ROBERT A. JARROW
Samuel Curtis Johnson Graduate School of Management
Sage Hall, Cornell University
Ithaca, NY 14853
e-mail: robertjarrow@cornell.edu

PROFESSIONAL EXPERIENCE

1979–1982	Assistant Professor, Samuel Curtis Johnson Graduate School of Management, Cornell University
1983 - 1987	Tenured Associate Professor, Samuel Curtis Johnson Graduate School of Management, Cornell University
1988 - present	Chaired Full Professor, Ronald P. and Susan E. Lynch Professor of Investment Management, Samuel Curtis Johnson Graduate School of Management, Cornell University
1998 - present	Faculty Member, Operations Research and Information Engineering, Cornell University
2011–present	Faculty Member, Economics Department, Cornell University

EDUCATION

1976–1979	MASSACHUSETTS INSTITUTE OF TECHNOLOGY, Cambridge, MA. Ph.D. in Finance. Minor field in economics.
1974–1976	AMOS TUCK SCHOOL OF BUSINESS, Dartmouth College, N.H. M.B.A. with specialization in Finance. Graduated with Highest Distinction.
1970–1974	DUKE UNIVERSITY, Durham, N.C. B.A. with double majors in Mathematics and Management Science. Graduated magna cum laude.

PROFESSIONAL ACTIVITIES

2022–present	Advisory Industry Consultant, Risk Research and Quantitative Solutions, SAS Institute Inc.
2022–present	Academic Advisory Board, LIFE Navigator Holding, Ltd., MSN Holding, Ltd.
2021–present	Academic Advisory Board, AIF Global
2020–present	Board of Directors, Scientific Association of Mathematical Finance, Inc. (SIAM) President of SIAM, Inc.
2006–2022	Board of Directors, Kamakura Corporation
1995–2022	Director of Research and Managing Director, Kamakura Corporation
2013–2014	Product Advisory Board, Decura
2011–2012	Board of Directors, Triangle Fund LLC
2009–2014	Internal Examinations Committee, Association of Certified International Investment Analysts
2008–2010	Advisory Board, Structured Investment Management
2007–present	Advisory Council, Cornell Financial Engineering, Manhattan

1995–2004	Co-Director, Cornell University's Certificate in Financial Engineering Program
2007–2008	Board of Directors, Quadrant Corporation
2005–2009	Director of Research, AJ Sterge Division, Magnetar
2002–2008	Council of the Bachelier Finance Society
2002–2005	Director of Research, WOTN Corporation
2002–2004	Advisory Committee, Cornell Theory Center
1999–2002	Executive Committee, Cornell Theory Center
2002	Interim Board Global Association of Risk Professionals (GARP)
1999–2005	Advisory Board, Center for Financial Innovation and Risk Management (CFIRM) and Masters Financial Engineering (MFE), School of Business, The University of Hong Kong
1999–2005	Advisory Board, Center for Financial Engineering, National University of Singapore
1998–2001	Board of Directors, The American Finance Association
1997–2018	Advisory Board, Parker Center, Cornell University
1996–2003	Honorary Board of Directors, Round Table Group, Inc.
1994–1995	Merrill Lynch Academic Advisory Council
1990–2013	Co-organizer, Annual Derivatives Securities Conference

ACADEMIC ACTIVITIES

2026–present	Co-Editor, Frontiers of Mathematical Finance
2022, 2024	Co-Editor, Special Issue, Frontiers of Mathematical Finance
2022–present	Co-Organizer, Bi-annual Peter Carr Conference on Mathematical Finance, U. of Maryland
2020–present	Advisory Board, Frontiers of Mathematical Finance
2020–present	Senior Editor, Chapman & Hall/CRC Financial Mathematics Series
2018–2023	Advisory Board, Journal of Risk and Financial Management
2014–present	Associate Editor, International Journal of Financial Engineering
2011–present	Advisory Board, The Journal of Investment Strategies
2008–present	ArXiv Quantitative Finance Advisory Committee, arXiv.org
2007–2021	Editorial Committee, Annual Review of Financial Economics
2021	Editor, Special Issue on Systemic Risk and Financial Networks, Mathematics and Financial Economics
2006–2020	Advisory Board, Mathematical Finance
2002–2005	Managing Editor, Mathematical Finance
1989–2001	Co-Editor, Mathematical Finance
1989	Founding Organizer, Mathematical Finance
2007–present	Editorial Board, Journal of Risk Management in Financial Institutions
2004–2005	Advisory Board, Journal of Finance Literature
2004–present	Associate Editor, Journal of Credit Risk

2003–present	Associate Editor, The Journal of Derivatives Accounting
1996–present	Associate Editor, Journal of Fixed Income
1993–2015	Associate Editor, Review of Derivatives Research
2002–2014	Associate Editor, Finance Research Letters
2002–2003	Associate Editor, Journal of Bond Trading and Management
1999–2010	Associate Editors Board, Istanbul Stock Exchange Review
2002–2018	Associate Editor, The Journal of Derivatives
1999–2002	Co-Editor, The Journal of Derivatives
1998–1999	Associate Editor, The Journal of Derivatives
2002–2015	Associate Editor, The Journal of Financial Research
1998–2015	Associate Editor, The Journal of Risk
1998	Editor, Special Issue on Credit Derivatives, Review of Derivatives Research
1998–1999	Associate Editor, Journal of Financial Engineering
1996–1997	Editorial Board, Net Exposure: The Electronic Journal of Financial Risk
1995–2000	Advisory Board, Asia-Pacific Financial Markets
1994–1997	Associate Editor, The Review of Financial Studies
1992–1997	Associate Editor, Advances in Futures and Options Research
1992–2003	Associate Editor, The Financial Review
1988–1994	Associate Editor, The Review of Futures Markets
1983–1999	Associate Editor, Journal of Financial and Quantitative Analysis

AWARDS

EFMA-WRDS Conference Best Paper Award, 2026
Journal of Investment Management Special Distinction Award, 2024
American Real Estate Society, Best Practitioner Research Award, 2023
Gravitas Teaching Award, Cornell-Tsinghua Finance Program, 2022
Best Paper Prize 2020, Korean Association of Financial Engineering Conference
Ross Best Paper Award 2013, *Finance Research Letters*
Arthur Warga Best Paper Award at the Moore School of Business 2013 Fixed Income Conference
Clifford H. Whitcomb Faculty Fellowship 2011-12
12th Annual Bernstein Fabozzi/Jacobs Levy Award 2009-2010, *Journal of Portfolio Management*
Risk Magazine's Lifetime Achievement Award 2009
Ross Best Paper Award 2008, *Finance Research Letters*
Center for Analytic Research Award 2006, Carnegie Mellon University
Risk Who's Who 2006
The Institute for Quantitative Research in Finance Fellowship for 2005
Fixed Income Analysts Society (FIASI) Hall of Fame, 2004
FDIC Senior Fellow, 2003 – 2014
Member Risk Magazine's 50 member Hall of Fame
Who's Who in Economics, 4th Edition (top 1200 cited economists)
Financial Services Exchange Grant 2002

2001 Graham and Dodd Scrolls Award (*Financial Analysts Journal*)
IAFE Senior Fellow, 1997
Cornell Johnson School's Exceptional Research Award 1997
1997 IAFE/SunGard Financial Engineer of the Year
Mobil Oil Scholarship 1993
The Institute for Quantitative Research in Finance Fellowship for 1992
1991 Southern Finance Association Meeting's Outstanding Paper in Futures/Options on Futures
1990 Southern Finance Association Meeting's Outstanding Paper in Futures/Options on Futures
Canadian Securities Institute Award for the Best Paper in Investments at the Northern Finance Association Meetings 1990
Bankers Trust Financial Research Grant, 1990, 1991
Chicago Board Options Exchange Pomerance Prize for Excellence in the Area of Options Research 1982
M.I.T. Endowed Fellowship 1976, 1977
The Lillian and Charles Leech Prize for Excellence in Finance 1976
Bache & Company Scholarship 1975
Edward Tuck Scholar 1975

PUBLICATIONS

[1] "An Autoregressive Jump Process for Common Stock Returns," The Journal of Financial Economics, 5 (1977) (with George Oldfield and Richard Rogalski).

