CURRICULUM VITAE

Name and Surname	Elena Vigna
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CURRENT POSITION

2020- current Full Professor in "Mathematical Methods for Economics and Actuarial and Financial Sciences" at the Dipartimento di Scienze Economico-Sociali e Matematico-Statistiche (Department ESOMAS), Università di Torino.

PREVIOUS POSITIONS

2000-2011 Assistant Professor in "Mathematical Methods for Economics and Actuarial and Financial Sciences" at the Dipartimento di Statistica e Matematica Applicata, Università di Torino.

2012- 2015 Assistant Professor in "Mathematical Methods for Economics and Actuarial and Financial Sciences" at the Dipartimento di Scienze Economico-Sociali e Matematico-Statistiche (Department ESOMAS), Università di Torino.

2015-2020 Associate Professor in "Mathematical Methods for Economics and Actuarial and Financial Sciences" at the Dipartimento di Scienze Economico-Sociali e Matematico-Statistiche (Department ESOMAS), Università di Torino

EDUCATION

1996: Laurea cum laude in Mathematics, Università di Torino (Italy).
1999: Postgraduate Certificate in Actuarial Management, City University, London (UK).
2000: PhD in "Matematica per le Decisioni Economiche", Università di Trieste (Italy).

RESEARCH AND TEACHING GRANTS

10/96-2/97: research and teaching grant by IMQ, Bocconi University.
11/99-2/00: research grant by Università di Torino.

AFFILIATIONS

2002-current Honorary Visiting Fellow of the Faculty of Actuarial Science, Cass Business School, London

2003-2009 Member of the PhD Programme Board in "Decisions in Insurance and Finance" of the Università di Torino

2009-current Research Fellow at CeRP

2010-current Carlo Alberto Affiliate

AWARDS

2002 "Edward A. Lew Award" by American Society of Actuaries for the research project "Management of De-Accumulation Risks in a Defined Contribution Environment modeling project".

VISITING POSITIONS

Feb-Mar 2001	Department of Actuarial Science and Statistics, City University, London, UK
Feb-Mar 2002	Department of Actuarial Science and Statistics, City University, London, UK
Feb-Mar 2003	Department of Actuarial Science and Statistics, City University, London, UK
Feb-Mar 2004	Faculty of Actuarial Science and Insurance, Cass Business School, London, UK

Feb-Mar 2005 Faculty of Actuarial Science and Insurance, Cass Business School, London, UK
June 2005 Department of Mathematical Sciences, Aalborg University, Denmark.

INVITED TALKS AND SEMINARS

2023 Université de Lausanne (UNIL), Département de sciences actuarielles, Lausanne, Switzerland
2023 Dipartimento di Scienze Economiche e Statistiche, Università Federico II di Napoli
2022 DGVFM (German Society for insurance and financial mathematics) Workshop for young mathematicians, Ulm, Germany.
2019 Second Italian Meeting on Probability and Mathematical Statistics, sessione "Advances in stochastic control and optimal stopping with applications"
2018 Facoltà di Economia, Università di Bolzano, sede di Brunico, Italy.
2017 School of Mathematical Sciences, Dublin City University.
2016 SIAM Conference on Financial Mathematics and Engineering, Minisymposium: Optimal Stochastic Control and Asset Allocation, Austin, Texas (USA).
2015 Institute of Insurance Science, University of Ulm, Germany.
2014 Dipartimento di Economia e Management, Università di Pisa, Italy.
2012 25th European Conference on Operational Research, Vilnius, Stream of Actuarial Science and Stochastic Methods, Lithuania.
2011 Institut für Finanzmarktökonomie und Statistik, University of Bonn, Germany.
2011 Dipartimento di Scienze Economiche, Università degli Studi di Brescia, Italy.
2011 Short course on Stochastic Mortality, Institut des Sciences Actuarielles, UCL, Louvain-la-Neuve, Belgium.
2010 24th European Conference on Operational Research, Lisbon, Stream of Optimization and Control, Portugal.
2009 Workshop on "Gli schemi pensionistici a contribuzioni definite per la previdenza obbligatoria e complementare: problemi e prospettive", Università di Cassino, Italy.
2009 Dipartimento di Matematica per le Decisioni Economiche, Finanziarie e Assicurative, Università Sapienza di Roma, Italy.
2008 Workshop on "Prospective Mortality Tables, Longevity and Mortality Linked Securities", org. by CREST-AXA, Paris, France.
2008 Faculty of Actuarial Science and Insurance, Cass Business School, City University, London, UK.
2005 Department of Mathematical Sciences, University of Aalborg, Denmark.
2005 Conference PARC (conference on Actuarial Topics), Institut de Sciences Actuarielles, Louvain-la-Neuve, Belgium.
2003 Faculty of Economics, Università del Piemonte Orientale, Italy.

