Daniel Bauer

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Academic Positions

Wisconsin School of Business, University of Wisconsin-Madison, 7/2018–present

- Senior Associate Dean for Programs, 7/2024–present
- Professor of Risk and Insurance, 7/2020–present
- Hickman-Larson Chair in Actuarial Science, 7/2018–present
- Chairperson, Department of Risk and Insurance, 7/2022–6/2024
- Inaugural Faculty Director of the Master of Data, Insights, and Analytics, 4/2023–6/2024
- Inaugural Faculty Director of the Master of Business Analytics, 12/2018–6/2024
- Faculty director of the Capstone program in Actuarial Science, 12/2018–6/2024
- Associate Professor (with tenure) of Risk and Insurance, 7/2018–6/2020

Culverhouse College of Commerce, University of Alabama, 8/2017–7/2018

- Dai-ichi Life Insurance Company Endowed Chair in Actuarial Science and Risk Management Honoring Mr. Tsuneta Yano, 8/2017–7/2018
- Associate Professor (with tenure) of Finance, 8/2017–7/2018

J. Mack Robinson College of Business, Georgia State University, 8/2007–8/2017

- Robert W. Batten Chair in Actuarial Science, 8/2016–8/2017
- Secondary appointment as Associate Professor of Analytics, Institute for Insight, 8/2016–8/2017
- New York Life Professor in Insurance, 8/2015–8/2016
- Associate Professor (with tenure) of Risk Management and Insurance, 8/2014–8/2017
- Faculty Director of the Master of Mathematical Risk Management program, 2012–2017
- Assistant Professor of Risk Management and Insurance, 2/2008–7/2014
- Visiting Lecturer of Risk Management and Insurance, 8/2007–1/2008

Education

Doctorate in Mathematics, Faculty of Mathematics and Economics, Ulm University, 6/2005–11/2007, Summa cum Laude

MS Statistics, Department of Mathematics and Statistics, San Diego State University, 9/2002–9/2003

Diploma in Econo-Mathematics, Faculty of Mathematics and Economics, Ulm University, 10/1999–6/2005, Summa cum Laude

Publications

Journal Articles, Refereed Scholarly

Kim, Y., **Bauer, D.** (2025). Transfer Learning in the Actuarial Domain: Foundations and Applications. *North American Actuarial Journal*, forthcoming.

Bauer, D., Lakdawalla, D., Reif, J. (2025). Health Risk and the Value of Life. *Journal of Public Economics*, 245, 105346.

Mönig, T., **Bauer, D.** (2023). Cheaper by the Bundle: The Interaction of Frictions and Option Exercise in Variable Annuities. *Journal of Risk and Insurance* 90, 453-486.

Bauer, D. (2023). Benchmarks for the Benchmark Approach to Valuing Long-Term Insurance Liabilities: Comment on Fergusson and Platen (2023). *Annals of Actuarial Science* 17, 208-211.

Zhu, N., **Bauer, D.** (2022). Modeling the Risk in Mortality Projections. *Operations Research* 70, 2069-2084.

Ha, H., **Bauer, D.** (2022). A Least-Squares Monte Carlo Approach to the Calculation of Enterprise Risk. *Finance and Stochastics* 26, 417-459.

Guo, Q., **Bauer, D.**, Zanjani, G. (2021). Capital Allocation Techniques: Review and Comparison. *Variance*, 14.

Bauer, D., Zanjani, G. (2021). Economic Capital and RAROC in a Dynamic Model. *Journal of Banking and Finance* 125, 106071.

Guo, Q., **Bauer, D.** (2021). Different Shades of Risk: Mortality Trends Implied by Term Insurance Prices. *North American Actuarial Journal* 25, S156-S169.

Schilling, K., **Bauer, D.**, Christiansen, M.C., Kling, A. (2020). Decomposing Dynamic Risks into Risk Components. *Management Science* 66, 5738-5756.

Bauer, D., Russ, J., Zhu, N. (2020). Asymmetric Information in Secondary Insurance Markets: Evidence from the Life Settlements Market. *Quantitative Economics* 11, 1143-1175.

Bauer, D., Kamiya, S., Ping, X., Zanjani, G. (2019). Dynamic Capital Allocation with Irreversible Investments. *Insurance: Mathematics and Economics* 85: 138-152.

Albrecher, H., **Bauer, D.**, Embrechts, P., Filipović, D., Koch, P., Korn, R., Loisel, S., Pelsser, A., Schiller, F., Schmeiser, H., Wagner, J. (2018). Asset-Liability Management for Long-Term Insurance Business. *European Actuarial Journal* 8: 9-25.

Bauer, D., Fasano, M., Russ, J., Zhu, N. (2018). Evaluating Life Expectancy Evaluations. *North American Actuarial Journal* 22: 198-209.

Bauer, D., Gao, J., Mönig, T., Ulm, E.R., Zhu, N. (2017). Policyholder Exercise Behavior in Life Insurance: The State of Affairs. *North American Actuarial Journal* 21: 485-501.

Bauer, D., Kramer, F. (2016). The Risk of a Mortality Catastrophe. *Journal of Business & Economic Statistics* 34: 391-405.

Bauer, D., Zanjani, G. (2016). The Marginal Cost of Risk, Risk Measures, and Capital Allocation. *Management Science* 62: 1431-1457.

Mönig, T., **Bauer, D.** (2016). Revisiting the Risk-Neutral Approach to Optimal Policyholder Behavior: A Study of Withdrawal Guarantees in Variable Annuities. *Review of Finance* 20: 759-794.

