Michele Azzone

RTDA at Politecnico di Milano

Birth: 08/06/1994

Education

Oct 2018–Feb 2022 **PhD in Mathematical Models and Methods in Engineering**, *Politecnico di Milano*, Italy
- Thesis Title: Modeling the implied volatility surface: a new method via additive processes.
- Volatility surface modelling with Additive processes and implicit cost of funding in the equity market.
- Artificial intelligence techniques for power consumption and insurance contracts lapse prediction.
- Fin-tech ho-2020 program, sup-tech dissemination sessions with the Italian market authority (CONSOB).

Oct 2016–Oct 2018 **Master Degree in *Quantitative Finance***, *Politecnico di Milano*, Italy, **110/110 cum laude**
- Main Exams: Mathematical Finance I and II, Financial Engineering,Computational Finance and Applied Statistics.
- Thesis title: Additive process for equity index derivatives.

Sep 2013–Sep 2016 **Bachelor's Degree in *Ingegneria Matematica***, *Politecnico di Milano*, Italy, **105/110**
- Thesis title: Expectation Maximization algorithm for mixed random variable.

Sep 2008–July 2013 **Maturità classica**, *Liceo Clemente Rebora*, Italy, **95/100**
- Literature, Mathematics, Latin and ancient Greek.

Experience

Feb 2023–Now **Researcher RTDA**, *Politecnico di Milano*, Italy
- Volatility surface modelling with Additive processes.
- Tail risks in the credit market from a financial stability perspective.
- Teaching: Econometrics (5 credits) and Financial Engineering (2 credits).

Sep 2022–Jan 2023 **Postdoc**, *Politecnico di Milano*, Italy
- Teaching assistant in the computational finance class.
- Theory and laboratories of portfolio allocation and energy finance.
- Central bank digital currency and deposit value.

Sep 2022– Dec 2022 **Financial Stability Analyst**, *ECB, Macroprudential Policy division*, Germany
- Forthcoming ECB working paper: Monetary and Macroprudential policy interactions within the 3D **DSGE** model.
- Forthcoming ECB working paper: Collateral implied volatility risk and LTV calibration with **Anacredit** data.
- Contribute to the division main outputs in internal and external policy questions.

Jun 2021–May 2022 **PhD trainee**, *ECB, Macroprudential Policy division*, Frankfurt
- Monetary and Macroprudential policy interactions within the 3D DSGE model.
- Partecipate in drafting ECB contribution to the review of the EU macroprudential framework. Latvia country expert and monitoring of Macroprudential policy in EA countries.

Oct 2018–Jun 2020 **Research assistant**, *Politecnico di Milano*, Italy
- Tutor and assistant professor in "Financial Engineering" class.
- Master thesis correlator: "Machine Learning in power consumption prediction" and "Mid-term probabilistic load forecasting with recurrent neural networks".

Feb 2018–Aug 2018 **Quantitative Analyst Intern**, *Unicredit*, Italy
- Pricing of credit plain vanilla and structured products.
- Statistic and Probability analysis on **big data-set** with R-studio and Sas EG.

Publications

Via Faravelli 6 – Milano – Italia
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Oct 2023 **Evaluation of sight deposits and central bank digital currency** , https://www.sciencedirect.com/science/article/pii/S1042443123001099

May 2023 **A fast Monte Carlo scheme for additive processes and option pricing** , *Computational Management Science, Accepted*, https://arxiv.org/abs/2112.08291

September 2022 **Short-time implied volatility of additive normal tempered stable process**, *Annals of Operations Research* , https://link.springer.com/article/10.1007/s10479-022-04894-y

April 2022 **A machine learning model for lapse prediction in life insurance contracts**, *Expert systems with applications*, https://doi.org/10.1016/j.eswa.2021.116261

December 2021 **Additive normal tempered stable processes for equity derivatives and power law scaling** , *Quantitative Finance*, https://doi.org/10.1080/14697688.2021.1983200

July 2021 **Synthetic forwards and cost of funding in the equity derivative market**, *Finance Research Letters*
https://doi.org/10.1016/j.frl.2020.101841

March 2021 **Neural Network Middle-Term Probabilistic Forecasting of Daily Power Consumption** , *Journal of Energy Markets* , https://doi.org/10.21314/JEM.2020.216

Preprints

November 2023 **Can we hedge carbon risk? A network embedding approach** , https://arxiv.org/abs/2311.12450

July 2023 **Is (independent) subordination relevant in option pricing?** , https://arxiv.org/abs/2307.08628

