MOSHE ARYE MILEVSKY

Schulich School of Business, Finance Area
York University, 4700 Keele Street
Toronto, Ontario, M3J 1P3, Canada
http://www.yorku.ca/milevsky
E-mail: milevsky@yorku.ca

DEGREES

MSc.	History;	University of Edinburgh, School of Classics, History and Archeology	**2022**
Ph.D.	Finance;	York University, Schulich School of Business (F.A.S.)	**1996**
M.A.	Mathematics & Statistics;	York University, Faculty of Arts	**1992**
B.A.	Mathematics & Physics;	Yeshiva University College, New York City	**1990**

ACADEMIC EMPLOYMENT

July 2017 to present
Professor of Finance (tenured); Schulich School of Business, York University

July 2004 to present
Member of Graduate Faculty Department of Math. & Stats. York University

July 2000 to **July 2017**
Associate Professor (tenured); Schulich School of Business, York University

July 1995 to **July 2000**
Assistant Professor (non-tenured); Schulich School of Business, York University

July 1992 to **July 1995**
Ad hoc Instructor, R.A. and T.A. Faculty of Admin. Studies, York University

OTHER ACADEMIC APPOINTMENTS & VISITS (During Sabbaticals)

2022/2023 Visiting (PG) Researcher, University of Edinburgh, National Records of Scotland, UK.
2015/2016 Visiting Scholar, Risk Management & Insurance, UNSW, Sydney, AUSTRALIA
2008/2009 Visiting Scholar, Insurance and Risk Management, Wharton School, USA
2008/2009 Visiting Fellow, University of Technology, Sydney, AUSTRALIA
2001/2002 Visiting Professor of Finance, ORT University, Montevideo, URUGUAY
2001/2002 KVBA Visiting Chair in Actuarial Studies, University of Leuven, BELGIUM

MANAGERIAL, VOLUNTEER AND CONSULTING EXPERIENCE

Part-time Consultant to Guardian Capital from **September 2020** onward, collaborating to create thought leadership articles, design new retirement income products & solutions and liaison with stakeholders in the investment community.

Vice chairman, **Jan/2023 to Dec/2023**, of the Investment Advisory Panel (IAP) for the Canadian Investment Regulatory Organization (CIRO), with a mandate to provide deeper understanding of investor issues and concerns to New SRO staff through regular consultations. [*Pro-bono*.]

Member of the Standing Technical Advisory Committee for Defined Contribution Pension Plans, for the Financial Services Regulatory Authority of Ontario (FSRA), **July 2020** to **July 2022**, where I provided advice on technical issues and legislation, reviewed current regulatory processes and requirements with a view to reducing complexity and undue regulatory burden [*Pro bono*.]

Finance Area Co-ordinator in the Schulich School of Business from **July 2016** to **June 2017** and from **July 2005** to **June 2006**, with responsibilities for staffing over **70 sections** of BBA undergraduate, MBA graduate and PhD level courses.

Served on the Student Affairs committee, Tenure & Promotion committee, PhD committee, Recruiting committee (Mathematics Department and School of Business), Research committee, University Pension Fund sub-committee as well as Union Steward during the **past 25 years**.

As part of my responsibilities as a member of the Faculty of Graduate Studies at York University, from **July/2004** onward, I have supervised and/or co-supervised and/or been a thesis examination committee member for **13 Ph.D. students** (detailed list and placement available upon request).

New York Stock Exchange (NYSE), Division of Enforcement, New York. Provided assistance to legal staff regarding the financial economic value of variable annuity riders and insurance guarantees; a **2-year project** from **2004 to 2006** with expert testimony and reports.

Founded the QWEMA Group at the Fields Institute for Research in Mathematical Sciences, in **2005**, managing 9 employees and then selling the company to CANNEX Financial Exchanges in **2013**, where I joined the board of directors for **5 years**, stepping down in **2018.**

Ad hoc consultant to the Boston office of the Securities and Exchange Commission (SEC) during **2005**, where I provided ongoing support regarding the economic value, disclosure and suitability of variable annuity (VA) and insurance contract secondary (longevity risk) guarantees.

Ad hoc consultant to the Washington office of the National Association of Securities Dealers (NASD), where I provided assistance to staff from **September 2002 to May 2004**, focused on the financial economic value of insurance riders and longevity risk guarantees.

Consultant to the Florida State Board of Administration from **2000** to **2005**, where I provided advice on the (new) Defined Contribution plan, as well as the Lawton Chiles Endowment Fund.

SERVICE TO THE ACADEMIC PROFESSION

Founder of the Individual Finance and Insurance Decisions (IFID) Centre in 2001, which organizes an annual conference for academics and practitioners in the Canadian financial services industry, funded entirely by the financial industry.

Associate Editor:

Risk Management and Insurance Review;	2012 -- 2021,
Journal of Pension Economics and Finance (& co-founder);	2001 -- current,
Financial Analysts Journal (Advisory Board);	2013 -- 2020,
Journal of Retirement;	2013 -- 2021
Insurance: Mathematics and Economics	2018 -- current

AWARDS, PRIZES AND FELLOWSHIPS

Fellow of the *Fields Institute for Research in Mathematical Sciences* (Elected 2002)

Winner of the Kulp-Wright Book Award (2017) from A*merican Risk and Insurance Association* for: *King William's Tontine: Why the Retirement Annuity of the Future Should Resemble its Past*

Graham and Dodd Scroll award from the *Financial Analysts Journal*, 2006 for the paper "Human Capital, Asset Allocation and Life Insurance" (joint with Roger Ibbotson)

Named by *Investment Advisor* magazine (May 2015) as one of the 35 most influential people in the U.S. financial advisory business during the last 35 years. Lifetime Achievement in Applied Retirement Research from *Retirement Income Industry Association* (September 2008)

American Society of Business Publication Editors (ASBPE) 2013 award for Editorial Excellence in a Regular Column, for *Annuity Analytics* in Research Magazine; November & September 2013.

National Magazine Awards Foundation, Gold Award for best article in Personal Finance and Business (*National Post Magazine*, February 2003), National Magazine Awards Foundation, Honorable Mention for article in General Business (*National Post Magazine*, February 2003)

Schulich Research Fellowship (Fall 2013 & Fall 2017). Schulich Research Scholar (2003/2004 academic year) and Co-recipient of 1997 and 2001 *Schulich School of Business Research Award*.

