Mouhssine Rifaki

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Research Interests

- **Theoretical Focus**: Policy-oriented DSGE models with a focus on financial frictions and heterogeneous agents to analyze macroeconomic stability and policy interventions.
- **Quantitative Methods**: Incorporating Machine Learning and Bayesian Estimation and computational techniques to improve model accuracy and applicability in real-world settings.

Education

- **Paris Dauphine University - PSL** — Paris, France
  Master of Science in Quantitative Economics (w/ Gap Year) — *Sep 2023 - May 2026*
  – **Relevant Coursework**: Advanced Macroeconomics, Computational social choice, Applied Machine Learning, NLP for Economics.
  – **GPA**: 4.0/4.0, Major in Macroeconomics and Econometrics.
- **Sorbonne University (Pierre and Marie Curie University)** — Paris, France
  Bachelor of Science in Mathematics (Gap Year Studies) — *Sep 2024 - May 2025*
  – **Relevant Coursework**: Probability Theory, Real Analysis, Stochastic Calculus, Numerical Optimization.
  – **Capstone Project**: Stochastic Optimal Control and Reinforcement Learning in Dynamic Economic Systems.
  – **GPA**: 4.0/4.0
- **Sorbonne Paris North University** — Villetaneuse, France
  Bachelor of Science in Economics — *Sep 2020 - May 2023*
  – **Relevant Coursework**: Financial Mathematics, Statistics, Econometrics, Game Theory.
  – **Thesis**: Assessing Monetary Policy in the Euro Area: A Framework-Based Analysis of the European Central Bank's Rate Decisions and Member State Priorities.
  – **CGPA**: 4.0/4.0, Top of the class.

Experience

- **LAMSADE - Laboratory for Analysis and Modeling of Decision Support Systems** — Paris, France
  Graduate Researcher — *Nov 2024 - Present*
  – **DSGE Modeling**: Developing policy-focused DSGE models.
  – **Machine Learning**: Applying reinforcement learning techniques to simulate strategic interactions among agents.
  – **Co-Authorship**: A working paper that combines advanced AI methodologies with economic modeling to inform optimal policy responses.
- **London Business School** — London, United Kingdom
  Research Assistant — *May 2024 - Sep 2024*
  – **Commodity Pricing**: Supported research initiatives on contextual pricing models for commodities, focusing on historical market dynamics.
  – **Machine Learning**: Designed a deep learning workflow using AutoKeras to process and classify archival content, incorporating NLP and fuzzy matching for high-dimensional database alignment.
- **ESCP Business School** — Paris, France
  Research Assistant — *Mar 2024 - May 2024*
  – **Main Task**: Worked with Prof. Tamara Nefedova on ETF fee competition and securities lending.
- **Alfiny** — Paris, France
  Founder — *Aug 2020 - Mar 2024*
  – **Business Model**: Founded a ML-driven investment management startup developing proprietary portfolio optimization solutions.
  – **System Development**: Built institutional-grade systems combining Bayesian algorithms, deep learning architectures, and alternative data pipelines for portfolio construction.
  – **Other Relevant Information**: Alumnus of the PSL-Pépite and Paris-Dauphine entrepreneurial programs; previously incubated at PSL-Lab.

Technical Skills

- **Programming**: Python, MATLAB, Julia, R, Stata.
- **Economics & Machine Learning**: DSGE Modeling, Bayesian Inference, MCMC, Time Series Analysis, and AutoKeras.

Teaching Experience

- **Sorbonne University** Paris, France
  Affiliated Tutor *Fall 2024*
  - **Activity**: Teaching statistics to first- and second-year undergraduate students and calculus to first-year undergraduates.

Projects and Working Papers

Projects

- **Foundational Development of Kernelized Support Vector Machines**: Project Report
- **Advanced Models for Student Knowledge Estimation**: Project Report
- **Valuation Growth Using Deep Learning Methods**: Project Report
- **Analysis of Anomalous Transactions Using Automated Predictive Techniques**: Project Report
- **Distinctive Bag-of-Words Modeling for Business Data Extraction**: Project Report

Work in Progress

- **Bayesian Inference on Financial Market Frictions: Time-Varying DSGE Estimation with Heterogeneous Shock Propagation**: Co-authors: Louis Briens (Polytechnic Institute of Paris) and Tahar Ferhati (London Stock Exchange Group).
- **The Interplay of Social Capital and Career Trajectories: A Theoretical Examination**: Co-author: Walkens Sainval (Paris Dauphine University - PSL).
- **Measuring Legislative and Regulatory Exposure**: Co-authors: Max Miller (Harvard Business School) and Arkajyoti Sinha (University of Chicago).
- **The World Economy in High Frequency**: Co-author: Karsten Müller and Mohamed Lehbib (National University of Singapore).
- **A Financial Programming Model Under Deep Uncertainty in Sub-Saharan Africa**: Co-author: Saite Lu (University of Cambridge).
- **Monte Carlo Tree Search in DSGE Models for Sequential Macroeconomic Policy Optimization**: Co-author: Tristan Cazenave (Paris Dauphine University - PSL).
- **Novel Macro Shocks, Systemic Prices, and Post-Macroprudential Policy**: Co-authors: Pedro Nascimento de Lima and Jonathan W. Welburn (RAND Corporation).

Honors and Awards

- **Graduate Excellence Scholarship**: Paris Dauphine University, Merit-Based, Nov 2023
- **Distinction**: Graduated summa laude at Sorbonne Paris North University, May 2023