the insurance industry.

Insurance Brokers and Advice Quality

by Michael Sonnenholzner

The model we employ is intended to isolate the effect of an insurance broker's advice quality on social welfare and on the division of the insurance market between brokers and

dependent agents. Therefore, we abstract from price differentials for similar insurance policies. This is in contrast to existing literature in this field which associates the role of an insurance broker with a price search service for consumers. This is certainly an important aspect. However, the focus of this paper shall be on the broker's advice quality not with regard to finding the cheapest policy but to recommending the right policy which covers the consumer's needs best.

How Insurance Brokers Create Value: A Functional Approach

by Peter Maas

Focusing on the relationship between brokers and insurants, the objective of this paper is to investigate the value added by insurance brokers to insurants considering today's challenging circumstances. Furthermore we investigate current and possible future functions of insurance brokers in the market. Our analysis is based on a functional perspective which focuses on the services provided by institutions - in our case insurance brokers (synonymously we use also the term insurance intermediaries) - such as managing risk or transferring resources across time and space (Merton and Bodie, 1995). We analyze broker functions from a customer point of view: What functions do (should) brokers fulfill for industry companies? By choosing a "functional perspective" rather than an "institutional perspective", which focuses on the activities of existing institutions such as insurance companies or brokers, we are following the argument of Merton and Bodie (1995 and 2004).

Brokers and the Insurance of Non-Verifiable Losses

by Neil A. Doherty and Alexander Muermann

How do insurance markets spread the risk when events are unknown or even unknowable? We argue that the insurance market is organized to write incomplete contracts such that these risks can be spread, even though complete contracts cannot be written. Both policyholders and insurers hostage their reputations when they engage in trade. The force of these reputation investments leads the parties to negotiate for a settlement when an event that is not covered by the insurance contract occurs. By choice of brokers, the parties can leverage the reputation stakes and thus influence the payoffs for un-contracted events. Thus, we see the role of ex post negotiation as helping to complete markets where otherwise insurance would not have been available. This view contrasts with other recent analyses in which ex post negotiation is seen as a degradation of the insurance market.

Multiline Insurance and Securitization: Bundling Risks to Reduce Moral Hazard

by Christian Laux

I analyze the role of bundling risks to be covered by one contract (multiline insurance or securitization) in the presence of moral hazard. The structure of the optimal multiline policy depends on a firm's risk-management objective. Bundling risk is always optimal if one can write comprehensive contracts where the payoff depends on each individual loss realization. Contracting on aggregate losses imposes a constraint that can make it optimal to use single risk contracts. When the firm can hide losses or cause fraudulent losses, the optimal contract based on aggregate losses resembles multilane insurance with a common aggregate deductible and policy limit. In the case of securitization it can be optimal for a bank to hold the junior or a mezzanine tranche.

The Kuznets Hypothesis for Income Elasticity of Insurance Demand and Economic Growth - An Empirical Analysis of the World Insurance Market

by Yu Ziyou and Wu Jianjun

As an obvious fact, economic growth promotes insurance demand, while the impetus varies as economy matures. This study attempts, based on the "Expected Utility Theory" and the "Saturation Growth Curve Model", to develop a novel method using the derivation process between two logarithmic variables with S-shaped relation (DLS) to testify that the response of per capita premium (consider life or non-life respectively) against the changes of per capita GDP may have the tendency of being faint-strong-faint, i.e., the inverted-U curve. This curve provided further insight into the relation between income elasticity of insurance demand and per capita GDP. In particular, the life and non-life insurance model differs significantly from each other, i.e., the income elasticity of life insurance demand is more sensitive than that of the non-life insurance. Based on the two inflexion points and the maximum point of the inverted-U curve, the status of economy were divided into four stages with respect to their elasticity responses, which yield a new platform for analyzing the growth of insurance market. The comparative function of the model allowed a more dynamic and specific characterisation of individual insurance market in an international perspective. While the forecast function of the inverted-U curve yields a feasible and reliable measurement for the potentiality of insurance market. Tested by these analyses, we proved that the DLS method is a successful one-step process to test the Kuznets characteristic between income elasticity of insurance demand and per capita GDP with high level of goodness of fit, which surpassed the traditional verification model for Kuznets characteristic curve and some other special techniques. Our efforts have shed a light on further improvement of the verification process under specific economic conditions.