[2] "The Relationship Between Yield, Risk, and Return of Corporate Bonds," The Journal of Finance, 4 (September 1978).

[3] "Negotiations versus Competition in the Sale of Securities," Financial Management, (Fall 1978) (with Dennis Logue).

[4] "Heterogeneous Expectations, Restrictions on Short Sales, and Equilibrium Asset Prices," The Journal of Finance, 5 (December 1980).

[5] "Forward Contracts and Futures Contracts," The Journal of Financial Economics, 4 (December 1981) (with George Oldfield).

[6] "Liquidity Premiums and the Expectations Hypothesis," Journal of Banking and Finance, 5 (December 1981).

[7] "Approximate Option Valuation for Arbitrary Stochastic Processes," Journal of Financial Economics, 10 (November 1982) (with Andrew Rudd).
CBOE Pomerance Prize 1982.

[8] "Tests of an Approximate Option Valuation Formula," Option Pricing: Theory and Applications, 1983, edited by Menachem Brenner, Lexington Books (with Andrew Rudd).

[9] "A Comparison of the APT and CAPM: A Note," Journal of Banking and Finance, 7 (June 1983) (with Andrew Rudd).

PUBLICATIONS (continued)

[10] "Consensus Beliefs Equilibrium and Market Efficiency," Journal of Finance, 3 (June 1983) (with David Easley).

[11] "The Error Learning Hypothesis: The Evidence Reexamined," Journal of Economics and Business, 36 (May 1984).

[12] "Jump Risks and the Intertemporal Capital Asset Pricing Model," Journal of Business, 57 (July 1984) (with Eric Rosenfeld).

[13] "A Characterization Theorem for Unique Equivalent Martingale Probability Measures," Economics Letters, 22 (1986).

[14] "The Relationship Between Arbitrage and First Order Stochastic Dominance," Journal of Finance, 4 (September 1986).

[15] "Spanning and Completeness in Markets with Contingent Claims," Journal of Economic Theory, 41 (February 1987) (with Richard Green).

[16] "An Integrated Axiomatic Approach to the Existence of Ordinal and Cardinal Utility Functions," Theory and Decision, 22 (March 1987).

[17] "The Pricing of Commodity Options with Stochastic Interest Rates," Advances in Futures and Options Research, 2 (1987).

[18] "Arbitrage, Continuous Trading, and Margin Requirements," Journal of Finance, 5 (December 1987) (with David Heath).

[19] "Beliefs and Arbitrage Pricing," Economics Letters, 24 (1987).

[20] "Ex-Dividend Stock Price Behavior and Arbitrage Opportunities," Journal of Business, 61 (1), (1988) (with David Heath).

[21] "Preferences, Continuity, and the Arbitrage Pricing Theory," The Review of Financial Studies, 2 (1988).

[22] "Forward Options and Futures Options," Advances in Futures and Options Research, 3 (1988) (with George Oldfield).

[23] "Bribes, Power, and Managerial Control in Corporate Voting Games," Theory and Decision, 26 (1989) (with Chris Leach).

[24] "Option Pricing and Implicit Volatilities: A Review and a New Perspective," Journal of Economic Surveys, 3 (1989) (with Jim Wiggins).

[25] "Primes and Scores: An Essay on Market Imperfections," Journal of Finance, 5 (December 1989) (with Maureen O'Hara).

[26] "Contingent Claims Valuation with a Random Evolution of Interest Rates," The Review of Futures Markets, 9 (1), (1990) (with David Heath and Andrew Morton).

PUBLICATIONS (continued)

[27] "The Stop-Loss Start-Gain Paradox and Option Valuation: A New Decomposition into Intrinsic and Time Value," The Review of Financial Studies, 3 (3), (1990) (with Peter Carr).

[28] "Bond Pricing and the Term Structure of Interest Rates: A Discrete Time Approximation," Journal of Financial and Quantitative Analysis, (December 1990) (with David Heath and Andrew Morton).

[29] "Large Trader Impact and Market Regulation," Financial Analysts Journal, (July/August 1991) (with Gary Gastineau).

[30] "The Relevance of Fiduciary Conflict-of-Interests in Control Versus Issue Proxy Contests," Journal of Financial and Quantitative Analysis, 26 (4), (December 1991) (with Chris Leach).

[31] "Pricing Foreign Currency Options Under Stochastic Interest Rates," Journal of International Money and Finance, 10(3), (September 1991) (with Kaushik Amin).

[32] "A Characterization of Complete Security Markets on a Brownian Filtration," Mathematical Finance, 1 (3), (July 1991) (with Dilip Madan).

[33] "Bond Pricing and the Term Structure of Interest Rates: A New Methodology for Contingent Claims Valuation," Econometrica, 60(1), (January 1992) (with David Heath and Andrew Morton).
Reprinted in *Vasicek and Beyond*, 1997, Risk Publications: London.
Reprinted in *Options Markets*, ed. G.M. Constantinides and A.G. Malliaris, 1999, Edward Elgar Pub., U.K.
Reprinted in *The Debt Market*, ed. Steve Ross and Franco Modigliani, 1999, Edward Elgar Pub., UK.
Reprinted in *The New Interest Rate Models*, ed. Lane Hughston, 2000, Risk Books: London.
Reprinted in *Derivatives Pricing: The Classic Collection*, ed. Peter Carr, 2004, Risk Books: London.

[34] "Market Manipulation, Bubbles, Corners, and Short Squeezes," Journal of Financial and Quantitative Analysis, 27(3), (September 1992).

[35] "Alternative Characterizations of American Put Options," Mathematical Finance, 2 (2), (April 1992) (with Peter Carr and Ravi Myneni).

[36] "Pricing American Options on Risky Assets in a Stochastic Interest Rate Economy," Mathematical Finance, 2 (4), (October 1992) (with Kaushik Amin).
Reprinted in *Vasicek and Beyond*, 1997, Risk Publications: London.

[37] "Easier Done Than Said," Risk Magazine, 5 (9), (October 1992) (with David Heath, Andrew Morton, and Mark Spindel).
Reprinted in *Over the Rainbow: Developments in Exotic Options and Complex Swaps*, 1995, Risk Publications: London.

[38] "Credit Risk: Drawing the Analogy," Risk Magazine, 5 (9), (October 1992) (with Stuart Turnbull).
Reprinted in *Derivative Credit Risk: Advances in Measurement and Management*, 1995, Risk Publications: London.

PUBLICATIONS (continued)

[39] "Diffusion Processes in Finance," The New Palgrave Dictionary of Money and Finance, 1993.

[40] "A Simple Formula for Options on Discount Bonds," Advances in Futures and Options Research, Vol. 6, (1993) (with Robin Brenner).

[41] "Futures," Douglas Greenwald, editor, Encyclopedia of Economics, McGraw-Hill, Inc., 1993.

[42] "Market Manipulation and Corporate Finance: A New Perspective," Financial Management, (Summer 1993) (with Arkadev Chatterjea and Joseph Cherian).

[43] "Option Pricing with Random Volatilities in Complete Markets," Review of Quantitative Finance and Accounting, 4 (1), (March 1994) (with Larry Eisenberg).
Reprinted in *Volatility: New Estimation Techniques for Pricing Derivatives*, 1998, Risk Publications: London.

[44] "Derivative Security Markets, Market Manipulation, and Option Pricing Theory," Journal of Financial and Quantitative Analysis, 29 (2), (June 1994).

[45] "Delta, Gamma and Bucket Hedging of Interest Rate Derivatives," Applied Mathematical Finance, 1, (September 1994) (with Stuart Turnbull).
Reprinted in *Surveys in Applied and Industrial Mathematics*, 2 (5), (1995).
Reprinted in *Interest Rate Risk Measurement and Management*, editors D. Chambers and S. Nawalkha, Institutional Investor, Inc.

