

*Curriculum Vitae: June 20, 2018 (TO BE PUBLISHED ONLINE)*

**ARSEN PALESTINI**

*Current affiliation:*

MEMOTEF  
Sapienza University of Rome

*Education:*

Degree in Mathematics in 1998 at University of Bologna, Italy.  
PhD in Mathematics in 2005 at University of Florence, Italy.  
Post-doctoral fellowship in Economics in 2006 at University of Bologna, Italy.  
Research fellowship (Assegno di Ricerca) in Differential game theory and economic applications in 2008 at the Department of Economics of University of Bologna, Italy.  
Assistant Professor in 'Mathematical Methods for Economics and for Actuarial and Financial Sciences' since 2010 at MEMOTEF of University of Rome La Sapienza, Italy.  
*Abilitazione nazionale scientifica* (habilitation for associate professorship) in *Political Economy* (SECS-P/01), *Economic Policy* (SECS-P/02) and *Mathematical Methods for Economics* (SECS-S/06) since 2017.

*Teaching and professional experiences:*

1. 2002-2003: teaching assistant in the course in Geometry and Algebra, Faculty of Engineering, University of Bologna.
2. 2003-2004: teaching assistant in the course in Geometry and Algebra, Faculty of Engineering, University of Bologna.
3. 2004-2005: teaching assistant in the course in Geometry and Algebra, Faculty of Engineering, University of Bologna.
4. 2004-2005: high school teacher in Mathematics at L.S. Marconi (Parma).
5. 2005-2006: high school teacher in Mathematics at IPSIA and ITG (Ascoli Piceno).
6. 2006-2007: lecturer at the preliminary course in Mathematics, Faculty of Engineering, University of Bologna.

7. 2006-2007: teaching assistant in the course in Geometry and Algebra, Faculty of Engineering, University of Bologna.
8. 2006-2007: lecturer in the course in Optimal Control Theory, PhD in Economics, University of Bologna.
9. 2007-2008: teaching assistant in the course in Mathematics for Applied Economics, Faculty of Political Sciences, University of Bologna.
10. 2008-2009: teaching assistant in the courses in Mathematics and of Mathematics for Applied Economics, Faculty of Political Sciences, University of Bologna.
11. 2008-2009: lecturer in the course in Optimal Control and Differential Game Theory, PhD in Economics, University of Bologna.
12. 2009-2010: lecturer at the Crash Course in Mathematics, LMEC, Faculty of Economics, University of Bologna.
13. 2009-2010: assistant professor in the courses in Mathematics and in Mathematics for Applied Economics, Faculty of Political Sciences, University of Bologna.
14. 2010-2011: lecturer at the Crash Course in Mathematics, LMEC, Faculty of Economics, University of Bologna.
15. 2010-2011: lecturer in the course in Financial Mathematics, Faculty of Economics, Sapienza University of Rome.
16. 2010-2011: lecturer at the course in Games and industrial Organization, PhD School in Economics, Sapienza University of Rome.
17. 2011-2012: lecturer at the Crash Course in Mathematics, LMEC, Faculty of Economics, University of Bologna.
18. 2011-2012: lecturer in the course in Financial Mathematics, Faculty of Economics, Sapienza University of Rome.
19. 2012-2013: lecturer at the Crash Course in Mathematics, LMEC, Faculty of Economics, University of Bologna.
20. 2012-2013: lecturer in the course in Financial Mathematics, Faculty of Economics, Sapienza University of Rome.
21. 2013-2014: lecturer at the Crash Course in Mathematics, LMEC, Faculty of Economics, University of Bologna.
22. 2013-2014: lecturer in the course in Financial Mathematics, Faculty of Economics, Sapienza University of Rome.