Optimal Hedging Strategies for Multi-period Guarantees in the Presence of Transaction Costs: A Stochastic Programming Approach

by Stein-Erik Fleten and Snorre Lindset

Multi-period guarantees are often embedded in life insurance contracts. In this paper we consider the problem of hedging these multi-period guarantees in the presence of transaction costs. We derive the hedging strategies for the *cheapest* hedge portfolio for a multi-period guarantee that with certainty makes the insurance company able to meet the obligations from the insurance policies it has issued. We find that by imposing transaction costs, the insurance company reduces the rebalancing of the hedge portfolio. The cost of establishing the hedge portfolio also increases as the transaction cost increases. For the multi-period guarantee there is a rather large rebalancing of the hedge portfolio as we go from one period to the next. By introducing transaction costs we find the size of this rebalancing to be reduced. Transaction costs may therefore be one possible explanation for why we do not see the insurance companies performing a large rebalancing of their investment portfolio at the end of each year.

Testing for Risk Sensitivity in the European Insurance Industry: Empirical Evidence from Subordinated Debt Issues

by Francesco Paolo Natale and Emma Zavarrone

This paper investigates an important issue in financial markets: the market discipline. A theoretical model based on the option price theory is developed to verify if the spreads at launch of subordinated bonds could be used as a tool for the market discipline. Then this model is tested on a sample of subordinated issues in Europe by using both classical regressions and a newer method to deal simultaneously with categorical and quantitative variables, without the usual loss of information implicit in the statistical treatment of mixed predictors. The results are quite supportive of the predictions of the model. The findings could have significant implications in the assessment of the future solvency system in Europe, still in search of tools for increase the market discipline.

Debt - Induced Agency Conflicts and Market Discipline: Evidence in Life Insurance Companies that Issue GIC

by Qiang Liu and Karen Epermanis

Corporate debt-induced agency conflict between fixed and residual claimants motivates a firm to take more risk, often called risk shifting. Risk shifting can take on two forms: asset substitution and asset-liability duration mismatch. Alternatively, corporate debt may induce private forces to exercise market discipline on the debt issuers, thus potentially reducing the risk shifting problem. This paper tests whether debt-induced market discipline can offset debt-induced agency conflicts. Using Guaranteed Investment Contracts (GICs) representing a transparent debt product, and NAIC's Life InfoPro data from 1993 to 2003, we find that life insurers significantly increase (reduce) both their asset portfolio risk and asset-liability duration gap after they issue (drop) these debt-like products, while asset portfolio risk is not as significant as asset – liability duration gap in the life insurers' risk shifting strategy. Further, investigating the relation of post-event risk taking behavior with the percentage of GICs to total assets, we find that the more GICS issued in the life insurer's product mix, the more asset – liability duration mismatch level that an insurer has, while there is no such statistically significant positive relationship with regard to the insurer's asset portfolio risk. This suggests that agency conflicts are still a dominant force affecting firms. Results are weaker associated with market discipline as an explanation for risk-shifting behavior of life insurers. Our findings provide new insight into risk-shifting behavior as respects GICs issued by life insurers.

Debt Capacity, the Cost of Debt and Corporate Insurance

by Hong Zou a and Mike B. Adams

Using a unique insurance dataset for a sample of Chinese publicly listed companies for the period 1997-2003, this study tests the simultaneous linkages between debt capacity, the cost of debt and corporate property insurance. Our results suggest that on the one hand, the cost of debt represents an important determinant of the corporate purchase of property insurance, while leverage does not seem to be a significant motivating factor. On the other hand, we show that a one percentage point increase in property insurance spending (measured as the ratio of insurance to the book value of tangible assets) on average lowers the borrowing cost of firms by two percent points We also find that the purchase of property insurance helps to expand the debt capacity of moderately-levered firms. Overall, we conclude that debt capacity, the cost of debt and corporate insurance are simultaneously related.