Zhu, N., **Bauer, D.** (2014). A Cautionary Note on Natural Hedging of Longevity. *North American Actuarial Journal* 18: 104-115.

Zhu, N., **Bauer, D.** (2013). Coherent Pricing of Life Settlements Under Asymmetric Information. *Journal of Risk and Insurance* 80: 827-851.

Bauer, D., Benth, F.E., Kiesel, R. (2012). Modeling the Forward Surface of Mortality. *SIAM Journal on Financial Mathematics* 3: 639-666.

Bauer, D., Reuss, A., Singer, D. (2012). On the Calculation of the Solvency Capital Requirement based on Nested Simulations. *ASTIN Bulletin* 42: 453-499.

Zhu, N., **Bauer, D.** (2011). Applications of Forward Mortality Factor Models in Life Insurance Practice. *Geneva Papers on Risk and Insurance – Issues and Practice* 36: 567-594.

Bauer, D., Bergmann, D., Kiesel, R. (2010). On the risk-neutral valuation of life insurance contracts with numerical methods in view. *ASTIN Bulletin* 40: 65-95.

Bauer, D., Börger, M., Russ, J. (2010). On the Pricing of Longevity-Linked Securities. *Insurance: Mathematics and Economics* 46: 139-149.

Bauer, D., Kling, A., Russ, J. (2008). A Universal Pricing Framework for Guaranteed Minimum Benefits in Variable Annuities. *ASTIN Bulletin* 38: 621-651.

Bauer, D., Weber, F. (2008). Assessing Investment and Longevity Risks within Immediate Annuities. *Asia-Pacific Journal of Risk and Insurance* 3: 90-112.

Bauer, D., Börger, M., Russ, J., Zwiesler, H.-J. (2008). The Volatility of Mortality. *Asia-Pacific Journal of Risk and Insurance* 3: 172-199.

Zaglauer, K., **Bauer, D.** (2008). Risk-Neutral Valuation of Participating Life Insurance Contracts in a Stochastic Interest Rate Environment. *Insurance: Mathematics and Economics* 43: 29-40.

Bauer, D., Kling, A., Russ, J. (2007). Ein allgemeines Modell zur Analyse und Bewertung von Guaranteed Minimum Benefits in Fondspolicen. *DGVFM Blätter* 28: 259-290.

Bauer, D., Kiesel, R., Kling, A., Russ, J. (2006). Risk-neutral valuation of participating life insurance contracts. *Insurance: Mathematics and Economics* 39: 171-183.

Handbook Chapters, Refereed Scholarly

Bauer, D., Phillips, R.D., Zanjani, G. (2024). Pricing Insurance Risk: Reconciling Theory and Practice. *Handbook of Insurance*, 3rd Edition (G. Dionne Ed.), forthcoming.

Bauer, D., Zanjani, G. (2013). Capital Allocation and its Discontents. *Handbook of Insurance*, 2nd Edition (G. Dionne Ed.), 863-880.

Bauer, D., Phillips, R.D., Zanjani, G. (2013). Financial Pricing of Insurance. *Handbook of Insurance*, 2nd Edition (G. Dionne Ed.), 627-645.

Monographs

Bauer, D. (2008). Stochastic Mortality Modeling and Securitization of Mortality Risk. ifa-Verlag, Ulm (Germany).

Patents

Ortgiese, J., Kastner, Z., Douglas, P.M., Forbes, A.J., **Bauer, D.** (2012). On-demand flight accident insurance. US Patent 8,224,676.

Non-refereed Publications

Bauer, D., Siemsen, E. (2023) Artificial Intelligence in Manufacturing: A Primer. 2023 Wisconsin Manufacturing Report, Wisconsin Center for Manufacturing & Productivity.

Bauer, D., Leverty J.T., Schmit, J., Sydnor, J. (2021). Symposium on insure-tech, digitalization, and big-data techniques in risk management and insurance. *Journal of Risk and Insurance* 88: 525-528.

Bauer, D., Crabb, R., Enderle, G., Frees, E., Johnson, P., Peter, K., Rosenberg, M., Shi, P. (2019). Getting Schooled. *The Actuary*.

Bauer, D. (2017). Longevity Risk Pooling: Opportunities to Increase Retirement Security. Society of Actuaries Pension Research Report.

Bauer, D., Buechner, D. (2017). The 52nd Actuarial Research Conference. *Expanding Horizons* (Society of Actuaries Education and Research Section Newsletter).

Bauer, D. (2016). Invitation to Attend ARC 2017 at Georgia State. *Expanding Horizons* (Society of Actuaries Education and Research Section Newsletter).

Bauer, D., Russ, J. (2012). A New Methodology for Measuring Actual to Expected Performance. Fasano e-newsletter November 2012.

Journal Articles, Submitted

Guo, Q., **Bauer, D.**, Zanjani, G. (2025). Dynamic Capital Allocation in General Insurance. Resubmitted to the *Journal of Risk and Insurance*.

Jing, X., **Bauer, D.**, Leverty, J.T. (2024). Virtuous Innovation or Obfuscation? Product Innovation in the Variable Annuities Market. Submitted.

Bauer, D., Powell, L., Su, B., Zanjani, G. (2024). Life Insurance and Annuity Pricing during the Financial Crisis, Revisited. Submitted.

Active Working Papers

Song, U., **Bauer, D.**, Lakdawalla, D., Reif, J. (2024). Health Risk, Incomplete Retirement Markets, and the Value of Health and Longevity.

Ulm, E.R., **Bauer, D.**, Sydnor, J. (2024). Risk and Time Preferences: Implications from Consumption Optimization.