23. 2014-2015: lecturer at the Crash Course in Mathematics, LMEC, Faculty of Economics, University of Bologna.
24. 2014-2015: lecturer in the course in Financial Mathematics, Faculty of Economics, Sapienza University of Rome.
25. 2015-2016: lecturer at the Crash Course in Mathematics, LMEC, Faculty of Economics, University of Bologna.
26. 2015-2016: lecturer in the course in Financial Mathematics, Faculty of Economics, Sapienza University of Rome.
27. 2015-2016: teaching assistant in the course of Calculus IV, Department of Mathematics and Physics, University of Rome 3.
28. 2016-2017: lecturer at the Crash Course in Mathematics, LMEC, Faculty of Economics, University of Bologna.
29. 2016-2017: lecturer in the course in Financial Mathematics, Faculty of Economics, Sapienza University of Rome.
30. 2017-2018: lecturer at the Crash Course in Mathematics, LMEC, Faculty of Economics, University of Bologna.
31. 2017-2018: lecturer in the course of Principles of Actuarial Mathematics, School of Economics, University of Macerata.
32. 2017-2018: lecturer in the course in Financial Mathematics, Faculty of Economics, Sapienza University of Rome.
33. 2017-2018: lecturer in the course in Elements of Mathematics for Economics, Faculty of Political Science, Sociology and Communication Science, Sapienza University of Rome.
34. 2017-2018: assistant professor in the course of Mathematical Models and Methods for Financial and Insurance Markets, School of Industrial and Information Engineering, Politecnico Milano.

*Communications and seminars:*

- May 26, 2004: Rappresentazioni di alcuni valori di potere in giochi cooperativi, Department of Mathematics for Decisions, University of Florence.
- July 13, 2004: The Myerson value as a barycentre, VI Spanish Meeting on Game Theory and Practice, Elche, Spain.
- September 22, 2004: Reformulations and geometric properties of some power values in cooperative games, VII Meeting SIMAI, Isola di S. Servolo.

- September 11, 2004: Reformulations and geometric properties of some power values in cooperative games, XXVIII Meeting AMASES, University of Modena.
- June 16, 2006: Minimax Multi-District Apportionments, SING 2, University of Foggia.
- September 6, 2006: Minimax Multi-District Apportionments, XXX Meeting AMASES, University of Trieste.
- January 24, 2007: Power indices in weighted voting games: representations and applications, Lunch Seminar, Department of Economics, University of Bologna.
- May 18, 2007: Power indices in weighted voting games: representations and applications, Meeting SIMAI 'Perspectives of Applied Mathematics in Italy', University of Parma.
- September 5, 2007: On Multi-Ordered Apportionments, XXXI Meeting AMASES, University of Lecce.
- September 10, 2007: Dynamical Analysis of a Demand Governed Market in relation to Innovative Commodities, Workshop 'Marketing decision models: Dynamic Optimization & Game theory', University of Padua.
- June 27, 2008: Equilibria in additively separable differential games, SING 4, Spain Italy Netherlands Meeting on Game Theory, University of Wroclaw, Wroclaw, Poland.
- July 4, 2008: Deterministic aspects of herd behaviour, International Summer School on Risk Measurement and Control, LUISS, Rome.
- September 4, 2008: On the time consistency of equilibria in additively separable differential games, XXXII Meeting AMASES, University of Trento.
- December 4, 2008: A class of best-response potential games, workshop 'Dynamic games in economics', Rimini Centre for Economic Analysis.
- April 8, 2009: Hamiltonian potential functions for differential games, Lunch Seminar, Department of Economics, University of Bologna.
- June 25, 2009: Hamiltonian potential functions for differential games, GTM 2009, Third International Conference on Game Theory and Management, Graduate School of Management, St. Petersburg State University, St. Petersburg, Russia.

