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#### CURRENT POSITION

- Associate Professor of Actuarial Finance, Department of Finance, Imperial College Business School. 2017-present.

#### PAST POSITIONS

- Associate Professor of Risk Management and Insurance (with tenure), J. Mack Robinson College of Business, Georgia State University, 2015-17.
- Visiting Associate Professor of Actuarial Finance, Department of Finance, Imperial College Business School. 2015-16.
- Adjunct Associate Professor, Department of Finance, Bocconi Milan, 2014-15.
- Assistant and Associate Professor of Actuarial Finance, Finance Group, Imperial College Business School. 2007-2015.
- Lecturer (RCUK fellowship), Faculty of Actuarial Science and Insurance, Cass Business School, 2005-07.
- Research fellow, Institute for Quantitative Methods, Bocconi Milan, 2004-05.

#### PROFESSIONAL EXPERIENCE

- Technical Assistant, International Monetary Fund, Monetary and Capital Markets Department, 2016-present.
- Insurance Risk and Finance Research Center, Nanyang Business School: Researcher, 2014-present.
- Lloyd's Market Association Loss & Exposure Data Working Group: Member, 2014-present.
- Imperial Space Lab: Member of the Steering Committee, 2013-present.
- Munich Risk and Insurance Centre: Associate Member, 2010-present.
- Pensions Institute, London: Fellow, 2008-present.
- Member, Steering Committee, PRMIA Atlanta Chapter, 2016-17.
- International Reinsurance Pricing Working Party, Institute of Actuaries and Casualty Actuarial Society: Member, 2015-16.
- Centralized Clearing of OTC Derivatives Working Party, Institute of Actuaries: Member, 2012-14.
- Benchmarking for Stochastic Models Working Party, Institute of Actuaries: Member, 2007-09.
- Economics and Research Department, Association of British Insurers (on secondment from Cass Business School), 2005-06.
- Editorial boards: co-editor of *ASTIN Bulletin - The Journal of the International Actuarial Association*; associate editor of *Risks*.

#### EDUCATION

- Ph.D. in Mathematics for Economic Decisions, University of Trieste, (joint program with Bocconi Milan, Turin, Venice, Verona), awarded 2006. Thesis: *Stochastic models for dynamic mortality: Actuarial applications*.
- MSc in Actuarial Management, Cass Business School, 2003.
- Laurea (BSc & MSc) in Statistics, University of Trieste, 1999.

## AWARDS

- Brian Hey Prize, Faculty and Institute of Actuaries, *Analyzing the disconnect between the reinsurance submission and global underwriter's needs.*
- Peter Clark Prize, Faculty and Institute of Actuaries, *Modelling extreme market events.*
- Giuseppe Ottaviani Prize, Italian Institute of Actuaries, *Lee-Carter goes risk-neutral.*
- Mutua Pelajo Prize, *The fair value of guaranteed annuity options.*
- SCOR UK 1<sup>st</sup> Actuarial Prize, MSc Dissertation *New accounting standards: The fair value of life insurance liabilities.*
- 'Mario Gasbarri' postgraduate scholarship, Alleanza Assicurazioni.
- Laurea Thesis Award, Alleanza Assicurazioni.

## RESEARCH GRANTS

- a. *Weather Index-based & Weather-driven Risk Services* (with Imperial College London, Reading University, Ecole Polytechnique, Hamburg University; in collaboration with World Food Program, WillisTowersWatson, and the World Bank), EIT/Climate-KIC, 2015-17, EUR 1.8m. [CI]
- b. *Space Weather the Economic Case* (with J. Eastwood, Imperial Physics [PI], and Mark Gibbs, Met Office; in collaboration with Airbus Defence and Space Ltd, UCL's Mullard Space Science Laboratory, National Oceanic and Atmospheric Administration [NOAA], South African National Space Agency [SANSA]), Science & Technology Facilities Council, 2015-16, GBP 602k. [CI]
- c. *Managing Model Risk in Insurance-Linked Securities* (with M. Ghossoub, Waterloo), Society of Actuaries, 2015-16, USD 18k. [co-PI]
- d. *Large Commercial Risks in the Asia-Pacific Region* (with A. Milidonis, Nanyang Business School Singapore; in collaboration with SCOR), Insurance Risk and Finance Research Centre, NTU Singapore, 2014-15, SGD 80k. [CI]
- e. Financial Module Lead for *OASIS - Open Access Loss Modelling Framework* (with R. Toumi [PI], J. Polak, W. Buytaert at Imperial, and TU Delft, IPSL Paris), EIT/Climate-KIC, EUR 3.6m (financial module: EUR 400k), 2011-14. [CI]
- f. *Modeling large losses in the insurance industry*, Financial Services KTP (NERC, TSB, ESRC, IICI, Liberty, Hiscox), GBB 614k, 2011-13. [PI]
- g. *Risk appetite indexing* (with N. Meade), Financial Services KTP (TSB, ESRC, Willis), GBP 138k, 2010-12. [PI]
- h. *Modeling and Risk Management Implications of Weather-related Extreme Events* (with B. Hoskins, W. Distaso), Imperial EPSRC Strategic Fund, GBP 35k, 2010. [CI]
- i. *Informed intermediation of longevity exposures: Pension buyouts and ILS investment* (with D. Blake), CAREFIN, Bocconi Milan, GBP 4k, 2009. [PI]
- j. *Sequential analysis of insurance data* (with A. Tsanakas), UK Institute of Actuaries, GBP 14k, 2008. [PI]
- k. *On a generalization of the Gerber-Shiu function* (with M. Morales), US Society of Actuaries, USD 10k, 2007. [CI]