Is there a Crisis in Healthcare Professional Liability Insurance?

by Faith Neale, Kevin Eastman and Pamela Parrish Peterson

There has been a great deal of discussion and debate about whether there is a medical malpractice insurance crisis and, if there is such a crisis, what is the cause of this crisis. In this study, we examine insurance premiums and losses to identify whether there is such a crisis, finding that in recent years, the year 2001 appears to exhibit characteristics of a crisis. We also examine alternative explanations for this crisis and conclude that the rise in direct losses explains the misalignment of premiums and losses, resulting in the observed 2001 crisis.

Medical Malpractice Reform: The Effect on Insurer Claims Defense Effort

by Anne Carroll and Jan Ambrose

In response to medical malpractice insurance crises past and present, most states have implemented reforms meant to stabilize premiums and coverage availability. The importance of understanding how these reforms implicitly affect the behavior and incentives of plaintiffs, attorneys, medical providers and malpractice insurers is crucial to policymakers if they are to achieve their goal. This study specifically examines the effect of reforms on insurer claims defense effort given that defense expenses represent a significant portion of malpractice premiums. Using state data for the period of 1998-2002, loss adjustment expense ratios are regressed against a variety of reform variables. These include seven tort reforms (noneconomic damage caps, punitive damages limits, attorney fees limits, modified collateral source rule, modified joint and several liability, mandatory pre-trial screening and statute of limitations) and two government-sponsored insurance mechanisms (joint underwriting associations and patient compensation funds). The presence of a modified collateral source rule decreases loss adjustment expense ratios; no other reform variables have any significant effect.

Soft and Hard Markets in Medical Malpractice Insurance

by Scott E. Harrington, Patricia M. Danzon and Andrew J. Epstein

Time-series analysis of medical malpractice insurance premium growth at the industry level during 1981-2003 indicates a strong, positive relation to accident-year loss growth and growth in the estimated discount factor for future claim payments. Industry-level premium growth was not negatively related to future loss development (loss forecast revisions), which might be expected if initially reported losses were deliberately overstated (or understated)

while premiums were increasing during hard markets (or decreasing or flat during soft markets). Analysis of firm-level growth in malpractice insurance premiums during the 1994-1999 soft market provides evidence that premium growth was positively related to subsequent loss development, which is consistent with the hypothesis that some firms priced too low ex ante and grew relatively rapidly during that period. Models of cross-firm determinants of premium growth and loss development during the soft market suggest that firms that sold malpractice insurance in more states grew faster and had worse loss development, which could indicate that firms with less geographic focus on average priced too low and grew accordingly. The results also provide weak evidence that firms that wrote relatively small amounts of malpractice insurance in relation to their total premiums for all lines had greater malpractice insurance premium growth and experienced worse loss development. Some malpractice insurers that subsequently became insolvent, as well as the St. Paul Companies, which exited the malpractice insurance market nationwide, had abnormally large premium growth during the most recent soft market. However, other malpractice writers that ultimately failed shrank significantly during the three to six-year period prior to exit.

SESSIONS VII

Risk Management Model of China Agriculture Insurance Fund

by Chen Shu

China is one of a few countries in the world with the higher level of natural disasters. This may decrease insurance funds. In this paper, author uses the similarity of insurance fund and open-end fund to disperse risks on security market. So we can manage risks on agriculture by portfolios theories. Two investment models are formed to fight for two types of agriculture's risk, for different distribution of natural disaster. The last section gives the risk measurement results on open-end fund of China.

Private Crop Insurers and the Reinsurance Fund Allocation Decision

by Keith H. Coble, Robert Dismukes and Joseph Glauber

This research investigates the strategic behavior of private crop insurance firms reinsured by the USDA through the Standard Reinsurance Agreement. This arrangement allows the private firm to strategically allocate individual policies into different risk sharing arrangements. Thus, firm earnings are conditioned upon accurately forecasting policy loss experience. Our analysis begins with models investigating the characteristics explaining the placement of policies into the assigned risk fund. Then a simulation model of the SRA is used to compare the post-SRA returns of actual firm allocations to two alternative allocation strategies based on aggregate models and a policy-level econometric forecasting model.

