

## **ALLEGATO B**

**UNIVERSITÀ DEGLI STUDI DI MILANO**

**selezione pubblica per n.\_1\_ posto/i di Ricercatore a tempo determinato ai sensi dell'art.24,**

**comma 3, lettera b) della Legge 240/2010 per il settore concorsuale \_\_**

**13/D4 - Metodi Matematici dell'Economia e delle Scienze Attuariali e Finanziarie \_\_\_\_\_ ,**

**settore scientifico-disciplinare \_\_\_\_\_**

**SECS-S/06-Metodi Matematici dell'Economia e delle Scienze Attuariali e Finanziarie**

**presso il Dipartimento di \_\_MATEMATICA "FEDERIGO ENRIQUES" \_\_\_\_\_,**

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**Codice concorso \_\_4140\_\_**

## **Matteo Burzoni CURRICULUM VITAE**

**INFORMAZIONI PERSONALI (NON INSERIRE INDIRIZZO PRIVATO E TELEFONO FISSO O CELLULARE)**

<b>COGNOME</b>	BURZONI
<b>NOME</b>	MATTEO
<b>DATA DI NASCITA</b>	14, 12, 1987

## SUMMARY

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Since January 2016 I am postdoctoral researcher at ETH Zurich in the team of Prof. H.M. Soner. Most of my research has been focusing, so far, on Knightian uncertainty in economics and finance and on risk measures. I am very interested in Mean Field Games and their applications, in the quantitative aspects of risk management and also in modeling financial markets with frictions. My areas of specialization are: mathematical finance, stochastic calculus, probability, functional analysis. From January 2016 to December 2018 I was responsible for the organization of the seminar series “Talks in Financial and Insurance Mathematics” at ETH Zurich. In September 2019 I will join the department of Mathematics of the University of Oxford as a fixed-term Hooke Research Fellow.

## EDUCATION

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- **Ph.D. in Mathematics and Statistics for Computational Sciences** Milan  
*Università degli studi di Milano; excellent* 11.2012 – 12.2015
- **Master in Applied Mathematics** Milan  
*Università degli studi di Milano; 110/110 cum laude* 12.2009 – 12.2011
- **Erasmus Program** Amsterdam  
*Universiteit van Amsterdam* 08.2010 – 01.2011
- **Bachelor in Mathematics** Milan  
*Università degli studi di Milano; 106/110* 09.2006 – 12.2009

## GRANTS, HONORS & AWARDS

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- **Hooke Research Fellowship 2019:** Fixed-term research fellowship at the University of Oxford.
- **Young Investigator Training Program prize 2017:** The grant is funded by ACRI, the Italian Association of Foundations of Banking Origin, and aims at supporting a research visit to one of the affiliated Italian universities.
- **Alberto Frigerio prize 2013:** This award has been assigned to the best Master thesis in mathematical finance.
- **Ph.D. Scholarship 2012–2015:** Doctoral studies have been financially supported by University of Milan.

## PUBLICATIONS AND PREPRINTS

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10. E. Bayraktar, M. Burzoni, On the quasi-sure superhedging duality with frictions. ArXiv 1809.07516, preprint 2018. (submitted).
9. M. Burzoni, F. Riedel, H.M. Soner, Viability and arbitrage under Knightian Uncertainty. ArXiv 1707.03335, preprint 2017. (submitted).
8. M. Burzoni, M. Sikic, Robust martingale selection problem and its connections to the no-arbitrage theory. *Mathematical Finance*, forthcoming. DOI: <https://doi.org/10.1111/mafi.12225>.
7. V. Bignozzi, M. Burzoni, C. Munari, Risk Measures Based on Benchmark Loss Distributions. *Journal of Risk and Insurance*, forthcoming. DOI: <https://doi.org/10.1111/jori.12285>.
6. M. Burzoni, M. Frittelli, Z. Hou, M. Maggis, J. Oblój, Pointwise arbitrage pricing theory in discrete-time. *Mathematics of Operations Research*, forthcoming. DOI: <https://doi.org/10.1287/moor.2018.0956>.
5. M. Burzoni, I. Peri, C. Ruffo, On the properties of Lambda value at risk: robustness, elicibility and consistency. *Quantitative Finance* 17(11), 1735-1743, 2017.
4. M. Burzoni, Arbitrage and Hedging in Model Independent Markets with frictions. *SIAM Journal of Financial Mathematics* 7(1), 812-844, 2016.

3. M. Burzoni, M. Frittelli, M. Maggis, Model-free superhedging duality.  
*Annals of Applied Probability*, 27(3), 1452-1477, 2017.
2. M. Burzoni, M. Frittelli, M. Maggis, Universal Arbitrage Aggregator in Discrete Time Markets under Uncertainty.  
*Finance and Stochastics*, 20(1), 1-50, 2016.
1. M. Burzoni, A Model-free analysis of discrete-time Financial Markets.  
Ph.D. Thesis, 2015.

