Lorenzo Cerboni Baiardi -

PERSONAL DATA

Born in Urbino (Italy), 18 November 1983;
fiscal id: CRBLNZ83S18L500B

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loren.cerbonibaiardi@unibo.it

EDUCATION

University of Urbino "Carlo Bo", Urbino, Italy

- Ph.D., Complexity science; February 2016
  - Thesis Title: Adaptive models of learning in complex physical and social systems
  - Thesis Topic: *Complex and nonlinear dynamics in economics and physics*
  - Advisors: Gian Italo Bischi and Gianluca M. Guidi

University of Bologna "Alma Mater Studiorum", Bologna, Italy

- Master Degree, Physics; Mar 2010

  Topic: *Towards statistical mechanics of cognitive systems*
  Advisor: Armando Bazzani

- Bachelor Degree, Physics; Oct 2007

  Topic: *Fundamentals in electrodynamics of continuous media*
  Advisor: Roberto Zucchini

PRESENT POSITION

Associate professor January 17, 2022 to present

Department of Mathematics, University of Bologna. SSD: SECS-S/06.

PAST POSITIONS

Researcher December 31, 2019 to January 16, 2022

Department of Economics, Statistics and Finance, University of Calabria. SSD: SECS-S/06.

Researcher October 1, 2018 to December 30 2019

Department of Economics and Management, University of Pisa. SSD: SECS-S/06.

Research fellow March 1, 2018 to September 30, 2018

Department of Economics, quantitative Methods and Management, University of Milano-Bicocca, Milano, Italy.
Research topic: Effetti delle fonti rinnovabili nei mercati dell'elettricità.
SSD: SECS-P/01, SECS-P/06.
Supervisor: Prof. Lucia Visconti Parisio

Research fellow Jenuary 2017 to December 2017

Department of Economics and Management, University of Pavia, Italy.
Research topic: scalar and vector optimization techniques for the study of economics and financial applications. Academic discipline: mathematical methods of economics, finance and actuarial sciences (SECS-S/06).

Supervisor: Prof. Elena Molho

Scholarship holder Jenuary 15, 2016 to July 15, 2016

Department of Economics Management and Statistics, University of Milano-Bicocca
Research topics: nonlinear economic dynamics. Academic discipline: mathematical methods of economics, finance and actuarial sciences (SECS-S/06).
Supervisor: Prof. Ahmad K. Naimzada

Membership May 2015 to May 2016

Member of the Virgo-Ligo collaboration group,
Department of Pure and Applied Sciences, University of Urbino.
Research topic: machine learning based control in gravitational wave detectors,
Supervisors: Prof. Gianluca M. Guidi, Jan Harms

Publications

Caprari E., Cerboni Baiardi L., Molho E.: "Scalarization and robustness in uncertain vector optimization problems: a non componentwise approach", accepted with minor remarks on January 2022 in *Journal of Global Optimization*

Caravaggio A., Cerboni Baiardi L., Sodini M.: "A note on symmetry breaking in a non-linear marketing model", Decisions in Economics and Finance (2021); https://doi.org/10.1007/s10203-021-00339-6

Cerboni Baiardi L., Costabile M., De Giovanni D., Lamantia F., Leccadito A., Massabò I., Menzietti M., Pirra M., Russo E. and Staino A. "The Dynamics of the $S\&P$ 500 under a Crisis Context: Insights from a Three-Regime Switching Model", Risk (2020); doi:10.3390/risks8030071

Cerboni Baiardi L., Panchuk A. "Global dynamic scenarios in a discrete-time model of renewable resource exploitation: a mathematical study", Nonlinear dynamics (2020), doi: 10.1007/s11071-020-05898-8

Cerboni Baiardi L., Naimzada A. "Existence, multiplicity and policy prescriptions for debt sustainability in an OLG model with fiscal policy and debt", Decision in Economics and Finance (2020).
doi: 10.1007/s10203-020-00284-w

Cerboni Baiardi, L., Naimzada A., Panchuk A. "Endogenous desired debt in a Minskyan business model", Chaos, Solitons and Fractals (2019).
doi: 10.1016/j.chaos.2019.109470.

Cerboni Baiardi L., Naimzada A. "An evolutionary Cournot oligopoly model with imitators and perfect foresight best responders", Metroeconomica (2019).
doi: 10.1111/meca.12264.