[46] "Pricing Interest Rate Options," Jarrow, Maksimoviz, Ziemba, editors, Finance: Handbook in Operations Research and Management Science, North Holland, (1995).

[47] "Market Manipulation," Jarrow, Maksimoviz, Ziemba, editors, Finance: Handbook in Operations Research and Management Science, North Holland, (1995) (with Joseph Cherian).

[48] "A Discrete Time Synthesis of Derivative Security Valuation Using a Term Structure of Futures Prices," Jarrow, Maksimoviz, Ziemba, editors, Finance: Handbook in Operations Research and Management Science, North Holland, (1995) (with Peter Carr).

[49] "Pricing Derivatives on Financial Securities Subject to Credit Risk," Journal of Finance, 50 (1), (March 1995) (with Stuart Turnbull).
Reprinted in *Credit Risk Models and Management*, 1999, Risk Publications: London.
Reprinted in *Options Markets*, eds. G.M. Constantinides and A.G. Malliaris, 2000, Edward Elgar Publishing Ltd: Cheltenham, U.K.
Reprinted in *Credit Risk Models and Management*, 2004, 2nd edition, Risk Publications, London.

[50] "Option Pricing Using the Term Structure of Interest Rates to Hedge Systematic Discontinuities in Asset Returns," Mathematical Finance, 5 (4), (October 1995) (with Dilip Madan).

[51] "Vital Statistics," Risk Magazine, 8 (4), (April 1995) (with Eric Jacquier).
Reprinted in *Over the Rainbow: Developments in Exotic Options and Complex Swaps*, 1995, Risk Publications: London.

[52] "Credit Risk", C. Alexander, editor, Handbook of Risk Management and Analysis, John Wiley (1996) (with Stuart Turnbull).

PUBLICATIONS (continued)

[53] "Power Swaps: Disease or Cure?," Risk Magazine, 9 (2), (February 1996) (with Donald van Deventer).
Reprinted in *Structured Products*, 2009, Risk Publications, London.

[54] "Option Pricing Using a Binomial Model with Random Time Steps (A Formal Model of Gamma Hedging)," Review of Derivatives Research, 1 (2) (1996), (with Heike Dengler).

[55] "A Markov Model for the Term Structure of Credit Risk Spreads," The Review of Financial Studies, 10 (1), (Summer 1997) (with David Lando and Stuart Turnbull).

[56] "Is Mean-Variance Analysis Vacuous: or Was Beta Still Born?" European Finance Review, 1 (1), (1997), (with Dilip Madan).

[57] "The Impact of Default Risk on Swap Rates and Swap Values," Risk Magazine, 10 (5), (May 1997) (with Stuart Turnbull).
Reprinted in *Hedging with Trees*, 1998, Risk Publications: London.

[58] "A Unified Approach for Pricing Contingent Claims on Multiple Term Structures," Review of Quantitative Finance and Accounting, 10 (1), (January 1998), (with Stuart Turnbull).

[59] "An Integrated Approach to Hedging and Pricing Eurodollar Derivatives," Journal of Risk and Insurance, 64 (2), (1997), (with Stuart Turnbull).

[60] "New Developments in Option-Adjusted Valuation," Derivatives Use, Trading and Regulation, 3 (1), (1997), (with Don van Deventer).

[61] "A Review of Gilster's Option Pricing Theory: Is Risk Free Hedging Feasible?," Financial Management, 26 (1), (Spring 1997).
Reprinted in *Behavioral Finance*, ed. H. Shefrin, 2000, Edward Elgar Pub. Ltd: Cheltenham, U.K.

[62] "Market Manipulation and a Model of the United States Treasury Securities Auction Market," Journal of Financial and Quantitative Analysis, 33 (2), (June 1998), (with Arkadev Chatterjea).

[63] The Arbitrage-Free Valuation and Hedging of Demand Deposits and Credit Card Loans," Journal of Banking and Finance, 22 (3), (March 1998), (with Don van Deventer).

[64] "The HJM Model: Its Past, Present, and Future," Journal of Financial Engineering, 6 (4), (December 1997).

[65] "Hedging Contingent Claims on Semimartingales," Finance and Stochastics, 3 (1), (January 1999), (with Dilip Madan).

[66] "Mopping up Liquidity," Risk Magazine, (December 1997), (with Ajay Subramanian).

[67] "Options Markets, Self-Fulfilling Prophecies, and Implied Volatilities," Review of Derivatives Research, 2 (1), (1998), (with Joseph Cherian).

[68] "Current Advances in the Modeling of Credit Risk," Derivatives: Tax, Regulation, Finance, (May/June 1998).

PUBLICATIONS (continued)

[69] "Bayesian Analysis of Contingent Claim Model Error," Journal of Econometrics, 94 (1), (2000), (with Eric Jacquier).

[70] "Integrating Interest Rate Risk and Credit Risk in Asset and Liability Management," Asset and Liability Management: The Synthesis of New Methodologies, Risk Publications, (1998), (with Don van Deventer).

[71] "The Second Fundamental Theorem of Arbitrage Pricing Theory," Mathematical Finance, (July 1999), (with Xing Jin and Dilip Madan).

[72] "The Second Fundamental Theorem of Asset Pricing-A New Approach," Review of Financial Studies, (Winter 1999), (with Robert Battig).

[73] "Practical Usage of Credit Risk Models in Loan Portfolio and Counterparty Exposure Management," Credit Risk Models and Management, Risk Publications, (1999), (with Don van Deventer).
Reprinted in *Credit: The Complete Guide to Pricing, Hedging and Risk Management*, ed. A. Arvanitis and J. Gregory, 2001, Risk Books: London.

[74] "In Honor of the Nobel Laureates Robert C. Merton and Myron S. Scholes: A Partial Differential Equation that Changed the World," The Journal of Economic Perspectives, 13 (4), (Fall 1999).
Reprinted in *Pioneers of Financial Economics: Volume 2*, ed. G. Poitras, F. Jovanovic, 2007, Edward Elgar Pub.

[75] "The Intersection of Market and Credit Risk," Journal of Banking and Finance, 24 (1), (2000), (with Stuart Turnbull).

[76] "An Empirical Analysis of the Jarrow-van Deventer Model for Valuing Non-Maturity Demand Deposits," The Journal of Derivatives, (Fall 1999), (with Tibor Janosi and Ferdinando Zullo).

[77] "The Liquidity Discount," Mathematical Finance, 11 (4), (October 2001), (with Ajay Subramanian).

[78] "Arbitrage, Martingales, and Private Monetary Value," Journal of Risk, 3 (1), (Fall 2000), (with Dilip Madan).

[79] "Contingent Claim Models with Deterministic Volatility: Model Error versus Poor Estimation," Model Risk, ed. R. Gibson, Risk Books, (2000), (with Eric Jacquier).

[80] "Default Parameter Estimation Using Market Prices," Financial Analysts Journal, (Sept./Oct. 2001). 2001 Graham and Dodd Scrolls Award

[81] "Counterparty Risk and the Pricing of Defaultable Securities," Journal of Finance, 56 (5), (2001), (with Fan Yu).

[82] "Put Premiums and Coherent Risk Measures," Mathematical Finance, 12 (2), (2002).

[83] "A Simple Model for Valuing Default Swaps When Both Market and Credit Risk Are Correlated," The Journal of Fixed Income, 11 (4), (March 2002), (with Yildiray Yildirim).

PUBLICATIONS (continued)

[84] "Pricing Treasury Inflation Protected Securities and Related Derivatives Using an HJM Model," 38 (2), (June 2003), Journal of Financial and Quantitative Analysis, (with Yildiray Yildirim).

