Curriculum Vitae

Yonggan Zhao

Canada Research Chair (Tier 2) in Risk Management
Professor of Finance
Rowe School of Business
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Education

- September 1996 - December 2000: Ph.D. (Business Administration), Sauder School of Business, The University of British Columbia, Vancouver, British Columbia, V6T 1Z2, Canada.

- August 1994 - May 1995: M.Sc. (Mathematics), Department of Mathematics, Western Kentucky University, Bowling Green, Kentucky, USA. 42101, USA.

- September 1978 - July 1982: B.Sc. (Mathematics), Department of Mathematics, Anhui Laodong University, China.

Academic Appointments

- September - December 2010: Visiting Fellow, Bendheim Center for Finance, Department of Operations Research and Financial Engineering, Princeton University.

- July 2010 -   : Professor of Finance and Canada Research Chair (Tier 2) in Risk Management, School of Business Administration, Dalhousie University, Canada.

- July 2006 - June 2010: Associate Professor of Finance and Canada Research Chair (Tier 2) in Risk Management, School of Business Administration, Dalhousie University, Canada.

- January 2001 - June 2006: Assistant Professor of Finance, Nanyang Business School, Nanyang Technological University, Singapore.

- October 1993 - August 1994: Visiting Scholar, Western Kentucky University, United States.

- September 1982 - September 1993: Assistant Professor, Huaibei Normal University, Anhui, China.

Research Interests

My research encompasses theoretical and empirical investigations of financial investment models. I work on equilibrium theory, dynamic portfolio management, and option pricing and hedging models. I have a particular interest in dynamic models of risk control and risk management in an incomplete market setting subject to realistic constraints. Specifically, my research interests are in the areas of

- Dynamic Portfolio Management.

- Option Models and Risk Management.

- Mutual Fund Performance Evaluation.

- Market Risk Modeling with Regime Switching.

Journal Articles

[1] Hui Zhao, Ximin Rong, and Yonggan Zhao, 2013, "Optimal Excess-of-Loss Reinsurance and Investment Problem for an Insurer with Jump-Diffusion Risk Process under the Heston Model", *Insurance: Mathematics and Economics*, Vol. 53, pp 504 - 514.

[2] Leonard C. MacLean, Yonggan Zhao, and William T. Ziemba, 2013, "Currency Returns, Market Regimes, and Behavioral Biases", *Annals of Finance*, Vol. 9, pp 249 - 269.

[3] Leonard C. MacLean, Yonggan Zhao, and William T. Ziemba, 2013, "An Endogenous Volatility Approach to Pricing and Hedging Options with Transaction Costs", *Quantitative Finance*, Vol. 13, pp 699 - 712.

[4] Meijing Shi and Yonggan Zhao, 2012, "Optimal Hedge Ratios of Copula-Based Model with Stock Index Futures", *Application of Statistics and Management* (Chinese), Vol. 31, pp 354-362.

[5] Leonard C. MacLean, Edward Thorp, Yonggan Zhao, and William T. Ziemba, 2011, "How Does the Fortune's Formula-Kelly Capital Growth Model Perform", *Journal of Portfolio Management*, Vol. 37, pp 96 - 111.

[6] Ying Ma, Kuan Xu, Leonard C. Maclean, and Yonggan Zhao, 2011, "A Portfolio Optimization Model with Regime Switching Risk Factors for Exchange Traded Funds", *Pacific Journal of Optimization*, Vol. 7, No. 2, pp 455-470.

[7] PaytonLiu, Kuan Xu, and Yonggan Zhao, 2011, "Market Regimes, Sectorial Investments, and Time-Varying Risk Premiums", *International Journal of Managerial Finance*, Vol. 7, No. 2, pp 107-133.

[8] Leonard C. MacLean, Yonggan Zhao, and William T. Ziemba, 2011, "Mean-Variance versus Expected Utility in Dynamic Investment Analysis", *Computational Management Science*, Vol. 8, pp 3 - 22.

[9] Giorgio Consigli, Leonard MacLean, Yonggan Zhao, and William T. Ziemba, 2010, "Risk Indicators in Financial Markets", *Mathematical Methods in Economics and Finance*, Vol. 3, pp 101 - 118.

[10] Giorgio Consigli, Leonard C. MacLean, Yonggan Zhao, and William T. Ziemba, 2009, "The Bond-Stock Yield Differential as a Risk Indicator in Financial Markets", *The Journal of Risk*, Vol. 11, pp 1 - 22.