Caprari E., Cerboni Baiardi L., Molho E. "Primal worst and dual best in robust vector optimization". European journal of operational research (2019).
doi: 10.1016/j.ejor.2019.01.003.

Cerboni Baiardi L., Naimzada A. "An evolutionary model with best response and imitative rules". Decisions in Economics and Finance (2019).
doi: 10.1007/s10203-018-0219.

Cerboni Baiardi L., Naimzada A. "An oligopoly model with rational and imitation rules". Mathematics and computers in simulation (2018). doi: 10.1016/j.matcom.2018.09.005.

Cerboni Baiardi L., Naimzada A. "An oligopoly model with best response and imitation rules", Applied mathematics and computation 336, 193–205 (2018). doi: 10.1016/j.amc.2018.04.061.

Cerboni Baiardi L., Naimzada A. "Imitative and best response behaviors in a nonlinear Cournotian setting", Chaos 28, 055913 (2018). doi: 10.1063/1.5024381.

Cerboni Baiardi L, Naimzada A. "Experimental oligopolies modeling: a dynamic approach based on heterogeneous behaviors", Communications in Nonlinear Science and Numerical Simulation 59, 57-61 (2018). doi: 10.1016/j.cnsns.2017.05.010.

Bischi G.I., Cerboni Baiardi L. "Bubbling, riddling, blowout and critical curves", Journal of difference equations and applications 23(5), 939-964 (2017). doi: 10.1080/10236198.2017.1307348.

Bischi GI, Cerboni Baiardi L. "Fallacies of composition in nonlinear marketing models", Communications in Nonlinear Science and Numerical Simulation 20, 209-228 (2015). doi: 10.1016/j.cnsns.2014.04.018.

Bischi G.I., Cerboni Baiardi L. "A dynamic marketing model with best reply and inertia", Chaos, Solitons and Fractals 79, 145-156 (2015). doi: 10.1016/j.chaos.2015.05.023.

Bischi G.I., Cerboni Baiardi L. Radi D. "On a discrete-time model with replicator dynamics in renewable resource exploitation", Journal of Difference Equations and Applications 21(10), 954-973 (2015). doi: 10.1080/10236198.2015.1059830.

Cerboni Baiardi L., Lamantia F., Radi D. "Evolutionary competition between boundedly rational behavioral rules in oligopoly games", Chaos, Solitons and Fractals 79, 204-225 (2015). doi: 10.1016/j.chaos.2015.07.011.

Further Publications

- Abbott, B. P., et al. "Observation of gravitational waves from a binary black hole merger." Physical review letters 116.6 (2016): 061102.
- Abbott, B. P., et al. "Astrophysical implications of the binary black hole merger GW150914." The Astrophysical Journal Letters 818.2 (2016): L22.
- Abbott, B. P., et al. "GW151226: Observation of Gravitational Waves from a 22-Solar-Mass Binary Black Hole Coalescence." Physical Review Letters 116.24 (2016): 241103.
- Abbott, B. P., et al. "GW150914: The Advanced LIGO Detectors in the Era of First Discoveries." Physical review letters 116.13 (2016): 131103.

Submitted Papers

- Cerboni Baiardi L., Lamantia F.: "Oligopoly dynamics with isoelastic demand: the joint effects of market saturation and delegation";
- Cerboni Baiardi L., Naimzada A.: "The ambiguous relation between deficit containment policies and debt sustainability";