- July 1, 2009: Hamiltonian potential functions for differential games, SING 5, Spain Italy Netherlands Meeting on Game Theory, VU University Amsterdam, Amsterdam, The Netherlands.
- September 3, 2009: Hamiltonian potential functions for differential games, XXXIII Meeting AMASES, University of Parma.
- December 10, 2009: On Lie-point symmetries for differential games, XXXIV Simposio de la Asociacin Espaola de Economa (SAEe), University of Valencia, Spain.
- January 11, 2010: Regulating Environmental Externalities through Public Firms: A Differential Game, Department of Economics, Università Ca' Foscari, Venice.
- January 20, 2010: Regulating Environmental Externalities through Public Firms: A Differential Game, Lunch Seminar, Department of Economics, University of Bologna.
- April 7, 2010: A Stochastic Optimal Control Model of Toxic Asset Reduction, MAF 2010, Fourth International Conference, Mathematical and Statistical Methods for Actuarial Sciences and Finance, Ravello.
- September 3, 2010: On Lie-point symmetries for differential games, XXXIV Meeting AMASES, University of Macerata.
- September 3, 2010: Regulating Environmental Externalities through Public Firms: A Differential Game, XXXIV Meeting AMASES, University of Macerata.
- December 13, 2010: On Lie-point symmetries for differential games, workshop 'Dynamic games in economics', Rimini Centre for Economic Analysis.
- February 22, 2011: Controllo ottimo e giochi differenziali: dalla teoria alle applicazioni alla modellistica economica, workshop 'Terza giornata della ricerca', MEMOTEF, Sapienza University of Rome.
- July 21, 2011: Extraction of exhaustible resources as a noncooperative game with random terminal instant, 8th International ISDG Workshop, University of Padova.
- February 23, 2012: Open Innovation in a Dynamic Cournot Duopoly, workshop 'Quarta giornata della ricerca', MEMOTEF, Sapienza University of Rome.
- June 2, 2012: Open Innovation in a Dynamic Cournot Duopoly, 12th Viennese Workshop on Optimal Control, Dynamic Games and Nonlinear Dynamics, Vienna University of Technology, Austria.

- February 28, 2013: On the Feedback Solutions of Differential Oligopoly Games with Hyperbolic Demand Curve and Capacity Accumulation, workshop 'Quinta giornata della ricerca', MEMOTEF, Sapienza University of Rome.
- July 4, 2013: On the Feedback Solutions of Differential Oligopoly Games with Hyperbolic Demand Curve and Capacity Accumulation, 26th EURO-INFORMS Conference, Sapienza University of Rome.
- July 23, 2013: A multi-factor inequality approach to a transfer scheme: the case of Common Agricultural Policy, Fifth meeting of the Society for the Study of Economic Inequality (ECINEQ), University of Bari.
- September 6, 2013: On the Feedback Solutions of Differential Oligopoly Games with Hyperbolic Demand Curve and Capacity Accumulation, XXXVII Meeting AMASES, University of Insubria.
- October 24, 2013: On the Feedback Solutions of Differential Oligopoly Games with Hyperbolic Demand Curve and Capacity Accumulation, 54th annual conference SIE, University of Bologna.
- February 27, 2014: Cost of inequality and cooperative games, workshop 'Sesta giornata della ricerca', MEMOTEF, Sapienza University of Rome.
- June 6, 2014: Effects of Law-Enforcement Efficiency and Duration of Trials in an Oligopolistic Competition Among Fair and Unfair Firms, Oligo Wokshop 2014, Sapienza University of Rome.
- October 24, 2014: Cost of Inequality, the Uniform Rule and Cooperative Games, 55th annual conference SIE, University of Trento.
- February 25, 2015: Allocation of risk capital in a cost cooperative game induced by a modified Expected Shortfall, workshop 'Settima giornata della ricerca', MEMOTEF, Sapienza University of Rome.
- July 14, 2015: A graph-based approach to inequality assessment, Sixth meeting of the Society for the Study of Economic Inequality (ECINEQ), University of Luxembourg, Luxembourg.
- February 24, 2016: Effects of Law-Enforcement Efficiency and Duration of Trials in an Oligopolistic Competition Among Fair and Unfair Firms, workshop 'Ottava giornata della ricerca', MEMOTEF, Sapienza University of Rome.
- June 29, 2016: A graph-based approach to inequality assessment, 13th Meeting of the Society for Social Choice and Welfare, University of Lund, Sweden.

