

## **Curriculum vitae and Track Record: Fausto GOZZI**

### **PERSONAL DETAILS**

Researcher unique identifier(s) ORCID 0000-0003-4755-2841

Date of birth: 18/02/1965

Nationality: Italian

URL for web site: <http://docenti.luiss.it/gozzi/>

### **• EDUCATION**

20/12/1998 PhD in Mathematics, Scuola Normale Superiore, Classe di Scienze, Pisa, Italy

1987 Master (“Laurea”) in Mathematics, Università di Pisa, Italy

1987 “Licenza” in Mathematics, Scuola Normale Superiore di Pisa.

### **• CURRENT POSITION**

2003 – current Full Professor, Luiss University, Roma, Italy

### **• PREVIOUS POSITIONS**

1998-2003 Associate Professor, Università di Roma “La Sapienza”, Roma, Italy

1990-1998 “Ricercatore Universitario” (Assistant Professor), Università di Pisa, Italy.

### **• FELLOWSHIPS AND AWARDS**

1983-1987 Scholarship for the degree studies in Mathematics, Scuola Normale Superiore di Pisa.

1987-1990 Scholarship for the PHD studies in Mathematics, Scuola Normale Superiore di Pisa.

1988-1989 Visiting PHD student at Brown University, USA.

1998-2023 Visiting professor at the following universities: Université Paris VII and XIII (France), Georgia Institute of Technology (USA), University of New South Wales, (Australia), AMU Marseille (FR), York University (UK), EPFL Lausanne (Switzerland), Scuola Normale (Pisa-Italy), Universitat Bielefeld (Germany), Université de Louvain-La-Neuve (Belgium), Osaka University (Japan), Athens University of Economics and Business (Greece), Rennes School of Economics and Business (France), Universidad de Concepcion (Chile).

2022-current Senior Fellow at Center for Unframed Thinking at the Rennes School of Business.

### **• SUPERVISION OF GRADUATE STUDENTS AND POSTDOCTORAL FELLOWS**

2003-2023 Postdocs 18 (Luiss University);

2001-2023 PhD Student 10 (Università di Pisa, Scuola Normale Superiore di Pisa, Università di Roma “La Sapienza”; Politecnico di Milano);

2003-2023 Master Students (approximately) 20.

### **• TEACHING ACTIVITIES**

1998-2023 Teaching position (Bachelor/Master/PHD) [Basic and Advanced Calculus, Dynamic Optimization] Università di Roma “La Sapienza” and Luiss University, Roma, Italy.

2000-2023 Teaching position (Bachelor/Master/PHD) [Basic and Advanced Calculus, Probability, Dynamic Optimization, Decisions in situations of complexity and conflict]; Università di Pisa, Scuola Sant’Anna di Pisa, Università di Catania, Politecnico di Milano, Politecnico di Torino, Università di Trento, Università di

Napoli Parthenope, Università di Roma "Tor Vergata", IMT Lucca, "Scuola Matematica Interuniversitaria di Perugia", University of York, Bielefeld University.

- **ORGANISATION OF SCIENTIFIC MEETINGS (last 5 years)**

- 2018 Member of the scientific committee of Viennese Workshop on Optimal Control, Wien, 7/2018 (Appr. 200 participants).
- 2019 Member of the scientific and organising committee of "UCL-Rome Workshop on Stochastic and Partial Differential Equation Methods in Finance and Economics" Luiss, Rome, Italy, 20-22 May 2019; (Appr. 50 participants).
- 2019 Member of the scientific and organising committee of the workshop "Space and Growth: Theoretical and Empirical Models" December 13-14, 2019 (Appr. 50 participants).
- 2020/23 Member of the scientific committee of the online workshop on "Mean Field Games and Economics", Luiss, Rome, Italy, 7-8/9/2020 (Appr. 100 participants) and 9-10/11/2023.
- 2022 Member of the scientific committee of the workshops: "Taming Uncertainty and Complexity in Economics and Finance", Roma May 26-28, 2022; "Time-Space Evolution of Economic Activities: Mathematical Models and Empirical Applications" July 1, 2022. Both approximately 50 participants.