[11] Yonggan Zhao and William T. Ziemba, 2008, Calculating Risk Neutral Probabilities and Optimal Portfolio Policies in a Dynamic Investment Model with Downside Risk Control, *European Journal of Operational Research*, Vol. 185, No. 3, pp 1525 - 1540.

[12] Yonggan Zhao, 2007, A Dynamic Model of Active Portfolio Management with Benchmark Orientation, *Journal of Banking and Finance*, Vol 31, pp 3336 - 3356.

[13] Yonggan Zhao, and William T. Ziemba, 2007, Comments on and Corrigendum to "Hedging Errors with Leland's Option Model in the Presence of Transaction Costs", *Finance Research Letters*, Vol. 4, pp 196 - 199.

[14] Yonggan Zhao and William T. Ziemba, 2007, Hedging Errors with Leland's Option Model in the Presence of Transaction Costs, *Finance Research Letters,* Vol. 4, pp 49 - 58.

[15] Christopher Ting, Mitchell Warachka, and Yonggan Zhao, 2007, Optimal Liquidation when Liquidity is Endogenous and Stochastic, *Journal of Economic Dynamics and Control,* Vol. 31, pp 1431 - 1450.

[16] Leonard MacLean, Yonggan Zhao, and William T. Ziemba, 2006, Dynamic Portfolio Selection with Process Control, *Journal of Banking and Finance,* Vol. 30, pp 317 - 339.

[17] Leonard C. MacLean, Rafael Sanegre, Yonggan Zhao, and William T. Ziemba, 2004, Capital Growth with Security, *Journal of Economic Dynamics and Control*, Vol. 28, No. 5, pp 937 - 954.

[18] Yonggan Zhao, Ulrich Haussmann, and William T. Ziemba, 2003, A Dynamic Investment Model with Control on the Portfolio's Worst Case Outcome, *Mathematical Finance*, Vol. 13, No. 4, pp 481 - 501.

[19] Yonggan Zhao and William T. Ziemba, 2001, A Stochastic Programming Model Using an Endogenously Determined Worst Case Risk Measure for Dynamic Asset Allocation, *Mathematical Programming*, Vol. 89, No. 2, pp 293 - 309.

[20] Yonggan Zhao and William T. Ziemba, 2000, A Dynamic Asset Allocation Model with Downside Risk Control, *Journal of Risk*, Vol. 3, No. 1, pp 91 - 113.

Book Chapters

[1] Leonard C. MacLean, Yonggan Zhao, and William Ziemba, 2011, Growth-Security Models and Stochastic Dominance, in *Stochastic Programming: The State of the Art In Honer of George B. Dantzig*, ed, Infanger, G., Springer, pp 277 - 296.

[2] MacLean, L., Thorp, E., Zhao, Y. and Ziemba, W., 2010, Medium term simulations of Kelly, fractional Kelly and proportional betting strategies, eds: L. Maclean, E. Thorp, and W. Ziemba, *The Kelly Capital Growth Investment Criterion: Theory and Practice*, World Scientific Publishing Co., Singapore. pp. 543 - 562.

[3] Leonard C. MacLean, Yonggan Zhao, Giorgio Consigli, and William T. Ziemba, 2007, Estimating parameters in a pricing model with state dependent shocks, in *Handbook of Financial Engineering*, Ed., Zopounidis, C, Springer, pp 231 - 245.

[4] Amiyatosh Purnanandam, Mitchell Warachka, Yonggan Zhao, and William T. Ziemba, 2006, Incorporating Diversification into Risk Management, in *Risk and Portfolio Management*, ed. Gregoriou, G, Wiley, pp 22-48.

[5] Leonard C. MacLean, Yonggan Zhao, Giorgio Consigli, and William T. Ziemba, 2006, Estimating parameters in a pricing model with state dependent shocks. in *Handbook of Financial Engineering*, C. Zopounidis, Ed.

[6] Leonard C. MacLean, Yonggan Zhao, William T. Ziemba, 2003, Wealth Goals Investing, in Application of Stochastic Programming, eds, Wallace, S. W. and Ziemba, W. T., *SIAM Mathematical Programming Society Series on Optimization*, pp 509-521.