## TALKS

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### Invited Speaker

- Risk measures and benchmark distributions Munich  
*Oberseminar Finanz- und Versicherungsmathematik* 15.07.2019
- Randomization in the robust superhedging duality with frictions Paris  
*9th AMaMEF Conference (invited session)* 11.06.2019
- Risk measures based on Benchmark Loss Distributions Hammamet  
*International Conference on Control, Games and Stochastic Analysis* 29.10.2018
- Arbitrage, hedging and all that: lessons learned from the absence of a probability Vienna  
*Seminar at TU Wien* 24.05.2018
- Martingale selection problem and its connection to arbitrage theory Ann Arbor  
*Seminar at University of Michigan* 17.01.2018
- Viability and arbitrage under Knightian Uncertainty CIRM Luminy  
*Advances in Stochastic Analysis for Risk Modeling* 14.11.2017
- Martingale selection problem and its connection to the no-arbitrage theory L'Aquila  
*I Gran Sasso Workshop in Mathematical Finance* 28.09.2017
- Martingale selection problem and its connection to the no-arbitrage theory Konstanz  
*Seminar at University of Konstanz* 06.06.2017
- Pointwise arbitrage pricing theory in discrete-time Ann Arbor  
*Byrne Young Researcher Workshop on Mathematical Finance* 31.03.2017
- Viability in Financial Markets determined by preferences Milan  
*Seminar at University of Milan-Bicocca* 22.02.2017
- Viability and arbitrage without probabilistic priors Rome  
*Seminar at LUISS* 20.12.2016
- Arbitrage and hedging in Robust Finance with frictions Paris  
*Seminar at Université Paris VI-VII* 12.05.2016
- Arbitrage and hedging in robust models for Finance Zurich  
*Seminar at ETH Zurich* 17.11.2015
- Universal Arbitrage Aggregator under Uncertainty Bielefeld  
*Zif Workshop: Mathematics and Financial Economics* 19.05.2015

### Contributed Speaker

- Randomization in the robust superhedging duality with frictions
  - 1st Oxford-ETH Workshop, Oxford, 13–15.03.2019
- Martingale selection problem and its connection to the no-arbitrage theory
  - Robust Techniques in Quantitative Finance, Oxford, 06–07.09.2018

- 10th Bachelier World Congress, Dublin, 16–20.07.2018
- Workshop Robust Finance, Freiburg, 14–18.05.2018
- 4th Young Researcher Meeting on BSDEs, Nonlinear Expectations and Mathematical Finance, Shanghai, 23–27.04.2018
- Risk measures based on Benchmark Loss Distributions
  - 2nd Model Uncertainty and Robust Finance, Milan, 15–16.03.2018
  - 13th German Probability Days, Freiburg, 27.02–02.03.2018
  - XIX Workshop on Quantitative Finance, Rome, 24–26.01.2018
  - Postdoctoral seminar, ETH Zurich, 31.10.2017
- Viability and arbitrage under Knightian Uncertainty
  - The Mathematics of Subjective Probability, Milan, 03–05.09.2018
  - 8th AMaMEF Conference, Amsterdam, 19–23.06.2017
  - University of Oxford, 15.05.2017
  - Postdoctoral seminar - ETH Zurich, 06.12.2016
- Pointwise arbitrage pricing theory in discrete-time
  - XVIII Workshop on Quantitative Finance, Milan, 25–27.01.2017
  - 11th Bachelier Colloquium, Métabief, 16–22.01.2017
  - Imperial-ETH Workshop on Mathematical Finance, Zurich, 27.09.2016
- Arbitrage and Hedging in model-independent markets with frictions
  - Mini workshop on pricing–hedging duality, Zurich, 20.03.2017
  - 9th Bachelier World Congress, New York, 14.07.2016
  - 5th Berlin Workshop on Mathematical Finance for young researchers, Berlin, 02.06.2016
- Model-free superhedging duality
  - XVII Workshop on Quantitative Finance, Pisa, 28.01.2016
  - Dependence and Risk Measures conference, Milan, 12.11.2015
- Robust Arbitrage under Uncertainty in discrete time
  - XVI Workshop on Quantitative Finance, Parma, 30.01.2015
  - 9th Bachelier Colloquium, Métabief, 14.01.2015
  - 38th AMASES Congress, Reggio Calabria, 04.09.2014
  - Universität Bielefeld, 14.07.2014
  - University of California Santa Barbara, 12.03.2014
  - Poster Session 8th Bachelier World Congress, Brussels
  - Poster Session 14th Winter School on Mathematical Finance, Lunteren
  - Poster Session Advanced Modelling in Mathematical Finance, Kiel