Bauer, D., Zanjani, G. (2023). An Integrated Approach to Measuring Asset and Liability Risks in Financial Institutions.

Inactive Working Papers

Bauer, D., Biffis, E., Sotomayor, L.R. (2015). Optimal Collateralization with Bilateral Default Risk.

Bauer, D., Phillips, R., Speight, A. (2012). Risk and Valuation of Premium Payment Options in Participating Life Insurance Contracts.

Zhu, N., **Bauer, D.** (2010). On the Economics of Life Settlements.

Grants and Sponsored Research Projects

Society of Actuaries. SOA Center for Actuarial Excellence Research Grant "New Trends in Longevity" (with L. Peng). Principal investigator. 7/2015-7/2017

Society of Actuaries. Sponsored Research "Longevity Pooling—Identifying and Measuring the Impact" (with L. Peng). 7/2015-5/2017

Casualty Actuarial Society. Research Consulting Project "Follow-up to Allocation of the costs of holding capital" (with Q. Guo and G. Zanjani). Co-Principal investigator. 9/2014-5/2017

Katie School of Insurance Research Grant (Illinois State University) "Testing and Valuing Informational Advantage of Life Expectancy Providers" (with N. Zhu). 5/2014-12/2014

Willis Economic Capital Forum. Research Grant "Dynamic Capital Allocation" (with X. Ping and G. Zanjani). 7/2013

Casualty Actuarial Society. Research Consulting Project "Allocation of the costs of holding capital" (with G. Zanjani). Co-Principal investigator. 8/2012-12/2013

Society of Actuaries. SOA Center for Actuarial Excellence Research Grant "Structural Models of Policyholder Behavior" (with E. Ulm and others). Principal investigator. 4/2011-5/2014

Awards and Fellowships

Research Awards

The 2020 Virtual World Risk and Insurance Economics Best Paper Award, awarded by the American Risk and Insurance Association (ARIA), for the paper "Accommodation or Obfuscation? Product Innovation in the Variable Annuities Market" (with X. Jing), 8/2020

The 2015 GAUSS-Preis (main prize), awarded by the German Society for Actuarial and Financial Mathematics (DGVFM) and the German Society of Actuaries (DAV), for the paper "Decomposing Life Insurance Liabilities into Risk Factors" (with K. Schilling, M.C. Christiansen, and A. Kling), 4/2016

The 2015 Charles A. Hachemeister Prize, awarded by the Casualty Actuarial Society, for the paper "Allocation of Costs of Holding Capital" (with G. Zanjani), 8/2015

The Bob Alting von Geusau Memorial Prize, awarded by the International Actuarial Association, for the best paper published in the ASTIN Bulletin on an AFIR/ERM related topic in the years 2012-2013 for "On the Calculation of the Solvency Capital Requirement Based on Nested Simulations" (with A. Reuss and D. Singer), 8/2015

Award for the "best paper in non-life insurance" presented at the International Congress of Actuaries 2014 for "The Marginal Cost of Risk in a Multi-Period Risk Model" (with G. Zanjani), 04/2014

International Actuarial Association (IAA) Life Section Prize 2009 for "A Universal Pricing Framework for Guaranteed Minimum Benefits in Variable Annuities" (with A. Kling and J. Russ), 09/2009

SCOR Actuarial Prize Germany (1st Prize) for the dissertation "Stochastic Mortality Modeling and Securitization of Mortality Risk", 11/2008

Dissertation Award from the Ulm University Society for the best Mathematics dissertation in 2007/2008, 07/2008

The 2005 GAUSS-Nachwuchspreis (junior prize), awarded by the German Society for Actuarial and Financial Mathematics (DGVFM) and the German Society of Actuaries (DAV), for the paper "Ein allgemeines Modell zur Analyse und Bewertung von Guaranteed Minimum Benefits in Fondspolicen" (with A. Kling and J. Russ), 05/2006

Teaching Awards

2019-20 Michael E. Lehman Distinguished Chair for Inspired Learning in Business, Wisconsin School of Business, University of Wisconsin-Madison

2016 Analytics Professor of the Year Award, Master of Science in Analytics, Georgia State University

Fellowships, Scholarships, and Sponsorships

Visiting Scholars for the Chicago Federal Reserve Bank, 7/2022–6/2024

LUISS Guido Carli Visiting Professorship, 5/2016

Willis Research Network Fellowship, 07/2010-06/2012

German Research Society (DFG) Scholarship for doctoral studies, 04/2005–08/2007

Fulbright Scholarship for studying abroad (travel grant), 09/2002–09/2003

Service Activities in Academic and Professional Organizations

Editorial Activities

Senior Editor of the *Journal of Risk and Insurance* (since 2019)

Co-Editor of the *North American Actuarial Journal* (since 2018) and the *ASTIN Bulletin – The Journal of the International Actuarial Association* (2012-2019)

Series Editor of the *Springer Actuarial book series* (since 2017)

Associate Editor of *Insurance: Mathematics and Economics* (since 2017), the *Annals of Actuarial Science* (since 2021), *Risks* (since 2013), and the *Journal of Risk and Insurance* (2014-2018)

Service for Professional Conferences or Organizations

Member of the Board of the American Risk and Insurance Association (ARIA) (2021-2024, elected)

Member of the Society of Actuaries Center for Actuarial Excellence Research Grants Committee (2017-2021)

Chair of the Organizing Committee for the 2017 Actuarial Research Conference, the 2016 International Congress on Insurance: Mathematics and Economics, and the CEAR Workshop On Longevity Risk 2014