PARTICIPATION TO FINANCED RESEARCH PROJECTS

2000-current she partecipates in Italian local and national research projects.
2000 she wins, together with S. Haberman, a research grant on the project "New Approaches to Annuitization". Sponsor: Institute of Actuaries Research Committee.
2003 she is the Unit Responsible of the National Research Project PRIN 2003 "Conseguenze economiche delle valutazioni personali di ambiguità ed equità. Un'analisi teorica e sperimentale".
2008 she wins, together with M. Di Giacinto and B. Højgaard, a grant for the research project "Optimal time of annuitization in the decumulation phase of a defined contribution pension scheme", financed by CAREFIN (Centre for Applied Research in Finance); Università Bocconi, Milano.
2009 she wins, together with P. De Blasi, S. Favaro, R. Ignaccolo and I. Pruenster a research project called "Bando Scienze Umane e Sociali", financed by Regione Piemonte.

INSTITUTIONAL ACTIVITIES

2013-2016 member of the Teaching Committee (Commissione Didattica) of Department ESOMAS, Università di Torino.

2016-2022 Director of the Master Degree in Quantitative Finance and Insurance, Department ESOMAS, Università di Torino.

ORGANIZATIONAL ACTIVITIES

2009-2014 Organizer of the series of Workshops in Capital Markets, CeRP and Collegio Carlo Alberto

2010 Organizer and chairman of the Session "Pension funds" in the Stream of Actuarial Science and Stochastic Methods at 24th European Conference on Operational Research (EURO XXIV), Lisbon.

2012 Organizer and chairman of the Session "Pension funds" in the Stream of Actuarial Science and Stochastic Methods at 25th European Conference on Operational Research (EURO XXIV), Vilnius.

CONSULTANCY ACTIVITIES

2019-current member of Commissione Attuariato e Finanza, Reale Mutua Assicurazioni

EDITORIAL ACTIVITY

Referee for: Annals of Actuarial Science, Annals of Operations Research, Applied Mathematical Finance, Applied Mathematics and Optimization, ASTIN Bulletin, Central European Journal of Operations Research, Decisions in Economics and Finance, Discrete Dynamics in Nature and Society, European Actuarial Journal, European Journal of Operational Research, IMA Journal of Management Mathematics, Insurance: Mathematics and Economics, International Journal of Managerial Finance, International Journal of Theoretical and Applied Finance, International Review of Economics and Finance, Journal of Banking and Finance, Journal of Computational and Applied Mathematics, Journal of Control and Decision, Journal of Economics Dynamics and Control, Journal of Mathematical Economics, Journal of Pension Economics and Finance, Journal of Risk and Insurance, Macroeconomic Dynamics, Mathematical Finance, Mathematics and Financial Economics, North American Actuarial Journal, Optimization, Quantitative Finance, Scandinavian Actuarial Journal, SIAM Journal on Financial Mathematics, Studies in Nonlinear Dynamics and Econometrics, The European Journal of Finance.

PHD STUDENTS SUPERVISION

2010-2013 supervision of Petar Jevtić student in the Vilfredo Pareto PhD in Economics. Defense done in March 2013.

2021- Maria Aragona (Vilfredo Pareto PhD in Economics)

PUBLICATIONS IN INTERNATIONAL REFEREED JOURNALS

- "Tail optimality and preferences consistency for intertemporal optimization problems", *SIAM Journal on Financial Mathematics* **13**, 295-320, 2022.
- "On time consistency for mean-variance portfolio selection", *International Journal of Theoretical and Applied Finance* **23** (06), 1-22, 2020.
- "Mean-variance dynamic optimality for DC pension schemes", with F. Menoncin, *European Actuarial Journal* **10**, 125-148, 2020.
- "The Italian Pension Gap: a Stochastic Optimal Control Approach", with A. Milazzo, *Risks 2018*, 6, 48.
- "Solvency requirement in a unisex mortality model", with A. Chen and M. Guillen, *ASTIN Bulletin* **48**, 1219-1243, 2018.
- "Mean-variance target-based optimisation for defined contribution pension schemes in a stochastic framework", with F. Menoncin, *Insurance: Mathematics and Economics* **76**, 172-184, 2017.
- "A unisex stochastic mortality model to comply with EU Gender Directive", with A. Chen, *Insurance: Mathematics and Economics* **73**, 124-136, 2017.

