



ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA

DEPARTMENT
OF STATISTICAL SCIENCES
"PAOLO FORTUNATI"

DEPARTMENT
OF MATHEMATICS

DEPARTMENT
OF ECONOMICS

QFW 2024

XXV Workshop on Quantitative Finance

April 11-13, 2024

Department of Economics – Piazza Scaravilli, Bologna

[EVENTI.UNIBO.IT/QFW2024](https://eventi.unibo.it/qfw2024)



The workshop aims to bring together academia and industry to stimulate discussions and interactions between researchers and professionals on the theoretical and applied aspects of Quantitative Finance broadly understood. Contributions come from the fields of Mathematical Finance, Quantitative Risk Management, Portfolio Optimization, Financial Economics, Empirical Corporate Finance, Insurance, Computational Finance, Econophysics, Financial Econometrics, Financial Applications of Artificial Intelligence and Machine Learning, Fintech and Insurtech, Game-Theoretical Models in Finance, and other related research areas.

THURSDAY APRIL 11TH

- 8.30 AM Registration | Aula Magna, Scaravilli
 9.45 **Opening Remarks** | Aula Magna, Scaravilli
 10.00 **10 Years of rough volatility: A current perspective, J. Gatheral** | Aula Magna, Scaravilli

<i>Venue</i>	<i>Aula 3, Scaravilli</i>	<i>Aula I, Belle Arti 41</i>	<i>Aula Magna, Scaravilli</i>
<i>Session</i>	ENERGY MARKETS	STOCHASTIC CONTROL	VOLATILITY MODELING
11.00	Fast and General Simulation of Lévy-driven OU processes for Energy Derivatives, P. Manzoni	Optimal Consumption and Investment with Independent Stochastic Labor Income, S. Park	Diamonds and forward variance models, P. Friz
11.30	Gaussian Volterra processes as models of electricity markets, T. Vargiolu	Uncertainty over uncertainty in environmental policy adoption: Bayesian learning of unpredictable socioeconomic costs, N. Rodosthenous	Pricing and calibration of path-dependent volatility models, G. Gazzani
11.45			The EWMA two-factor exponential Ornstein-Uhlenbeck model, F. Baschetti
12.00	A Fuzzy Approach to Volumetric Risk Management in Solar Power Production, B. Sartini	On optimal portfolio choice under stochastic drift of longevity bonds, I. Gallo	Orthogonal expansions in Volterra-Heston models, T. K. Kloster
12.15	Higher moments in the fundamental specification of electricity forward prices, G. Scandolo	Optimal Retirement Choice under Age-dependent Force of Mortality, S. Zhu	A Heston-Nandi GARCH model with two volatility components and two driving factors, C. Tezza
12.30	Additive model with fractional Brownian martingale for forward prices in energy markets, M. Mastrogiovanni	Self-consumption groups and the optimal management of storage, A. Awerkin	Long Memory by Heterogeneous Forecast Aggregation, G. P. Aielli

12.45	A comparison principle for Hamilton-Jacobi-Bellman-Isaacs equations based on couplings of differential operators, F. Fuchs	On the implied volatility of Inverse and Quanto Inverse options under stochastic volatility models, M. Pravosud
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1.00 PM **Lunch + Poster Session + MSc QF Poster Session**

Sentiment Trading with Large Language Models, **K. Kirtac**

The Information Content of Delayed Block Trades in Cryptocurrency Markets, **L. Galati**

Managing ESG Ratings Disagreement in Sustainable Portfolio Selection, **M. L. Martino**

Russia-Ukraine war and market expectations: evidence from option implied densities of European gas, **M. Kosolapova**

Dynamics of Wealth Inequality in the United States, **Y. Choi**

Ergodic Mean-Field Games of Singular Control with Regime-Switching, **I. Tzouanas**

Deep Limit Order Book Forecasting, **A. Briola**

A Methodological Approach to Assess Life Annuities Changes, **C. Di Palo**

Trading with Concave Price Impact and Impact Decay - Theory and Evidence, **N. Hey**

MSc QF Poster Session, **M. Penza**

MSc QF Poster Session, **G. Nadalini**

MSc QF Poster Session - Price Impact on Uniswap V3 Decentralized Exchange, **D. Barone**