Member of the Scientific Committee for the 2015 and the 2017 AFIR/ERM Colloquium and the 2012 Eighth International Longevity Risk and Capital Markets Solutions Conference (Longevity 8)

Chair of the 2019, the 2020, and the 2021 ARIA Brockett-Shapiro Actuarial Journal Award Committee. Co-chair of the International Association of Actuaries (IAA) Life Section Prize 2014 Committee

Member of the 2017 and the 2018 ARIA Witt Award, the 2016 ARIA Kulp-Wright Book Award, and the 2015 ARIA Brockett-Shapiro Actuarial Journal Award Committee

Refereeing Activity

Reviewer for the *Annals of Actuarial Science*, *Annals of Finance*, *Applied Economics*, *Applied Mathematical Finance*, *Asia-Pacific Journal of Risk and Insurance*, *ASTIN Bulletin*, *Axioms*, *B.E. Journal of Theoretical Economics*, *Belgian Actuarial Bulletin*, *Columbia University Press*, *Decisions in Economics and Finance*, *Economics Letters*, *European Actuarial Journal*, *European Journal of Finance*, *European Journal of Operational Research*, *Finance and Stochastics*, *Geneva Risk and Insurance Review*, *Geneva Papers on Risk and Insurance – Issues and Practice*, *IEEE Transactions on Engineering Management*, *Insurance: Mathematics and Economics*, *Insurance Risk*, *International Journal of Theoretical and Applied Finance*, *International Review of Economics and Finance*, *International Review of Finance*, *International Transactions in Operational Research*, *Japan Journal of Industrial and Applied Mathematics*, *Journal of Banking and Finance*, *Journal of Behavioral and Experimental Finance*, *Journal of Computational Finance*, *Journal of Computational and Applied Mathematics*, *Journal of Economic Behavior and Organization*, *Journal of Economic Dynamics and Control*, *Journal of Economic Surveys*, *Journal of Financial Intermediation*, *Journal of Insurance Issues*, *Journal of Pension Economics and Finance*, *Journal of Regulatory Economics*, *Journal of Risk and Insurance*, *Journal of Risk Finance*, *Journal of Risk Model Validation*, *Management Science*, *Mathematics and Computers in Simulation*, *Mathematics and Financial Economics*, *Mathematical Finance*, *Mathematical Reviews (AMS)*, *Methodology and Computing in Applied Probability*, *North-American Actuarial Journal*, *Operations Research*, *Review of Managerial Science*, *Risk Management and Insurance Review*, *Risks*, *Scandinavian Actuarial Journal*, *SIAM Journal on Financial Mathematics*, *Springer* series "Probability Theory and Stochastic Modelling", *Statistics & Risk Modeling*, *Sustainability*, *Quantitative Economics*, *Wiley* series "Applied Probability & Statistics", and *Theory and Decision*

Reviewer for the National Science Foundation (NSF), the Natural Sciences and Engineering Research Council of Canada (NSERC), the Dutch Research Council (NWO), the Swiss National Science Foundation (SNSF), the Research Grants Council of Hong Kong, and the Georgian National Science Foundation

Reviewer for the 2011-2023 Meetings of the American Risk and Insurance Association (ARIA); the 2009-2023 Meetings of the European Finance Association (EFA); and the 2007-2008 Annual Meetings of the Asia-Pacific Risk and Insurance Association (APRIA)

Reviewer for the 2009, the 2012, and the 2017 GAUSS-Award of the German Actuarial Society (DAV) and the German Society for Actuarial and Financial Mathematics (DGVFM)

Presentations

Invited Keynote or Plenary Presentations at Conferences or Professional Meetings

2023: 11th General Advanced Mathematical Methods in Finance (AMAMEF) Conference, Bielefeld, Germany, "An Integrated Approach to Measuring Asset and Liability Risks in Financial Institutions".

2022: 2022 Insurance Mathematics and Economics Congress (virtual), "Calculation of Enterprise Capital via Least-Squares Monte Carlo – Regress Now or Later?".

2020: CSAF Virtual Conference "Predictive Modeling". Life Insurance Settlement Association (LISA) 10th Annual Institutional Investor Conference, New York, NY "Qualitative and Quantitative Approaches to Life Expectancy".

2019: 2019 Taiwan Risk and Insurance Association (TRIA) Annual Conference, Taipei, Taiwan "Measuring Risk in an Insurance Company". Asia-Pacific Risk and Insurance Association Annual Meeting, Seoul, South Korea, "Some thoughts on Global Capital Regulation".

2017: Fasano Life Settlement & Longevity Conference, Washington, DC, "Selection in the Structured Settlement Market – An Actuarial Perspective". Swiss Risk and Insurance Forum 2017, Zurich, Switzerland, "A Perspective on 'Valuation'". European Life Settlement Association (ELSA) Spring 2017 Symposium, London, UK, "Evaluating Life Expectancy Evaluations".

2016: Fall 2016 Casualty Actuaries of the Southeast (CASE) Meeting, Atlanta, GA, "Capital Allocation".

2015: 2015 Casualty Actuarial Society Meeting, Philadelphia, PA, "The Marginal Cost of Risk in a Multi-Period Risk Model" (Hachemeister Prize presentation, with G. Zanjani). V Simposio de Actuaria, Bogotá, Colombia, "An Application of Analytics in the Secondary Life Insurance Market" (and panel on big data in insurance).

2014: Fasano Life Settlement & Longevity Conference, Washington, DC (with Jochen Russ), "Quantifying the Effect of Anti-Selection on Life Settlement Pricing".