- "Spouses' dependence across generations and pricing impact on reversionary annuities", with E. Luciano and J. Spreeuw, *Risks 2016*, 4, 16. (Special Issue: Life Insurance and Pensions).
- "Single and cross-generation natural hedging of longevity and financial risk", with E. Luciano and L. Regis, *Journal of Risk and Insurance* **84**, 961-986, 2017.
- "Income drawdown option with minimum guarantee", with M. Di Giacinto, S. Federico and F. Gozzi, *European Journal of Operational Research* **234**, 610-624, 2014.
- "Mortality surface by means of continuous time cohort models", with E. Luciano and P. Jevtić, *Insurance: Mathematics and Economics*, **53**, 122-133, 2013.
- "On efficiency of mean-variance based portfolio selection in DC pension schemes", *Quantitative Finance* **14**, 237-258, 2014.
- "On the sub-optimality cost of immediate annuitization in DC pension funds" with M. Di Giacinto, *Central European Journal of Operations Research*, **20**, 497-527, 2012.
- "Delta and Gamma hedging of mortality and interest rate risk", with E. Luciano and L. Regis, *Insurance: Mathematics and Economics* **50**, 402-412, 2012.
- "Choosing the optimal annuitization time post retirement" with R. Gerrard and B. Højgaard, *Quantitative Finance* **12***,* 1143-1159, 2012.
- "Modelling stochastic mortality for dependent lives", with E. Luciano and J. Spreeuw, *Insurance: Mathematics and Economics* **43**, 234-244, 2008.
- "Mortality risk via affine stochastic intensities: calibration and empirical relevance", with E. Luciano, *Belgian Actuarial Bulletin* **8**, 5-16, 2008.
- "The Management of De-cumulation Risks in a Defined Contribution Pension Scheme", with R. Gerrard and S. Haberman, *North American Actuarial Journal* **10** (1), 84-110, 2006.
- "Optimal investment choices post retirement in a defined contribution pension scheme", with R. Gerrard and S. Haberman, *Insurance: Mathematics and Economics* **35**, 321-342, 2004.
- "Optimal Investment Strategies and Risk Measures in Defined Contribution Pension Schemes" with S. Haberman, *Insurance: Mathematics and Economics* **31**, 35-69, 2002.
- "Optimal Investment Strategy for Defined Contribution Pension Schemes" with S.Haberman, *Insurance: Mathematics and Economics* **28**, 233-262, 2001.

WORKING PAPERS

- Optimal additional voluntary contribution in DC pension schemes to manage inadequacy risk, with H. Ferreira Morici, 2023, Collegio Carlo Alberto Notebook 699/2023.
- Portfolio optimization in DC pension scheme with unhedgeable stochastic wage, with F. Menoncin, 2021

OTHER PUBLICATIONS

- "Stochastic Control Theory For Pension Funds", with B. Højgaard. *Wiley StatsRef: Statistics Reference Online,* 1-10, 2017.
- "Convenienza finanziaria dei fondi pensione: confronto tra lavoratore aderente e lavoratore non aderente a un fondo aziendale", *INPDAP – Rivista bimestrale dell'Istituto Nazionale di Previdenza per i dipendenti dell'Amministrazione Pubblica – N: 4/98, pag. 121-132, luglio/agosto 1998*.

CONFERENCE PROCEEDINGS

- "A switch criterion for defined contribution pension schemes", with B. Arts, *Proceedings of the 13th International AFIR Colloquium, 261-290, 2003.*

TECHNICAL REPORTS

- "Constrained portfolio choices choices in the de-cumulation phase of a pension plan", with M. Di Giacinto, S. Federico and F. Gozzi, Carlo Alberto Notebook 155/2010, preprint of SSRN, available at http://papers.ssrn.com/sol3/papers.cfm?abstract\underline{ }id=1600130.

- "Mean-variance inefficiency of CRRA and CARA utility functions for portfolio selection in defined contribution pension schemes", Carlo Alberto Notebook 108/2009 and CeRP WP 89/09.
- "Mean-variance portfolio selection and efficient frontier for defined contribution pension schemes" with B. Højgaard, 2007, *Technical report R-2007-13. Department of Mathematical Sciences. Aalborg University*.
- "Non mean reverting affine processes for stochastic mortality", with E. Luciano, 2005, Collegio Carlo Alberto Notebook 30/2006.
- "The income drawdown option: quadratic loss", with R. Gerrard, S. Haberman and B. Højgaard, *Actuarial Research Paper No. 155, Cass Business School, City University, London, 2004.*

TEACHING TEXTBOOKS

- "Principi di Matematica per l'Economia", with E. Castagnoli and M. Marinacci, EGEA, Seconda Edizione, 2017.
- "Principi di Matematica per l'Economia (Versione Integrale)", with E. Castagnoli and M. Marinacci, Le Dispense del Pellicano, Libreria EGEA, 2014.
- "Principles of Mathematics and Economics", with S. Cerreia-Vioglio and M. Marinacci. Accepted for publication by SPRINGER.
- "Principi di Matematica per l'Economia. Esercizi svolti.", with G. Chiomio, M. Marinacci and C. Mattalia, EGEA, 2017.
- "Principles of Mathematics and Economics. Exercises", with G. Chiomio, C. Mattalia and M. Marinacci, EGEA, 2018.

Torino, October 2023