Books

[1] Gerald H. L. Cheang and Yonggan Zhao, 2005, *Calculus and Matrix Algebra for Finance*, McGraw Hill, 3rd edition.

Proceedings

[1] Leonard C. MacLean, Yonggan Zhao, and William T. Ziemba, 2003, A Process Control Approach to Investment Risk, *IEEE on Computational Intelligence for Financial Engineering*, pp 265 - 270.

Invited Talks

[1] Tianjin University (Tianjin, China), *An Investment Model via Regime Switching Economic Indicators.* December, 2011.

[2] Nanyang Technological University (Singapore), *An Investment Model via Regime Switching Economic Indicators.* December, 2011.

[3] Renmin University of China (Beijing, China), *An Investment Model via Regime Switching Economic Indicators.* November, 2011.

[4] Xian Jiaotong University (Xian, China), *An Endogenous Volatility Approach to Option Pricing and Hedging with Transaction Costs.* October, 2011.

[5] University of Waterloo (Waterloo, Canada), *An Investment Model via Regime Switching Economic Indicators.* October, 2011.

[6] York University (Toronto, Canada), *An Investment Model via Regime Switching Economic Indicators.* October, 2011.

[7] University of Florida (Gainseville , U.S.A). *An Investment Model via Regime Switching Economic Indicators.* February, 2011.

[8] Princeton University (Princeton, U.S.A). *An Investment Model via Regime Switching Economic Indicators.* February, 2011.

[9] Norwegian University of Science and Technology (Trondheim, Norway). *Optimal Currency Portfolio with Regime Switching Risk Factors.* November, 2009.

[10] Renmin University of China (Beijing, China). *Active Portfolio Management with Regime-Switching Risk Factors.* October, 2009.

[11] Jiangxi University of Finance and Economics (Nanchang, China). *A Practical Trading Strategy for the S&P 500 Index Futures and Options.* October, 2009.

[12] The Queen's Business School, Canada. *Equity Risk Premium and Volatility: A Correlation Structure.* March, 2009.

[13] Annual Canadian Statistical Society Meeting. *Currency Regimes and Weak Interest Rate Parity.* May, 2008.

[14] Chinese Academy of Science. *Active Portfolio Management.* August, 2007.

[15] Institute for Mathematical Sciences (Singapore). *Weak Interest Rate Parity and Currency Portfolio Diversification.* September, 2005.

[16] Institute of Quantitative Finance and Insurance (University of Waterloo, Canada). *Weak Interest Rate Parity and Currency Optimal Portfolio.* June, 2005.

[17] 1st SAW Center for Financial Studies Conference on Quantitative Finance (National University of Singapore). Invited talk: *Incorporating Diversification into Risk Management.* April, 2005.

[18] PIMS-MITACS Mathematical Finance Seminar (University of British Columbia). Invited talk: *Portfolio selection with a minimum wealth requirement.* February, 2000.

Conferences

[1] Annual Northern Finance Association Meeting (Vancouver, Canada). *An Investment Model via Regime Switching Economic Indicators.* September, 2011.

[2] China International Conference in Finance (Wuhan, China), *An Investment Model via Regime Switching Economic Indicators.* July, 2011.

[3] Annual Northern Finance Association Meeting (Winnipeg, Canada). *Market Regimes, Sectorial Investments, and Time Varying Risk Premiums.* September, 2010, Best paper award.

[4] XII International Conference in Stochastic Programming (Halifax, Canada). *A Portfolio Investment model with Exchange Traded Funds.* August, 2010.

[5] Annual Northern Finance Association Meeting (Niagara on-the-Lake, Canada). *Equity Risk Premium and Volatility: A Correlation Structure.* September, 2009.

[6] Financial Management Association (Xiamen, China). *A Price-Action Trading Strategy for Index Derivatives.* May, 2009.

[7] Annual Midwest Finance Association Meeting. *Equity Risk Premium and Volatility: A Correlation Structure.* March, 2009.

[8] Annual Canadian Statistical Society Meeting. *Currency Regimes and Weak Interest Rate Parity.* May, 2008.

[9] The 11$^{\text{th}}$ international Stochastic Programming Conference (Vienna, Austria). *A Dynamic Model of Active Portfolio Management with Benchmark Orientation.* August, 2007.

[10] Annual INFORMS meeting (Pittsburgh, United States), *Endogenous Volatilities for Pricing and Hedging Options with Transaction Costs.* November, 2006.