Asymmetric Information with Optional Units in Federal Crop Insurance

by Saleem Shaik and Joseph A. Atwood

Focusing on the optional unit provision in federal crop insurance program, we first demonstrate the relation of orthogonal error decomposition of the two-way random effects panel model to potential moral hazard and adverse selection. These components form the basis for examining the presence of temporal and spatial asymmetry (identified with adverse selection and moral hazard) by the producer decision to insure as a single or multiple-unit farm due to optional unit provision. Using discrete choice ordered logit model, empirical

application to 1998 U.S. cotton crop insurance data reveals the presence of moral hazard and adverse selection.

Automobile Insurance in Canada: An Analysis of Costs Across Provinces

by Anne E. Kleffner, Gilles Bernier and David Chan

Dissatisfaction with the tort system led to the development of no-fault insurance. Proponents of no-fault claimed that it would overcome many of the inefficiencies and inequities of the tort system and be able to achieve faster settlement of claims, lower claim settlement costs, and greater compensation for economic losses. Whether or not no-fault could help control auto insurance costs remained an empirical question. Fundamentally it depends on the level of first party benefits and the threshold that determines which parties have the right to sue. To address this issue, this paper examines auto insurance costs per insured vehicle across Canadian provinces and provides a discussion of previous U.S. results in order to offer some insight regarding the ability of no-fault to control costs.

Predictive Modeling in Automobile Insurance: A Preliminary Analysis

by Stephen P. D'Arcy

This project applies the Data to Knowledge (D2K) systems developed by NCSA to the Detail Claim Database (DCD) of the Automobile Insurers Bureau of Massachusetts to generate predictive models to enhance insurance claim investigation practices. Data mining is a relatively new tool for insurance companies. However, advances in applications of data mining have been hindered by the lack of research that can be shared within the industry. Although insurers have conducted many data mining projects for a variety of applications, including underwriting, rating and claim investigation, they have generally resisted disclosing the details of this research in an attempt to maintain a competitive advantage. In many cases, when insurers have tried to utilize the results of these studies in their operations they have encountered regulatory resistance due to a lack of full disclosure of the supporting documentation. This project seeks to redress some of the problems limiting the advance of data mining and predictive modeling in the insurance industry by conducting a study that can be shared within the industry and all the details can be published. This study provides a significant advance over the few prior studies that used this data set by utilizing the state-of-the-art data mining tools developed at NCSA.

This project examines the data set for patterns of claim behavior based on the records of the almost one-half million automobile bodily injury claims included in the DCD. An updated D2K system has been applied to these data to establish which factors can be effectively utilized in the claims process in order to generate a predictive model to help insurers identify which

claims are most likely to generate cost savings by investigating the claim more extensively in an attempt to deter fraudulent claiming behavior.

Analysis of the Market Risk in the Korean Insurance Industry by Using the VaR Method

by Yong-Duk Kim

The purpose of this paper is to analyze market risks of Korean insurance companies, based on the VaR model and the multiple regression model by using the VaR technique. In this paper, Korean insurance companies were classified respectively by the governance structure, the market share, and the survival status in both the property-liability and the life insurance industries from April 1993 to March 2004. The content of this paper is organized as follows. Section 2 discusses prior empirical researches. Selection 3 describes the empirical model used for the VaR analysis. Section 4 and section 5 analyze empirical results from the VaR model and the multiple regression model.

The Bowman Paradox in the U.S. Property and Casualty Insurance Industry

by Mark J. Browne and Cuncun Luan

The Bowman Paradox, a negative relationship between firm-level risk and return in earnings, has been observed in numerous industries including banking, manufacturing, food processing, and metals and mining. The current study tests for the Bowman Paradox in the United States property and casualty insurance industry. The data for this study come from the NAIC for the period 1993-2003.