- **INSTITUTIONAL RESPONSIBILITIES**

1990-2023 Faculty member of: University of Pisa/Roma "La Sapienza"/Luiss University

2005-2010 Co-founder and head of a PHD program (in Mathematics for Economics and Finance) in Luiss University, Roma, Italy

2011-2015 Member of the "Giunta di Dipartimento", Luiss University, Roma, Italy

2003-2023 Organiser of Internal Seminars, Luiss University, Roma, Italy

2003-2023 Member (mostly president) of Hiring Committees for 15 postdocs, 3 Assistant Prof., 2 Associate Prof., 1 Full Prof.; Luiss University, Roma, Italy

- **REVIEWING ACTIVITIES**

1990 – Reviewer of various scientific journals. Among them: Annals of Applied Probability, Annals of IHP, Communications in Pure and Applied Mathematics, Econometrica, European J. of Operation Research. IEEE Access. Insurance, Mathematics and Economics. J. of Economic Behavior and Organization. J. of Economic Dynamics and Control. J. of Economic Theory, Mathematical Finance. Mathematics of Operations Research, Proceedings of the American Mathematical Society. Proceedings of the IEEE, Quantitative Finance. SIAM J. on Control and Optimization. SIAM J. on Financial Mathematics. SIAM J. on Optimization, Stochastic Processes and Applications. System and Control Letters.

2003 – Reviewer for funding programs: Imperial College London, Italian PRIN MIUR, Swiss Science Foundation, Università di Padova, Norway Science Foundation;

2003 – Reviewer for promotion committees, Université Paris 9 and University of Luxembourg;

2013 – 2019 External member of the CAP- Committee for Appointments and Promotions, at Bocconi University (Milano, Italy)

2018 – Associate Editor of: Journal of Mathematical Economics, Stochastic Analysis and Application, Journal of Optimization Theory and Applications, International Journal of Economic Theory.

- **MEMBERSHIPS OF SCIENTIFIC SOCIETIES**

1990 – Member (among others) of AMS, EMS, SIAM Research Networks.

## • MAJOR COLLABORATIONS

Some recent and partly going-on collaborations (for each one I write only the starting year):

2019 – R. Boucekkine (Rennes), A. Dobson (Princeton), G. Fabbri (CNRS, Grenoble) M. Pascual (Chicago), T. Temzelides (Rice), on epidemic control policies in the early stages of the outbreaks.

2020 – R. Boucekkine (Rennes), G. Fabbri (CNRS, Grenoble), T. Temzelides (Rice) on strategic climate negotiations between asymmetric countries.

2018 – R. Boucekkine (Rennes), G. Fabbri (CNRS, Grenoble) and S. Federico (University of Genoa) on spatiotemporal modelling and control of transboundary pollution, including strategic aspects.

2020 – G. Fabbri (CNRS, Grenoble), S. Federico (University of Genoa), D. Fiaschi (Pisa) on strategic mobility choices and epidemics.

2021 – A. Calvia (Luiss), M. Leocata (Luiss), A. Xepapadeas (Athens), A. Yannacopoulos (Athens) on Control/Differential Games on Networks in Economics.

2017 – A. Calvia (Luiss), A. Cosso (Milano), M. Leocata (Luiss), Masiero (Milano - Bicocca), I. Kharroubi (Paris 1), H. Pham (Paris 7), M. Rosestolato (Lecce), N. Touzi (E. Polytechnique, Paris), A. Swiech (Georgia Tech) on Stochastic Control, Mean Field Control, Mean Field Games.

2022 – A. Calvia, F. Lippi, G. Zanco (All Luiss) on Optimal Control tools for EPI-ECON Models.

## RESEARCH ACHIEVEMENTS AND PEER RECOGNITION

### 1. BRINGING MATHS TO INTERDISCIPLINARY COLLABORATIONS

I am an applied mathematician with expertise in Control Theory, Partial Differential Equations, Stochastic Analysis and, more recently, on Differential Games and Mean Field Games. In 1996 I started cooperating with various researchers on the application of the above topics in Economics and Finance. Such collaborations have been very successful, in particular in the field of Macroeconomics/Growth Theory as one can see from the list of publications. Hence I started building an active group of researchers which combine a strong knowledge in Mathematics with a strong interest in Economic Modelling and the ability to collaborate at an interdisciplinary level.