[85] "Estimating Expected Losses and Liquidity Discounts Implicit in Debt Prices," Journal of Risk, 5 (1), (2002), (with Tibor Janosi and Yildiray Yildirim).
Reprinted in *Innovations in Risk Management*, ed. P. Jorion, 2004, Risk Books: London.

[86] "Market Pricing of Deposit Insurance," Journal of Financial Services Research, 24 (2/3), (2003), (with Darrell Duffie, Amiyatosh Purnanandam and Wei Yang).

[87] "How Valuable is Credit Card Lending," The Journal of Derivatives, 11 (2), (2003), (with Arka Chatterjea, Robert Neal, Yildiray Yildirim).

[88] "Estimating Default Probabilities Implicit in Equity Prices," Journal of Investment Management, (2003, First Quarter), (with Tibor Janosi and Yildiray Yildirim).
Reprinted in *The Credit Market Handbook: Advanced Modeling Issues*, e.d. Gifford Fong, (2006), John Wiley.

[89] "Modeling Credit Risk with Partial Information," The Annals of Applied Probability, 14 (3), (August 2004), (with Umut Cetin, Philip Protter, Yildiray Yildirim).

[90] "A Robust Test of Merton's Structural Model for Credit Risk," Journal of Risk, 6 (1), (2003), (with Don van Deventer and Xiaoming Wang).

[91] "Pricing the Convenience Yield of Treasury Securities: Theory and Evidence," Review of Derivatives Research, 7 (2), (2004), (with Joseph Cherian and Eric Jacquier).

[92] "Testing Market Efficiency using Statistical Arbitrage with Applications to Momentum and Value Strategies," Journal of Financial Economics, 73 (3), (September 2004), (with Steve Hogan, Melvyn Teo, and Mitch Warachka).

[93] "Estimating the Term Structure of Corporate Debt with a Semiparametric Penalized Spline Model," Journal of the American Statistical Association, 99 (465), (March 2004), (with David Ruppert and Yan Yu).

[94] "Liquidity Risk and Arbitrage Pricing Theory," Finance and Stochastics, 8 (3), (August 2004), (with Umut Cetin, Philip Protter).
Reprinted in *Handbook of Quantitative Finance and Risk Management*, ed. C.F. Lee, A.C. Lee, John Lee, (2010), Springer Verlag.

[95] "Default Risk and Diversification: Theory and Empirical Applications," Mathematical Finance, 15 (1), (January 2005), (with David Lando and Fan Yu).

[96] "Practical Usage of Credit Risk Models in Loan Portfolio and Counterparty Exposure Management: An Update," Credit Risk Models and Management, ed. David Shimko, Risk Publications, (2004), (with Don van Deventer).

[97] "A Short History of Stochastic Integration and Mathematical Finance: The Early Years, 1880-1970," A Festschrift to Honor Herman Rubin, ed. Anirban Dasgupta, IMS Lecture Notes, Monograph Series, (2004), Vol. 45, (with Philip Protter).

PUBLICATIONS (continued)

[98] "Risky Coupon Bonds as a Portfolio of Zero-Coupon Bonds," Finance Research Letters, 1 (2), (June 2004).

[99] "Mathematics and Finance: A Fruitful Relationship," Modern Risk Management: A History, Risk Books, (2003).

[100] "Structural versus Reduced Form Models: A New Information Based Perspective," Journal of Investment Management, 2 (2), (2004), (with Philip Protter).
Reprinted in *The Credit Market Handbook: Advanced Modeling Issues*, e.d. Gifford Fong, (2006), John Wiley.

[101] "Estimating the Value of Delivery Options in Futures Contracts," Journal of Financial Research, 28 (3), (Fall 2005), (with Jana Hranaiova and William Tomek)

[102] "Bankruptcy Prediction with Industry Effects," Review of Finance, 8 (4), (2004), (with Sudheer Chava).
Nominated 2005 GSAM Best Paper Prize.

[103] "Large Traders, Hidden Arbitrage and Complete Markets," Journal of Banking and Finance, 29, (2005), (with Philip Protter).

[104] "Generalized Coherent Risk Measures: The Firm's Perspective," Finance Research Letters, 2, (2005), (with Amiyatosh Purnanandam).

[105] "Estimating Default Correlations Using a Reduced Form Models," Risk Magazine, (January 2005), (with Don van Deventer).

[106] "Liquidity Risk and Option Pricing Theory," Handbook of Financial Engineering, ed., J. Birge and V. Linetsky, Elsevier Publishers, (with Philip Protter), (2007).

[107] "An Introduction to Financial Asset Pricing," Handbook of Financial Engineering, ed., J. Birge and V. Linetsky, Elsevier Publishers, (with Philip Protter), (2007).

[108] "Pricing Options in an Extended Black-Scholes Economy with Illiquidity: Theory and Empirical Evidence," Review of Financial Studies, 19 (2), (Summer 2006), (with Umut Cetin, Philip Protter, Mitch Warachka).

[109] "Liquidity Risk and Risk Measure Computation," Review of Futures Markets, 11 (1), (Summer 2005), (with Philip Protter).

[110] "A Loss Default Simulation Model of the Federal Bank Deposit Insurance Funds," Proceedings of the 2005 Winter Simulation Conference, M.E. Kuhl, N.M. Steiger, F.B. Armstrong, and J.A. Joines, eds., (with Rosalind Bennett, Daniel Nuxoll, Michael Fu, Huiju Zhang).

[111] "Liquidity Risk and Classical Option Pricing Theory," Liquidity Risk Measurement and Management, eds. L. Matz and P. Neu, (2007), John Wiley & Sons (Asia).

[112] "Downside Loss Aversion and Portfolio Management," Management Science, 52 (4), (April 2006), (with Feng Zhao).

PUBLICATIONS (continued)

[113] "Interest Rate Caps 'Smile' Too! But Can the LIBOR Market Models Capture It?," Journal of Finance, 62 (1), (February 2007), (with Haitao Li and Feng Zhao).

[114] "A Tutorial on Zero Volatility and Option Adjusted Spreads," Advances in Mathematical Finance, (2007), eds., M. Fu, R. Jarrow, J. Yen, R. Elliott, Birkhauser, Boston, MA.

[115] "Asset Price Bubbles in Complete Markets," Advances in Mathematical Finance, (2007), eds., M. Fu, R. Jarrow, J. Yen, R. Elliott, Birkhauser, Boston, MA, (with Philip Protter and Kazuhiro Shimbo).

[116] "Information Reduction via Level Crossings in a Credit Risk Model," Finance and Stochastics, 11 (2), (April 2007), (with Philip Protter and A. Deniz Sezer).

[117] "A Critique of Revised Basel II," Journal of Financial Services Research, 32 (1-2), (October 2007).

[118] "Restructuring Risk in Credit Default Swaps: An Empirical Analysis," Stochastic Processes and Their Applications, 117 (11), (2007), (with Antje Berndt and ChoongOh Kang).
Center for Analytic Research Award 2006.

[119] "Operational Risk," Journal of Banking and Finance, 32, (May 2008).

[120] "The Determinants of Corporate Credit Spreads," Risk Magazine, (September 2007), (with Li Li, Mark Mesler, Don van Deventer).

[121] "Modeling the Recovery Rate in a Reduced Form Model," Mathematical Finance, 19 (1), (January 2009), (with Xin Guo and Yang Zeng).

[122] "Commercial Mortgage Backed Securities (CMBS) and Market Efficiency with Respect to Costly Information," Real Estate Economics, 36 (3), (2008), (with Andreas Christopoulos and Yildiray Yildirim).

[123] "Capital Structure and the Present Value of a Firm's Investment Opportunities: A Reduced Form Credit Risk Perspective," Review of Derivatives Research, 10 (1), (January 2007), (with Amiyatosh Purnanandam).

[124] "Modeling Loan Commitments," Finance Research Letters, 5 (1), (March 2008), (with Sudheer Chava).
Ross Best Paper Award 2008.