2013: 3rd joint Statistical Meeting DAGStat 2013, Freiburg, Germany, "Coherent Modeling of the Risk in Mortality Projections"

2012: Fasano Life Settlement & Longevity Conference, Washington, DC (with Jochen Russ), "A New Methodology for Measuring Actual to Expected Performance".

2009: AFIR/LIFE Colloquium 2009, Munich, Germany, "A Universal Pricing Framework for Guaranteed Minimum Benefits in Variable Annuities".

Invited Presentations at Conferences or Professional Meetings

2024: Munich Risk and Insurance Days 2024, Munich, Germany, "Asset and Liability Risks in Financial Institutions"

2023: SIAM Conference on Financial Mathematics and Engineering (FM23), Philadelphia, PA, "Calculation of Enterprise Capital via Least-squares Monte Carlo: Regress Now or Later?".

2022: 2022 New England Statistical Symposium (virtual) "Calculation of Enterprise Capital via Least-squares Monte Carlo: Regress Now or Later?". 2022 CAS Spring Meeting (virtual) "A Primer on Algorithmic Fairness in Insurance" (with James Guszcza).

2021: 5th Eastern Conference on Mathematical Finance (virtual) "The Marginal Cost of Risk and Capital Allocation in a Property and Casualty Insurance Company". 2021 Actuarial Research Conference "A Primer on Algorithmic Fairness in Insurance" (with Jed Frees and James Guszcza). CASTF Book Club (virtual) "Actuarial Fairness, principles and perspectives" (with James Guszcza). CAS RPM Seminar (virtual) "Actuarial Fairness, principles and perspectives" (with James Guszcza and Rayid Ghani).

2020: UWEBC Annual Conference (virtual) "The Analytic Foundation of Intelligence ".

2019: Great Lakes Analytics Conference, Stevens Point, WI, "A Least-Squares Monte Carlo Approach to the Calculation of Enterprise Risk". Katie School of Insurance Financial Regulators Workshop, Bloomington, IL, "Big Data, AI, and Impact on Insurance" (on behalf of the Griffith Insurance Education Foundation). NCSL Executive Committee Task Force on Insurance May Meeting, Des Plaines, IL, "Big Data and Insurance Public Policy" (with Ty Leverty, on behalf of the Griffith Insurance Education Foundation). Workshop on Frontier Areas in Financial Analytics, Fields Institute, Toronto, Canada, "An Integrated Approach to Measuring Asset and Liability Risks in Financial Institution"

2017: 2017 Casualty Actuarial Society Meeting, Anaheim, CA, "Capital Allocation Concepts and Controversies" (with Ira Robbin and Nicholas Pastor). Workshop on Risk Measurement and Regulatory Issues in Business, Université de Montréal, "An Integrated Approach to Measuring Asset and Liability Risks in Financial Institutions". Conference for the 10th Anniversary of the Center for Financial Mathematics and Actuarial Research, University of California at Santa Barbara, "A Least-Squares Monte Carlo Approach to the Calculation of Capital Requirements". Conference Innovations in Insurance, Risk- and Asset Management at TU Munich, Munich, Germany, "A Least-Squares Monte Carlo Approach to the Calculation of Capital Requirements"

2016: Western Economic Association International 91st Annual Conference, Portland, OR, "Adverse Selection in Secondary Insurance Markets: Evidence from the Life Settlement Market". 9th Conference in Actuarial Science & Finance on Samos, Samos, Greece, "Longevity Risk: Methods, Models and Management"

2015: BIRS/BANFF Workshop Recent Advances in Actuarial Mathematics, Oaxaca, Mexico, "On the (Mis-)Use of Models in Actuarial Research". 2015 AFIR Colloquium, Sydney, Australia, "On the Calculation of the Solvency Capital Requirement based on Nested Simulations" (Bob Alting von Geusau Memorial Prize presentation). 2015 CEAR–Huebner Summer Risk Institute, Atlanta, GA, "Mortality and Longevity Risk: Methods, Models and Management". Society of Actuaries Life & Annuity Symposium, New York, NY, "Structural Models of Policyholder Behavior"

2014: 2014 German Probability and Statistics Days (satellite conference), Ulm, Germany, "The Marginal Cost of Risk, Risk Measures, and Capital Allocation"

2013: IV Simposio de Actuaria, Medellín, Colombia, "The Marginal Cost of Risk, Risk Measures, and Capital Allocation".

2012: INFORMS Annual Meeting 2012, Phoenix, AZ, "Optimal collateralization with bilateral default risk: The symmetric case". Leibniz University Workshop on Insurance and Financial Mathematics, Hannover, Germany, "Modeling the Forward Surface of Mortality: Basic Setup and Extensions"

2011: Workshop on Longevity and Pension Funds, Paris, France, "Applications of Forward Mortality Factor Models in Life Insurance Practice"

2010: SIAM Conference on Financial Mathematics and Engineering, San Francisco, "Modeling the Forward Surface of Mortality"

2009: CMA workshop on insurance mathematics and longevity risk, Centre of Mathematics for Applications, University of Oslo, "Solvency II and nested simulations – a least squares Monte Carlo approach"

2008: ISBIS-2008 International Symposium on Business and Industrial Statistics, Prague, Czech Republic (session organizer), "Modeling the Forward Surface of Mortality". Workshop on Prospective Mortality Tables, Longevity and Mortality Linked Securities, AXA, Paris, France, "Risk and Valuation of Mortality Contingent Catastrophe Bonds"

2007 Workshop Scientific Computing in Finance and Insurance, Research Association Scientific Computing Baden Württemberg. "Computationally Intensive Problems from Life Insurance" (translated title)