Two measures of return are considered: return on assets and return on equity. Risk is defined as the standard deviation in return over a set time period. We consider time periods of three and five years. We, therefore, estimate four test equations. Each equation controls for insurer characteristics; these include organizational form, states in which business is underwritten, and lines of business written.

Our results provide mixed support for the Bowman Paradox. With return measured as the return on equity, we find a negative and highly statistically significant relationship between risk and return in both the three and five year models. With return measured as the return on assets, we find an insignificant relationship between risk and return in the three year model and a positive and highly statistically significant relationship in the five year model.

Integration in U.S. Financial System

by Yuan Yuan

This study contributes to the literature on the effects of the Gramm-Leach-Bliley Act 1999. In this study we conduct an empirical analysis of two most important sectors, insurance and banking, in the post-Gramm-Leach-Bliley U.S. financial service industry. We investigate the market structure, companies' conduct, and operating performance of financial institutions by using a unique combined data set of U.S. banking and insurance industry. Our result shows that both domestic "assurbankers" (-insurers owning banks) and "bancassurers" (-banks owning insurers) are large in size, and count for significant part of the market share. They are more diversified in terms of their traditional products with a focus on individual line products. Big bancassurers are more interested in mid-size young life insurance subsidiaries and small-size young property-liability subsidiaries. Big assurbankers are more interested in mid-size commercial banks and saving banks. Both have lower RBC ratio, relative high leverage, and low liquidity ratio. Overall they performed better than non-affiliated counterparts.

Impact of Bancassurance on Life Insurance Companies in Korea: Firm Characteristics and Performance Change

by Jaehyun Kim, Sukho Lee and Joongyoung Jeong

The purpose of this study is to analyze the impact of bancassurance on Korean life insurance companies in terms of efficiency and productivity. This study first examines the impact of the introduction and evolution of bancassurance on the performance (in terms of efficiency and productivity) of Korean life insurers. Then, it determines how bancassurance affects the performance of Korean life insurers depending on firm characteristics such as firm size, product portfolio, distribution channels, and ownership structure, etc.
While there have been numerous efficiency and productivity studies on the insurance industry (especially on U.S. and European insurance companies), few studies have attempted to examine the explicit impact of bancassurance on insurance companies' efficiency and productivity.

Possible Synergy of Bank and Insurance in a Developing Economy: Empirical Evidence from Bangladesh

by M. Ziaulhaq Mamun and Mohammad Aslam

This study tries to find out the possible synergy of bank and insurance in a developing economy taking a case of Bangladesh. From a sampling frame of 24 banks and 15 insurance

companies 11 banks and equal number of insurance companies were studied to observe their stock behavior. The data used for the research are the monthly return of each of the banks and insurance companies during January 1997 to September 2004 (93 months). In Bangladesh the banking and insurance industry works separately and are independent of each other. But the findings show that bank and insurance sector in Bangladesh are related closely by their respective stock behavior. The study noted that both have similar portfolio return. They also do not have different risk phenomena and even they do not enjoy different security market line. Therefore, the argument for synergy may stand valid at least with respect to their stock behavior.

The Impact of Organizational Structure and Business Strategy on Performance and Risk Taking: Evidence from the Life Insurance Industry in Taiwan

by Gene C. Lai and Lin Yhi Chou

The purpose of this paper is to examine the impact of organizational structure and business strategy on the performance, efficiency, and risk taking in life insurers in Taiwan.

Issuance Decisions and Long-Term Care Insurance

by Michael K. McShane and Larry A. Cox

Even though liabilities generated by the issuance of insurance policies arguably represent the most important source of risk for insurers, few researchers have rigorously investigated the determinants of managers' decisions to issue these liabilities. In this study, we explore the factors influencing decisions by managers of life-health insurers with regard to the issuance of long-term care (LTC) insurance. While many researchers have provided rationales for growth limitations in the LTC market, the reality is that this market has been the fastest growing segment of the life-health industry over many years. Although we examine a number of determinants supported by the extant research, we particularly focus on the impact of core-business expertise, which we find to be a consistently important factor in both the decision to participate in the LTC insurance market and the decision of volume to issue. These findings are consistent with a primary implication of coordinated risk management theory, i.e. firms are more willing to take risks in operations related to their core business. We also find evidence that the participation and volume decisions are made independently.