[125] "CDO Valuation: Fact and Fiction," The Definitive Guide to CDOs, ed. G. Meissner, Risk Books, London, (2008), (with Li Li, Mark Mesler, Don van Deventer).

[126] "Tax Liens: A Novel Application of Asset Pricing Theory," Review of Derivatives Research, 10 (2), (May 2007), (with Vikrant Tyagi).

[127] "Synthetic CDO Equity: Short or Long Correlation Risk?," Journal of Fixed Income, 17 (4), (Spring 2008), (with Don van Deventer).

[128] "Option Pricing Theory: Historical Perspectives," Encyclopedia of Quantitative Finance, ed. Rama Cont, John Wiley & Sons, Ltd., (2010).

PUBLICATIONS (continued)

[129] "Measuring the Risk of Default: A Modern Approach," Risk Management Association Journal, (July/August 2008), (with Jens Hilscher and Don van Deventer).

[130] "Valuing Callable Corporate Bonds in a Reduced Form Model Using a Call Intensity Process," Journal of Financial Economics, 95 (2), (February 2010), (with Haitao Li, Sheen Liu, and Chunchi Wu).

[131] "Credit Risk Models with Incomplete Information," Mathematics of Operations Research, 34 (2), (May 2009), (with Xin Guo and Yang Zeng).

[132] "The Subprime Credit Crisis of 07," Journal of Derivatives, 16 (4), (Fall 2008), (with Michel Crouhy and Stuart Turnbull).

[133] "Asset Price Bubbles in Incomplete Markets," Mathematical Finance, 20 (2), (April 2010), (with Philip Protter and Kazuhiro Shimbo).

[134] "No Arbitrage Without Semimartingales," Annals of Applied Probability, 19 (2), (April 2009), (with Philip Protter and Hasanjan Sayit).

[135] "The Term Structure of Interest Rates," Annual Review of Financial Economics, 1, (2009).

[136] "Credit Risk Models," Annual Review of Financial Economics, 1, (2009).

[137] "Distressed Debt Prices and Recovery Rate Estimation," Review of Derivatives Research, 11 (3), (October 2008), (with Xin Guo and Haizhi Lin).

[138] "Forward and Futures Prices with Bubbles," International Journal of Theoretical and Applied Finance, 12 (7), (November 2009), (with Philip Protter).

[139] "Reduced Form Credit Risk Models," Encyclopedia of Quantitative Finance, ed. Rama Cont, John Wiley & Sons, Ltd., (2010), (with Don van Deventer).

[140] "Convenience Yields," Review of Derivatives Research, 13 (1), (2010).

[141] "On Model Testing in Financial Economics," The Financial Review, 45 (2), (May 2010).

[142] "The Future of Risk Management Tools: Lessons Learned," Canadian Investment Review, (Winter 2009).

[143] "Hedging in a HJM Model," Finance Research Letters, 7, (2010).

[144] "A Robust Test of Market Efficiency," Journal of Financial Markets, 15 (1), (February 2012), (with Melvyn Teo, Yiukuena Tse and Mitch Warachka).

[145] "Active Portfolio Management and Positive Alphas: Fact or Fantasy?", Journal of Portfolio Management, 36 (4), (2010).
12th Annual Bernstein Fabozzi/Jacobs Levy Award 2009-2010.
Reprinted in *Five Years of Award-Winning Articles from the Journal of Portfolio Management*, Volume Three, 2009-2013, eds. F. Fabozzi, B. Jacobs, K. Levy, Institutional Investor Journals, 2014.

PUBLICATIONS (continued)

[146] "A Simple Robust Model for Cat Bond Valuation," Finance Research Letters, 7 (2), (2010).

[147] "The Martingale Theory of Bubbles: Implications for the Valuation of Derivatives and Detecting Bubbles," The Financial Crisis: Debating the Origins, Outcomes, and Lessons of the Greatest Economic Event of Our Lifetime, ed., Arthur Berd, Risk Publications, (2010), (with Philip Protter).

[148] "The Dangers of Calibration and Hedging the Greeks in Option Pricing," Journal of Financial Education, Spring/Summer, (2012), (with Arkadev Chatterjea).

[149] "Understanding the Risk of Leveraged ETFs," Finance Research Letters, 7 (3), (2010).

[150] "The Cost of Operational Risk Loss Insurance," Review of Derivatives Research, 13 (3), (2010), (with Jeff Orman and Yildiray Yildirim).

[151] "Foreign Currency Bubbles," Review of Derivatives Research, 14 (1), (2011), (with Philip Protter).

[152] "Optimal Trading of Arbitrage Opportunities with Market Impact," International Review of Applied Financial Issues and Economics, 2 (3), (2010).

[153] "Credit Rating Accuracy and Incentives," Journal of Credit Risk, 6 (3), (2010), (with Liheng Xu)

[154] "Credit Market Equilibrium Theory and Evidence: Revisiting the Structural versus Reduced Form Model Debate," Finance Research Letters, 8, (2011).

[155] "TARP Warrants Valuation Methods," Serial No. 111-132, Hearing: TARP Oversight: An Update on Warrant Repurchases and Benefits to Taxpayers, Committee on Financial Services, U.S. House of Representatives, (May 2010).

[156] "A Reduced Form Model for Warrant Valuation," The Finance Review, 46 (3), (2011), (with Siegfried Trautmann).

[157] "Positive Alphas, Abnormal Performance and Illusory Arbitrage," Mathematical Finance, 23 (1), (2013), (with Philip Protter).

[158] "The Economics of Credit Default Swaps (CDS)," Annual Review of Financial Economics, 3, (2011).

[159] "Hedging Derivatives with Model Error," Quantitative Finance, 12 (6), (2012).

[160] "Risk Management Models: Construction, Testing, Usage," Journal of Derivatives, 18 (4), Summer, (2011).

[161] "Investigating Bubble Trouble," Creditflux Magazine, April (2011), (with Philip Protter).

[162] "Is There a Bubble in LindedIn's Stock Price?," Journal of Portfolio Management, 38 (1), (Fall 2011), (with Y. Kchia and P. Protter).

[163] "Housing Prices and the Optimal Time-on-the-Market Decision," Finance Research Letters, 8 (4), (December 2011), (with Hazer Inaltekin, Mehmet Saglam, Yildiray Yildirim).

PUBLICATIONS (continued)

[164] "How to Detect an Asset Bubble," SIAM Journal on Financial Mathematics, 2 (2011), (with Younes Kchia and Philip Protter).

[165] "A Liquidity Based Model for Asset Price Bubbles," Quantitative Finance, 12 (9), (2012), (with Philip Protter and Alexandre Roch).

[166] "The Meaning of Market Efficiency," Mathematical Finance, 22 (1), (2012), (with Martin Larsson).

[167] "The Role of ABS, CDS and CDOs in the Credit Crisis and the Economy," Rethinking the Financial Crisis, eds., A. Blinder, A. Lo, and R. Solow, Russell Sage Foundation, (2012).

[168] "Discretely Sampled Variance and Volatility Swaps vs Their Continuous Approximations," Finance and Stochastics, 17 (2), (2013), (with Younes Kchia, Martin Larsson, and Philip Protter).

[169] "Relating Top Down with Bottom Up Approaches in the Evaluation of ABS with Large Collateral Pools," International Journal of Theoretical and Applied Finance, 15 (2), (2012), (with Nicolas Diener and Philip Protter).

[170] "A Real Time Bubble Detection Methodology," Bloomberg Risk Newsletter, (October 28, 2011), (with Younes Kchia and Philip Protter).

[171] "A Dysfunctional Role of High Frequency Trading in Electronic Markets," International Journal of Theoretical and Applied Finance, 15 (3), (2012), (with Philip Protter).
Most read articles in IJTAF, Sept. 2012-Jan. 2013.

[172] "Problems with Using CDS to Infer Default Probabilities," Journal of Fixed Income, 21 (4), (Spring 2012).
Reprinted in Credit Derivatives: Examining the Credit Default Swap Market, Institutional Investors Journal Publisher, (2012).