Other: Co-Recipient of the *Financial Research Foundation*'s Harvey Rorke Memorial Prize for best Finance Ph.D. Dissertation in Canada, 1996. Best paper award at the *Canadian Institute of Actuaries*, September 2000, (with S. Posner) Best Paper Awards and/or Honorable Mention at the following conferences: *Southern Finance Association* 1998 (with S. Posner); *Midwest Finance Association 1998* (with C. Robinson); *SoA Retirement Needs Framework Conference 1998* (with C. Robinson); *ASAC* 1997 (with C. Robinson and K. Ho); *SFA* 1996 (with S. Posner); *EFA*1995 (Doctoral Paper Award); *AFS* 1993, 1994, 1995 (All three with C. Robinson and K. Ho). Kenneth Black Jr. Award for Best paper in *Journal of Financial Services Professionals* 2007.

Academic Research Funding

- Ongoing research support of $40,000 (per annum) from the **IFID Centre**
- **NETSPAR**, 2013-2014, **CFA Research Institute**, 2012-2013,
- **MITACS** (with T.S. Salisbury), 1999-2003, **SSHRC** (with S.D. Promislow) 2003-2006.
- **SSHRC** (solo) 1997-2000; 2000-2003, **Schulich** Fellowship (2010/2012, 2020/2023)

Technology Patents

U.S. Patent #878-1937-B2: *Optimal portfolio withdrawal during retirement in the presence of longevity risk* (Inventors: M.A. Milevsky and H. Huang). Filed: 4 September 2012, Granted July 15, 2014. Assigned to QWeMA Group (a start-up I founded, now part of CANNEX Financial.)

U.S. Patent #712-0601-B2: *Optimal asset allocation during retirement in the presence of fixed and variable immediate life annuities* (Inventors: P. Chen and M.A. Milevsky). Filed: 18 June 2002, Granted: 10 October 2006. Assigned to Ibbotson Associates (now part of Morningstar.)

Scholarly Books and Monographs

[S9] *The Religious Roots of Longevity Risk Sharing: The Genesis of Annuity Funds in the Scottish Enlightenment and the Path to Modern Pension Management*, forthcoming, **2024**, to be published by Palgrave (Springer Nature.)

[S8] *How to Build a Modern Tontine: Algorithms, Tips and Tricks*, Springer-Nature, July **2022**, 156 pages.

[S7] *Retirement Income Recipes in R: From Ruin Probabilities to Intelligent Drawdown*, Springer-Nature, September **2020**, 320 pages

[S6] *The Day the King Defaulted: Financial Lessons from the Stop of the Exchequer in 1672*, Palgrave-Springer September **2017**, 250 pages

[S5] *King William's Tontine: Why the Retirement Annuity of the Future Should Resemble Its Past*, Cambridge University Press, May **2015**, (Paperback published **2017**.) 257 pages.

[S4] *Life Annuities: An Optimal Product for Retirement Income*, CFA Institute Publications, June **2013**, 120 pages. Charlottesville, Virginia.

[S3] *Strategic Financial Planning over the Lifecycle: A Conceptual Approach to Personal Risk Management* (N. Charupat, H. Huang and M.A. Milevsky), Cambridge University Press, June **2012**, 367 pages.

[S2] *Lifetime Financial Advice: Human Capital, Asset Allocation, and Life Insurance* (P. Chen, R. Ibbotson, M.A. Milevsky and K. Zhu), CFA Institute Publications, April **2007**, 95 pages.

[S1] *The Calculus of Retirement Income: Financial Models for Pension Annuities and Life Insurance*, Cambridge University Press, April **2006**, 321 pages. Translated into Japanese by Tadashi Nakada and published in 2008 by NFI Research Review.

Popular Books

[P9] *In Defense of Annuities: From Accumulation to Decumulation*, June **2021**, Published on Amazon Platform, ISBN-979-8515118518

[P8] *Longevity Insurance for a Biological Age: Why Your Retirement Plan Shouldn't Be Based on the Number of Times You Have Circled the Sun*, March **2019**, PileCo Ventures.

[P7] *The Seven Most Important Equations for Your Retirement … The Fascinating People and Ideas Behind Planning Your Retirement Income*, John Wiley & Sons, Canada, April **2012**, 250 pages.

[P6] *Pensionize™ Your Nest Egg: How to Use Product Allocation to Create a Guaranteed Income for Life* (M.A. Milevsky A. Macqueen), John Wiley & Sons, Canada, October **2010**, 210 pages. 2nd Revised U.S. & International edition, published April **2015**, 234 pages.

[P5] *Your Money Milestones: A Guide to Making the 9 Most Important Financial Decisions in Your Life*, FT/Pearson Press, January **2010**, Saddle River, New Jersey, 224 pages. Translated and Published in Portuguese, March **2010**.

[P4] *Are You a Stock or a Bond? Create Your Own Pension for a Secure Financial Future*, FT/Pearson Press, 1st Edition published in August 2008, Saddle River, New Jersey, 240 pages. 2nd Edition published in October **2012**. Translated and published in Mandarin, Summer **2015**. Translated and published in Japanese, Winter **2019**, Translated and Published in Korean, Fall **2021**.

[P3] *Wealth Logic: Wisdom for Improving Your Personal Finances*, Captus Press, Toronto, January **2003**, 237 pgs. (Collection of articles published in the *National Post Magazine*.)

[P2] *Insurance Logic: Risk Management Strategies for Canadians*, Stoddart, Toronto, March **2002**, 229 pages. 2nd edition published by Captus Press, Toronto, October **2004**.

[P1] *Money Logic: Financial Strategies for the Smart Investor*, (M.A. Milevsky and M. Posner), Stoddart Publishing **1999**, Toronto. U.S. edition published under the title: *The Probability of Fortune*: *Financial Strategies with the Best Odds*, Stoddart Press **2000**, New York. French Edition under the title: *Investir en Toute Logique*, Transcontinental Spring **2001**, Montreal.