- July 4, 2016: Allocation of risk capital in a cost cooperative game induced by a modified Expected Shortfall, 28th European Conference on Operational Research, University of Poznan, Poland.
- September 17, 2016: Inequality assessment in a dynamic framework with heterogeneous agents, XL Meeting AMASES, University of Catania.
- January 26, 2017: Inequality assessment in a dynamic framework with heterogeneous agents, Quantitative Finance Workshop 2017, University of Milano-Bicocca.
- January 24, 2018: Allocation of risk capital in a cost cooperative game induced by a modified Expected Shortfall, Quantitative Finance Workshop 2018, University of Rome 3.
- February 22, 2018: Microfoundation of Oligopolistic Models and Potential Games, workshop 'Nona giornata della ricerca', MEMOTEF, Sapienza University of Rome.

*Research interests:*

#### GAME THEORY AND ECONOMICS:

- a) Determination of classes of dynamic games to be investigated from the viewpoints of: time-consistency, properties of open-loop and closed-loop Nash and Stackelberg equilibria. Development of techniques to find out solutions of Hamilton-Jacobi-Bellman equation explicitly.
- b) Investigation of properties and construction of algorithmic computation techniques for power indices in cooperative games. Exploitation of such properties to evaluate control power both in coalition theory and in economic inequality issues.
- c) Construction of models for Environmental Economics and Law and Economics.
- d) Theoretical evaluation of solution concepts in cooperative games applied to voting theory and International Environmental Agreements.

#### DIFFERENTIAL EQUATIONS AND APPLICATIONS:

- a) Exact integration of ordinary differential equations by elliptic functions and determination of original formulas for computation.
- b) Asymptotic properties of exact solutions of dynamic optimization models of advertising, resource extraction, cooperative/noncooperative oligopoly.

c) Investigation of asymptotic and stability properties of contagion models and applications to financial markets.

*Published books:*

- 1) 'Manuale di Geometria: Teoria', with Giuliano Parigi, Pitagora Editrice Bologna, 2003.
- 2) 'Manuale di Geometria: Esercizi', with Giuliano Parigi, Pitagora Editrice Bologna, 2003.
- 3) 'Manuale di Geometria: Esercizi e Temi d'esame svolti', with Giuliano Parigi, Pitagora Editrice Bologna, 2006.

*Published and forthcoming papers:*

MATHEMATICS FOR ECONOMIC AND SOCIAL SCIENCES

- 'Reformulation of Some Power Indices in Weighted Voting Games', *Homo Oeconomicus*, Vol. 22, 4, 2005, pp. 487-507.
- 'Dynamical analysis of a demand governed market', with Giancarlo Barbirelli and Daniele Ritelli, *Applied Sciences*, Vol. 9, 2007, pp. 22-32.
- 'Minimax Multi-district Apportionments', with Gianfranco Gambarelli, *Power Measures IV: A special Issue of Homo Oeconomicus*, Vol. 23, 3/4, 2007, pp.335-356.
- 'Dynamic Oligopoly with Capital Accumulation and Environmental Externality' with Davide Dragone and Luca Lambertini, *Dynamic Systems, Economic Growth and the Environment*, Cuaresma, Palokangas, Tarasyev eds., Springer, 2009, pp. 197-214.
- 'Dynamic Advertising with Spillovers: Cartel vs. competitive fringe' with Luca Lambertini, *Optimal Control Applications and Methods*, Vol. 30, 2009, pp. 562-572.
- 'Closed form solutions to generalized logistic-type nonautonomous systems' with Giovanni Mingari Scarpello and Daniele Ritelli, *Applied Sciences*, Vol. 12, 2010, pp. 134-145.
- 'A Stochastic Optimal Control Model of Pollution Abatement' with Davide Dragone, Luca Lambertini and George Leitmann, *Nonlinear Dynamics and System Theory*, Vol. 10, 2, 2010, pp. 117-124.