[173] "Discrete versus Continuous Time Models: Local Martingales and Singular Processes in Asset Pricing Theory," Finance Research Letters, 9, (2012), (with Philip Protter).

[174] "Detecting Asset Price Bubbles," Journal of Derivatives, 20 (1), (2012).

[175] "The Effect of Trading Futures on Short Sale Constraints," Mathematical Finance, 25 (2), (April 2015), (with Philip Protter and Sergio Pulido).

[176] "The Third Fundamental Theorem of Asset Pricing," Annals of Financial Economics, 7 (2), (2012).

[177] "A Simple, Transparent, and Accurate Mortgage Valuation Yield Curve," Journal of Fixed Income, 22 (3), (Winter 2013), (with Donald van Deventer).

[178] "A Leverage Ratio Rule for Capital Adequacy," Journal of Banking and Finance, 37, (2013).

[179] "All Your CDS Models are Wrong," Creditflux Magazine, (November 2012).

PUBLICATIONS (continued)

[180] "Government Policies, Residential Mortgage Defaults, and the Boom and Bust Cycle of Housing Prices," Real Estate Economics, 42 (3), (2014), (with Marius Ascheberg, Holger Kraft, and Yildiray Yildirim).

[181] "Capital Adequacy Rules, Catastrophic Firm Failure, and Systemic Risk," Review of Derivatives Research, 16 (3), (October 2013).

[182] "Credit Analysis Models," Fixed Income Analysis, 3rd edition, eds. B. Petitt, J. Pinto, W. Pirie, (2015), J. Wiley, N.J., (with Don van Deventer).

[183] "Option Pricing and Market Efficiency," Journal of Portfolio Management, 40 (1), (Fall 2013).

[184] "The Zero-Lower Bound on Interest Rates: Myth or Reality?", Finance Research Letters, 10 (2013).
Ross Best Paper Award 2013

[185] "Abnormal Profit Opportunities and the Informational Advantage of High Frequency Trading," Quarterly Journal of Finance, 3 (2), (2013), (with Hao Li).

[186] "Financial Crises and Economic Growth," Quarterly Review of Economics and Finance, 54 (2), (2014).

[187] "Computing Present Values: Capital Budgeting Done Correctly," Finance Research Letters, 11, (2014).

[188] "Forward Rate Curve Smoothing," Annual Review of Financial Economics, 6, (2014).

[189] "The Impact of Quantitative Easing on the U.S. Term Structure of Interest Rates," Review of Derivatives Research, 17 (3), (2014), (with Hao Li).
Arthur Warga Best Paper Award at the Moore School of Business 2013 Fixed Income Conference.

[190] "The Economic Default Time and the Arcsine Law," Journal of Financial Engineering, 1 (3), (2014), (with Xin Guo and Adrien de Larrard).

[191] "Risk Measures and the Impact of Asset Price Bubbles," Journal of Risk, 17 (3), (2015), (with Felipe Silva).

[192] "Liquidity Risk and the Term Structure of Interest Rates," Mathematics and Financial Economics, 9 (1), (2015), (with Alex Roch).

[193] "The Impact of a Central Bank's Bond Market Intervention on Foreign Exchange Rates," The Quarterly Journal of Finance, 5 (2), (2015), (with Hao Li).

[194] "Specification Tests of Calibrated Option Pricing Models," Journal of Econometrics, 189 (2), (2015), (with Simon Kwok).

[195] "Liquidity Suppliers and High Frequency Trading," SIAM Journal on Financial Mathematics, 6 (1), (2015), (with Philip Protter).

PUBLICATIONS (continued)

[196] "A Simplified Approach for Teaching Interest Rate Derivatives," Journal of Applied Risk Management and Insurance, 3 (1), (2015), (with Arka Chatterjea).

[197] "Designing Catastrophic Bonds for Catastrophic Risks in Agriculture: Macro Hedging Long and Short Rains in Kenya," Agricultural Finance Review, 75 (1), (2015), (with Lin Sun and Calum Turvey).

[198] "Bank Runs and Self-Insured Bank Deposits," The Quarterly Review of Economics and Finance, 58, (2015), (with Liheng Xu).

[199] "Asset Price Bubbles," Annual Review of Financial Economics, 7, (2015).

[200] "Simulating and Validating a Multi-factor HJM Model with Negative Interest Rates," Journal of Risk Management in Financial Institutions, 8 (4), (2015), (with Don van Deventer).

[201] Commentary "Active Portfolio Management and Positive Alphas: Fact or Fiction," *Five Years of Award-Winning Articles from the Journal of Portfolio Management*, Vol. 3, 2009-2013, eds. F. Fabozzi, B. Jacobs, K. Levy, Institutional Investor Journals, (2014).

[202] "Informational Efficiency Under Short Sale Constraints," SIAM Journal on Financial Mathematics, 6 (1), (2015), (with Martin Larsson).

[203] "Positive Alphas and A Generalized Multiple-Factor Asset Pricing Model," Mathematics and Financial Economics, 10 (1), (2016), (with Philip Protter).

[204] "Asset Price Bubbles and the Land of Oz," Journal of Portfolio Management, 42 (2), (2016).

[205] "Bubbles and Multiple-Factor Asset Pricing Models," International Journal of Theoretical and Applied Finance, 19 (1), (2016).

[206] "Testing for Asset Price Bubbles: Three New Approaches," Quantitative Finance Letters, 4 (1), (2016).

[207] "Relative Asset Price Bubbles," Annals of Finance, 12(2), (2016), (with Roseline Bilina Falafala and Philip Protter).

[208] "Optimal Cash Holdings Under Heterogeneous Beliefs," Mathematical Finance, 28(2), (2018), (with Andrey Krishenik and Andreea Minca).

[209] "Volatility Uncertainty, Time Decay, and Option Bid-Ask Spreads in an Incomplete Market,", Management Science, 65(4), (2019), (with PeiLin Hsieh).

[210] "On the Existence of Competitive Equilibrium in Frictionless and Incomplete Stochastic Asset Markets," Mathematics and Financial Economics, 11 (4), (2017).

[211] "Asset Price Bubbles and Risk Management," Journal of Risk, 20 (1), (2017).

[212] "Portfolio Balance Effects and the Federal Reserve's Large-Scale Asset Purchases," Studies in Economics and Finance, 35 (1), (2018), with Thomas Emmerling and Yildiray Yildirim).

PUBLICATIONS (continued)

[213] "On Aggregation and Representative Agent Equilibrium," Journal of Mathematical Economics, 74, (2018), (with Martin Larsson).

[214] "An Equilibrium Capital Asset Pricing Model in Markets with Price Jumps and Price Bubbles," Quarterly Journal of Finance, 8 (2), (2018).

[215] "A CAPM with Trading Constraints and Price Bubbles," International Journal of Theoretical and Applied Finance, 20 (8), (2017).

[216] "Asset Market Equilibrium with Liquidity Risk," Annals of Finance, 14 (2), (2018).

[217] "Exploring Mispricing in the Term Structure of CDS Spreads," Review of Finance, 23 (1), (2019), (with Haitao Li, Xiaoxia Ye, May Hu).

[218] "CMBS Market Efficiency: The Crisis and the Recovery," Journal of Financial Stability, 36(1), (2018), (with Andreas Christopoulos).

[219] "Fair Microfinance Loan Rates," International Review of Finance, 19(4), (2019), (with Philip Protter).

[220] "An Empirical Investigation of Large Trader Market Manipulation in Derivatives Markets," Review of Derivatives Research, 21(3), (2018), (with Shih-Chuan Tsai and Scott Fung).

[221] "Capital Asset Market Equilibrium with Liquidity Risk, Portfolio Constraints, and Asset Price Bubbles," Mathematics and Financial Economics, 13 (1), (2019).

[222] "Credit Risk, Liquidity, and Bubbles," International Review of Finance, 20 (3), (2020), (with Philip Protter).