Peer Reviewed and Refereed Scholarly Publications

[A71] "The Riccati Tontine: How to Satisfy Regulators on Average" (joint work with T.S. Salisbury), *under journal review*. **2024** WP available on ARXIV.

[A70] "Egalitarian Pooling and Sharing of Longevity Risk: The Many Ways to Skin a Tontine Cat" (joint work with J. Dhaene), *under journal review*. **2024** WP available on SSRN.

[A69] "Pensions and Protestants: or Why Everything in Retirement Can't be Optimized " (joint work with M. Velazquez), *under journal review*. **2023** WP available on SSRN

[A68] "Adam Smith's Reversionary Annuity: Money's Worth, Default Options and Auto Enrollment", Financial History Review, **2023,** Vol. 30(2), pg. 162-197

[A67] "Refundable Income Annuities: Feasibility of Money-back Guarantees", (with T.S. Salisbury) *Insurance: Mathematics and Economics*, **2022**, Vol. 105, pg.175-193.

[A66] "Calibrating Gompertz in Reverse: What is your longevity-risk-adjusted global age?, Insurance: Mathematics and Economics, **2020**, Vol. 92, pg. 147-161.

[A65] "Swimming with Wealthy Sharks: Longevity, Volatility and the Value of Risk Pooling", Journal of Pension Finance and Economics, **2020**, Vol. 19(2), pg. 217-246.

[A64] "The Utility Value of Longevity Risk Pooling: Analytic Insights" (M.A. Milevsky and H. Huang), North American Actuarial Journal, **2018**, Vol. 22(4), pg. 574-590

[A63] "Retirement Spending and Biological Age" (H. Huang, M.A. Milevsky and T.S. Salisbury), Journal of Economic Dynamics and Control, **2017**, Vol. 84, pg. 58-76.

[A62] "Optimal Purchasing of Deferred Income Annuities When Payout Yields are Mean-Reverting" (H. Huang, M.A. Milevsky and V. Young); Review of Finance, **2017**, Vol. 21(1) pg. 327-361. (Selected as finalist for the 2017 Paul Samuelson award from the *TIAA-CREF Institute*.)

[A61] "Equitable Retirement Income Tontines: Mixing Cohorts Without Discriminating" (M.A. Milevsky and T.S. Salisbury), ASTIN Bulletin: The Journal of the International Actuarial Association, **2016,** Vol. 46(3), pg. 571-604.

[A60] "Longevity Risk and Retirement Income Tax Efficiency: A Location Spending Rate Puzzle". (H. Huang and M.A. Milevsky), Insurance: Mathematics and Economics, **2016**, Vol. 71, pg. 50-62.

[A59] "The Sluggish And Asymmetric Reaction Of Life Annuity Prices To Changes In Interest Rates" (N. Charupat, M. Kamstra and M.A. Milevsky), Journal of Risk and Insurance, **2016**, Vol. 83(3), pg. 519-555. (Lead article.)

[A58] "Optimal Retirement Income Tontines" (M.A. Milevsky and T.S. Salisbury), Insurance: Mathematics and Economics, **2015**, September, Vol. 64(1), pg. 91-105.

[A57] "A Glide Path for Target Date Annuitization" (M.A. Milevsky, H. Huang and V. Young), Journal of Retirement, **2015**, Vol. 3(1), pg. 27-37

[A56] "Rethinking RRIF Withdrawals: New Rates for New Realities, Canadian Tax Journal, **2014**, Vol. 62(4), pg. 971-983

[A55] "Mortality Plateaus and Longevity Insurance", Journal of Retirement, **2014**, Vol. 2(2), pg. 99-107. Slightly longer version reprinted in (non-refereed) *Pension & Longevity Risk Transfer for Institutional Investors*, Vol. 2, Fall **2014**, pg. 61-69.

[A54] "Portfolio Choice and Longevity Risk in the Late 17th Century: A Re-examination of the First English Tontine," Financial History Review, (lead article) **2014**, Vol. 21(3), pg. 225-258.

[A53] "Optimal Initiation of a GLWB in a variable annuity: No Arbitrage approach" (H. Huang, M.A. Milevsky and T.S. Salisbury), Insurance: Mathematics and Economics, **2014**, Vol. 56(2), pg. 102-111

[A52] "Can Collars Reduce Retirement Sequencing Risk? Analysis of Portfolio Longevity Extension Overlays (LEO)" (M.A. Milevsky and S.E. Posner), Journal of Retirement, **2014**, Vol. 1(4), pg. 46-56

[A51] "Valuation and Hedging of the Ruin-Contingent Life Annuity" (H. Huang, M.A. Milevsky and T. Salisbury), Journal of Risk and Insurance, **2014**, Vol. 81(2), pg. 367-395

[A50] "Optimal Retirement Consumption with a Stochastic Force of Mortality" (H. Huang, M.A. Milevsky and T. Salisbury), Insurance: Mathematics and Economics, **2012**, Vol. 51(2), pg. 282-292.

[A49] "Lifetime Ruin Minimization: Should Retirees Hedge Inflation or Just Worry About It?" (H. Huang and M.A. Milevsky), Journal of Pension Economics and Finance, (lead article), **2011**, Vol. 10(4), pg. 363-388.

[A48] "Spending Retirement on Planet Vulcan: The Impact of Longevity Risk Aversion on Optimal Withdrawal Rates" (M.A. Milevsky and H. Huang), Financial Analyst Journal, **2011**, Vol. 67(2), pg. 45-58. Reprinted in the Journal of the American Association of Individual Investors, **2011**.

[A47] "Do Markets Like Frozen DB Pension Plans? An Event Study" (M.A. Milevsky and K. Song), Journal of Risk and Insurance, **2010**, Vol. 77(4), pg. 893-909

[A46] "Valuation of Mortality Risk via the Instantaneous Sharpe Ratio: Applications to Life Annuities" (E. Bayraktar, M.A. Milevsky, V. Young and D. Promislow), Journal of Economic Dynamics and Control, Vol. 33(3), **2009**, pg. 676-691.

[A45] "A Different Perspective on Retirement Income Sustainability: The Blueprint for Ruin Contingent Life Annuity" (H. Huang, M.A. Milevsky and T.S. Salisbury) Journal of Wealth Management. **2009**, page 1-8.