Presentations

Talks delivered at national and international conferences

- Cerboni Baiardi L., Naimzada A. "The ambiguous relations between deficit containment policies and sustainability in an OLG model"; AMASES, Sept 2019, Perugia, Italy.
- Caprari E., Cerboni Baiardi L., Molho "Scalarization and robust approach"; EURO 2019, Dublino, Irland.
- Caprari E., Cerboni Baiardi L., Molho "Scalarization and robust approach"; Set Optimization for Application, Jen 2019, Jena, Germany.
- Cerboni Baiardi L., Naimzada A. "Endogenous Desired Debt in a Minskyan Business Mode"; Globalization and Development: cities, regions, nations. 59a Riunione Scientifica Annuale della Società Italiana degli Economisti. Oct 2018, Bologna, Italy.
- Cerboni Baiardi L., Naimzada A. "Endogenous Desired Debt in a Minskyan Business Mode"; MDEF, Sept 2018, Urbino, Italy.
- Cerboni Baiardi L., Naimzada A. "Endogenous desired debt in a Minskyan business model"; MARX 2 DAY, Bicentennial Conference, May 2018, Milano, Italy.
- Cerboni Baiardi L., Naimzada A. "Economic growth and infectious diseases dynamics in an OLG model"; NED, September 2017, Pisa, Italy.
- Bischi G.I., Cerboni Baiardi L., Radi D., and Panchuk A. "On a discrete-time model with replicator dynamics in renewable resource exploitation"; ICDEA, July 2017, Timisoara, Romania.
- Bischi G.I., Cerboni Baiardi L., Radi D., and Panchuk A. "On a discrete-time model with replicator dynamics in renewable resource exploitation"; PODE, May 2017, Urbino, Italy.
- Bischi G.I., Cerboni Baiardi L. "Fallacies of composition in a nonlinear marketing model"; AMASES, September 2016, Catania, Italy
- Cerboni Baiardi L, Naimzada A. "A dynamical model of oligopolies with imitators"; MDEF, June 2016, Urbino, Italy
- Bischi G.I., Cerboni Baiardi L. "A dynamic marketing model with best reply and inertia"; MDEF, Sept 2014, Urbino, Italy

Posters delivered at International conferences

- Cerboni Baiardi L, Harms J. "Reinforcement Learning (RL) Based Control for Seismic Noise Reduction "; GWADW, Advanced Gravitational Wave Detectors; May 2015, Girdwood, Alaska

Teaching Experience

Lecturer (academic year 2021/22)

- *Metodi Matematici per l'Economia* - 9 CFU, 63 hours. Academic discipline: mathematical methods of economics, finance and actuarial sciences (SECS-S/06); degree course: *Economia* at the Department of Economics, Statistics and Finance, University of Calabria;

Lecturer (academic year 2020/21)

- *Metodi Matematici per l'Economia* - 12 CFU, 84 hours. Academic discipline: mathematical methods of economics, finance and actuarial sciences (SECS-S/06); degree course: *Economia* at the Department of Economics, Statistics and Finance, University of Calabria;

Lecturer (academic year 2019/20)

- *Matematica Finanziaria (avanzato)* shared with Professor Ivar Massabò - 6 CFU, 14 (me) + 28 (Massabò) hours. Academic discipline: mathematical methods of economics, finance and actuarial sciences (SECS-S/06); degree course: *Economia* at the Department of Business and Legal Sciences, University of Calabria;

Lecturer (academic year 2019/20)

- *Matematica Finanziaria* - 6 CFU, 42 hours. Academic discipline: mathematical methods of economics, finance and actuarial sciences (SECS-S/06); degree course: *Economia Aziendale* at the Department of Business and Legal Sciences, University of Calabria;

Lecturer (academic year 2019/20)

- *Principles of mathematics* shared with Dott. Andrea Caravaggio - 9 CFU, 21 (Caravaggio) + 42 (me) hours. Academic discipline: mathematical methods of economics, finance and actuarial sciences (SECS-S/06); degree course: *Management for business and economics* at the Department of Economics and Management, University of Pisa;

Lecturer (academic year 2018/19)

- *Introduction to differential and differenze equation with a focus on economics and economic policy.* Academic discipline: mathematical methods of economics, finance and actuarial sciences (SECS-S/06); PhD course: *quantitative methods for political economics* at the Department of Economics and low, University of Macerata;

Lecturer (academic year 2018/19)

- *Principles of mathematics.* Academic discipline: mathematical methods of economics, finance and actuarial sciences (SECS-S/06); degree course: *Management for business and economics* at the Department of Economics and Management, University of Pisa;

Lecturer (academic year 2017/18)

- *Introduction to differential and difference equations.* Academic discipline: mathematical methods of economics, finance and actuarial sciences (SECS-S/06); PhD course: *quantitative methods for political economics* at the Department of Economics and low, University of Macerata;

Teaching Assistant (academic year 2017/18)

- *Matematica per il Marketing* (lecturer Prof. R. Raimondo). Academic discipline: mathematical methods of economics, finance and actuarial sciences (SECS-S/06); degree course: *Marketing, comunicazione aziendale e mercati globali* at school of economics and statistics, University Milano-Bicocca;