[223] "A Rational Asset Pricing Model for Premiums and Discounts or Closed-End Funds: The Bubble Theory,", Mathematical Finance, 29(4), (2019), (with Philip Protter).

[224] "On the Existence of Stock Price Bubbles – the Smoking Gun – Discounts and Premiums on closed-end Funds and EFTs," Journal of Portfolio Management, 45(6), (September 2019).

[225] "Asset Price Bubbles, Market Liquidity, and Systemic Risk," Mathematics and Financial Economics, 15 (1), (2021), (with Sujan Lamichhane).

[226] "Remembering Mark Rubinstein," Journal of Derivatives, 27(1), (2019), (with Menachem Brenner, Emanuel Derman, Eric Reiner).

[227] "The Effects of Yield Control Monetary Policy: A Helicopter Money Drop to Financial Institutions," Quarterly Journal of Finance, 10(1), (2020), (with Sujan Lamichhane).

[228] "The Economics of Insurance: A Derivatives-Based Approach," Annual Review of Financial Economics, 13, (2021).

[229] "Robert C. Merton's Seminal Insights, Revisited," Robert C. Merton and the Science of Finance: A Collection, CFA Institute Research Foundation, eds. Luis Garcia-Feijoo, Laurene B. Siegel, and Timothy R. Kohn, (2020).

PUBLICATIONS (continued)

[230] "Informational Efficiency with Trading Constraints: a Characterization," SIAM Journal on Financial Mathematics, 11(4), (2020), (with Martin Larsson).

[231] "High Dimensional Estimation and Multi-Factor Models," Quarterly Journal of Finance, 10(4), (2020), (with Liao Zhu, Sumanta Basu, and Martin Wells).

[232] "Endogenous Liquidity Risk and Dealer Market Structure," Quarterly Review of Economics and Finance, 81, (2021), (with Siguang Li).

[233] "Concavity, Stochastic Utility, and Risk Aversion," Finance and Stochastics, 25 (2), (2021), (with Siguang Li).

[234] "Preface to the Special Issue on Systemic Risk and Financial Networks." Mathematics and Financial Economics, 15 (1), (2021), (with Agostino Capponi).

[235] "Risk-Neutral Pricing Techniques and Examples," Mathematical Finance, 31 (3), (2021), (with P. Patie, A. Srapionyan, and Y. Zhao).

[236] "Inferring Financial Bubbles from Option Data,", Journal of Applied Econometrics, 36 (7), (2021), (with Simon Kwok).

[237] "Asset Price Bubbles: Invariance Theorems," Frontiers of Mathematical Finance, 1 (2), (2022), (with Phillip Protter and Jaime San Martin).

[238] "Testing the Multi-factor Model with Time-Invariant Coefficients," Quarterly Journal of Finance, 11 (4), (2021), (with Liao Zhu and Martin Wells).

[239] "Applying the Local Martingale Theory of Bubbles to Cryptocurrencies," International Journal of Theoretical and Applied Finance, 25 (3), (2022), (with Soon Hyeok Choi).
Best Paper Prize 2020, Korean Association of Financial Engineering Conference.

[240] "Funding Shortages, Expectations, and Forward Rate Risk Premium," Quantitative Finance, 22 (7), (2022), (with Sujan Lamichhane).

[241] "Risk Premia, Asset Price Bubbles, and Monetary Policy," Journal of Financial Stability, 60, (2022), (with Sujan Lamichhane).

[242] "Index Design: Hedging and Manipulation," Quarterly Journal of Finance, 12 (2), (2022), (with Siguang Li).

[243] "High Frequency Trading and Standard Asset Pricing Models," Finance Research Letters, 49, (2022).

[244] "Asset Price Bubbles, Wealth Preserving, Dominating, and Replicating Trading Strategies," Frontiers of Mathematical Finance, 2 (1), (2023), (with Yuxuan Liu).
Reprinted in Peter Carr Gedenkschrift: Research Advances in Mathematical Finance, World Scientific Press Co., Inc., (2023).

[245] "Interest Rate Swaps: A Comparison of Compounded Daily versus Discrete Reference Rates," Review of Derivatives Research, 26 (1), (2023), (with Siguang Li).

PUBLICATIONS (continued)

[246] "An Explosion Time Characterization of Asset Price Bubbles," 23 (2), (2023), International Review of Finance, (with Simon Kwok).

[247] "Computing the Probability of a Financial Market Failure: A New Measure of Systemic Risk,", Annals of Operations Research, December, (2022), (with Philip Protter and Alejandra Quintos).

[248] "Inflation-Adjusted Bonds, Swaps, and Derivatives," Annual Review of Financial Economics, 15, (2023), (with Yildiray Yildirim).

[249] "A Practical Guide to the Valuation of Coupon-Bearing Fixed Income Securities," The Journal of Fixed Income, 33 (1), (2023), (with Donald van Deventer).

[250] "A Bottom-up, Reduced Form Credit Risk Model Approach for the Determination of Collateralized Loan Obligation Capital," Journal of Risk Management in Financial Institutions, 16 (3), (2023), (with Donald van Deventer).

[251] "Media Trading Groups and Short Selling Manipulation – Are Media Groups Efficiency Enhancing or Reducing," Quantitative Finance, 23 (7-8), (2023), (with Siguang Li).

[252] "The No-arbitrage Pricing of Non-traded Assets," Annals of Finance, 19 (3), (2023).

[253] "Portfolio Optimization in the Presence of Asset Price Bubbles," Annals of Operations Research, November, (2023), (with Yuxuan Liu).

[254] "Futures Contract Collateralization and its Implications," Journal of Empirical Finance, 74 (2023), (with Simon Kwok).

[255] "The Low-volatility Anomaly and the Adaptive Multi-Factor Model," International Journal of Theoretical and Applied Finance, 26 (4/5), (2023), (with Rinald Murataj, Martin Wells, and Liao Zhu).

[256] "Filtration Reduction and Incomplete Markets," Frontiers of Mathematical Finance, 3 (1), (2024), (with Karen Grigorian).

[257] "A Study on Asset Price Bubble Dynamics: Explosive Trend or Quadratic Variation?," Quantitative Finance, 24 (5), (2024), (with Simon Kwok).

[258] "Option Pricing in an Incomplete Market," Quarterly Journal of Finance, 14 (3), (2024), (with Karen Grigorian).

[259] "The Valuation of Corporate Coupon Bonds," Journal of Financial and Quantitative Analysis, 60 (5), (2025), (with Jens Hilscher and Don van Deventer).

[260] "Fitting Dynamically Consistent Forward Rate Curves: Algorithm and Comparison," International Journal of Theoretical and Applied Finance, 27 (5&6), (2024), (with David Wu).

[261] "Arbitrage Pricing Theory 50 Years after Black Merton Scholes," Journal of Investment Management, 22 (4), (2024).
Journal of Investment Management Special Distinction Award, 2024.

PUBLICATIONS (continued)

[262] "Testing for Asset Price Bubbles using Options Data," Journal of Business and Economic Statistics, 43 (4), (2025), (with Nicola Fusari and Sujan Lamichhane).

[263] "No Arbitrage for a Special Class of Filtration Expansions," Annals of Finance, 21 (1), (2025), (with Karen Grigorian).

[264] "A Credit Spread Decomposition: A Resolution of the Credit Spread Puzzle," Quarterly Journal of Finance, 13 (2), (2025).

[265] "Filtration Reduction and Completeness in Brownian Motion Models," Frontiers of Mathematical Finance, 5, (2025), (with Karen Grigorian).

[266] "Optimal Strategies for Digital Assets with No Fundamental Value," Journal of Portfolio Management, 52 (1), (2025).

[267] "Are Most Published Research Findings in Financial Economics False?" Wilmott magazine, November, (2025)

[268] "Digital Assets, Bubbles, and Derivative Prices," Review of Derivatives Research, 28 (3), (2025).