MSc QF Poster Session, **M. M. Barbieri**

Venue **Aula 3, Scaravilli**

Aula 1, Belle Arti 41

Session **PORTFOLIO**

FINANCIAL DATA MINING

2.15 Quantifying Credit Portfolio sensitivity to asset correlations with interpretable generative neural networks, **S. Caprioli** and **E. Cagliari**

Sentiment-Based ETF Return Forecasting with Bayesian RFE and FinBERT Tweets Classification, **R.G. Cestari**

2.45 Factor Risk Budgeting and Beyond, **A. Rengim Cetingoz**

Text mining arXiv: a look through quantitative finance papers, **M. L. Bianchi**

3.15 Is there an ESG-return trade off for asset managers?, **D. Stocco**

Option pricing in a sentiment-biased stochastic volatility model, **M. Patacca**

3.30 A risk-gain-sparsity dominance approach for portfolio selection, **A. Di Paolo**

3.45 Fast and Stable Credit Gamma of CVA, **R. Daluiso**

Option-implied asymmetry indices in the Eurozone: the relationship with sentiment and financial stress, **L. Gambarelli**

4.00

Hawkes-based cryptocurrency forecasting via Limit Order Book data, **D. Raffaeli**

4.15 *Coffee Break*

Venue *Aula 3, Scaravilli*

Aula 1, Belle Arti 41

Session **PORTFOLIO**

**STOCHASTIC CONTROL
AND STOCHASTIC PROCESSES**

4.45 An Asset and Liability Management model for pension funds using deep reinforcement learning, **M. Di Francesco and V. Sperandeo**

Striking the Balance: Life Insurance Timing and Asset Allocation in Financial Planning, **G. Ferrari**

5.00 Delta Hedging: Reinforcement Learning from simulation to reality, **M. Colombi**

5.15 Capital Risk, Fiscal Policy, and the Distribution of Wealth, **L. Regis**

Utility Maximization for Reinsurance Policies in a Dynamic Contagion Claim Model, **C. Ceci**

5.30 Signature Trading: A Path-Dependent Extension of the Mean-Variance Framework with Exogenous Signals, **O. Futter**

5.45

Arcades to Bridge to Net Zero, **A. Macrina**

6.15

Option pricing for time-changed Feller processes, **E. Scalas**

6.30

A note on two stochastic hyperbolic equations, **L. Marconi**

FRIDAY APRIL 12TH

Venue *Aula 3, Scaravilli*

Aula 1, Belle Arti 41

Aula Magna, Scaravilli

Session **MACHINE LEARNING
FOR FINANCE**

INSURANCE

MICROSTRUCTURE

8.45 AM SpotV2Net: Multivariate Intraday Spot Volatility Forecasting via Vol-of-Vol-Informed Graph Attention Networks, **G. Toscano**

Robust asymptotic insurance-finance arbitrage, **K. Oberpriller**

Insider trading with legal risk, entropy and BSDEs, **U. Cetin**

9.15 Optimal Estimation of Generic Dynamics by Path-Dependent Neural Jump ODEs, **J. Teichmann**

Pseudo Weak Lack-of-Memory Property with Insurance Applications, **M. Ricci**

A Novel Approach to Queue-Reactive Models: The Importance of Order Sizes, **H. Bodor**

9.30

Pricing insurance contracts with an existing portfolio as background risk, **C. De Vecchi**

9.45 Dimensionality reduction techniques to support insider trading detection, **A. Ravagnani**

An analytical study of variable annuities with surrender option, **G. Stabile**

Unwinding Stochastic Order Flow: When to Warehouse Trades, **M. Nutz**

10.00	Machine learning methods for American-style path-dependent contracts, A. Pallavicini	Market-Consistent Valuation and Capital Assessment for Demographic Risk in Life Insurance: A Cohort Approach, F. Della Corte	
10.15	Robust calibration of financial models using Bayesian methods for neural stochastic differential equations, E. Flonner	Optimal reinsurance via BSDEs in a partially observable model with jump clusters, M. Brachetta	Limit Order Book Dynamics and Order Size Modelling Using Compound Hawkes Process, K. Jain
10.30	CAESar: Conditional Autoregressive Expected Shortfall, F. Gatta	A parametric insurance policy for beekeepers and honey production: random forest regressions and real world pricing, I. Colivicchi	A model for the hedging impact of option market makers, S. Egebjerg