## WORKING PAPERS

1. Systemic risk, credit default swaps, and bailout guarantees (with P. Della Corte and E. Shi)
2. Security posture assessment in conflict areas: The value of spatio-temporal information (with D. Benedetti, M. Shoukru)
3. Optimal portfolio choice with path dependent labor income: The infinite horizon case (with F. Gozzi, C. Prosdocimi)
4. Large Commercial Exposures and Tail Risk: Evidence from the Asia-Pacific P&C Insurance Market (with D. Benedetti and A. Milidonis)
5. Insurance contract design and endogenous frailty (with D. Benedetti)
6. A pricing formula for delayed claims: Appreciating the past to value the future (with B. Goldys, C. Prosdocimi)
7. Health Insurance, Portfolio Choice, and Retirement Incentives (with E. Barucci, D. Marazzina)



8. Optimal collateralization with bilateral default risk (with D. Bauer, L.R. Sotomayor)
9. Dynamic incentives with event risk (with C. Lepore)
10. Optimal insurance with counterparty default risk (with P. Millossovich)

#### PUBLISHED PAPERS

1. Satellite data and machine learning for weather risk management and food security (with E. Chavez), to appear in *Risk Analysis*.
2. Analyzing the disconnect between the reinsurance submission and global underwriter's needs (with J. Buchanan, M.S. Affy, S. Andrews, C. Boggs, L. Chenge, P. Gates, E. Greenhill, Y. Hang, K. Hilferty, M. Kisala, S. Li, A.J. Mata, E. O'Baighill, J. Ogungbesan, A.B. Shrubshall, B. Zhou), to appear in *The British Actuarial Journal*.
3. The Cross-Section of Asia-Pacific Mortality Dynamics: Implications for Longevity Risk Sharing (with Y. Lin, A. Milidonis), 2016, to appear in *The Journal of Risk and Insurance*.
4. The economic impact of space weather – where do we stand? (with J. Eastwood, M.A. Hapgood MA, L. Green, M.M. Bisi, R.D. Bentley, R. Wicks, L.A. McKinnell, M. Gibbs, C. Burnett), 2016, *Risk Analysis*, vol. 37(2), pp. 206-218.
5. The cost of counterparty risk and collateralization in longevity swaps (with D. Blake, L. Pitotti, A. Sun), *The Journal of Risk and Insurance*, 2016, vol. 83, pp. 387-419.
6. Tail risk in commercial property insurance (with E. Chavez), *Risks*, 2014, vol. 2(4), pp. 393-410
7. Keeping some skin in the game: How to start a capital market in longevity risk transfers (with D. Blake), *North American Actuarial Journal*, 2014, vol. 18(1), pp. 14-21.
8. Informed intermediation of longevity exposures (with D. Blake), *Journal of Risk and Insurance*, 2013, vol. 80(3), pp. 559-584.
9. A note on scale functions and the time value of ruin for Lévy risk processes (with A. Kyprianou), *Insurance: Mathematics & Economics*, 2010, vol. 46(1), pp. 85-91.
10. On an extension of the Gerber-Shiu function to path-dependent penalties (with M. Morales), *Insurance: Mathematics & Economics*, 2010, vol. 46(1), pp. 92-97.
11. Securitizing and tranching longevity exposures (with D. Blake), *Insurance: Mathematics & Economics*, 2010, vol. 46(1), pp. 186-197.
12. Regression-based algorithms for life insurance contracts with surrender guarantees (with A.R. Bacinello and P. Millossovich), *Quantitative Finance*, 2010, vol. 10, pp. 1077-1090.
13. Stochastic mortality under measure changes (with M. Denuit and P. Devolder), *Scandinavian Actuarial Journal*, 2010, vol. 2010, pp. 284-311.
14. Pricing life insurance contracts with early exercise features (with A.R. Bacinello, E. Biffis and P. Millossovich), *Journal of Computational and Applied Mathematics*, 2009, vol. 233(1), pp. 27-35.
15. Modelling extreme market events (with R. Frankland, A.D. Smith, T. Wilkins, E. Varnell, A. Holtham, S. Ethun, D. Dullaway), *The British Actuarial Journal*, 2009, vol. 15(I), pp. 99-217.
16. A bidimensional approach to mortality risk (with P. Millossovich), *Decisions in Economics & Finance*, 2006, vol. 29(2), pp. 71-94.
17. Lee-Carter goes risk-neutral: An application to the Italian annuity market (with M. Denuit), *Giornale dell'Istituto Italiano degli Attuari* (now *European Actuarial Journal*), 2006, vol. LXIX, pp. 1-21.
18. The fair value of guaranteed annuity options (with P. Millossovich), *Scandinavian Actuarial Journal*, 2006, vol. 2006(1), pp. 23-41.
19. Affine processes for dynamic mortality and actuarial valuations, *Insurance: Mathematics & Economics*, 2005, vol. 37(3), pp. 443-468.
20. Demographic risks in pension schemes with combined benefits (with A. Olivieri), *Giornale dell'Istituto Italiano degli Attuari* (now *European Actuarial Journal*), 2002, vol. LXV, pp. 137-174.