[A44] "Portfolio Choice and Mortality Contingent Claims: The General HARA Case" (H. Huang and M.A. Milevsky), **2008** Journal of Banking and Finance, Vol. 32(11), pg. 2444-2452.

[A43] "Portfolio Choice and Life Insurance: The CRRA Case" (H. Huang, M.A. Milevsky and J. Wang), **2008**, Journal of Risk and Insurance, Vol. 75(4), pg. 847-872.

[A42] "Portfolio Choice with Puts: Evidence from Variable Annuities" (M.A. Milevsky and V. Kyrychenko), Financial Analysts Journal, **2008**, Vol. 64(3), pg. 80-95.

[A41] "Annuitization and Asset Allocation" (M.A. Milevsky and V. Young), Journal of Economic Dynamics and Control, Volume 31, Issue 9, **2007**, Pg. 3138-3177. Erratum published in Vol. 32(11), pg. 3743-4744.

[A40] "The Timing of Annuitization, Investment Dominance and Mortality Risk" (M.A. Milevsky and V. Young), Insurance: Mathematics and Economics, **2007**, Vol. 40(1), pg. 135-144.

[A39] "Killing the Law of Large Numbers: Mortality Risk Premiums and the Sharpe Ratio", (M.A. Milevsky, S.D. Promislow and V. Young) Journal of Risk and Insurance, **2006**, Vol. 73(4), pg. 673-686.

[A38] "Asset Allocation and Annuity Purchase Strategies to Minimize the Probability of Financial Ruin" (M.A. Milevsky, K. Moore and V. Young), Mathematical Finance, **2006** Vol. 16(4), pg. 647-671.

[A37] "Cleaning a Passive Index: How to Include CSR Constraints Using Portfolio Optimization" (M.A. Milevsky, A. Aziz, A. Goss, J. Thomson and D. Wheeler) Journal of Portfolio Management, **2006**, Vol. 32(3), pg. 110-118.

[A36] "Human Capital, Asset Allocation and Life Insurance" (P. Chen, M.A. Milevsky, R. Ibbotson and K. Zhu), Financial Analysts Journal, **2006**, Vol. 62(1), pg. 97-109 (winner of a 2006 *Graham & Dodd Scroll Award* from the CFA Institute)

[A35] "Financial Valuation of Guaranteed Minimum Withdrawal Benefits" (M.A. Milevsky and T. Salisbury), Insurance: Mathematics and Economics, **2006**, Vol. 38(1), pg. 21-38.

[A34] "A Sustainable Spending Rate without Simulation" (M.A. Milevsky and C. Robinson), Financial Analysts Journal, **2005**, Vol. 61(6), pg. 89-100. (Reprinted as a chapter in *Private Wealth: Advances in Wealth Management Practices*, CFA Institute, **2008**)

[A33] "Waiting for Returns: Testing GBM via Space Time Duality" (M. Kamstra and M.A. Milevsky), Quantitative Finance, **2005**, Vol. 5(3), pg. 237-244.

[A32] "Advanced Life Delayed Annuities: Introduction to Real Longevity Insurance with Deductibles", North American Actuarial Journal, **2005**, Vol. 9(4), pg. 109-122.

[A31] "Probabilistic Investing: Or How to Win the Globe and Mail's Stock Picking Contest" (M.A. Milevsky and T. Salisbury), Financial Services Review, **2005**, Vol. 14(3), pg. 197-211.

[A30] "Implied Longevity Yield: A Note on Developing an Index for Payout Annuities", Journal of Risk and Insurance, **2005**, Vol. 72(2), pg. 301-320.

[A29] "The Erosion Effects of Income Taxes and Inflation on GIC Investment Returns" (A. Mawani, M.A. Milevsky and J. Landzberg, Canadian Tax Journal, **2004**, Vol. 52(4), pg. 1-21.

[A28] "Florida's Pension Election: From DB to DC and Back" (M.A. Milevsky and D. Promislow), Journal of Risk and Insurance, **2004** Vol. 71(3), pg. 381-404.

[A27] "Ruined Moments in Your Life: How Good Are the Approximations?" (M.A. Milevsky, H. Huang and J. Wang), Insurance: Mathematics and Economics, **2004** Vol. 34(3), pg. 421-447.

[A26] "Illiquid Asset Allocation and Policy Weights: How Far Can They Deviate?", The Journal of Wealth Management, **2004**, Vol. 7(3), pg. 27-34.

[A25] "Asset Allocation and the Liquidity Premium for Illiquid Annuities" (S. Browne, M.A. Milevsky and T. S. Salisbury), Journal of Risk and Insurance, **2003** Vol. 70(3), pg. 509-526.

[A24] "The Impact of Personal Income Taxes on Returns and Rankings of Canadian Equity Mutual Funds", (A. Mawani, M.A. Milevsky and K. Panyagometh), Canadian Tax Journal, **2003** Vol. 51(2), pg. 863-901.

[A23] "A Continuous Time Reexamination of Dollar-Cost Averaging", (M.A. Milevsky with S. E. Posner), International Journal of Theoretical and Applied Finance, **2003** Vol. 6(2), pg. 173-194.

[A22] "Space-Time Diversification: Which Dimension is Better?", Journal of Risk, Vol. 5(2), **2002**, pg. 45-71.

[A21] "Variable Annuities vs. Mutual Funds: A Monte Carlo Analysis of the Options", (M.A. Milevsky and K. Panyagometh), Financial Services Review, Vol. 10, **2002**, pg. 145-162.

[A20] "Asset Allocation in Variable Annuities: A Note", (N. Charupat and M.A. Milevsky), Insurance: Mathematics and Economics, Vol. 30(2), **2002**, pg. 199-210.

[A19] "Mortality Derivatives and the Option to Annuitize", (M.A. Milevsky and D. Promislow), Insurance: Mathematics and Economics, Vol. 29(3), **2001**, pg. 299-318.

[A18] "Mortality Swaps and Tax Arbitrage in the Canadian Insurance Market", (N. Charupat and M.A. Milevsky), Journal of Risk and Insurance, Vol. 68(2), **2001**, pg. 124-147.

