Journal of Risk and Insurance / Volume 76, Issue 3 / pp. 493-545

Convergence of Insurance and Financial Markets: Hybrid and Securitized Risk-Transfer Solutions

J. David Cummins, Mary A. Weiss

First published: 19 August 2009

https://doi.org/10.1111/j.1539-6975.2009.01311.x

The authors can be contacted via e-mail: cummins@temple.edu or mweiss@temple.edu. The authors thank Roger Beckwith, Morton Lane, John Gefaell, Sean F. Mooney, and Sojung (Carol) Park for providing valuable information used in preparing this article.

Abstract

One of the most significant economic developments of the past decade has been the convergence of the financial services industry, particularly the capital markets and (re)insurance sectors. Convergence has been driven by the increase in the frequency and severity of catastrophic risk, market inefficiencies created by (re)insurance underwriting cycles, advances in computing and communications technologies, the emergence of enterprise risk management, and other factors. These developments have led to the development of hybrid insurance/financial instruments that blend elements of financial contracts with traditional reinsurance as well as new financial instruments patterned on asset-backed securities, futures, and options that provide direct access to capital markets. This article provides a survey and overview of the hybrid and pure financial markets instruments and provides new information on the pricing and returns on contracts such as industry loss warranties and Cat bonds.

References

Aase, K. K., 2001, A Markov Model for the Pricing of Catastrophe Insurance Futures and Options, *Journal of Risk and Insurance*, **68**: 25-49.

Web of Science® | Google Scholar

Google Scholar

A.M. Best Company, 2008, *Global Reinsurance—Market Review* (Oldwick , NJ).

Google Scholar

American Academy of Actuaries, 1999, Evaluating the Effectiveness of Index-Based Insurance Derivatives in Hedging Property/Casualty Insurance Transactions, Report of the Index Securitization Task Force (Washington , DC).

Google Scholar

Aon Capital Markets, 2008a, *Insurance-Linked Securities 2008: Innovation and Investor Demand Set the Stage for Continued Growth* (Chicago).

Google Scholar

Aon Capital Markets, 2008b, *Catastrophe Bonds Evolve in Brave New World* (Chicago).

Google Scholar

Bantwal, V. J., and H. C. Kunreuther, 2000, A Cat Bond Premium Puzzle? *Journal of Psychology and Financial Markets*, **1**: 76-91.

Google Scholar

Barrieu, P., and H. Louberge, 2007, Hybrid Cat-bonds, Research Paper Series No. 07-27, Swiss Finance Institute , Zurich , Switzerland .

Google Scholar

Bakshi, G., and D. Madan, 2002, Average Rate Claims With Emphasis on Catastrophe Loss Options, *Journal of Financial and Quantitative Analysis*, **37**: 93-115.

Web of Science® Google Scholar

Web of Science® Google Scholar

Brandts, S., and C. Laux, 2007, Cat Bonds and Reinsurance: The Competitive Effect of Information-Insensitive Triggers, Working Paper, Goethe University Frankfurt , Frankfurt , Germany .

Google Scholar

Bruggeman, V., 2007, Capital Market Instruments for Catastrophe Risk Financing, Working Paper, Faculty of Law of the University of Maastricht , Maastricht , the Netherlands .

Google Scholar

Campbell, J. Y., and J. H. Cochrane, 1999, By Force of Habit: A Consumption-Based Explanation of Aggregate Stock Market Behavior, *Journal of Political Economy*, **107**: 205-251.

Web of Science® Google Scholar

Canter, M. S., J. B. Cole, and R. L. Sandor, 1996, Insurance Derivatives: A New Asset Class for the Capital Markets and a New Hedging Tool for the Insurance Industry, *Journal of Derivatives*, **4**: 89-105.

Google Scholar

Cardenas, V., S. Hochrainer, R. Mechler, G. Pflug, and J. Linnerooth-Bayer, 2007, Sovereign Financial Disaster Risk Management: The Case of Mexico, *Environmental Hazards*, **7**: 40-53.

Google Scholar

Carson, J. M., E. Elyasiani, and I. Mansur, 2008, Market Risk, Interest Rate Risk, and Interdependencies in Insurer Stock Returns: A System-GARCH Approach, *Journal of Risk and Insurance*, **75**: 873-891.

Web of Science® Google Scholar

Carvill and Company, 2007, *Carvill Hurricane Index (CHI): An Index to Measure the Destructive Potential of Hurricanes* (London , UK).

Cox, S. H., and R. G. Schwebach, 1992, Insurance Futures and Hedging Insurance Price Risk, *Journal of Risk and Insurance*, **59**: 628-644.