## BOOK CHAPTERS

1. Managing capital market risk for retirement (with R. Kosowski), in *Recreating Sustainable Retirement: Extreme Risk and Pension Security*, 2014, Oxford University Press (eds. Raimond Maurer, Olivia Mitchell).
2. Mortality-linked securities and derivatives (with D. Blake), *Optimizing the Aging, Retirement and Pensions Dilemma* (M. Bertocchi, S.L. Schwartz, W.T. Ziemba eds.), 2010, John Wiley & Sons.
3. Fair value of insurance liabilities (with P. Millossovich), *Encyclopedia of Quantitative Risk Assessment*, 2008, John Wiley & Sons, New York.
4. Pricing of life insurance liabilities, *Encyclopedia of Quantitative Risk Assessment*, 2008, John Wiley & Sons, New York.

## INVITED TALKS AND SEMINARS

2016: LUISS Rome; FERM 2016, Zhongshan University; University of Zurich. 2015: CAS Reinsurance Seminar, Philadelphia; Pension Research Network Workshop, London; General Insurance Pricing Forum, London. 2014: HEC Montreal; University of Amsterdam; Cass Business School; Bocconi, Milan; European Actuarial Conference, Vienna (invited short course); Risk Management Summer School, Rome La Sapienza & Luiss; Lloyd's & LMA Analytics Forum, London; Longevity Risk Workshop, Georgia State University (CEAR); General Insurance Pricing Forum, London; Banque de France - Toulouse School of Economics Seminar, Paris; 12<sup>th</sup> Actuarial and Financial Mathematics Conference, Brussels; Nanyang Technological University, Singapore; Fudan University, Shanghai. 2013: Nomura Centre for Mathematical Finance, University of Oxford; ECB OTC Derivatives Conference, Banque de France, Paris; Risk Pricing in Financial Engineering, Shanghai; German Actuarial Association Scientific Day 2013; Pension Research Council Symposium, Wharton School; Global Derivatives 2013, Amsterdam; Risk Minds Insurance 2013, Amsterdam. 2012: DAA-Young Mathematicians Workshop, Reimsburg Castle; AFI Financial Engineering Summer School, Madrid; University of Bologna; Collegio Carlo Alberto, Turin; Milan Politecnico; NBER Insurance Markets and Catastrophe Risk Conference; University of Hanover/Talanx; Global Derivatives 2012, Barcelona; Georgia State University; Queen's University, Belfast; Risk Minds Insurance 2012, Geneva. 2011: University of Copenhagen; University of Bonn; Georgia State University (CEAR); University of Ulm; ISFA, Lyon; Talanx, Hanover; AXA Longevity and Pension Funds Conference, Paris. 2010: Chinese University of Hong Kong; Australian School of Business, UNSW, Sydney; Summer School in Risk Management and Control, Rome; DAG-Stat 2010 (Risk Analysis section), Dortmund; IWAP 2010, Madrid; MAF 2010, Ravello; Cass Business School; Munich School of Management, LMU Munich; Recanat School of Business, Tel Aviv University. 2009: CESIF-Rome Tor Vergata (econ); Australian School of Business, UNSW, Sydney; Risk and Stochastics Day, LSE, London; ISEG, TU Lisbon. 2008: 2008 Conference in Actuarial Science and Finance, Samos; International workshop on Gerber-Shiu Functions, Linz; Bachelier Finance Society World Congress (longevity risk session), London; Swiss Banking Institute, University of Zurich; University of Modena and Reggio Emilia (econ); University of Copenhagen (maths). 2007: International Workshop on Insurance Risk Theory, Chern Institute of Mathematics, Tianjin; Heriot-Watt University, Edinburgh; Bocconi University, Milan; Tanaka Business School, Imperial College London; LSE (stats), London; University of Trieste (applied maths); Nankai University (maths), Tianjin. 2006: UCL (statistics, actuarial science), Louvain-la-Neuve; Italian Institute of Actuaries, Rome. 2005: CeRP, Collegio Carlo Alberto; University of Turin (stats and applied maths). 2004: Institute for Quantitative Methods, Bocconi University, Milan. 2003: Department of Mathematics, ETH, Zurich.

