CURRICULUM VITAE: PAULINE BARRIEU

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Employment and Career Progression at the LSE within the Statistics Department

2022-now	Vice-Chair of Academic Board
2022-now	Head of Department
2020-2022	Academic Director (Flexible Education)
2020-2022	Academic Director (Executive Education & Online Learning)
2019-2020	Academic Lead of the LSE Data Science Initiative
2016- 2019	Head of Department
2013-2016	Deputy Head of Department
2012-now	Professor
2005-2012	Reader (Associate Professor)
2002-2005	Lecturer (Assistant Professor)

Other Responsibilities with the LSE

2022-now	Member of the Academic Nomination Committee
2022-now	Member of APRC
2021- now	Member of Council, and its sub-committees (Finance and Estate Committee and Governance Committee).
2021-now	Member of the Timetable and Course selection Programme Board.
2019-2020	Member of the Promotions Committee
2019-2020	Member of the Executive Education Working Group
2019-now	Member of the 35LIF Working Group
2018-now	Member of the Executive Education, Online and Custom Programmes Board
2018-now	Member of the Campaign Working Group (engagement and philanthropy)
2017-now	Member of the LSE Ethics Grants and Donations Panel
2017-2021	Member of the Pension Advisory Group
2017-2019	Head of Department representative
2017-2018	Member of the LSE Education Strategy Group
2013-2016	Chair of the Statistics Teaching Committee
2014-2015	Acting Director for the Centre for the Analysis of Time Series (CATS)

2007-2020	Co-director of the Centre for the Analysis of Time Series (CATS)
2006-2018	Member of the LSE Research Degree Sub-Committee
2006-2014	PhD programme director, Statistics Department

Professional Activities Outside the LSE

2020-now	Appointment as Board of Studies External Adviser – Mathematics and Statistics, Open University.
2020	Member of the SIAG/CST Best SICON Paper Prize.
2019-2022	Chair of the Board of Examiners for the University of London International Programmes
2019-now	Elected Member of Council for the Bachelier Finance Society.
2019-now	Member of the Scientific Committee for the Institut Louis Bachelier
2019-2020	Board Apprentice at Gresham House Strategic
2018	Chair of the Bruti Liberati Prize
2016-2018	Member of the Bruti Liberati Prize (Bachelier Finance Society)
2010-2018	Member of the Accreditation Panel of the Institute of Actuaries
2011-2018	Principal Examiner for the Institute of Actuaries
2015-2016	Member of the selection committee for SSHRC (Social Sciences and Humanities Research Council of Canada)

Education

2019-now	Member of the TMP programme (Advance HE) (cohort 45)
2005	Qualification as an Actuary from Institut des Actuaires Français
2002	PhD in Applied Mathematics with highest honours, laboratoire de Probabilités et Modéles aléatoires, University of Paris VI (supervisor: Nicole El Karoui).
2002	PhD in Finance with highest honours, HEC (supervisor: Marc Chesney).
1998-1999	Doctorat HEC specialization certificate, with highest honours.
1997-1998	Postgraduate diploma in Probability: "DEA Probabilités et Applications Option Finance", University Paris VI, with honours.
1994-1997	MBA, ESSEC, Graduate Business School.

Academic Journals Editorial Board Membership

2022-now	Associate Editor of Frontiers of Mathematical Finance.
2022-now	Associate Editor of Stochastic Processes and their Applications.
2019-now	Associate Editor of Management Science - Special Issue on Business and Climate Change.
2019-now	Associate Editor of Annals of Applied Probability.
2019-now	Associate Editor of SIAM Journal on Control and Optimization.
2018-now	Associate Editor of Insurance, Mathematics and Economics.

2017-now Associate Editor of SIAM Journal of Financial Mathematics.

2014-now Member of the Editorial Board of SpringerBriefs in Quantitative Finance Series.

2013-2018 Associate Editor of Bernoulli.

2009-2018 Associate Editor of Stochastic Processes and their Applications.

Honours and Prizes

2022 Portrait in the permanent exhibition of French mathematicians at Institut Henri Poincaré (Paris, France).

2021 Podcast "L'oreille mathématique" (https://maison-des-maths.paris/pauline-barrieu/) of Institut Henri Poincaré (Paris, France).