Teaching Assistant (academic year 2017/18)

- *Teoria dei giochi e sistemi dinamici* (lecturer Prof. G.I. Bischi). Academic discipline: mathematical methods of economics, finance and actuarial sciences (SECS-S/06); degree course: *economics and management* at DESP - Department

of Economics, Society, Politics, University of Urbino;

Teaching Assistant (academic year 2017/18)

- *Mathematical methods and programming, modulus: mathematics* (lecturer Prof. A. Naimzada). Academic discipline: mathematical methods of economics, finance and actuarial sciences (SECS-S/06); degree course: *international economics* at school of economics and statistics, University Milano-Bicocca;

Teaching Assistant (academic year 2016/17)

- *Teoria dei giochi e sistemi dinamici* (lecturer Prof. G.I. Bischi). Academic discipline: mathematical methods of economics, finance and actuarial sciences (SECS-S/06); degree course: *economics and management* at DESP - Department of Economics, Society, Politics, University of Urbino;

Teaching Assistant (academic year 2016/17)

- *Mathematical methods and programming, modulus: mathematics* (lecturer Prof. A. Naimzada). Academic discipline: mathematical methods of economics, finance and actuarial sciences (SECS-S/06); degree course: *international economics* at school of economics and statistics, University Milano-Bicocca;

Teaching Assistant (academic year 2016/17)

- *Game theory and dynamical system* (lecturer Prof. G.I. Bischi); degree course: *economics and management* at DESP - Department of Economics, Society, Politics, University of Urbino;

Lecturer (September 2016)

- *Crash Course in actuarial mathematics* at School of Economics, Management and Statistics, University of Bologna;

Teaching Assistant (academic year 2015/16)

- *Teoria dei giochi e sistemi dinamici* (lecturer Prof. G.I. Bischi). Academic discipline: mathematical methods of economics, finance and actuarial sciences (SECS-S/06); degree course: *economics and management* at DESP - Department of Economics, Society, Politics, University of Urbino;

FOREIGN ACTIVITIES

- Visiting at Institute of Natural Science and Mathematics of Ural Federal University in Ekaterinburg (Russia), from December 1 2019 to December 7 2019, which included both teaching and research activity

- Hosted by Varela Cabo L.M., department of physics, Universidad de Santiago de Compostela, Spain; Mar 2014
  Topics: complex networks analysis

- Hosted by Lopez Pintado D., economic department, Universidad Pablo de Olavide, Sevilla, Spain; May 2014
  Topics: games on networks

- Hosted by Varela Cabo L.M., department of physics, Universidad de Santiago de Compostela, Spain; May 2015
  Topics: network of R&D collaboration anìmong firms

Attended conferences and schools

- Summer School & Colloquium: Set Optimization for Applications; from June 21, 2017, to July 1, 2017, Brunico (Italy), organized by Free University of Bozen.
- Training School on qualitative theory of dynamical systems, tools and applications; Sept 2015, Urbino (Italy), organized within the ISCH COST ACTION IS1104 project on "The EU in the new complex geography of economic systems: models, tools and policy evaluation" and DESP-Department of Economics, Society, Politics - Urbino University and with the collaboration of SICC-Italian Society for Chaos and Complexity
- Dynamic Models in Economics and Finance; Sept 2014, Urbino (Italy), organized by DESP-Department of Economics, Society, Politics - Urbino University
- 9th SICC International Tutorial Workshop "Topics in Nonlinear Dynamics". MAICP2014 - Modelling and Analysis of Innovation and Competition Processes; May 2014, Milano (Italy), oganized by DEIB - Department of Electronics, Information and Bioengineering - Politecnico di Milano and SICC-Italian Society for Chaos and Complexity
- Training School: Complex Networks and Dynamics; Feb 2014, Madrid (Spain), organized within the ISCH COST ACTION IS1104 project on "The EU in the new complex geography of economic systems: models, tools and policy evaluation"
- Mean Field Games and Related Topics - 2; Sept. 2013, Padova (Italy), organized by University of Padova
- Analysis of complex networks: structure and dynamics; Feb 2013, Milano (Italy), oganized by DEIB - Department of Electronics, Information and Bioengineering - Politecnico di Milano and SICC-Italian Society for Chaos and Complexity