Web of Science® | Google Scholar

Culp, C. L., 2002, Contingent Capital: Integrating Corporate Financing and Risk Management Decisions, *Journal of Applied Corporate Finance*, **15**: 8-18.

Google Scholar

Culp, C. L., and J. B. Heaton, 2005, The Uses and Abuses of Finite Risk Reinsurance, *Journal of Applied Corporate Finance*, **17**: 18-31.

Google Scholar

Cummins, J. D., 2005, Convergence in Wholesale Financial Services: Reinsurance and Investment Banking, *The Geneva Papers*, **30** (April): 187-222.

Web of Science® | Google Scholar

Cummins, J. D., 2007, Reinsurance for Natural and Man-Made Catastrophes in the United States: Current State of the Market and Regulatory Reforms, *Risk Management and Insurance Review*, **10**: 179-220.

Google Scholar

Cummins, J. D., 2008a, Cat Bonds and Other Risk-Linked Securities: State of the Market and Recent Developments, 2008, *Risk Management and Insurance Review*, **11** (Spring): 23-47.

Google Scholar

Cummins, J. D., 2008b, *The Bermuda Insurance Market: An Economic Analysis* (Hamilton , Bermuda : Bermuda Insurance Market.com).

Google Scholar

Web of Science® Google Scholar

Cummins, J. D., and O. Mahul, in press, *Catastrophe Risk Financing in Developing Countries: Principles for Public Intervention* (Washington , DC : The World Bank).

Google Scholar

Cummins, J. D., R. D. Phillips, and S. D. Smith, 2001, Derivatives and Corporate Risk Management: Participation and Volume Decisions in the Insurance Industry, *Journal of Risk and Insurance*, **68**: 51-91.

Web of Science® Google Scholar

D'Arcy, S. P., and V. G. France, 1992, Catastrophe Futures: A Better Hedge for Insurers, *Journal of Risk and Insurance*, **59**: 575-600.

Web of Science® Google Scholar

Dieckmann, S., 2008, By Force of Nature: Explaining the Yield Spread on Catastrophe Bonds, Working Paper, Wharton School, University of Pennsylvania , Philadelphia , PA .

Google Scholar

Doherty, N. A., 1997, Innovations in Managing Catastrophe Risk, *Journal of Risk and Insurance*, **64**: 713-178.

Web of Science® Google Scholar

Doherty, N. A., 2000, Innovation in Corporate Risk Management: The Case of Catastrophe Risk, in G. Dionne, ed., *Handbook of Insurance* (Boston , MA : Kluwer Academic Publishers).

Google Scholar

Doherty, N. A., and A. Richter, 2002, Moral Hazard, Basis Risk, and Gap Insurance, *Journal of Risk and Insurance*, **69**: 9-24.

Web of Science® Google Scholar

Google Scholar

Forrester, J. P., 2008, Insurance Risk Collateralized Debt Obligations: What? Why? Now? *Journal of Structured Finance*, (Spring): 28-32.

Web of Science® Google Scholar

Frank, N., B. Gonzalez-Hermosillo, and H. Hesse, 2008, Transmission of Liquidity Shocks: Evidence From the 2007 Subprime Crisis, International Monetary Fund Working Paper 08/200.

Google Scholar

Froot, K. A., 2001, The Market for Catastrophe Risk: A Clinical Examination, *Journal of Financial Economics*, **60**: 529-571.

Web of Science® Google Scholar

Froot, K. A., 2007, Risk Management, Capital Budgeting and Capital Structure Policy for Insurers and Reinsurers, *Journal of Risk and Insurance*, **74**: 273-299.

Web of Science® Google Scholar

Froot, K. A., and P. O'Connell, 2008, On the Pricing of Intermediated Risks: Theory and Application to Catastrophe Reinsurance, *Journal of Banking and Finance*, **32**: 69-85.

Web of Science® Google Scholar

Froot, K. A., and S. E. Posner, 2002, The Pricing of Event Risks With Parameter Uncertainty, *Geneva Papers on Risk and Insurance Theory*, **27**: 153-165.

Web of Science® Google Scholar

Froot, K. A., D. S. Scharfstein, and J. C. Stein, 1993, Risk Management: Coordinating Investment and Financing Policies, *Journal of Finance*, **68**: 1629-1658.

Gatzert, N., H. Schmeiser, and D. Toplek, 2007, An Analysis of Pricing and Basis Risk for Industry Loss Warranties, Working Paper Series in Finance, Paper No. 50, University of St. Gallen .

Google Scholar

GC Securities, 2008, *The Catastrophe Bond Market at Year-End 2007: The Market Goes Mainstream* (New York).