May 2023 **Explicit option pricing with additive processes** , https://www.researchgate.net/publication/370894123_Explicit_option_pricing_with_additive_processes

May 2023 **On the implied volatility skew outside the at-the-money point**, https://www.researchgate.net/publication/370894125_On_the_implied_volatility_skew_outside_the_at-the-money_point

Conference talks

November 2023 **Talk**, *International Fintech Research Conference*, Italy
- Can we hedge carbon risk? A network embedding approach

September 2023 **Talk**, *AMASES Conference 2023*, Italy
- Explicit option pricing with additive processes

June 2023 **Talk**, *MathRisk Conference on Numerical Methods in Finance*, Italy
- Explicit option pricing with additive processes

April 2023 **Talk**, *Quantitative Finance Workshop 2023*, Italy
- Evaluation of sight deposits and central bank digital currency.

December 2022 **Seminar**, *DGMF Seminar, ECB*, Germany
- Macroprudential policy and monetary policy friends or foes?

October 2022 **Talk**, *International Fintech Research Conference*, Italy
- Evaluation of sight deposits and central bank digital currency.

September 2022 **Talk**, *AMASES 2022 conference*, Italy
- Short-time implied volatility of additive normal tempered stable processes.

May 2022 **Talk**, *Intrinsic time in finance 2022*, Germany
- Normal tempered stable additive processes for equity derivatives and power law scaling.

May 2022 **Seminar**, *MAP Seminar, ECB*, Germany
- Macroprudential policy and monetary policy friends or foes?

April 2022 **Talk**, *Quantitative Finance Workshop 2022*, Italy
- Short-time implied volatility of additive normal tempered stable processes.

March 2022 **Talk**, *Modeling Uncertainty in Social, Economic, and Environmental Sciences*, France
- Short-time implied volatility of additive normal tempered stable processes.

July 2021 **Talk**, *New challenges in quantitative finance*, Spain
- Short-time implied volatility of additive normal tempered stable processes.

June 2021 **Talk**, *Big Data and Machine Learning in Finance Conference*, Italy
- A machine learning estimation of lapse rates.

May 2020 **Talk**, *Fintech Workshop on AI, Financial Automation and Market Risk*, UK
- Neural Network Middle-Term Probabilistic Forecasting of Daily Power Consumption.

Jan 2020 **Poster Presentation**, *Quantitative Finance Workshop*, Italy
- Normal tempered stable additive processes for equity derivatives.

Jan 2020 **Talk**, *Advances in Mathematical Finance 2020*, France
- Normal tempered stable additive processes for equity derivatives and power law scaling.

Sep 2019 **Talk**, *Vienna Conference on Mathematical Finance*, Austria
- Normal tempered stable additive processes for equity derivatives and power law scaling.

Jan 2019 **Poster Presentation**, *18th Winter school on Mathematical Finance*, Netherlands
- Normal tempered stable additive processes for equity derivatives.

Conferences Organized

February 2023 **Organizing Committee**, *Energy Finance Italia 8 Conference*, Italy
Politecnico di Milano

June 2021 **Organizing Committee**, *Big Data and Machine Learning in Finance Conference*, Italy
Politecnico di Milano

Teaching

2023-2024 **Econometrics**, *5 Credits*
Politecnico di Milano

2023-2024 **Financial Engineering**, *2 Credits (TA)*
Politecnico di Milano

2022-2023 **Econometrics**, *5 Credits*
Politecnico di Milano

2022-2023 **Financial Engineering**, *2 Credits (TA)*
Politecnico di Milano

2022-2023 **Computational Finance**, *4 Credits (TA)*
Politecnico di Milano

2020-2021 **Financial Engineering**, *2 Credits (TA)*
Politecnico di Milano

2019-2020 **Financial Engineering**, *2 Credits (TA)*
Politecnico di Milano

Languages

Italian Native speaker

English C1 *Toeic score: 960/990*

Computer skills

Programming Languages MATLAB, Python, R, Dynare, C++, LaTeX.

Software environment: Office Suite, Reuters Eikon, Sas EG.

- Autorizzo al trattamento dati ai sensi del GDPR 2016/679 del 27 aprile 2016 (Regolamento Europeo relativo alla protezione delle persone fisiche per quanto riguarda il trattamento dei dati personali).
- Autorizzo la pubblicazione del Curriculum Vitae sul sito istituzionale del Politecnico di Milano (sez. Amministrazione Trasparente) in ottemperanza al D. Lgs n. 33 del 14 marzo 2013 (e s.m.i.).