A first important step in this direction has been the beginning, in 2009, of the collaboration of myself and two of my former PHD students (Fabbri and Federico) with R. Boucekkine and his group (now we have 10 papers published together, some in top field journals).

A second step has been the publication, in 2017 by Springer (with my former PHD student G. Fabbri and my coauthor A. Swiech), of the first survey/research monograph on Stochastic Control in Infinite Dimension (about 950 pages), the field of which I am one of the most recognised world experts. My challenge was (and partly still is) to show that such a complex mathematical theory can be proved to be very fruitful for economic applications, in particular to understand models treating heterogeneity. This challenge has been partly rewarded by the winning, as a PI, of two Italian PRIN-MIUR projects, one which is ending this year (see the funding ID) and one which is starting in 2024. Also thanks to this, in the last years, I had the possibility of hiring new people and starting new collaborations, creating a close-knit group of about 10 people working on such topics with publications in top field journals.

A third and crucial step has been, since 2020, the beginning of a cooperation with R. Boucekkine, A. Dobson, M. Pascual, T. Temzelides (biologists, economists and mathematicians), on some of the most challenging subjects of the present times involving the impact of human behaviour on the environment and its consequences: in particular climate change and economics, biodiversity loss, emergence of pandemics. The cooperation has been very positive and the first outcome is a paper which has been recently published on Science Advances, and can be considered the departure point of the present project. In the present project the main task of my team is to develop the “strategic modelling” employing the recent theory of Mean Field

Games, on which I started to work in the last few years and where my expertise in infinite dimensional control theory is a key tool for deep understanding and innovation.

## 2. PUBLICATIONS AND CITATIONS:

Fausto Gozzi has published more than 80 papers in peer-reviewed journals in his career, 39 in the last decade. In particular, he has published in journals of general mathematics, economic theory, control and optimization, financial mathematics, mathematical analysis, probability. As to October 29th 2023, he has 973 citations (743 excluding self-citations) reported in the Web of Knowledge (WOK) database (h-index= 19), and 2943 (1287 since 2018) in Google Scholar (GS) database with h-index=32 (20 since 2017); i10-index 74 (41 since 2018). MathSciNet American Math. Society database) reports 915 total citations by 460 publications (h-index=17). Scopus reports 1171 citations by 677 documents; h-index 20. Here are the 10 most representative. Full list [here](#)

1. Cosso A., **Gozzi** F., Kharroubi I., Pham H., Rosestolato M. (2023). Master Bellman equation in the Wasserstein space: Uniqueness of viscosity solutions. To appear in *Transactions of American Mathematical Society*. Arxiv preprint 2107.10535.
2. Cosso A., **Gozzi** F., Kharroubi I., Pham H., Rosestolato M. (2023). Optimal control of path-dependent McKean-Vlasov SDEs in infinite dimension. *Annals of Applied Probability* 33(4), 2863-2918.
3. Biagini S., **Gozzi** F., Zanella M. (2022), Robust portfolio choice with sticky wages. *SIAM Journal on Financial Mathematics* 13(3), 1004-1039.
4. **Gozzi** F., Leocata M. (2022) A stochastic model of economic growth in time-space. *Siam Journal on Control and Optimization*, 60 (2), 620-651 .
5. Boucekkine R., Fabbri G., Federico S., **Gozzi** F. (2022). A dynamic theory of spatial externalities. *Games and Economic Behavior* 132, 133-165.
6. Bandini E., de Angelis T., Ferrari G., **Gozzi** F. (2022). Optimal dividend payout under stochastic discounting. *Mathematical Finance* 32 (2), 627-677.
7. Boucekkine R., Fabbri G., Federico S., **Gozzi** F. (2021). From firm to global-level pollution control: the case of transboundary pollution. *European J. of Operation Research* 290 (2021) 331–345.
8. Boucekkine R., Fabbri G., Federico S., **Gozzi** F. (2019). Growth and agglomeration in the heterogeneous space: a generalized ak approach. *Journal of Economic Geography*, 19(6), 1287–1318.
9. Cosso A., Federico S., **Gozzi** F., Rosestolato M., Touzi N. (2018). Path-dependent equations and viscosity solutions in infinite dimension. *Annals of Probability* 46(1), 126-174.
10. Bambi M., **Gozzi** F., Licandro O. (2014). Endogenous growth and wave-like business fluctuations. *Journal of Economic Theory* 54, 68-111.