[A17] "The Titanic Option: Valuation of Guaranteed Minimum Death Benefits in Variable Annuities and Mutual Funds", (M.A. Milevsky and S. Posner), Journal of Risk and Insurance, Vol. 68(1), **2001**, pg. 55-79.

[A16] "Optimal Annuitization Policies: Analysis of the Options", North American Actuarial Journal, Vol. 5(1), **2001**, pg. 57-69.

[A15] "Self-Annuitization and Ruin in Retirement", (M.A. Milevsky and C. Robinson), North American Actuarial Journal, Vol. 4(4), **2000**, pg. 112-129.

[A14] "International Equity Diversification and Shortfall Risk", (K. Ho, M.A. Milevsky and C. Robinson), Financial Services Review, Vol. 8, **1999**, pg. 11-25.

[A13] "Martingales, Scale Functions and Stochastic Life Annuities: A Note", Insurance: Mathematics and Economics, Vol. 24(1-2), **1999**, pg. 149-154.

[A12] "Time Diversification, Safety-First and Risk", Review of Quantitative Finance and Accounting, Vol. 12(3), **1999**, pg. 271-281.

[A11] "Hedging and Pricing with Tax Law Uncertainty: Managing Under an Arkansas Best Doctrine", (M.A. Milevsky and E. Prisman), The Quarterly Review of Economics and Finance, Vol. 39(1), **1999**, pg. 149-170.

[A10] "Asian Options, The Sum of Lognormals and the Reciprocal Gamma Distribution", (M.A. Milevsky and S. Posner), Journal of Financial and Quantitative Analysis, Vol. 33(3), September **1998**, pg. 409-422. Extended version was published in the book Quantitative Analysis in Financial Markets, edited by M. Avellaneda, World Scientific Publishing, **1999**.

[A9] "Optimal Asset Allocation Towards the End of the Life Cycle: To Annuitize or Not to Annuitize?", Journal of Risk and Insurance, Vol. 65(3), **1998**, pg. 401-426.

[A8] "A Closed-Form Approximation for Valuing Basket Options", (M.A. Milevsky and S. Posner), The Journal of Derivatives, Vol. 5(4), **1998**, pg. 54-61.

[A7] "Valuing Exotic Options by Approximating the SPD with Higher Moments" (M.A. Milevsky and S. Posner), The Journal of Financial Engineering, Vol. 7(2), **1998**, pg. 109-125.

[A6] "A Theoretical Investigation of Randomized Asset Allocation Strategies", (M.A. Milevsky and S. Posner), 1998, Applied Mathematical Finance, Vol. 5(2), **1998**, pg. 117-130.

[A5] "The Optimal Choice of Indexed Linked GICs: Some Canadian Evidence", (M.A. Milevsky with S. Kim), Financial Services Review, Vol. 6(4), **1997**, pg. 271-284.

[A4] "The Present Value of a Stochastic Perpetuity and the Gamma Distribution", Insurance: Mathematics and Economics, Vol. 20(3), **1997**, pg. 243-250.

[A3] "Asset Allocation via the Conditional First Exit Time or How To Avoid Outliving your Money" (K. Ho, M.A. Milevsky and C. Robinson), Review of Quantitative Finance and Accounting, Vol. 9(1), **1997**, pg. 53-70.

[A2] "Tax Effects in Canadian Equity Option Markets", (M.A. Milevsky and E. Prisman), Multinational Finance Journal, Vol. 1(2), **1997**, pg. 101-122.

[A1] "Asset Allocation, Life Expectancy and Shortfall" (K. Ho, M.A. Milevsky and C. Robinson), Financial Services Review, Vol. 3(2), **1994**, pg. 109-126.

Lightly Refereed and/or Practitioner Oriented Publications

[B15] "Annuity Fables: Some observations from the Ivory Tower", Journal of Financial Planning, December **2018.**

[B14] "It's Time to Retire Ruin (Probabilities)", Financial Analysts Journal, Vol. 72(2), April **2016**.

[B13] "How Long Does the Market Think You Will Live? Implying Longevity from Annuity Prices" (M.A. Milevsky, T.S. Salisbury and N. Chigodaev), Journal of Investment Consulting, Winter **2016**, Vol. 17(1), pg. 11-21.

[B12] "What is a Pension Exactly…And Why Should You Care" (M.A. Milevsky and A. Macqueen), Policy Options, March **2010**, pg. 39-42

[B11] "Retirement Income Sustainability: How To Measure the Tail of a Black Swan", (A. Abaimova, B. Cavalieri and M.A. Milevsky), Journal of Financial Planning, October **2009**, pg. 56-67.

[B10] "A Gentle Introduction to the Calculus of Sustainable Income: What is Your Retirement RisQuotient?", Journal of Financial Service Professionals, July **2007**, Volume 61(4), pg. 51-62. (Winner of the *Kenneth Black Jr. Award* for best paper in the *JFSP* in 2007.)

[B9] "Will the True Monte Carlo Number, Please Stand Up?" (A. Abaimova and M.A. Milevsky), Journal of Financial Planning, Online Version, July **2006**

[B8] "Exchanging Variable Annuities: An Optional Test for Suitability" (M.A. Milevsky and K. Panyagometh), Journal of Financial Planning, April **2004**, Vol. 17(4), pg. 56-66.

[B7] "A Diffusive Wander Through Human Life", Quantitative Finance, **2004**, Vol. 4(2), pg. 21-23.

[B6] "Merging Asset Allocation and Longevity Insurance: An Optimal Perspective on Payout Annuities", (P. Chen and M.A. Milevsky), Journal of Financial Planning, June **2003**, pg. 64-72

[B5] "Spending Your Retirement in Monte Carlo", Journal of Retirement Planning, **2001**, pg. 21-29.

[B4] "Another Moment for the Average Option", (M.A. Milevsky and S. Posner), Derivatives Quarterly, Vol. 5(4), Summer **1999**, pg. 47-53.

[B3] "Optional Taxes" (M.A. Milevsky and E. Prisman), RISK Magazine, Vol. 10(9), September **1997**, pg. 133-137.

[B2] "Risk-Adjusted Retirement" (K. Ho, M.A. Milevsky and C. Robinson), Canadian Investment Review, Vol. 9(1), Spring **1996**, pg. 19-27.