## TEACHING EXPERIENCE

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### Lecturer

- Mean Field Games ETH Zurich  
*Master in Mathematics* *Fall 2017*
- Mean Field Games (with Prof. Soner) ETH Zurich  
*Bachelor and Master in Mathematics, seminar course* *Fall 2016*
- Probabilistic methods for Finance (with Dr. Maggis) Collegio Carlo Alberto  
*Master in Finance, exercise class* *Fall 2015*
- Probabilistic methods for Finance (with Prof. Frittelli) Collegio Carlo Alberto  
*Master in Finance, exercise class* *Fall 2014*
- Prerequisites of Mathematics University of Milan  
*Bachelor in Science* *Fall 2014*
- Mathematical Finance I (with Dr. Maggis) University of Milan  
*Master in Mathematics, exercise class* *Fall 2013*
- Prerequisites of Mathematics University of Milan  
*Bachelor in Science* *Fall 2013*

### Master Thesis supervision

- **Alberto Corti**: Robust hedging of American Options, co-supervision with Prof. Teichmann, 2019.
- **Gustav Hermann**: Mean Field Games on finite state spaces, co-supervision with Prof. Soner, 2019.

### Semester Paper supervision

- **Marcello Monga**: An application of Stochastic Differential Games to Systemic Risk, co-supervision with Prof. Soner 2019.

## CONFERENCE ORGANIZATION

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- **Young Researcher Workshop on Robust Mathematical Finance** ETH Zurich  
*co-organized with Dr. Riga, Dr. Prömel and Dr. Neufeld* *26-28.04.2017*
- **Mini-Workshop on Pricing-Hedging Duality** ETH Zurich  
*co-organized with Prof. Soner* *20-21.03.2017*

## REFeree

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I have been invited to review research papers for the following journals: Applied Mathematical Finance, Applied Mathematics and Optimization, Dependence Modeling, Finance and Stochastics, Mathematical Finance, Mathematical Methods of Operations Research, Mathematics and Financial Economics, Mathematics of Operations Research, Quantitative Finance, Scandinavian Actuarial Journal, Stochastic Processes and their Applications.

## PH.D. EDUCATION

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**Supervisor:** Prof. M. Frittelli

### Schools:

- 21–23.01.2013 Participation in the 12th Winter School on Mathematical Finance in Lunteren (The Netherlands). Main topics: Mathematical Behavioural Finance (Prof. X.Y. Zhou), Adjoint methods in Mathematical Finance (Prof. M. Giles).

- 26–30.08.2013 Participation in the 6th European Summer School in Financial Mathematics in Wien (Austria). Main topics: Model independent pricing and hedging for derivatives (Prof. D. Hobson), Leading order correction in Mathematical Finance (Prof. J. Kallsen).
- 07–18.07.2014 Participation in the 1st Summer School Model on Uncertainty in Economics and Finance in Bielefeld (Germany). Main Topics:
  1. Patrick Cheridito: Risk Measures and Model Uncertainty in Finance
  2. Shige Peng: Stochastic Calculus under Knightian Uncertainty (G-Calculus)
  3. Frank Riedel: Financial Economics under Knightian Uncertainty
  4. Michael Röckner: Advances in Stochastic PDEs
  5. Chris Shannon: General Equilibrium and Knightian Uncertainty
  6. Jean-Marc Tallon: Decision Theory under Uncertainty
- 26–28.01.2015 Participation in the 14th Winter School on Mathematical Finance in Lunteren (The Netherlands). Main topics: Nonlinear valuation under credit gap risk, collateral initial and variation margins, funding costs and multiple curves (Prof. D. Brigo), Dependence, risk bounds, optimal allocations and portfolios (Prof. L. Ruschendorf).
- 22–23.09.2015 Participation in the Bolzano Risk School (Italy). Main topics: Portfolio credit risk, set-valued models, systemic risk, uncertainty in economic forecasting (Proff. M. Scherer, B. Rudloff, A. Hamel, F. Ravazzolo).

#### **Additional courses attended:**

- Stochastic Differential Equations (Prof. M. Gregoratti) at Politecnico di Milano.
- Computational methods for Decision Making based on Uncertainty Quantification (Prof. P. Diez – UPC Barcelona Tech) at Politecnico di Milano
- Enlargement of filtrations (Prof. M. JeanBlanc) at Università degli studi di Padova
- Microsimulations and population dynamics (Prof. N. El Karoui) at Università degli studi di Padova

#### **Visiting student:**

- 01.2014–03.2014 University of California Santa Barbara (USA).

#### **WORK EXPERIENCE**

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- **Sisal s.p.a.** Milan  
*Game Designer Innovator* *02.2012–10.2012*
  - **Main responsibilities:** Reengineering of existing games, creation of the probability structure of new games, risk analysis and MATLAB simulations. Quantitative data analysis of the performance of Sisal's current games.
  - **Type of business or sector:** Games and Services

Data 18/07/2019

Luogo Zurigo