- 'On the Time Consistency of Equilibria in a Class of Additively Separable Differential Games' with Emanuele Bacchiega and Luca Lambertini, *Journal of Optimization Theory and Applications*, Vol. 145(3), 2010, pp. 415-427.
- 'The Leitmann-Schmitendorf advertising game with  $n$  players and time discounting' with Davide Dragone and Luca Lambertini, *Applied Mathematics and Computation*, Vol. 217, 3, 2010, pp. 1010-1016.
- 'On Lie point symmetries in differential games', *Game Theory and Applications* (Series editors: Leon Petrosjan and Vladimir V. Mazalov ((St. Petersburg State University, Russia))), Vol. 15, 2011.
- 'Differential game of resource extraction with random time horizon and different hazard functions', with Sergey Kostunin and Ekaterina Shevkopyas, *Control Processes and Stability: proceedings of XLII international conference / Ed. by A.S. Eremin, N.V. Smirnov. Saint-Petersburg*, 2011, pp. 571-576.
- 'Static and Dynamic Best-Response Potential Functions for the Non-Linear Cournot Game' with Davide Dragone and Luca Lambertini, *Optimization*, Vol. 61, 11, 2012, pp. 1283-1293.
- 'The Incentive to Invest in Environmental-Friendly Technologies: Dynamics Makes a Difference' with Davide Dragone and Luca Lambertini, *Green Growth and Sustainable Development*, Cuaresma, Palokan-gas, Tarasyev eds., Springer, 2013, pp. 165-188.
- 'On the Optimal Number of Firms in the Commons: Cournot vs Bertrand' with Davide Dragone, Luca Lambertini, Alessandro Tampieri, *Mathematical Economics Letters*, Vol. 1, 2013, pp. 25-34.
- 'Government spending under non-separability: a theoretical analysis' with Luigi Marattin, *International Review of Economics*, Vol. 61, 2014, pp. 39-60.
- 'Open Innovation in a Dynamic Cournot Duopoly' with Irina Hasnas and Luca Lambertini, *Economic Modelling*, Vol. 36, 2014, pp. 79-87.
- 'On the Feedback Solutions of Differential Oligopoly Games with Hyperbolic Demand Curve and Capacity Accumulation' with Luca Lambertini, *European Journal of Operational Research*, Vol. 236, 2014, pp. 272-281.
- 'The Socially Responsible Choice in a Duopolistic Market: A Dynamic Model of 'Ethical Product' Differentiation', with Leonardo Becchetti, Nazaria Solferino, Maria Elisabetta Tessitore, *Economic Modelling*, Vol. 43, 2014, pp. 114-123.

- 'On a Nonrenewable Resource Extraction Played by Asymmetric Firms' with Sergey Kostunin and Ekaterina Shevkoplyas, *Journal of Optimization Theory and Applications*, Vol. 163(2), 2014, pp. 660-673.
- 'Regulating environmental externalities through public firms: a differential game' with Davide Dragone and Luca Lambertini, *Strategic Behavior and the Environment*, Vol. 4(1), 2014, pp. 15-40.
- 'Multifactorial Decomposition of Inequality: the case of CAP' with Giuseppe Pignataro, *Journal of Income Distribution*, Vol. 23, 2015, pp. 59-83.
- 'On Cooperative games Affected by Negative Externality' with Ilaria Poggio, *Journal of Interdisciplinary Mathematics*, Vol. 18(5), 2015, pp. 539-568.
- 'A Bayesian Potential Game to Illustrate Heterogeneity in Cost/Benefit Characteristics' with Ilaria Poggio, *International Review of Economics*, Vol 62(1), 2015, pp. 23-39.
- 'Hamiltonian Potential Functions for Differential Games' with Davide Dragone, George Leitmann and Luca Lambertini, *Automatica*, Vol. 62, 2015, pp. 134-138.
- 'Quality, Distance and Trade: a Strategic Approach' with Emanuele Bacchiega and Antonio Minniti, *Papers in Regional Science*, Vol. 95, Issue S1, 2016, pp. S165-S191.
- 'What determines volunteers'work? On the effects of adverse selection and intrinsic motivation' with Nadia Burani, *Economics Letters*, Vol. 144, 2016, pp. 29-32.
- 'Effects of Law-Enforcement Efficiency and Duration of Trials in an Oligopolistic Competition Among Fair and Unfair Firms' with Maria Caterina Bramati and Mauro Rota, *Journal of Optimization Theory and Applications*, Vol. 170(2), 2016, pp. 650-669.
- 'CSR in an Asymmetric Duopoly with Environmental Externalities' with Luca Lambertini and Alessandro Tampieri, *Southern Economic Journal*, Vol. 83(1), 2016, pp. 236-252.
- 'On the instability of an R& D portfolio in a dynamic monopoly. Or, one cannot get two eggs in one basket' with Luca Lambertini and Raimondello Orsini, *International Journal of Production Economics*, Vol. 193, 2017, pp. 703-712.
- 'Voluntary Export Restraints in a Trade Model with Sticky Price: Linear and Nonlinear Feedback Solutions' with Luca Lambertini, forthcoming in *Dynamic Games and Applications*, 2018.