2018 Prize Louis Bachelier (biennial prize in applied mathematics jointly awarded by the London Mathematical Society, the Natixis Foundation for Quantitative Research and the Société de Mathématiques Appliquées et Industrielles (SMAI))

2018 David Sprott Distinguished Lecture, University of Waterloo (Canada)

2006 Award for the best research paper in quantitative finance, Europlace Institute of Finance: "Inf-convolution of risk measures and optimal risk transfer" (with N. El Karoui) published in Finance and Stochastics in 2005.

2006 Award for the best research paper "Finance and sustainable development", European Union (Responsible Investment Forum): "On precautionary policies" (with B. Sinclair Desgagné) published in Management Science in 2006.

Published Work And Work In Press (*in reverse chronological order*)

Books

1. "Dialogues around Models and Uncertainty", published World Scientific (2020).
2. "Risk and Stochastics: Ragnar Norberg", published by World Scientific (2019).
3. "The Handbook of Insurance-Linked Securities" (co-edited by Luca Albertini), published by Wiley (2009).

Articles in Refereed Journals

1. "A random forest-based approach for predicting spreads in the primary catastrophe bond market" (with D. Makariou and Y. Chen), Insurance: Mathematics and Economics, Vol. 101 p140-162 (2021).
2. "A finite mixture modelling perspective for combining experts' opinions with an application to quantile-based risk measures" (with D. Makariou and G. Tzougas), Risks, Vol. 9(6) 115. https://doi.org/10.3390/risks9060115 (2021).

3. "Assessing Contaminated Land Cleanup Costs and Strategies" with N. Bellamy and B. Sinclair Desgagné. *Applied Mathematical Modelling,* Vol. 42, p. 4787-492 (2017).
4. "Pricing q-forward contracts: an evaluation of estimation window and pricing method under different mortality models" with L. Veraart. *Scandinavian Actuarial Journal*, Vol. 2, p. 146-166 (2016).
5. "Assessing financial model risk" with G. Scandolo. European Journal of Operational Research, Vol. 242, p. 546-556 (2015).
6. "Robust capital requirements with model risk" with C. Ravanelli. *Economic Notes*, Vol. 44, p. 1-28 (2015).
7. "Market-consistent modelling for cap-and-trade schemes and application to option pricing" with M. Fehr. *Operations Research*, Vol. 62, p. 234-249 (2014).
8. "Reinsurance and securitisation in life insurance risk: the impact of regulatory constraints" with H. Loubergé. *Insurance: Mathematics and Economics*, Vol. 52, p.135-144 (2013).
9. "Indifference pricing with uncertainty averse preferences" with F. Giammarino. *Journal of Mathematical Economics*, Vol. 49, p. 22-27 (2013).
10. "Monotone stability of quadratic semimartingales with applications to general unbounded quadratic BSDEs" with N. El Karoui. *The Annals of Probability*, Vol. 41, p. 1831-1853 (2013).
11. "Assessing of the costs of protection in a context of switching stochastic regimes stochastic regimes" with N. Bellamy and J.M. Sahut. *Applied Mathematical Finance*, Vol 19, p.495-511 (2012).
12. "Understanding, modeling and managing longevity risk: aims and scope" with H. Bensusan, N. El Karoui, C. Hillairet, S. Loisel, C. Ravanelli and Y. Sahli. *Scandinavian Actuarial Journal*, Vol. 2012, p. 203-231 (2012).
13. "Non-linear mixture of asset return models" with S. Tobelem. *Risk Magazine*, p.74-79 (July 2012).
14. "An adaptive nonparametric model for the systematic factors of portfolio credit risk premia" with F. Giammarino. *Journal of Empirical Finance*, Vol. 16, p. 655-670 (2009).
15. "Hybrid Cat-bonds" with H. Loubergé. *Journal of Risk and Insurance*, Vol. 76, p. 547-578 (2009).
16. "Robust asset allocation under model risk" with S. Tobelem. *Risk Magazine*, p. 91-95 (February 2009). Republished in *Life and Pensions*, p. 36-40 (May 2009).
17. "Closedness results for BMO semi-martingales and application to quadratic BSDEs " with N. Cazanave and N. El Karoui. *Comptes Rendus de l'Academie des Sciences*, Vol. 346, p. 881-886 (2008).
18. "On Pareto-optimal allocations for multi-period risks" with G. Scandolo. *ASTIN Bulletin*, Vol. 38, p. 105-136 (2008).
19. "Flood insurance in the Netherlands" with R. Jongejan. *Geneva Papers on Risk and Insurance*, Vol. 33, p. 250-268 (2008).
20. "Optimal hitting time and perpetual option in a non-Levy model: Application to real options" with N. Bellamy. *Advances in Applied Probability*, Vol. 39, p. 1-20 (2007).
21. "On precautionary policies" with B. Sinclair Desgagné. *Management Science*, Vol. 52, nb 8, p.1145-1154 (2006).
22. "Iterates of the infinitesimal generators and generalized Stirling numbers associated with certain subordinators" with W. Schoutens. Journal of Computational and Applied Mathematics, Vol. 186, p. 300-323 (2006).
23. "Inf-convolution of risk measures and optimal risk transfer" with N. El Karoui. *Finance and Stochastics*, Vol. 9, nb 2, p. 269-298 (2005).
24. "Optimal risk transfer" with N. El Karoui. *Finance*, Vol. 25, p. 31-47 (2004).
25. "A study of the Hartman-Watson distribution motivated by numerical problems related to Asian options pricing" with A. Rouault and M. Yor. *Journal of Applied Probability*, Vol. 41 nb 4, p. 1049-1058 (2004).