Google Scholar

Gibson, R., M. A. Habib, and A. Ziegler, 2007, Why Have Exchange-Traded Catastrophe Instruments Failed to Displace Reinsurance? Working Paper, Swiss Finance Institute, University of Zurich , Zurich , Switzerland .

Google Scholar

Grundl, H., and H. Schmeiser, 2002, Pricing Double-Trigger Reinsurance Contracts: Financial Versus Actuarial Approach, *Journal of Risk and Insurance*, **69**: 449-468.

Web of Science® Google Scholar

Guy Carpenter, 2006, *The Catastrophe Bond Market at Year-End 2005: Ripple Effects From Record Storms* (New York).

Google Scholar

Guy Carpenter, 2008, *2008 Reinsurance Market Review: Near Misses Call for Action* (New York).

Google Scholar

Harrington, S. E., S. V. Mann, and G. Niehaus, 1995, Insurer Capital Structure Decisions and the Viability of Insurance Derivatives, *Journal of Risk and Insurance*, **62**: 483-508.

Web of Science® Google Scholar

Hoerger, T. J., F. A. Sloan, and M. Hassan, 1990, Loss Volatility, Bankruptcy, and the Demand for Reinsurance. *Journal of Risk and Uncertainty*, **3**: 221-245.

Web of Science® | Google Scholar

Insurance Futures Exchange Services (IFEX), 2009, *IFEX Event Linked Futures*, PowerPoint presentation, London .

Google Scholar

Jaffee, D. M., and T. Russell, 1997, Catastrophe Insurance, Capital Markets, and Uninsurable Risks, *Journal of Risk and Insurance*, **64**: 205-230.

Web of Science® | Google Scholar

Klein, R. W., and S. Wang, in press, Catastrophe Risk Financing in the US and the EU: A Comparative Analysis of Alternative Regulatory Approaches, *Journal of Risk and Insurance*.

Google Scholar

Lakdawalla, D., and G. Zanjani, 2006, Catastrophe Bonds, Reinsurance, and the Optimal Collateralization of Risk-Transfer, National Bureau of Economic Research Working Paper No. 12742.

Google Scholar

Lane, M., 2006, What Katrina Hath Wrought, *Lane Financial Trade Notes*, January 6.

Google Scholar

Lane, M., 2007, *Of Sidecars and Such* (Wilmette , IL : Lane Financial).

Google Scholar

Lane, M., and R. Beckwith, 2006, *How High Is Up: The 2006 Review of the Insurance Securitization Market* (Wilmette , IL : Lane Financial).

Google Scholar

Lane, M., and R. Beckwith, 2007, *Developing LFC Return Indices for Insurance Securitizations* (Wilmette , IL : Lane Financial).

Google Scholar

Lane, M., and R. Beckwith, 2008, *The 2008 Review of ILS Transactions: What Price ILS?—A Work in Progress* (Wilmette , IL : Lane Financial).

Google Scholar

Lane, M., and O. Mahul, 2008, Catastrophe Risk Pricing: An Empirical Analysis, World Bank Policy Research Working Paper 4765.

Google Scholar

Lee, J.-P., and M.-T. Yu, 2002, Pricing Default-Risky CAT Bonds With Moral Hazard and Basis Risk, *Journal of Risk and Insurance*, **69**: 25-44.

Web of Science® Google Scholar

Lee, J.-P., and M.-T. Yu, 2007, Valuation of Catastrophe Reinsurance with Catastrophe Bonds, *Insurance: Mathematics and Economics*, **41**: 264-278.

Web of Science® Google Scholar

Litzenberger, R. H., D. R. Beaglehole, and C. E. Reynolds, 1996, Assessing Catastrophe Reinsurance-Linked Securities as a New Asset Class, *Journal of Portfolio Management* **23** (December): 76-86.

Google Scholar

Google Scholar

Merton, R. C., 1995, A Functional Perspective of Financial Intermediation, *Financial Management*, **24**: 23-41.

Web of Science® | Google Scholar

Michel-Kerjan, E., and F. Morlaye, 2008, Extreme Events, Global Warming, and Insurance-Linked Securities: How to Trigger the "Tipping Point," *Geneva Papers*, **33**: 153-176.

Web of Science® | Google Scholar

MMC Securities, 2007, *The Catastrophe Bond Market at Year-End 2006: Ripples Into Waves* (New York).

Google Scholar

Mocklow, D., J. DeCaro, and M. McKenna, 2002, Catastrophe Bonds, in M. Lane, ed., *Alternative Risk Strategies* (London : Risk Books).