[269] "Do Bubbles Exist? Positive Digital Asset Market Prices are the Definitive Proof," Journal of Investment Management, 24 (1), (2026).

[270] "Pricing Derivatives in an Incomplete Market Using Filtration Reduction Methods: A Review," forthcoming, A Festschrift in Honor of Robert J. Elliott, eds. S. Cohen, D. Madan, T. Kuen Siu, and H. Yang, World Scientific Press.

[271] "The Treasury - SOFR Swap Spread Puzzle: An Explanation," Quarterly Journal of Finance, 15 (4), (2026), (with David Wu).

WORKING PAPERS

[1] "Filtration Reduction and Completeness in Jump-Diffusion Models," (with Karen Grigorian).

[2] "Pricing the Upside Potential to Downside Risk," (with Soon Choi, Daniel Lebret, and Crocker Liu). American Real Estate Society, Best Practitioner Research Award, 2023.

[3] "Impact of Monetary Policy on Interest Rate Risk and Derivative Valuation," (with Sujan Lamichhane).

[4] "Is the Current Bull Market a Bubble? An Empirical Investigation," (with Steve Choi).

[5] "Filtration Reduction and Incomplete Markets: The Independent Filtration Case."

[6] "Is Nifty Going Up to Quickly? The case of the Indian Stock Bubble," (with Steve Choi).

[7] "P-Bubbles, Q-Bubbles, and Risk Premia," (with Simon Kwok).

[8] "Valuing Commercial Real Estate and its Real Options," (with Crocker Liu and Motoyuki Yoshihara).

[9] "Proxy Volatility and Options on Nontraded Assets: Evidence from Rent-to-Own Housing Contracts" (with Yildiray Yildirim).
EFMA-WRDS Conference Best Paper Award, 2026.

[10] "Riding a Bubble - A Study of Market-Timing Trading Strategies," (with Simon Kwok).

[11] "Differential Beliefs in Financial Markets Under Information Constraints: A Modeling Perspective," (with Karen Grigorian).

[12] "Arbitrage-free Valuation in Fractional Brownian Motion Markets," (with Jayen Tan).

[13] "The Valuation of Certificates of Deposit," (with David Wu).

[14] "Large Traders' Strategic Trading and Intraday Manipulation in Derivatives Markets," (with Scott Fung and Shih-Chuan Tsai).

[15] "Catastrophe and Corporate Bonds: A Unified Approach to Pricing Natural Disaster Risks," (with Sujan Lamichhane).

[16] "Optimal Exercise of Brokered Callable Certificates of Deposit," (with David Wu).

[17] "Informational Efficiency under Trading and Holding Costs," (with Siguang Li and Yifang Ye).

[18] "Measuring Bubbles via Put-Call Disparity: A Model-Free Approach," (with Simon Kwok).

[19] "Option Pricing in Fractional Brownian Motion (fBm) Markets: the Fractional Variance Gamma (fVG) Model," (with Jayen Tan).

[20] "Quantifying Systemic Risk," (with Eric Wang).

BOOKS

Option Pricing, 1983, Richard D. Irwin, Inc. (with Andrew Rudd).

Finance Theory, 1988, Prentice-Hall, Inc.

Modelling Fixed Income Securities and Interest Rate Options, 1996, McGraw-Hill Book Company.
Second edition, 2002, Stanford University Press.
Translated into Japanese, 1997, Japan UNI Agency, Inc., Tokyo.
Translated into Korean, 1997, Bob Mun Sa Publishing Co.
Third edition, 2020, CRC Press, Taylor & Francis Group.

Derivative Securities, 1996, Southwestern Publishing Co. (with Stuart Turnbull).
Second edition, 2000.

An Introduction to Derivative Securities, Financial Markets, and Risk Management, 2013, W.W. Norton & Co., Inc. (with Arkadev Chatterjea).
Translated into Chinese, 2014, hibooks.
Indian edition, 2016, Viva Books.
Second edition, 2019, World Scientific Publishing Co., Inc.
Third edition, 2024.

The Economic Foundations of Risk Management: Theory, Practice, and Applications, 2017, World Scientific Press Co., Inc.

Continuous Time Asset Pricing Theory: A Martingale Based Approach, 2018, Springer.
Second edition, 2021. Corrected 2022.

Essentials of Derivative Securities, forthcoming, World Scientific Press Co., Inc. (with Arka Chatterjea).

EDITED BOOK OF READINGS

Finance: Handbook in Operations Research and Management Science, North Holland, 1995 (with V. Maksimoviz and W. Ziemba).
Translated into Japanese, 1997; Chinese, 2002.

Over the Rainbow: Developments in Exotic Options and Complex Swaps, Risk Publications: London, 1995.

Volatility: New Estimation Techniques for Pricing Derivatives, Risk Publications: London, 1998.

Advances in Mathematical Finance, Birkhauser, Boston, MA, (with R. Elliott, M. Fu, J. Yen), 2007.

Financial Derivatives Pricing: Selected Works of Robert Jarrow, World Scientific Press Co., Inc., 2008.

Peter Carr Gedenkschrift: Research Advances in Mathematical Finance, World Scientific Press Co., Inc. (with Dilip Madan), 2023.

Volume 1: Asset Pricing Bubbles - No Arbitrage, World Scientific Press Co., Inc., forthcoming.

Volume 2: Equilibrium and Empirical Estimation, World Scientific Press Co., Inc., forthcoming.

Consulting

1987	Citibank, Executive Training
1988	Bank of America, Capital Markets Research Citicorp, Research Group
1989	Bank of America, Capital Markets Research Bankers Trust, Research Group
1990	Security Pacific, Swaps Group

Consulting (continued)

1991	Merrill Lynch, Professional Trading MacQuarie Bank Ltd., Research Dealerware
1992	World Bank, Derivatives Products and Liability Management Merrill Lynch, Investors Strategies Group Spear, Leeds, Kellogg - expert witness (index options)
1993	Bankers Trust, Global Assets Retirement Services
1994	Treasury Services Merrill Lynch, Trading Research Group
1995	Merrill Lynch, Trading Research Group Citicorp, Global Derivatives Kamakura Corporation
1996	Kamakura Corporation Coburn & Croft - expert witness (manipulation)
1997	Kamakura Corporation Nomura Securities—expert witness (agency securities)
1998	Kamakura Corporation Expert Witness (foreign currency swaps) S.E.C. and U.S. Attorney's Office (bond valuation)
1999	Kamakura Corporation Expert Witness (foreign currency swaps)
2000	Kamakura Corporation Expert Witness (Orange County) First Union National Bank, Risk Management Expert Witness (Valuation of Tax Liens)
2001	Kamakura Corporation SKG Board of Advisors
2002	Kamakura Corporation SKG Board of Advisors WOTN Corporation
2003	Barclays Capital (TIPS pricing) Kamakura Corporation WOTN Corporation Federal Deposit Insurance Corporation (FDIC)

Consulting (continued)

2004	Kamakura Corporation WOTN Corporation Federal Deposit Insurance Corporation (FDIC) Wachovia Bank
2005	Kamakura Corporation WOTN Corporation Federal Deposit Insurance Corporation (FDIC) AJ Sterge Investments
2006 - 2008	Kamakura Corporation Federal Deposit Insurance Corporation (FDIC) Magnetar Capital
2009	Kamakura Corporation Federal Deposit Insurance Corporation (FDIC) Magnetar Capital U.S. Treasury (Valuing TARP Warrants)
2010 - 2011	Kamakura Corporation Federal Deposit Insurance Corporation (FDIC)
2012	Kamakura Corporation Federal Deposit Insurance Corporation (FDIC) Federal Reserve Bank of New York
2013 - 2014	Kamakura Corporation Federal Deposit Insurance Corporation (FDIC) Decura
2015 - 2021	Kamakura Corporation
2022	Kamakura Corporation SAS Institute Inc.
2023 - 2026	SAS Institute Inc.