26. “Optimal derivatives design under dynamic risk measures” with N. El Karoui. Article in *Mathematics of Finance, Contemporary Mathematics* (A.M.S. Proceedings), p. 13-26 (2004).
27. “Introduction aux produits dérivés climatiques”. *Journal de la Société Française de Statistique* Vol. 144, nb 3, p. 53-68 (2003).
28. “Optimal timing for an environmental policy in a strategic framework” with M. Chesney. *Environmental Modeling and Assessment*, Vol. 8, p. 149-163 (2003).
29. “Structuration optimale de produits dérivés et diversification en présence de sources de risque non-négociables” with N. El Karoui. *Comptes Rendus de l'Académie des Sciences*, Vol. 336, nb. 6, p. 493-498 (2003).
30. “Reinsuring climatic risk using optimally designed weather bonds” with N. El Karoui. *Geneva Papers – Risk and Insurance Theory*, Vol. 27, p. 87-113 (2002).
31. “Optimal design of weather derivatives” with N. El Karoui. *Algo Research Quaterly*, Vol. 5, n°1, p. 79-92 (spring 2002).
32. “Optimal design of derivatives in illiquid framework” with N. El Karoui. *Quantitative Finance*, Vol. 2, p. 1-8 (2002).
33. “Weather hedging at the Hot Air Gas Company” with R. Dischel. Electronic Journal: *Erivativesreview.com* (July 2001).

Refereed Chapters

1. “Innovations in insurance markets: hybrid and securitized risk-transfer solutions” with D. Cummins. In: *The Handbook of Insurance*, Second Edition (ed: G. Dionne). Springer Verlag (2013).
2. “Robust asset allocation under model risk” with S. Tobelem. In: *Alternative Investments and Strategies* (eds: Rudiger Kiesel, Matthias Scherer and Rudi Zagst). World Scientific (2010).
3. “Asset allocation under model risk” with S. Tobelem. In: *The Risk Modeling Evaluation Handbook* (eds: Greg N. Gregoriou, Christian Hoppe and Carsten S. When) MacGraw-Hill (2010).
4. “Weather derivatives” with O. Scaillet. In: *Encyclopedia for Quantitative Finance*. Wiley (2010).
5. “Securitisation”. In: *Encyclopedia for Quantitative Finance*. Wiley (2010).
6. “A primer on weather derivatives” with O. Scaillet. In: *Handbook on Uncertainty and Environmental Decision Making* (eds: Jerzy Filar and Alain Haurie). Springer International Series in Operations Research and Management science (2009).
7. “Pricing, hedging and optimally designing derivatives via minimization of risk measures” with N. El Karoui. In *Volume on Indifference Pricing* (ed: Rene Carmona), Princeton University Press (2009).
8. “Dynamic Financial Risk Management” with N. El Karoui. In: *Aspects of Mathematical Finance* (ed: Marc Yor), Springer Verlag (2008).
9. “Dynamic Financial Risk Management” with N. El Karoui. In: *Aspects des mathématiques financières*, Institut de France, Académie des Sciences, Editions Tec & Doc (2006).
10. “Impact of a market crisis on real options” with N. Bellamy. In: *Exotic Option Pricing and Advanced Levy Models* (eds: Andreas Kyprianou, Wim Schoutens and Paul Wilmott), Wiley Finance (2005).
11. “Gestion du risque climatique à l’aide de contrats financiers: l’expérience Américaine” with R. Dischel, in *“La réassurance: Approche technique*”, Economica (2003).
12. “Fundamentals of weather Financial contracts, what protection they provide, and strategies for their use” with R. Dischel, in “*The Perpetually Evolving Climate: variability, adverse weather and climate risk management*”, Risk Book, Risk Waters Group (2002).

