MATTEO GARDINI

Curriculum Vitae

Milan area, Italy
(+39) 3425133082
matteo.gardini88@gmail.com
LinkedIn *GitHub* *Website*

About me

Ph.D. Quantitative Researcher with 10+ years of experience in energy markets, specializing in stochastic modeling and derivatives pricing. Played a key role in building quantitative teams at Eni Plenitude and ERG. Passionate about mathematics, programming and innovation in energy finance. Seeking a new challenge in quantitative modeling.

Working Experiences

2021 – present **Quantitative Researcher**, Eni-Plenitude S.p.A., Milan.

- European power and gas **forward curves construction** ensuring compliance with non-arbitrage constraints.
- Developed a ***Python* pricing library**, Improving pricing efficiency by 25%, enabling advanced simulations for energy derivatives, and enhancing code maintainability for long-term scalability and ease of updates:
  - Two-factor model and the Schwartz-Smith model.
  - Stochastic model with double exponential jumps for energy spot prices.
  - Heath-Jarrow-Morton framework for energy markets
- **Stochastic models** for renewable production simulation.
- **Energy derivatives pricing**: swing, gas storage, American and European vanilla options, virtual power plants and weather contracts.
- Power Purchase Agreements (PPAs) evaluation.

2017 – 2021 **Quantitative Analyst**, ERG S.p.A., Genoa.

- **Lévy processes** derivative pricing: *Black76*, *Variance Gamma*, *Merton Jump-Diffusion* and *Normal Inverse Gaussian*: ***Monte Carlo Simulations***.
- **Risk metrics computation**: Par, VaR, CVaR, and greeks under a HJM framework of large portfolios of financial deals and physical assets.
- **G**rafical **U**ser **I**ntrerface (**GUI**) for derivatives valuation, enabling traders to autonomously price complex instruments, significantly improving speed and efficiency in daily operations.
- *Hull-White* model for the Euribor rate: historical calibration and Monte Carlo simulations.

2014 – 2016 **Quantitative Analyst**, A2A Trading, Milan.

- Developed a **MILP optimization model** for optimal dispatching of hydroelectric facilities, supporting long-term operational forecasting and enhancing the effectiveness of the generation programming strategy.
- MATLAB implementation with GUI of the **Euphemia algorithm** adapted to the Italian power spot market, used to simulate long-term market scenarios such as coal phase-out and increased renewable penetration. (`https://arxiv.org/abs/1703.09782`).
- Italian energy market players **Cluster analysis** based on a *k-means algorithm*, aimed at identifying typical competitor bidding patterns to improve and optimize the company's bidding strategy.

Teaching Experiences

2023 – present **Adjunct professor**, *Department of Mathematics*, Politecnico of Milan, Advanced Mathematical Models in Finance.
Portfolio theory, Binomial trees, option pricing with *Python* under Black76 model, **Swap Curve Construction**.

2022 – 2023 **Adjunct professor**, *Department of Mathematics*, University of Genoa, Computational Finance.
Stochastic calculus, Brownian motion, Black-Scholes model, Lévy processes, derivatives pricing by PDE approach, Monte Carlo techniques and Fourier methods.

2022 – 2023 **Adjunct professor**, *Department of Economics*, University of Genoa, General Mathematics.

2019 – 2020 **Adjunct professor**, *Department of Mathematics*, University of Genoa, **Financial Engineering**.
Stochastic calculus, Brownian motion, Black-Scholes model, Lévy processes, European and American derivatives pricing by PDE approach, Monte Carlo techniques and Fourier methods.

Education

2018 – 2022 **PhD - Applied Mathematics**, *Self-decomposability and multidimensional Lévy processes in Finance*, Università degli Studi di Genova.
Thesis: *Financial models in continuous time with self-decomposability: application to the pricing of energy derivatives*.

2011 – 2013 **Master Degree - Mathematical Engineering**, *Quantitative Finance*, Politecnico di Milano, Milan.
Thesis: *Option pricing in regime-switching*.

2007 – 2011 **Bachelor Degree - Mathematical Engineering**, Politecnico di Milano, Milan.
Thesis: *Infinitely divisible matrices*

2002 – 2007 **Scientific Diploma**, *Scientific High School Antonio Banfi*, Vimercate.

Publications

Journal Articles

2024 **A Heath-Jarrow-Morton framework for energy markets: review and applications for practitioners**, Gardini, M. and Santilli, E., in *Decision in Economics and Finance*.

2023 **Exchange option pricing under variance gamma-like models**, Gardini, M. and Sabino, P., in *Applied Mathematical Finance*.

2022 **The Variance Gamma++ Process and Applications to Energy Markets**, Gardini, M. and Sabino, P. and Sasso, E., in Applied Stochastic Models in Business and Industry.

2022 **A bivariate Normal Inverse Gaussian process with stochastic delay: efficient simulations and applications to energy markets**, Gardini, M. and Sabino, P. and Sasso, E., in *Applied Mathematical Finance*.

2021 **Correlating Lévy processes with Self-Decomposability: Applications to Energy Markets**, Gardini, M. and Sabino, P. and Sasso, E., in *Decision in Economics and Finance*.

Pre-prints

2025 **Closed-form Option Formulas for Kou-like Models**, Gardini, M. and Sabino, P..

Computer skills

Programming Languages

- Python, MATLAB ■■■■■
- SQL ■■■□□
- C++, C, VBA ■■□□□
- R, CUDA, MPI ■□□□□

Other skills

- Office Suite, GIT ■■■■■
- Copilot, Chat GPT, LaTeX ■■■■□