10.45 *Coffee Break*

Venue **Aula 3, Scaravilli**

Aula I, Belle Arti 41

Aula Magna, Scaravilli

Session **NETWORKS AND CRYPTO MARKETS**

INSURANCE

MICROSTRUCTURE AND MACHINE LEARNING FOR FINANCE

11.15	Interbank network reconstruction enforcing density and reciprocity, V. Macchiati	On the optimal design of a new class of proportional portfolio insurance strategies in a jump-diffusion framework, I. Oliva	Spoofing and Manipulating Order Books with Learning Algorithms, G. García-Arenas
11.45	Local Balance and Systemic Risk Measures in Signed Financial Networks, P. Bartesaghi	A novel undertaking specific approach for demographic risk in Solvency II framework, G. P. Clemente	Stochastic Liquidity as Proxy for Nonlinear Cross Impact, C. Tracy
12.00	A Network Perspective on the DAX 30 Supply Chain: Stylized Facts and Resilience, E. Flori	Insurance premium implied by rank dependence and probability distortion, M. Nardon	
12.15	A new systemic risk measure in a Random Matrix Theory context, C. Pastorino	A Score-Driven approach to Temperature Modelling in High Dimensions, S. Serafino	Optimal execution in a time varying environment: well-posedness and price manipulation, G. Palmari
12.30	Modelling shock propagation and resilience in financial temporal networks, G. Rizzini	Corporate demand for environmental insurance, G. Iannucci	Physics-Informed Deep Volatility, K. Hoshisashi
12.45	Crypto premium, higher-order moments and tail risk, P. Santucci de Magistris	Portfolio insurance strategies for defined contribution pension schemes in a jump-diffusion framework with stochastic longevity risk, D. Feleppa	Reservoir computers for quantile forecasting, P. Mazzarisi

1.00 PM	Coherent Entropy-Based Risk Metrics in Minimum Risk Portfolio Selection, J. M. Ricci	Optimal dynamic pension funds management with volatility and interest rate risk, I. Stefani	Introducing the sigma-Cell: Unifying GARCH, Stochastic Fluctuations and Evolving Mechanisms in RNN-based Volatility Forecasting, G. Rodikov
1.15	<i>Lunch</i>		
<i>Venue</i>	<i>Aula 3, Scaravilli</i>	<i>Aula I, Belle Arti 41</i>	<i>Aula Magna, Scaravilli</i>
<i>Session</i>	RISKS	GENERAL FINANCE	DERIVATIVE PRICING
2.30	Playing with Fire? A Mean Field Game of Control Model for the Impact of Regulatory Capital Constraints on Fire Sales and Systemic Risk, R. Frey	Whose forecast matters? The risk premium of optimistic & pessimistic disagreement, G. Curatola	American options with liquidation penalties, A. Battauz
3.00	On a General Class of Portfolio Diversification	Hedging Permanent Income Shocks, R. Corvino	Collective Arbitrage and the Value of Cooperation, A. Doldi
3.15	Measures Induced by Risk Measures, P. Uberti	On continuity of state-dependent utility, E. Berton	
3.30	Modelling the option Bid-Ask Spreads, A. Medina	The Attribution Matrix and the joint use of Finite Change Sensitivity Index and Residual Income for value-based performance measurement, A. Marchioni	Time-Inhomogeneity in Currency Triangles, G. Amici
3.45	Symmetric Bernoulli distributions and minimal dependence copulas, A. Mutti	Pricing anomalies in an equilibrium pricing model with biased learning, G. Bottazzi	
4.00	Risk Adjusted Liquidity Coverage Ratio, N. Picchiotti	Consumption Skewness, Time Deformation and the Term Structure, P. Neri	American options with acceleration clauses, S. Staffolani
4.15	Graph Neural Network Methods for Systemic Risk Management, N. Weber	Reverse Mortgages, Housing and Consumption: An Equilibrium Approach, A. Sun	
4.30	Sharpening Market Risk Allocation: from Basel 2.5 to FRTB, M. Bianchetti	Market structure or agent rationality: How efficiency trades with belief updating?, M. Ottaviani	Pricing Options with a Compound CARMA(p,q)-Hawkes model, L. Mercuri
4.45	Risk measures based on weak optimal transport, M. Nendel		Is (independent) subordination relevant in option pricing?, M. Azzone
5.00	<i>Coffee Break</i>		