An Empirical Study of China's Life Insurance Demand

by Qixiang Sun, Lingyan Suo and Tao Liu

During the past two decades, China's life insurance industry has grown rapidly. In this paper, we undertake both qualitative and quantitative analyses of the factors that affect China's life insurance demand. We group these factors into two broad categories, namely factors affecting consumers' purchasing power and factors affecting willingness to pay. Based upon our theoretical discussions, we use monthly observations from January 2001 to December 2004 to test the key variables' impact on life insurance demand in China, paying particular attention to the estimation of the income elasticity of life insurance demand. Finally, we use our empirical findings to examine the sustainability of the fast growth of China's life insurance industry.

Stock Analyst's Compensation Structure

by Koji Kojima, Mahito Okura and Yen H. Tong

Recent scrutiny on stock analysts' compensation structure has lead to debates on linking stock analysts' pay to investment banking revenues. Some suggest that biased research arising from linking stock analysts' pay to investment-banking revenues will adversely affect investment banks' long-run profits. They caution that the short-run gains from generating large investment-banking fees from optimistic calls on stocks will be overshadowed by the long-run loss from reputation damage and legal actions from mislead investors. On the other hand, some suggest that that the complete separation of research from investment banking is non-optimal. Rather, building the right relationships with firms allows the stock analysts to provide better insights and analysis in their research. In order to shed some light on the debates, we use a multi-tasks principal-agent model to examine the effects of using research quality and investment-banking revenues as performance measures in analysts' compensation. The results derived from the model show that neither research quality or investment-banking revenues as sole performance measure is desirable. Rather, investment banks are strictly better off using both performance measures when compensating stock analysts. Our results suggest that to totally de-link stock analysts' compensation from investment-banking revenues might not be optimal for investment banks.

A Simple Approach to Risk-based Deposit Insurance Pricing

by SeungYoung Oh

This article provides a simple approach to pricing deposit insurance premium based on the default risk of insured banks. An exact closed-form formula for the deposit insurance

premium is derived in the option pricing theory framework which possesses the attributes of simplicity, fairness and accuracy. This article explicitly takes into account the effects on the deposit insurance of the timing of bank default occurrence, capital forbearance policy, capital standard, and diverse debt issues with different maturities of a bank. These factors make it possible to analyze the structure of risk-based deposit insurance premium based on American digital option and exchange option pricing theory. An optimal capital forbearance level can be calculated in the model. Finally, numerical illustration shows the impacts of each variable in the model and compares the prices from the model presented in this article and other methods reported in the literatures.

Uninsured Liabilities and Market Discipline in Property-Liability Insurance Industry

by Wenyen Hsu

The purpose of the study is to investigate the impact of market discipline on insurer's business mixes. Literature shows that market discipline affects price of insurance, while the paper argues that market discipline may also affect the quantity of premium income. In addition, market discipline may be more effective in the commercial lines markets and to the insurers using independent agency systems. The paper also examine whether rating changes convey new information to the market. The empirical evidences suggest that downgraded insurers will experience a decline in the commercial line business and will allocate their underwriting capacity to personal line market. The results also suggest independent agency is more effective in monitoring insurers' financial conditions. Finally, a comparison of proportions of commercial lines premium before and after downgrading shows no significant differences, suggesting rating changes do not convey new information to the insurance market.

Risk Management Case Project

by Robert E. Hoyt, Randy E. Dumm and Kathleen A. McCullough

The purpose of the risk management case project is to have students act as risk management and insurance consultants for the owners of a case firm. As part of the project, students prepare a comprehensive risk management audit. The process includes identifying and valuing the firm's risks; recommending the appropriate risk treatments including retention, insurance and risk financing, and loss control; and suggesting a framework for risk management administration. The case project can serve as a capstone project for a risk management and insurance major or components of the project can be used separately to reinforce a variety of risk management and insurance concepts and skills at the graduate and undergraduate level.

