

**Speaker:** Dr. Andrea Macrina

**Talk Title:** Interest Rate Term Structures with Roll-Over Risk

**Talk Abstract:**

We develop a dynamical no-arbitrage term structure approach that accommodates, aside from interest rate risk and credit risk, chiefly roll-over risk. When refinancing a financial position over fixed periods of time, roll-over risk is a significant source of funding cost, particularly in markets with reduced liquidity. The consistent inclusion of various kinds of risks in our framework is obtained by use of a foreign exchange analogy that assists with understanding the economics behind the construction of the no-arbitrage pricing and hedging models. The ‘‘exchange rates’’, produce the associated risk premia, each of which accounts for the exposure to a specific risk type. One of the intriguing results is a non-standard model for an inter-bank offered rate based on a quanto-adjustment between two (artificial) economies subject, or not, to roll-over risk. Our view is that this approach to incorporating roll-over risk in interest rate term structures produces flexible models for both, the IBOR-OIS spread and the basis-spread dynamics, anchored in a sound financial and mathematical ground. The spreads have an element of endogeneity, that is, the model can be used to extrapolate basis spreads for bespoke tenors, a feature we consider helpful in markets with low liquidity.

**Speaker Bio:**

Andrea Macrina holds a PhD in Mathematics from King’s College, University of London, and an MSc in Physics from the University of Bern, Switzerland. He is a Reader in Mathematics and the Director of the Financial Mathematics MSc

Programme in the Department of Mathematics, University College London. He holds an Adjunct Professorship at the University of Cape Town in the African Institute of Financial Markets and Risk Management.

Before joining UCL, Dr Macrina held a Lectureship in Financial Mathematics in the Department of Mathematics, King's College London, a Visiting Research Associate Professorship in the Institute of Economic Research, Kyoto University, and a Research Fellowship at ETH Zurich. He is one of the principle developers of information-based asset pricing, a stochastic framework for the pricing of asset classes including credit, fixed-income, equity, and insurance-linked instruments. Dr Macrina's research benefits from fruitful collaborations with (inter)national researchers, doctoral students, and practitioners of the financial service industry. Personal web page: <http://amacrina.wixsite.com/macrina>