Others

1. "Risk, Reward and Realism: Climate Science, Models and Informed Risk Trading" (with L. Smith), *Trading Risk* (April 2010).

Work Submitted For Publication

Articles in Refereed Journals

1. "Some Remarks on Policy Making under Model Uncertainty" with B. Sinclair Desgagné.
2. "A new methodology for asset allocation under model risk" with S. Tobelem.

Working Papers (work in progress)

1. "Optimality of indemnity-based and index-based transactions: a trade-off between asymmetry of information and basis risk" with A. Eyraud-Loisel, S. Loisel and P. Montesinos.
2. "From optimal reinsurance to optimal partnership contracting: a retention rate approach" with A. Eyraud-Loisel, S. Loisel and P. Montesinos.
3. "Sensitivity of cat-bond pricing to model uncertainty" with F. Niehoerster and N. Ranger.
4. "Sensitivity of Stochastic Delay Differential Equations with respect to the time lag" with N. Bellamy and E. Buckwar.

Past Research Grants

As Principal Investigator:

1998-2002	PhD funded by the French Government (Allocation de Recherche).
2003-2005	EPSRC Travel Grant "Measures of Risk and Uncertainty at the Interface of Insurance and Finance" (£8,500).
2006	Amamef Exchange Grant "Risk measurement and robust statistics" (€775).
2006-2008	British Academy Grant "Stochastic Delay Differential Equations: Robustness and Portfolio Optimization" (£5,700).
2007	British Academy Grant for the organization of a conference "Risk and Stochastics Day 2007" (£1,600).
2007-2008	London Development Agency Grant "Future Developments in the Credit Risk Market" (£8,000)
2008-2010	Columbia-LSE Alliance Collaborative Research Fund "Credit derivatives and structured credit products: issues in pricing and optimal design" (£5000).
2013	STICERD grant for the visit by Giacomo Scandolo (£6000).
2014	STICERD grant for the visit by Giacomo Scandolo (£5000).

As Co-Investigator:

2007-2011	EPSRC "Mathematical Sciences Integrated PhD" for the creation of the London Graduate Taught Course Centre in Mathematical Sciences (LTCC) (£450,646). (PIs Frank Smith and Shaun Bullett).

2008-2013	ESRC Centre for Climate Change Economics and Policy, project WP4 “Carbon Finance: Society, Technology, Market” (Total funding for the Centre: £4.5m. (PIs Judith Rees & Andrew Gouldson).
2008-2013	Munich Re “Evaluating the economics of climate risks and opportunities in the insurance sector”, project 5a “Evidence of current economic reaction and future financial products” (Total funding of £3m). (PI Leonard Smith).
2008-2012	EC FP7 People IAPP “Climate Change and the Insurance Industry” (€922,535). (PIs Henry Wynn and Arnoldo Frigessi).

Conferences Recently Organised

2007
- Mini-symposium on Environmental Economics and Stochastics in the ICIAM Conference (Zurich, Switzerland).
- Risk and Stochastics Day 2007 (London, UK).
- London Graduate School in Mathematical Finance, PhD Day (London, UK).

2008
- London Graduate School in Mathematical Finance, PhD Day (London, UK).