Contributed Presentations at Conferences

2022: INFORMS Annual Meeting 2022, Indianapolis, IN, "Topics in Computational Actuarial Science and Risk Management" (session organizer). 11th Bachelier World Congress (virtual) "Cheaper by the Bundle: The Interaction of Frictions and Option Exercise in Variable Annuities". 2022 Risk Theory Society Seminar, Waco, TX, "Risk and Time Preferences: Implications from Consumption Optimization"

2019: 23rd Asia-Pacific Risk and Insurance Association Annual Meeting (APRIA 2019), Seoul, Korea, "An Integrated Approach to Measuring Asset and Liability Risks in Financial Institution". 23rd Congress on Insurance: Mathematics and Economics (IME 2019), Munich, Germany, "An Integrated Approach to Measuring Asset and Liability Risks in Financial Institution"

2018: American Risk and Insurance Association (ARIA) 2018 Annual Meeting, Chicago, IL, "Negative Marginal Option Values: The Interaction of Frictions and Option Exercise in Variable Annuities". 2018 Risk Theory Society Seminar, Atlanta, GA, "Mortality Risk, Insurance, and the Value of Life"

2017: 2017 Actuarial Research Conference, Atlanta, GA, Panel discussion on Analytics in Actuarial Science (organizer/moderator)

2016: 2016 Actuarial Research Conference, Minneapolis, MN, "Modeling and Forecasting Mortality Projections"

2015: 2015 CenFIS-CEAR workshop "The Role of Liquidity in the Financial System", Atlanta, GA, "Optimal Collateralization with Bilateral Default Risk". 2015 Risk Theory Society Seminar, Ithaca, NY, "The Marginal Cost of Risk in a Multi-Period Risk Model". 2015 ASSA Meetings, Boston, MA, "Adverse Selection in Secondary Insurance Markets: Evidence from the Life Settlement Market"

2014: 2014 SIAM Conference on Financial Mathematics and Engineering (mini-symposium organizer), Chicago, IL, "Revisiting the Risk-Neutral Approach to Optimal Policyholder Behavior: a Study of Withdrawal Guarantees in Variable Annuities". Econometrical Society European Meeting (ESEM) 2014, Toulouse, France, "Adverse Selection in Secondary Insurance Markets: Evidence from the Life Settlement Market". International Congress of Actuaries 2014, Washington, DC, "The Marginal Cost of Risk in a Multi-Period Risk Model". NBER Insurance Working Group meeting, Cambridge, MA, "Adverse Selection in Secondary Insurance Markets: Evidence from the Life Settlement Market"

2013: Workshop *Indices of Riskiness and New Risk Measures* at ETH Zurich, Zurich, Switzerland (with George Zanjani), "The Marginal Cost of Risk, Risk Measures, and Capital Allocation". 3rd joint Statistical Meeting DAGStat 2013, Freiburg, Germany (poster presentation), "Adverse Selection in Secondary Insurance Markets: Evidence from the Life Settlement Market". 2013 ASSA Meetings, San Diego, CA, "Optimal Policyholder Behavior in Personal Savings Products"

2012: Financial Management Association (FMA) 2012 Annual Meeting, Atlanta, GA, "Coherent Modeling of the Risk in Mortality Projections". Eighth International Longevity Risk and Capital Markets Solutions Conference (Longevity 8), Waterloo, Canada, "Forward Mortality Models: Newborn Cohort Effects, Mortality Spikes, and Beyond". Econometrical Society European Meeting (ESEM) 2012, Málaga, Spain, "Coherent Modeling of the Risk in Mortality Projections". American Risk and Insurance Association (ARIA) 2012 Annual Meeting, Minneapolis, MN, "The Marginal Cost of Risk, Risk Measures, and Capital Allocation". 47th Actuarial Research Conference, Winnipeg, Manitoba, "The Marginal Cost of Risk, Risk Measures, and Capital Allocation" and "Revisiting the Risk-Neutral Approach to Optimal Policyholder Behavior: A Study of Withdrawal Guarantees in Variable Annuities" (two presentations)

2011: International Conference on Mathematical Finance and Economics, Istanbul, Turkey, "The Marginal Cost of Risk, Risk Measures, and Capital Allocation". 2011 Risk Theory Seminar, Little Rock, AR (with Nan Zhu), "On the Economics of Life Settlements"

2010: Sixth International Longevity Risk and Capital Markets Solutions Conference (Longevity 6), Sydney, Australia, "Gaussian Forward Mortality Models: Specification, Calibration, and Application"

2009: Fifth International Longevity Risk and Capital Markets Solutions Conference (Longevity 5), New York, NY, "Risk and Valuation of Mortality Contingent Catastrophe Bonds" and "Modeling the Forward Surface of Mortality" (two presentations)

2008:11th Symposium on Finance, Banking, and Insurance, Technical University Karlsruhe, Germany, "A Universal Pricing Framework for Guaranteed Minimum Benefits in Variable Annuities"

2006: American Risk and Insurance Association (ARIA) 2006 Annual Meeting, Washington, DC, "Pricing Longevity Bonds using Implied Survival Probabilities". Asia-Pacific Risk and Insurance Association (APRIA) 2006 Annual Meeting, Meiji University, Tokyo, Japan, "Risk-Neutral Valuation of Participating Life Insurance Contracts" and "Pricing Longevity Bonds using Implied Survival Probabilities" (two presentations). International Symposium on Insurance and Finance, Norwegian School of Economics and Finance (NHH), Bergen, Norway, "Risk-Neutral Valuation of Participating Life Insurance Contracts"

2005: 15^{th} International AFIR Colloquium, ETH Zurich, Zurich, Switzerland, "Risk-Neutral valuation of With-Profits Life Insurance Contracts"

Seminar Presentations

2024: Technical University Munich / Ludwig-Maximilians-University, "Calculation of Enterprise Capital via Least-squares Monte Carlo – Regress Now or Later?". Ludwig-Maximilians-University, "Virtuous Innovation or Obfuscation? Product Innovation in the Variable Annuities Market".