[11] Financial Management Association (Salt Lake City, United States). *Equity and Volatility Risk Premiums: A Correlation Structure.* October, 2006.

[12] China International Conference in Finance (Xian, China), *Weak Interest Rate Parity and Currency Portfolio Diversification.* July, 2006.

[13] Canadian Operations Research Society (Halifax, Canada). Invited talk: *Optimal Currency Portfolio with a Markov Regime Switching Process.* May, 2005.

[14] International Conference on Modeling, Optimization, and Risk Management in Finance (University of Florida). Invited talk: *A Dynamic Model of Active Portfolio Management and Mutual Fund Performance Evaluation.* April, 2005.

[15] The 10th International Conference on Stochastic Programming (Tucson, USA), *Calculating Risk Neutral Probabilities and Optimal Investment Polices with Downside Risk Control*, 2004.

[16] 3rd Bachelier World Conference (Chicago, United States). *Dynamic Portfolio Selection of Risk Control.* May, 2004.

[17] IEEE International Conference on Computational Intelligence for Financial Engineering (Hong Kong). Presentation: *A Process Control Approach to Investment Risk.* March, 2003.

[18] International Conference on Modeling, Optimization, and Risk Management in Finance (Florida, United States). *Risk Control of Dynamic Investment Models.* February, 2003.

[19] 9th Global Finance Conference (Beijing, China). Presentation: *Mean Variance versus Expected Utility in Dynamic Investment Analysis.* June, 2002.

[20] 2nd Bachelier World Conference (Crete, Greece). *Capital Growth with Security.* May, 2002.

[21] Financial Engineering E-Commerce and Supply-Chain (Crete, Greece). *A Process Control Approach to Investment Risk.* May, 2002.

[22] Institute for Mathematical Sciences (Singapore). Invited talk: *Mean Variance versus Expected Utility in Dynamic Investment Analysis.* January, 2002.

[23] 13th Asian Pacific Finance Conference (Bangkok, Thailand). *A Dynamic Investment Model with Downside Risk Control on the Portfolio's Worst Case Outcome*. July, 2001.

[24] 1st Bachelier World Conference (Paris, France). Presentation: *A Dynamic Asset Allocation Model with Downside Risk Control*. June, 2000.

Working Papers

[1] Time-Consistent Investment Polices in Markovian Markets: A Case of Mean-Variance Analysis, with Zhiping Chen and Gang Li, second round review at *Journal of Economic Dynamics and Control.*

[2] Optimal Capital Growth with Shortfall Penalties, with Leonard C. MacLean and William T. Ziemba, submitted to *Mathematical Finance.*

[3] An Investment Model via Regime Switching Economic Indicators, with John Mulvey.

[4] Equity and Volatility Risk Premiums: A Correlation Structure.

[5] A Price-Action Trading Strategy with the S&P 500 Index Futures and Options.

[6] A Real-Options Approach to Capital Budgeting with Regime-Switching Risk Factors.

Honors and Awards

- 2010 - 2010: Best Paper Award for "Market Regimes, Sectional Investments, and Time-Varying Risk Premiums", 2010 Northern Finance Association conference.

- 2006 -   Canada Research Chair (Tier 2) in Risk Management.

- 1998 - 2000: University Graduate Fellowship, University of British Columbia.

- 1997 - 1998: St. John's Scholarship, University of British Columbia.

- 1996 - 1997: E.D. MacPhee Graduate Fellowship, Sauder School of Business, UBC.

- 1994 - 1995: Outstanding Graduate Student, Western Kentucky University.

- 1992 - 1993: Outstanding Professional Achievement, Anhui, China.

Courses

[1] Corporate Finance II (undergraduate)

[2] Derivative Securities and Risk Management (undergraduate, MBA).

[3] Portfolio Management (undergraduate).

[4] Mathematical Method for Finance (undergraduate).

[5] Optimization in Finance (MSc).

[6] Theory of Finance (undergraduate, PhD).

[7] Contemporary Issues in Finance (PhD).

Research Grants

- MITACS Accelerate Grant (2013), An Optimal Investment Model for Stocks and Bonds with Regime Switching Economic Indicators.

- Standard Research Grant, Social Sciences and Humanities Research Council of Canada (2009-2013). Project: *A Real Options Model for Capital Budgeting with Economic Regimes*.