[B1] "How to Avoid Outliving Your Money" (K. Ho, M.A. Milevsky and C. Robinson), Canadian Investment Review , Vol. 7(3), Fall **1994**, pg. 35-38.

Selected Book Chapters *(not published elsewhere.)*

[C9] "What can tontine design of the future learn from its past?", Chapter #18 (pg. 307-316) in *The Past, Present and Future of Tontines: A Seventeenth Century Financial Product and the Development of Life Insurance* edited by Philip Hellwege, Fall **2018**, published by Duncker & Humblot, Berlin.

[C8] "The Two Worlds of Personal Finance: Discussion" by Laurence Kotlikoff and Moshe A. Milevsky, published CFA Research Foundation Publications, *Life-Cycle Investing: Financial Education and Consumer Protection*, page. 97–106, December **2012**.

[C7] "Annuities and their Derivatives: The Recent Canadian Experience" (M.A. Milevsky and L. Shao), published as Chapter 4 in *Securing Lifelong Retirement Income: Global Annuity*

Markets and Policy, edited by Olivia S. Mitchell, John Piggot and Noriyuka Takayama, Oxford University Press, New York **2011**.

[C6] "The Three Dimensions of Longevity Risk", published in *The Encyclopedia of Quantitative Risk Assessment*, John Wiley & Sons, Ltd, **2008**.

[C5] "Asset Allocation within Variable Annuities: The Impact of Guarantees" (V. Kyrychenko and M.A. Milevsky), published as Chapter 12 in *Recalibrating Retirement Spending and Saving*, edited by John Ameriks and Olivia S. Mitchel, Oxford University Press, New York **2008**.

[C4] "Applied Risk Management at Retirement" (M.A. Milevsky and A. Abaimova), *The Advisors Guide to Retirement Income*, edited by H. Evensky and D. Katz, Bloomberg Press, May **2006**

[C3] "Are You a Stock or a Bond? Risk Classification of Human Capital", Chapter 7 in *The Investment Think Tank*: *Theory, Strategy, and Practice for Advisers*, edited by H. Evensky and D. Katz, Bloomberg Press, November **2004**.

[C2] "Credit Implications of the Payout Annuity Market", (Scott Robinson, M.A. Milevsky and Arthur Fliegelman), in *The Pension Challenge: Risk Transfers and Retirement Income Security*, edited by Olivia S. Mitchell and Kent Smetters, Oxford: Oxford University Press, **2003**.

[C1] Extended version of "Asian Options, The Sum of Lognormals and the Reciprocal Gamma Distribution", (M.A. Milevsky and S. Posner), published in Quantitative Analysis in Financial Markets: Collected Papers of the NYU Mathematical Finance Seminar, edited by M. Avellaneda, World Scientific Publishing, **1999**.

SELECTED ACADEMIC SEMINARS & INVITED CONFERENCE PRESENTATIONS

2024	*Conference in Celebration of David Wilkie's 90th Birthday*	York (UK)
2024	*U. of Waterloo Actuarial Science and Financial Mathematics*	Waterloo.
2023	*Actuarial, Finance, Risk and Insurance Congress (AFRIC)*	Victoria Falls
2022	*University of Amsterdam & University of Leuven, November*	Europe
2022	*Columbia University, Department of Actuarial Science, April*	New York
2021	*24th Insurance: Mathematics and Economics* Congress, July	ONLINE
2020	One World Actuarial Research Seminar, May	ONLINE
2020	*ASSA/AEA/AFA Annual Meeting*, January	San Diego.
2019	*23rd Insurance: Mathematics and Economics* invited keynote, July	Munich.
2019	*Brookings Institution*, April	Washington.
2018	*CEAR-RSI Household Finance* Workshop, November,	Montreal.
2018	*OECD Roundtable on Insurance and Retirement Saving*, April,	Tokyo.
2018	*Financial Planning Foundation (FPSC*), February,	Arlington.
2017	*American Risk and Insurance Association*, August,	Toronto.

2017	Pension Foresight: *Retirement Income Plans of the Future*, OECD, June,	Paris.
2016	*Dept. of Mathematics at U. of Connecticut*, Special Colloquia October,	Hartford.
2016	*Canadian Economic Association*, June,	Ottawa.
2015	*MIT Center for Finance and Policy*, September,	Boston.
2015	*Center for Financial Risk*, Macquarie University, August,	Sydney.
2014	*Longevity Risk 10*, Universidad Diego Portales, September,	Santiago.
2014	*Stanford Center on Longevity*, May,	Palo Alto.
2014	*Society of Actuaries*, Living to 100 Symposium, January,	Orlando.
2013	*CEPAR*, University of New South Wales, November,	Sydney.
2013	*Cass Business School*, July,	Sydney.
2013	*Insurance Mathematics and Economics Congress*, July,	Copenhagen.
2012	*Longevity Risk 8*, University of Waterloo, September,	Waterloo.
2012	*Risk Theory Seminar*, Florida State University, March,	Tallahassee.
2011	7th International *Longevity Risk Conference*, September,	Frankfurt.
2011	*OECD Conference on Annuities and Pensions*, June,	Mexico City.
2011	*The Future of Lifecycle Saving and Investing*, Boston U., December	Boston.
2010	*Quantitative Methods in Finance* (QMF), Keynote, December,	Sydney.
2009	*Modern Portfolio Theory (MPT) Forum*, December,	Tokyo.
2009	*NetSpar*, Conference on Pensions, January,	Amsterdam.
2008	U. of New South Wales, U. of Technology Sydney, Monash University,	Australia.
2008	*Texas Tech University*, Program is Personal Financial Planning, January,	Texas.
2007	*Pension Research Council*, Wharton School, April,	Philadelphia.
2006	*Longevity Risk Conference & Bowles Symposium*, May,	Chicago
2005	*Canadian Mathematics Society*, June (Invited Keynote),	Waterloo.
2004	*British Institute of Actuaries at Staple Inn*, June,	London.
2003	*University of Toronto Rotman School*, Toronto, March,	Toronto.
2002	*London School of Economics*, London, September,	London.
2002	*Western Finance Association*, Salt Lake City UT, June,	Utah.
2002	*Royal Belgian Society of Actuaries*, February,	Brussels.
2001	*American Economics Association*, January,	New Orleans
2000	*Derivative Securities Conference*, April,	Boston.
1999	*Insurance Mathematics and Economics Congress*, July,	London.
1998	*European Financial Management Association*, June,	Lisbon.
1998	*American Finance Association*, January 1998,	Chicago.