SESSIONS VIII

Capital Allocation Using Cooperative Game Theory

by S. Hun Seog and Sungwhee Shin

Several approaches have been proposed for capital allocation in insurance firms, including Merton and Perold (1993) and Myers and Read (2001). We propose alternative capital allocation approaches, namely the "Shapley value" approach, and the "Aumann-Shapley value" approach. We argue that, when an entire division is added or when the effect of a decision is large, the Shapley value approach is an improvement over the Merton and Perold approach in that it properly takes into account the orders in which divisions are added, and resolves the unallocated capital problem. When the effect of a decision is infinitesimal, we can apply the Aumann-Shapley value approach. We show that the Auman-Shapley value approach, not only provides game theoretic support for, but also conceptually extends the Myers and Read approach.

The Incentive Effects of Increasing Per-Claim Deductible Contracts in Automobile Insurance

by Chu-Shiu Li, Chwen-Chi Liu and Jason Jia-Hsing Yeh

A new rating system of automobile insurance for vehicle damage in Taiwan was launched in 1996, introducing a deductible that increases with the number of claims. In this paper, we provide a theoretical rationale for the existence of an increasing per-claim deductible system and show that the new system is most likely an optimal choice for those insured who tend to have lower claims probability when incentives are present. Using a unique dynamic data set, we are able to conduct a natural experiment to examine the incentive effects (both positive and negative) by looking at the change in claim tendency before and after switching between two deductible plans: an increasing per-claim deductible and a zero deductible. Our results provide direct evidence of the effects of deductible structures on claim behavior.

The Incentive Effects of Automobile Insurance Rate Regulation on Accident Frequency and Loss Costs: An Empirical Analysis

by Laureen Regan, Sharon Tennyson and Mary A. Weiss

The usual stated goals of rate regulation are to assure that rates are adequate to make insurance readily available in the market, but not so high that insurance is unaffordable to drivers. However, regulatory efforts to achieve affordability may have adverse effects on driver incentives and automobile accident loss cost, and this is largely ignored in the regulatory process. The purpose of this paper is to investigate whether distortion in incentives from rate regulation actually lead to higher accident frequency and ultimately to higher loss costs.
This paper empirically investigates the effect of these distortions on accident frequency and loss costs using panel data consisting of annual state-level data over the time period 1980-1998.

Rethinking Risk: Aspiration as Pure Risk

by Greg B. Davies

There exists no satisfactory theory of risk in current normative decision theories. Notions based on utility curvature, loss aversion and probability weighting are derivative, cannot be applied to non-numerical consequences, and are not psychologically intuitive. I develop Pure Risk theory which resolves these problems – it is consistent with existing normative theories, and both internalises and generalises the intuitive notion of risk being related to the probability of not achieving one's aspirations. The theory shows that existing models are misspecified. Effects hitherto modelled as loss aversion or utility curvature may be due instead to Pure Risk.

Bio-Information and Insurance Markets

by Li-Ming Han and Richard MacMinn

This proposed research focuses on how insurance market innovations may affect individuals' attitude toward genetic testing and privacy value.
The objectives of this paper are first to show that insurance policies can be devised to encourage the uninformed to take tests and disclose results and thus create private and social values, and second to examine the same issue assuming that a positive test result does not necessarily indicate high risk.2 When such insurance policies are found, then privacy is shown to have no inherent value. That is, privacy is an economic problem, not a political or social problem. As an economic problem, it can be solved by markets in theory

and perhaps with a combination of markets and public policies in practice. The results will provide an intellectual foundation for relaxing current ban on the use of genetic testing results for insurance pricing.

Probability Weighting in Damage-Claiming Decisions

by Yoram Eden and Doron Sonsino

Experimental evidence suggests that insurance holders ignore the impact of recurrent claiming on premium rates when deciding whether to claim for a current loss. When the probability of damage-recurrence is disclosed, subjects increase the cutoff damage for submitting a claim; the recurrence probability is significantly overweighed.