## 3. RESEARCH MONOGRAPHS (first comprehensive survey monograph on the topic).

Fabbri G., Gozzi F., Swiech A. (2017). *Stochastic Optimal Control in Infinite Dimension - Dynamic Programming and HJB Equations*, Probability Theory and Stochastic Modeling, vol. 82, Springer.

## 4. SELECTED INVITED PRESENTATIONS IN LAST 10 YEARS

A - Schools:

1- "16th Summer School in Risk Finance and Stoch." 9-13/9/2020, Athens, Greece. Short course (5 lectures) on "Optimal Control and Economic/Financial Applications".

B - Invited communications to congresses (selected)

1-Osaka 16-20/3/15 "5th Workshop on Math. Finance and Related Issues" Talk on 20/3/15

- 2-Hammamet 19-23/10/15 "Stoch. Analysis and Applications" Talk on 19/10/15
- 3-Levico Terme (TN) 1-5/6/2016. "SPDE and Applications" Talk on 2/6/16.
- 4-European University at St. Petersburg, 25-26/5/17 "Int. Workshop Economic Growth, Macroeconomic Dynamics and Agents' Heterogeneity" Talk on 25/5/17
- 5-Beijing 10-23/9/18 "New Trends in Stoch. Analysis" Talk 22/9/18
- 6-Vienna 5-6/12/19 "Wien Vintage Workshop" Talk 6/12/19
- 7- Univ. of Trento (online) Models of COVID-19. Talk: 22/06/20
- 8-Helsinki 24-27/6/22 "Euro 2022" Talk 26/6/22
- 9-Vienna 1-5/7/22 "Viennese Workshop on Opt. Control and Dyn. Games" Talk 2/7/22
- 10-Santiago del Chile 5-10/7/23, "IFORS Congress 2023" Talk on 6/7/23

Moreover, FG gave invited seminars/short courses in various universities. For example short courses at: Bielefeld University, Univ. Bocconi di Milano. For example seminars at: London School of Economics (prof. Zervos), Osaka University (prof. Sekine), Georgia Tech, Atlanta, USA (prof. Swiech), Università di Padova (proff. Runggaldier e Vargiolu), Università di Milano (De Finetti Seminar, prof. Frittelli), Imperial College London (prof. Brigo), Bielefeld University (proff. Ferrari e Riedel), IHP Paris (Bachelier Seminar, prof. Pham) ENSTA Paris (prof. Russo), KTH – Stockholm (prof. Djieiche), Univ. du Maine (prof. Di Girolami), Leeds University (prof. De Angelis), Univ. Di Trento (Prof. Bagagiolo), TU Berlin (prof. Bank) Brest (prof. Bettiol), Concepcion (prof. Molina).

**6. FUNDING** (numbers are approximately given in Kilo Euro (KE)).

National PI of three italian PRIN projects (2022: 220 KE; 2017: 247 KE and 2006: 106 KE)

National PI of a "progetto coordinato" CNR (1999: 42 KE).

Local PI of a unit of two national PRIN projects (PRIN 2003: 71 KE; PRIN 2015: 12 KE).

Local PI of the Pisa unit in a "progetto coordinato" CNR (1998: 6 KE).

PI of two projects at Università di Roma "La Sapienza" (1998: 30 KE, 2001: 35KE).

**7. MAJOR CONTRIBUTIONS TO EARLY CAREERS OF EXCELLENT RESEARCHERS**

Most of the old PHD students and postdocs of FG still work with FG and are now established researchers. PHD students: Salvatore Federico is now a full professor in Italy. Marina Di Giacinto, Silvia Faggian are now Associate Prof. in Italian Universities; Mauro Rosestolato has now a tenure track position; Cristina Di Girolami is now Ricercatore (permanent position); Giorgio Fabbri has now a permanent senior researcher position at CNRS (France); Maya Briani has now a permanent researcher position at CNR (Italy).

Postdocs that were not PHD students: Elena Bandini, Alessandra Cretarola, Marco Papi, Marco Avarucci, Xavier Dupuis, have permanent positions at the university (the last two out of Italy). Alessandro Calvia, Daria Ghilli, Marta Leocata and Giovanni Zanco have a tenure track position.