<u>Selected Newspaper and Magazine Columns</u>

Toronto Star: "How life length hurts retirement plans" (with A. Macqueen), May 19th, **2014**, "Why the 10% Savings Rules Doesn't Always Apply", September 30th, **2012**; "Our Pension Debt to Halley's Comet", June 3rd, **2012**; "RRIF vs. Annuity: What Should You Do?", April 15th, **2012**; "A Pooled Pension Plan Isn't A Pension", November 18th, **2011**; "How Long Can Home Prices Keep Rising?", August 15th, **2011**; "What's the Bigger Worry? Inflation or Deflation?" November 18th, **2010**; "Dumping debt can pay off better than stashing cash in RRSPs," Sunday August 8th, **2010**; "Think You've Got a Pension: Well, You'd Better Think Again", March 15th, **2010**;

Wall Street Journal: "How to Think Smarter About Risk" June 14, **2010**, page R1 (cover story); "Want Financial Security? Look to the Renaissance" April 19, **2013**, page C1; "Money on Seahawks or Patriots? No, I Just Bet I'll Live to 80", January 29, **2015** (online).

Research Magazine: Wrote a periodic column entitled: *Retirement Income University* (2007 – 2008) and *Annuity Analytics* (2009 - 2013) The magazine is circulated to approximately 80,000 financial advisors in North America. Details and links to 46 articles appended.

Globe & Mail: "How to win the One-and-Only contest" January 6, **2005**, (with T. S. Salisbury.) **National Post Business Magazine:** Over 40 monthly columns from 1999-2003. Editorial published in April **2016** ("on Canadian Debt Management") and April **2017** ("on Brexit and Lessons from History")

National Underwriter: "Making the Case for Longevity Insurance: Here's a Tale About Annuitization and Grandmothers", October **2004**, "Will GMWBs Keep Up with Retirees Inflation?", February **2006**, "The Sequencing of Returns", July **2006**; **A.M. Best:** "A Suitable Choice: Simulations to Evaluate VA Exchanges", September **2004**; **Benefits Canada:** "To RRIF or Annuitize", October **1997**.

Canadian MoneySaver: "How Much Risk is Enough?" Oct/**1998**; "Index-Linked GICs: Can You Cook them at Home for Less?" Sep/**1997**; "Index-Linked GICS: Concluding Remarks", Nov/**1997**. **Advisor's Edge (Rogers Media):** Wrote over 25 bi-monthly columns from 1998 to 2004. **The Actuary**: "A Time for Tontines, Again?" August/September **2017**

Other Selected Research Work in the Public Domain

Book Review of: *Derivatives: The Tools that Changed Finance*, By P. Boyle and F. Boyle, in *The Journal of Finance*, Vol. 58(4), **2003**, pg. 1719-1722

"The Titanic Option", (M.A. Milevsky and S. Posner), *Derivatives Week: Learning Curve*, Vol. 8(22), July 19, **1999**, pg. 5-6; "Closed-Form Arithmetic Asian Option Valuation", (with S. Posner), *Derivatives Week: Learning Curve*, Vol. 6(27), July 14, **1997**, pg. 6-7.

Mortgage Financing: Floating Your Way to Prosperity, March **2001**, IFID Centre www.ifid.ca;

Canadians' Debt Diversification: Why These Eggs Belong in One Basket (A. Abaimova and M.A. Milevsky) October **2005**, IFID Centre www.ifid.ca;

Variable Payout Annuities with Downside Protection: How to Replace the Lost Longevity Insurance in DC Plans (M.A. Milevsky and A. Abaimova), October **2005**, at www.ifid.ca

Financial Futures Beyond Money (M.A. Milevsky), *Global Brief*, **Winter 2012**, pg. 5.

Annuities vs. Tontines in the 21st Century: A Canadian Case Study (M.A. Milevsky, T.S. Salisbury, G. Gonzalez, H. Jankowski), Funded and Published by the Society of Actuaries, available at: https://www.soa.org/research-reports/2018/annuities-vs-tontines/ **March 2018**.

APPENDIX A

List of Practitioner-oriented trade magazine articles on "Retirement Income & Longevity" published (and solo-authored) in Research Magazine over the time period 2007 to 2013.

#	Article's Title	Date Published	URL Link
1.	Confessions of a VA Critic	January 2007	http://www.thinkadvisor.com/2007/01/01/confessions-of-a-va-critic
2.	Lesson 1, The Trigonometry of Retirement Income	February 2007	http://www.thinkadvisor.com/2007/02/01/lesson-1-the-trigonometry-of-retirement-income
3.	Lesson 2, The Uncertainty of Death and Taxes	March 2007	http://www.thinkadvisor.com/2007/03/01/lesson-2-the-uncertainty-of-death-and-taxes
4.	Lesson 3: Sustainability and Ruin	April 2007	http://www.thinkadvisor.com/2007/04/01/lesson-3-sustainability-and-ruin
5.	Lesson 4: Inflation Rates and Retirement	May 2007	http://www.thinkadvisor.com/2007/05/01/lesson-4-inflation-rates-and-retirement
6.	Lesson 5: Spending Buckets and Financial Placebos	June 2007	http://www.thinkadvisor.com/2007/06/01/lesson-5-spending-buckets-and-financial-placebos
7.	Lesson 6: Longevity Risk	July 2007	http://www.thinkadvisor.com/2007/07/01/lesson-6-longevity-risk
8.	Lesson 7: Annuitization	August 2007	http://www.thinkadvisor.com/2007/08/01/lesson-7-annuitization
9.	Lesson 8: Defined Benefit Pensions: Winners & Losers	September 2007	http://www.thinkadvisor.com/2007/09/01/lesson-8-defined-benefit-pensions-winners-losers
10.	Lesson 9: Moral Hazard	October 2007	http://www.thinkadvisor.com/2007/10/01/lesson-9-moral-hazard
11.	Lesson 10: Questions to Ask Annuity Wholesalers	November 2007	http://www.thinkadvisor.com/2007/11/01/lesson-10-questions-to-ask-annuity-wholesalers
12.	Lesson 11: Feast or Famine First?	December 2007	http://www.thinkadvisor.com/2007/12/01/lesson-11-feast-or-famine-first
13.	Innovation in Insurance	January 2008	http://www.thinkadvisor.com/2008/01/01/innovation-in-insurance
14.	Are You a Stock or a Bond?	October 2008	http://www.thinkadvisor.com/2008/10/01/are-you-a-stock-or-a-bond
15.	Frustrations of a Variable Annuity Advocate	July 2009	http://www.thinkadvisor.com/2009/07/01/frustrations-of-a-variable-annuity-advocate
16.	What is a Guaranteed Rate Really Worth?	August 2009	http://www.thinkadvisor.com/2009/08/01/annuity-analytics-what-is-a-guaranteed-rate-really