## MATHEMATICAL PHYSICS

- 'Exact integration of a nonlinear model of steady heat conduction/radiation in a wire with internal power' with Giovanni Mingari Scarpello and Daniele Ritelli , *Journal of Geometry and Symmetry in Physics*, Vol. 4, 2005, pp. 59-67.
- 'Straight and Circular motions of a Particle in the Field of Two Fixed Attractors' with Giovanni Mingari Scarpello and Daniele Ritelli , *Journal of Geometry and Symmetry in Physics*, Vol. 11, 2008, pp. 49-66.
- 'Nonisothermal filaments in equilibrium' with Alvaro Hacar and Simone Recchi, *Astronomy & Astrophysics*, Vol. 558, October 2013, A27.
- 'On the equilibrium of rotating filaments' with Alvaro Hacar and Simone Recchi, *Monthly Notices of the Royal Astronomical Society*, Vol. 444(2), 2014, pp. 1775-1782.
- 'A graph-based approach to inequality assessment' with Giuseppe Pignataro, *Physica A: Statistical Mechanics and its Applications*, Vol. 455, 2016, pp. 65-78.
- 'Analytic solutions for Hamilton-Jacobi-Bellman equations', *Electronic Journal of Differential Equations*, Vol. 8, 2017, pp. 1-11.

### Working papers:

- 'A Class of Best-Response Potential Games' with Davide Dragone and Luca Lambertini, *Working Paper 635 Department of Economics, University of Bologna*, [www2.dse.unibo.it/wp/635.pdf](http://www2.dse.unibo.it/wp/635.pdf), 2008.
- 'On the non-neutrality of profit taxation in a Cournot oligopoly with environmental effects' with Davide Dragone and Luca Lambertini, *Working Paper 662 Department of Economics, University of Bologna*, [www2.dse.unibo.it/wp/662.pdf](http://www2.dse.unibo.it/wp/662.pdf), 2009.
- 'Social Stigma, Heuristics and criminal law' with Laarni Escresa, *RILE Working Paper 2011/2*, [papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1820023](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1820023), 2011.
- 'Internalization of the Risk of Environmental catastrophes as an Incentive for IEA' with Ilaria Poggio, Working paper, [papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1998115](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1998115), 2012.

- 'Cost of inequality, the uniform rule and cooperative games', with Giuseppe Pignataro, ECINEQ Working Paper 322, <http://www.ecineq.org/milano/WP/ECINEQ2014-322.pdf>, 2014.
- 'Allocation of risk capital in a cost cooperative game induced by a modified Expected Shortfall' with Mauro Bernardi and Roy Cerqueti, 2016, arXiv preprint arXiv:1608.02365, <http://arxiv.org/abs/1608.02365>.

*Further scientific activities:*

Associate Editor of the review *International Journal of Theoretical and Applied Mathematics*.

Referee for the international reviews: *Journal of Economic Dynamics and Control*, *European Journal of Operational Research*, *Journal of the Operational research Society*, *Journal of Optimization Theory and Applications*, *International Journal of Industrial Organization*, *Economic Modelling*, *Dynamic Games and Applications*, *Southern Economic Journal*, *Decisions in Economics and Finance*, *Homo Oeconomicus*, *Game Theory and Applications*, *International Game Theory Review*, *International Journal of Theoretical and Applied Mathematics*, *Operational Research: an International Journal*, *Economia Politica*, *Economics Bulletin*, *Journal of Economics*, *International Review of Economics*, *Journal of Probability and Statistics*, *Theory and Decision* and *Abstract and Applied Analysis*.

June 25, 2018, Rome

Arsen Palestini