2022: Brigham Young University, "Calculation of Enterprise Capital via Least-Squares Monte Carlo – Regress Now or Later?". University of Waterloo, "Dynamic Capital Allocation in General Insurance". L2-Seminar (University of Lausanne and University of Lyon, virtual) "Dynamic Capital Allocation in General Insurance".

2021: One World Actuarial Research Seminar (OWARS, virtual) "The Marginal Cost of Risk and Capital Allocation in a Property and Casualty Insurance Company". Australian National University (virtual), "Accommodation or Obfuscation? Product Innovation in the Variable Annuities Market". University of Bielefeld (virtual), "Mortality Risk, Insurance, and the Value of Life".

2020: All canceled (Covid-19).

2019: Institute of Actuaries of Korea (Seoul), "Changes in insurance solvency regulation: Review, challenges, and perspectives". University of Wisconsin Department of Neurological Surgery Grand Rounds, "Introduction to Machine Learning". University of Waterloo, "Negative Marginal Option Values: The Interaction of Frictions and Option Exercise in Variable Annuities". Federal Reserve Bank of Chicago, "An Integrated Approach to Measuring Asset and Liability Risks in Financial Institution"

2018: University of Iowa, "An Integrated Approach to Measuring Asset and Liability Risks in Financial Institution". ETH Zurich, "A Least-Squares Monte Carlo Approach to the Calculation of Capital Requirements". Insurance Risk Seminar, Korea Deposit Insurance Corporation (KDIC), Seoul, South Korea, "Economic Valuation of Insurance Liabilities: Background and Recent Trends". Arizona State University, "Capital Allocation: Mathematics & Economics"

2017: University of Wisconsin-Madison, "Mortality Risk, Insurance, and the Value of Life". St. John's University, "An Integrated Approach to Measuring Asset and Liability Risks in Financial Institutions". Ulm University, "The Marginal Cost of Risk, Capital Allocation, and RAROC in a Multi-Period Model"

2016: Temple University, "The Marginal Cost of Risk, Capital Allocation, and RAROC in a Multi-Period Model". University of Waterloo, "The Marginal Cost of Risk, Capital Allocation, and RAROC in a Multi-Period Model". University of Alabama, "Adverse Selection in Secondary Insurance Markets: Evidence from the Life Settlement Market". University of Southern California, "Longevity Risk: Methods, Models and Management". LUISS Guido Carli, "Adverse Selection in Secondary Insurance Markets: Evidence from the Life Settlement Market". University of California Santa Barbara, "Optimal Collateralization with Bilateral Default Risk". Université de Montréal, "A Least-Squares Monte Carlo Approach to the Calculation of Capital Requirements"

2015: HEC Montréal, "Variable Annuities with Guaranteed Minimum Benefits: An Overview on Market, Valuation, and Risk Management". University of Illinois at Urbana-Champaign, "The Marginal Cost of Risk in a Multi-Period Risk Model". Towson University, "Adverse Selection in Secondary Insurance Markets: Evidence from the Life Settlement Market"

2014: University of Connecticut, "Adverse Selection in Secondary Insurance Markets: Evidence from the Life Settlement Market". University of St. Thomas, "Adverse Selection in Secondary Insurance Markets: Evidence from the Life Settlement Market". St. John's University, "Adverse Selection in Secondary Insurance Markets: Evidence from the Life Settlement Market"

2013: Ulm University, "Optimal Collateralization with Bilateral Default Risk". University of Copenhagen, "The Marginal Cost of Risk, Risk Measures, and Capital Allocation". Georgia State University, "Adverse Selection in Secondary Insurance Markets: Evidence from the Life Settlement Market"

2012: Ulm University, "Coherent Modeling of the Risk in Mortality Projections: Theory and Applications". Barrie&Hibbert, "On the Calculation of the Solvency Capital Requirement based on Internal Models"

2011: Université Catholique de Louvain, "Coherent Modeling of the Risk in Mortality Projections: Theory and Applications". Queen's University, "Risk and Valuation of Mortality Contingent Catastrophe Bonds". Imperial College, "The Marginal Cost of Risk, Risk Measures, and Capital Allocation". Ulm University, "The Marginal Cost of Risk, Risk Measures, and Capital Allocation". École Polytechnique, "Mortality Risk Modeling"

2010: University of Duisburg-Essen, "On the Calculation of the Solvency Capital Requirement based on Internal Models". Ulm University, "On the Economics of Life Settlements". Georgia State University, "Modeling the Forward Surface of Mortality"

2009: Georgia Institute of Technology, "Modeling the Forward Surface of Mortality"

2008: Humboldt University Berlin, "Some Ideas on Solvency II"

2007: Georgia State University, "Mortality Derivatives with a Focus on Longevity Risk"

2006: Illinois State University, "Pricing Longevity Bonds using Implied Survival Probabilities". San Diego State University, "Risk-Neutral Valuation of Participating Life Insurance Contracts"

Supervision of Doctoral Dissertations

Chair

Xiaochen Jing, "Actuarial and Economic Aspects of Product Innovation in Variable Annuities", U Wisconsin Risk and Insurance Ph.D. (2021). First/Current Position: Assistant Professor at the University of Illinois at Urbana-Champaign, Champaign, Il