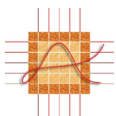
5.30	ROUND TABLE Risk and Intelligence: Exploring the Intersection of Finance, Insurance, and Artificial Intelligence Aula Magna, Scaravilli Panelists: Renzo Giovanni Avesani (Leithà - Unipol Group), Andrea Cosentini (Intesa Sanpaolo), Pier Giuseppe Giribone (AIFIRM and BPER Banca), Lea Zicchino (Prometeia), A representative from AIAF Moderator: Umberto Cherubini (University of Bologna)
8.00	Social Dinner at Carlton Hotel

SATURDAY APRIL 13TH

<i>Venue</i>	<i>Aula 3, Scaravilli</i>	<i>Aula I, Belle Arti 41</i>	<i>Aula Magna, Scaravilli</i>
<i>Session</i>	MEAN-FIELD AND STOCHASTIC GAMES	STOCHASTIC PROCESSES	GREEN FINANCE
8.45 AM	Executions in competition under Erlang kernel, M. Aleandri	Optimal liquidation policies of redeemable shares, F. Rotondi	Can Investors Curb Greenwashing? , P. Tankov
9.15	Multiple equilibria in mean-field game models for large oligopolies with strategic complementarities, J. Dianetti	Estimation of parameters and local times in a discretely observed threshold diffusion model, P. Pigato	Active Fund Management when ESG Matters, A. Tarelli
9.45	Price formation under asymmetry of information - a mean-field approach, G. Lanaro	Infinite-dimensional Wishart processes, C. Cuchiero	Impact of Climate transition on Credit portfolio's loss with stochastic collateral, L. Sogouï
10.00	A saddle point in stopper vs. singular-controller games with free boundaries, A. Bovo		The puzzle of Carbon Allowance spread, R. Baviera
10.15	Optimal irreversible investments with price impact in a competing market: a singular stochastic game, A. Pesce	Calibration of the Bass Local Volatility model, A. Marini	Climate risk and sovereign debt: scarcity effects in green bonds, A. Santini
10.30	The explicit solution to a risk-sensitive ergodic singular stochastic control problem, J. Gwee		Imperfect information and ESG disagreement: an ambiguous portfolio selection model, G. Bongiorno
10.45	Market Stackelberg-Cournot-Nash equilibria with Dempster-Shafer uncertainty and α -maxmin preferences, S. Lorenzini	General space multivariate Markov chain: a mixture transition distribution approach, R. De Blasis	LHP approximation for green loan credit portfolios under skewed and heavy-tails returns, A. Ramponi
11.00	<i>Coffee Break</i>		

<i>Venue</i>	<i>Aula 3, Scaravilli</i>	<i>Aula I, Belle Arti 41</i>	<i>Aula Magna, Scaravilli</i>
<i>Session</i>	INTEREST RATE MODELS	STOCHASTIC PROCESSES AND CRYPTO MARKETS	GREEN FINANCE AND PORTFOLIO
11.30	Cross-Currency Heath-Jarrow-Morton Framework in the Multiple Curve Setting, A. Gnoatto	Time expansions for stochastic processes, S. Svaluto-Ferro	What common structure behind the ESG ratings?, E. Ossola
12.00	A simple parsimonious framework for extracting and modelling the term structure of interest rates, D. Palumbo	Warnings about Future Jumps: Properties of the Exponential Hawkes Model, C. Mancini	A stationary equilibrium model of green technology adoption with endogenous carbon price, F. Dammann
12.15		Exponential expansions for approximation of probability distributions, A.M. Gambaro	Learning from Experts: Energy Efficiency in Residential Buildings, V. Veggente
12.30	International Evidence on Risk Premia for Nominal and Inflation-Linked Bonds: The Information in Long-Term Rates, A. Berardi	Growth rate of wealth in G3Ms, T.-H. Wang	ESG evaluation for European Small and Medium Enterprises: A Multi-Criteria approach, G. Filogrosso
12.45			Behavioral dynamic portfolio selection with S-shaped utility and epsilon-contaminations, B. Vantaggi
1.00 PM	A simple model for the Euro Short-Term Rate, S. Herzel	The impact of cryptocurrencies in an equity investment universe for portfolio selection, F. Luciani	
1.15			
1.30	<i>Lunch</i>		

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