2009
- Special lecture for the Worshipful Company of Actuaries, LSE (London, UK).
- London Graduate School in Mathematical Finance, PhD Day (London, UK).

2010
- Special lecture for the Worshipful Company of Actuaries, LSE (London, UK).
- London Graduate School in Mathematical Finance, PhD Day (London, UK).
- Two sessions in the 'Energy and Emission Markets' stream of the EURO XXIV (24th European Conference on Operational Research) (Lisbon, Portugal).

2011
- Longevity and Pension Funds Conference (Paris, France).

2012
- Workshop on Uncertainty Quantification, Risk and Decision (London, UK).

2013
- Workshop on Uncertainty Quantification, Risk and Decision (London, UK).

2015
- Risk and Stochastics Conference in the Honour of Ragnar Norberg (London, UK)
- Scientific Committee of the IME conference (Liverpool, UK)
- Scientific Committee of the Amamef conference (Lausanne, Switzerland)

2018
- Scientific Committee of the Bachelier conference (Dublin, Ireland)

2022
- Scientific Committee of the IMS annual meeting (London, UK)

Recent Guest Lectures and Plenary Talks

2007
- Workshop Risk metrics and modelling with applications (Eurandom, Eindhoven, The Netherlands).
- German Association for Insurance and Financial Mathematics (DGVFM), Scientific Conference (Berlin, Germany).
- Workshop on Mathematics and the Environment: Energy Risk, Environmental Uncertainty and Public Decision Making (Banff, BIRS center, Canada).
- Seminar in the mathematics department, ETH (Zurich, Switzerland).
- Workshop on Economic Capital and Diversification effect at Group Level (Lyon, France).
- Marcus Evans Conference on Life Insurance Securitization (London, UK).

2008
- Workshop on Prospective mortality tables, longevity and mortality linked securities (Paris, France).
- Financial stability seminar at the Bank of England (London, UK).
- Marcus Evans Conference on Life Insurance Securitization (London, UK).
- AXA Mastery, guest lecture on Insurance Linked Securitization (Bordeaux, France).

2009
- AXA Mastery, guest lecture on Insurance Linked Securitization (Bordeaux,

France).
- Seminar in the economics department, University of Geneva (Geneva, Switzerland).
- Conference from the German and Austrian mathematical societies (Graz, Austria).

2010
- IPQ Conference on Insurance-Linked Securitisation (New-York, USA).
- Winter School on Mathematical Finance (Lunteren, The Netherlands).
- Risk and Stochastics Day (London, UK).
- Workshop on Carbon Markets as part of the conference "Chaire Finance et Developements Durables" (Paris, France).
- IMS conference (Gothenburg, Sweden).

2012
- Oberwolfach workshop on The Mathematics and Statistics of Quantitative Risk Management (Oberwolfach, Germany).

2013
- Amamef and Banach Center Conference on Advances in Mathematics of Finance (Warsaw, Poland).
- AFIR-ERM Colloquium (Lyon, France)
- IME Conference (Copenhagen, Denmark)

2015
- Oberwolfach workshop on The Mathematics and Statistics of Quantitative Risk Management (Oberwolfach, Germany).
- Public Lecture, Collegium (ETH-University of Zurich) (Zurich, Switzerland)
- INFORMS conference (Philadelphia, USA)

2016
- Plenary lecture, Bachelier Conference (New York, USA)
- Workshop on uncertainty and decision (Paris, France)

2017
- Annual Meeting of the Statistical Society of Canada (Winnipeg, Canada)

2018
- David Sprott Distinguished Lecture, University of Waterloo (Canada)

2019
- Women in Science, Paris (France)

<u>Experience of Research Student Supervision</u>

LSE

Sandrine Tobelem, PhD, who graduated in July 2011.
Flavia Giammarino, PhD, who graduated in July 2012.
Despoina Makariou, PhD, who graduated in December 2022.

Co-supervision outside of the LSE

Alexandre Mornet, PhD (joint supervision with Stéphane Loisel, Université de Lyon, France), who graduated in July 2015.
Pierre Montesinos (joint supervision with Stéphane Loisel, Université de Lyon, France). Who graduated in March 2021.