- Discovery Grant, Natural Sciences and Engineering Research Council of Canada (2007-2013). Project: *Markov Decision Models for Risk Management*.

- Canada Foundation for Innovation (2006-2011). Project: *Dynamic Risk Management and Measurement*, infrastructure funding for the risk laboratory, the RBC Center for Risk Management.

- Research Start-up fund, Faculty of Management, Dalhousie University. (2006).

- Research Development Fund, Dalhousie University (2006). Project: *Real Estate Investment for Canadian Pension Fund Management*.

- Nanyang Technological University (2005). Project: *A Dynamic Model of Active Portfolio Management and Mutual Fund Performance Evaluation*.

- Nanyang Technological University (2002-2005). Project: *Option Pricing and Replication with Transaction Costs*.

Graduate Supervision (2007-2013)

Doctoral Supervision

- Zongming Ma, Department of Economics, Dalhousie University. Co-supervisor. September 2013.

- Alexandero, Visiting PhD student, University of Bergamo, Italy. <u>Co-supervisor</u>. January - June 2011.

Master's Supervision

1 Wenshuang Yu, "Mutual fund performance with regime switching economic indicators", in progress, <u>Co-supervisor</u>.

2 Jingzhi Chang, "An ETF investment model with regime switching economic indicators", in progress, <u>Supervisor</u>.

3 Zongming Ma, "Option pricing with regime switching economic indicators", August 2013, <u>Co-supervisor</u>.

4 Shuichang Xie, "A Markov regime-switching multi-factor model for stock and bond investments", September 2012, <u>Supervisor</u>. Presented at the Bank of Canada meeting in Halifax, October 2, 2012. OMG Group.

5 Lingyun Ye, "Estimation of Markov regime switching models", May 2012, <u>Co-supervisor</u>.

6 Jun Yuan, "A multi-factor Markov regime switching model for country exchange traded funds", September 2011, <u>Co-supervisor</u>, Financial Analyst at Citco, Halifax, Canada. Presented at 2011 Middle West Finance annual meeting in Orleans, USA.

7 Muting Zhang, "Mutual fund performance evaluation with regime-switching economic indicators", September 2010, <u>Supervisor</u>, Financial Analyst at Citco, Halifax, Canada.

8 Jing Liu, "Rapple effect in the U.S. housing market", September 2010, <u>Supervisor</u>.

9 Ying Ma, "A state-dependent market neutral strategy for ETFs", September 2010, <u>Co-supervisor</u>, China Capital Investment Corporation, Hong Kong. The joint work, "A Portfolio Optimization Model with Regime Switching Risk Factors for Exchange Traded Funds", published in *Pacific Journal of Optimization*.

10 Peixin (Payton) Liu, "Regime dependent factor model on sector select SPDRs exchange traded funds", September 2009, <u>Co-supervisor</u>, Financial Analyst for the Asset Management of University of Toronto, Canada. Payton Liu's joint work with Kuan Xu and Yonggan Zhao entitled "Market regimes, sectoral investments, and time-varying risk premiums", was awarded the *International Journal of Managerial Finance* Best Paper Award at the 2010 Northern Finance Association Meetings, September 25–27, 2010.

11 Ran Zhang, "Development of housing derivatives in the United States", May 2009, <u>Co-supervisor</u>, Financial Planner at HSBC Bank, Halifax.

12 Qianwen (Vivian) Zhang, "What kind of asset pricing model works in emerging markets? A case study for the Chinese stock markets", May 2007, <u>Co-supervisor</u>, Financial Analyst at China's State Investment Bank, Beijing.

13 Min Lu, Searching for alpha, September 2007. <u>Co-supervisor</u>, Citco, Halifax.

14 Shadi Wang, visiting Master's student, University College London, 2010/2011, <u>Supervisor</u>.

Professional Services

- Track Chair, 2011 Mid West Finance association meeting, Chicago, USA.

- Co-Chair, 2010 International Conference on Stochastic Programming, Halifax, Canada.

- On the Editorial Board for *Quantitative Finance Letters*, Associate Editor, 2013– present.

- On the Editorial Board for *IMA Journal of Mathematics Management*, Associate Editor, 2013 – present.

Professional Affiliation

- Member of Global Association of Risk Professionals

- Member of American Finance Association

- Member of Northern Finance Association

- Member of Financial Management Association

- Member of INFORMS

- Member of Canadian Economics Association

- Member of Statistical Society of Canada