## TEACHING EXPERIENCE

- Robinson College of Business, GSU: Derivatives and valuation, Advanced Credit Risk Models, Actuarial Science Graduate Seminar.
- Imperial College Business School: Risk management, Advanced investments, Life insurance economics, Life insurance finance (MSc Actuarial Finance, MSc Risk Management and



Financial Engineering); Risk management, Risk Analysis (FTMBA, EMBA); Risk Management, Options Trading (exec-ed, PRMIA).

- Cass Business School (postgraduate): Risk management and control, Theory of risk and insurance markets, Financial risk management.

#### PROFESSIONAL SERVICE

- PhD committees: Hongjun Ha (GSU), Russel Nel (EDHEC), Alexandre Boumezoued (Paris VI), Tim Boonen (Tilburg), Helena Aro (Aalto), Jan Windemann (LMU Munich), Erik Chavez (Imperial and Ecole Normale Sup), Craig Blackburn (Australian School of Business, UNSW), Espen Masotti-Kryeger (Copenhagen), Ralf Stevens (Tilburg).
- PhD student supervision: Davide Benedetti, Elaine Shi, Ariel Sun, Caterina Lepore (Bank of England Research Department), Stephen Zhang (HSBC), Lorenzo Pitotti (Credit Suisse), Farouk Jivraj (Morgan Stanley), Athos Brogi (Unicredit).
- Scientific committees: International Congress of Actuaries 2018 (life insurance section); ARIA 2017; 2017 Brockett-Shapiro Actuarial Journal Award; IME 2016; World Risk and Insurance Congress 2015 (EGRIE section); 2014 EGRIE SCOR Young Insurance Economist Prize; International Actuarial Association 2013 (Life Section Prize).
- Referee for academic journals: *Applied Mathematics and Computation*, *ASTIN Bulletin*, *Decisions in Economics and Finance*, *European Actuarial Journal*, *Finance and Stochastics*, *Geneva Insurance Review*, *Geneva Papers on Risk and Insurance*, *Insurance: Mathematics and Economics*, *Journal of Banking and Finance*, *Journal of Computational and Applied Mathematics*, *Journal of Economic Dynamics and Control*, *Journal of Optimization Theory and Applications*, *Journal of Pension Economics & Finance*, *Journal of Risk & Insurance*, *Journal of Risk & Uncertainty*, *Management Science*, *Mathematical Finance*, *Mathematical Methods in Operations Research*, *Mathematics and Computers in Simulation*, *Mathematics and Financial Economics*, *Mathematics of Operations Research*, *Methodology and Computing in Applied Probability*, *North American Actuarial Journal*, *Quantitative Finance*, *Risk Analysis*, *Scandinavian Actuarial Journal*, *SIAM Journal on Financial Mathematics*.
- Reviewer for publishers: Blackwell Publishing, Chapman-Hall John Wiley & Sons, Pearson, Risk Books, Springer.
- Reviewer for funding bodies: EPSRC, ESRC, Mathematics of Information Technology and Complex Systems; Natural Sciences and Engineering Research Council of Canada; AXA Research Fund; ETH Zurich Research Commission.
- External examiner for MSc in Risk and Stochastics (London School of Economics) and MSc in Risk Management (Nottingham Business School).
- Professional memberships: American Economic Association, American Risk and Insurance Association, Econometric Society, European Group of Risk and Insurance Economists, Risk Theory Society, National Order of Actuaries, and Italian Institute of Actuaries.