#	Article's Title	Date Published	URL Link
17.	How Much to Allocate to Annuities?	September 2009	http://www.thinkadvisor.com/2009/09/01/annuity-analytics-how-much-to-allocate-to-annuitie
18.	How Risky is Longevity?	October 2009	http://www.thinkadvisor.com/2009/10/01/annuity-analytics-how-risky-is-longevity
19.	Annuity Analytics: Back to Basics	November 2009	http://www.thinkadvisor.com/2009/11/01/annuity-analytics-back-to-basics
20.	Truth in Retirement-Product Labeling	December 2009	http://www.thinkadvisor.com/2009/12/01/annuity-analytics-truth-in-retirementproduct-label
21.	Annuity Analytics: A Truly Relevant Benchmark	January 2010	http://www.thinkadvisor.com/2010/01/01/annuity-analytics-a-truly-relevant-benchmark
22.	Annuity Analytics: Age-Old Lessons From Japan	February 2010	http://www.thinkadvisor.com/2010/02/01/annuity-analytics-ageold-lessons-from-japan
23.	Annuity Analytics: Fidelity & MetLife's Variable Annuity	March 2010	http://www.thinkadvisor.com/2010/03/01/annuity-analytics-fidelity-metlifes-growth-and-gu
24.	Annuity Analytics: Presidential Life's Sentinel Annuity	April 2010	http://www.thinkadvisor.com/2010/04/01/annuity-analytics-presidential-lifes-sentinel-annu
25.	Annuity Analytics: Penn Mutual's PPP Living Benefit	May 2010	http://www.thinkadvisor.com/2010/05/01/annuity-analytics-penn-mutuals-ppp-living-benefit
26.	Annuity Analytics: AXA Equitable Retirement Cornerstone	June 2010	http://www.thinkadvisor.com/2010/06/01/annuity-analytics-axa-equitable-retirement-corners
27.	I Bought my First VA...Just in the Nick of Time	September 2010	http://www.thinkadvisor.com/2010/09/01/i-bought-my-first-vajust-in-the-nick-of-time
28.	How to Get an A on the Exam	November 2010	http://www.thinkadvisor.com/2010/11/01/how-to-get-an-a-on-the-exam
29.	Transamerica Principium II	January 2011	http://www.thinkadvisor.com/2011/01/01/transamerica-principium-ii
30.	Monthly vs. Quarterly vs. Annual: Does Frequency Matter?	March 2011	http://www.thinkadvisor.com/2011/03/01/monthly-vs-quarterly-vs-annual-does-frequency-ma
31.	Jackson National's Perspective II	May 2011	http://www.thinkadvisor.com/2011/05/01/jackson-nationals-perspective-ii
32.	The Ins and Outs of Annuity Suitability	July 2011	http://www.thinkadvisor.com/2011/07/01/the-ins-and-outs-of-annuity-suitability
33.	What Does Retirement Really Cost?	September 2011	http://www.thinkadvisor.com/2011/09/01/what-does-retirement-really-cost

#	Article's Title	Date Published	URL Link
34.	Lunch with Professor Menahem Yaari	October 2011	http://www.thinkadvisor.com/2011/10/26/my-lunch-with-professor-menahem-yaari
35.	The Debt Retirees Owe to Fibonacci	December 2011	http://www.thinkadvisor.com/2011/12/26/the-debt-retirees-owe-to-fibonacci
36.	Gompertz' Law of Mortality:	February 2012	http://www.thinkadvisor.com/2012/02/01/gompertz-law-of-mortality-how-long-must-your-money
37.	Is a Pension Annuity Worth It?	February 2012	http://www.thinkadvisor.com/2012/02/24/is-a-pension-annuity-worth-it
38.	What Is a Proper Spending Rate in Retirement?	March 2012	http://www.thinkadvisor.com/2012/03/26/milevsky-what-is-a-proper-spending-rate-in-retirem
39.	How Much in Risky Stocks vs. Safe Cash?	April 2012	http://www.thinkadvisor.com/2012/04/25/milevsky-how-much-in-risky-stocks-vs-safe-cash
40.	What Is Your Financial Legacy – Today?	May 2012	http://www.thinkadvisor.com/2012/05/24/milevsky-what-is-your-financial-legacy-today
41.	Annuities 2020:	December 2012	http://www.thinkadvisor.com/2012/12/20/annuities-2020-will-the-future-of-vas-look-like-th
42.	Turn on Your Living Benefit, Now	February 2013	http://www.thinkadvisor.com/2013/02/22/milevskys-va-shocker-turn-on-your-living-benefit-n
43.	Solving Chile's Annuity Puzzle	May 2013	http://www.thinkadvisor.com/2013/05/28/milevsky-solving-chiles-annuity-puzzle
44.	Annuity Anomaly: EIA + GLB > SPIA?	July 2013	http://www.thinkadvisor.com/2013/07/01/annuity-anomaly-eia-glb-spia
45.	Mispricing Annuities, Then and Now	August 2013	http://www.thinkadvisor.com/2013/08/26/milevsky-mispricing-annuities-then-and-now
46.	A Most Curious Will(iam)	October 2013	http://www.thinkadvisor.com/2013/10/28/milevskys-tales-from-annuity-history-a-most-curiou