Qiheng Guo, "Essays on Risk Pricing in Insurance", GSU RMI Ph.D. (2018). First Position: Post-Doc/Visiting Assistant Professor at University of California at Santa Barbara, Santa Barbara, CA. Current: Assistant Professor at Ball State University, Muncie, In

Hongjun Ha, "Essays on Computational Problems in Insurance", GSU RMI Ph.D. (2016). First Position: Assistant Professor at Saint Joseph's University, Philadelphia, Pa. Current: Professor (w/ tenure) at Korea University, South Korea

Thorsten Mönig, "Optimal Policyholder Behavior in Personal Savings Products and its Impact on Valuation", GSU RMI Ph.D. (2012). First Position: Assistant Professor at the University of St. Thomas, Saint Paul, Mn. Current: Associate Professor (w/ tenure) at Temple University (Fox), Philadelphia, Pa

Nan Zhu, "Essays on Lifetime Uncertainty: Models, Applications, and Economic Implications", GSU RMI Ph.D. (2012). First Position: Assistant Professor at Illinois State University, Bloomington, Il. Current: Associate Professor (w/ tenure) at Pennsylvania State University (Smeal), University Park, Pa

Committee Member

Xiaohu Ping, "Essays on Optimal Insurance Contracts and Dynamic Capital Allocation," GSU RMI Ph.D. (2015)

Jinjing Wang, "Essays on Insurance Economics," GSU RMI Ph.D. (2015)

Jinyu Yu, "Essays on Financial Risk Modeling and Forecasting," GSU RMI Ph.D. (2014)

Ning Wang, "Essays on Dynamic Models of the Insurance Markets," GSU RMI Ph.D. (2013)

Jin Gao, "A Dynamic Analysis of Variable Annuities and Guaranteed Minimum Benefits," GSU RMI Ph.D. (2010)

Xiangjing Wei, "House Prices and Mortgage Defaults: Econometric Models and Risk Management Applications," GSU RMI Ph.D. (2010)

External examiner/member for theses at Heriot-Watt University Edinburgh (2012), Ulm University (2014), the University of New South Wales (2017), the University of Waterloo (2019, 2021), and the University of Iowa (2021).

Teaching and Academic Program Leadership

Academic Program Development and Leadership

Member of the Masters Curriculum Committee, Wisconsin School of Business, University of Wisconsin-Madison (since 2019)

Program council and admission committee for the Master of Data Science and Analytics, Robinson College of Business, Georgia State University (2015-2017)

Courses Taught

Actuarial Science:

Interest Rate Theory / Theory of Interest and Life Insurance (4×), Life Contingencies I / Actuarial Mathematics I (7×), Life Contingencies II (6×), Actuarial Science Graduate Seminar (5×)

Analytics:

Statistics and Programming for Business Analytics (2×), Introduction to Analytical Programming and Numerical Methods (3×), Machine Learning for Business Analytics (6×), Econometrics for Analytics (1×)

Quantitative Finance:

Financial Engineering (8×), Stochastic Processes in Insurance and Finance (PhD) (4×), Derivatives Valuation (1×)

Short Courses and Executive Education

Digital Leader Program (multiple cohorts), American Family Insurance, WI, since 2020

CAS Predictive Analytics Bootcamp, Chicago, IL, 8/2019; virtual in 2022 and 2023

AmFam Machine Learning Course (2 times), American Family Insurance, Madison, WI, 4/2018-9/2018 and 11/2018-06/2019

Workshop "Financial Risk Modeling, Capital Requirements, and Economic Capital Models," Bermuda Monetary Authority, Bermuda, 3/2014

Short course "Risk and Valuation of Variable Annuities with Guaranteed Minimum Benefits," Mathematical Finance Summer School, African Institute for Mathematical Sciences, Cape Town, South Africa, 2/2014

Incisive workshop on "Modelling and Managing Longevity and Mortality Risk," New York, NY, 9/2008

Work & Consulting Experience

Litigation Consultation. Since 2015

Securities and Exchange Commission v. Pacific West Capital Group et al. – Life Settlements evaluation and practices (for the SEC). Expert Report, Supplemental Report, Deposition. 2015-2022 (link to case write up)

WML Gryphon Fund, LLC, et al. v. Wood, Hat, & Silver, et al. – Life Settlements evaluation and practices (for various insurance companies). Expert Report & Deposition. 2020-2021

Susan Cucchiarella v. Fairview Health Services and others – life expectancy estimation. Expert Report & Deposition. 2020

Yoder v. Cleveland Steel Container and Pipeline Packaging – life expectancy estimation. Expert Report. 2024

Expert on Tax Litigation on behalf of the IRS. Since 2024

Short-term consulting on various issues related to risk management and insurance. Since 2011

Assistant Consultant with the Institute for Finance and Actuarial Science (ifa), Ulm, Germany (actuarial and financial consulting). 9/2003-8/2007

Intern with BodeGrabnerBeye AG & Co. KG (now BodeHewitt AG & Co. KG), Munich, Germany (pension consulting). 3/2002-4/2002

Miscellaneous

Member of the German Society for Actuarial and Financial Mathematics (DGVFM) and the Risk Theory Society

Affiliate with the Center for Demography of Health and Aging (CDHA) at the University of Wisconsin-Madison

Passed all preliminary exams of the German Society of Actuaries (DAV) (for the final exam three years of practical actuarial experience are necessary)

Last updated: April 3, 2025