Google Scholar

Muermann, A., 2008, Market Price of Insurance Risk Implied by Catastrophe Derivatives, *North American Actuarial Journal*, **12**: 221-227.

Google Scholar

Myers, S. C., and N. Majluf, 1984, Corporate Financing and Investment Decisions When Firms Have Information That Investors Do Not Have, *Journal of Financial Economics*, **3**: 187-221.

PubMed | Google Scholar

Nell, M., and A. Richter, 2004, Improving Risk Allocation Through Indexed Cat Bonds, *The Geneva Papers*, **29**: 183-201.

Web of Science® | Google Scholar

Web of Science® | Google Scholar

Roberts, S., 2008, Judge Upholds All Finite Reinsurance Verdicts, *Business Insurance*, **42**(3), May 19, 2008, p. 3.

Google Scholar

Rooney, S. G., and K. J. Brennan, 2006, Securitization in the Life Insurance Industry: Managing Risk and Capital Requirements, *Journal of Structured Finance*, **12**: 23-29.

Google Scholar

Santomero, A. M., and D. F. Babbel, 1997, Financial Risk Management by Insurers: An Analysis of the Process, *Journal of Risk and Insurance*, **64**: 231-270.

Web of Science® | Google Scholar

Sclafane, S., 2007, Sidecars Being Parked, But Most Likely Will Refuel During Next Capacity Crisis, *P&C National Underwriter* (February 19, 2007). World Wide Web: http://www.property-casualty.com/Issues/2007/7/Pages/Sidecars-Being-Parked-But-Most-Likely-Will-Refuel-During-Next-Capacity-Crisis.aspx.

Google Scholar

Song, Q. (Freda), and J. D. Cummins, 2008, Hedge the Hedgers: Usage of Reinsurance and Derivatives by PC Insurance Companies, Working Paper, Wharton School, University of Pennsylvania , Philadelphia . Available at SSRN: http://ssrn.com/abstract=1138028.

Google Scholar

Staking, K. B., and D. F. Babbel, 1995, The Relation Between Capital Structure, Interest Rate Sensitivity, and Market Value in the Property-Liability Insurance Industry, *Journal of Risk and Insurance*, **62**: 690-718.

Web of Science® | Google Scholar

Swiss Re, 1997a, *Alternative Risk Transfer vis Finite Risk Reinsurance: An Effective Contribution to the Stability of the Insurance Industry, Sigma*, No. 5/1997 (Zurich , Switzerland).

Swiss Re, 1999, *Alternative Risk Transfer (ART) for Corporations: A Passing Fashion or Risk Management for the 21st Century?*, *Sigma* No. 2/1999 (Zurich , Switzerland).

Google Scholar

Swiss Re, 2001, *Capital Market Innovation in the Insurance Industry*, *Sigma* No. 3/2001 (Zurich , Switzerland).

Google Scholar

Swiss Re, 2002, *An Introduction to Reinsurance* (Zurich , Switzerland).

Google Scholar

Swiss Re, 2003, *The Picture of ART*, *Sigma* No. 1/2003 (Zurich , Switzerland).

Google Scholar

Swiss Re, 2006, *Securitization: New Opportunities for Insurers and Investors*, *Sigma* No. 7/2006 (Zurich , Switzerland).

Google Scholar

Swiss Re, 2007, *Market Loss Index for Europe—Expanding Capital Market Capacity* (Zurich , Switzerland).

Google Scholar

Swiss Re, 2008, *Natural Catastrophes and Man-Made Disasters in 2007: High Losses in Europe*, *Sigma No. 1/2008* (Zurich , Switzerland).

Google Scholar

Swiss Re, 2009, *Insurance-Linked Securities Market Update*, XII (January), Zurich , Switzerland .

U.S. General Accounting Office, 2002, *Catastrophe Insurance Risks: The Role of Risk-Linked Securities and Factors Affecting Their Use* (Washington , DC).

Google Scholar

Wohrmann, P., and C. Burer, 2002, Captives, in M. Lane, ed., *Alternative Risk Strategies* (London : Risk Waters Group).

Google Scholar

World Economic Forum, 2008, *Convergence of Insurance and Capital Markets* (New York).

Google Scholar

Yago, G., and P. Reiter, 2008, *Financial Innovations for Catastrophic Risk: Cat Bonds and Beyond*, Financial Innovations Lab Report, **Volume 5** (Santa Monica , CA : Milken Institute).

Google Scholar

Yang, C. C., M. Wang, and X. Chen, 2008, Catastrophe Effects on Stock Markets and Catastrophe Risk Securitization, *Journal of Risk Finance*, **9**: 232-243.

Google Scholar

Citing Literature

Download PDF