

# Studies on financial time series analysis

L. J. Carbonaro  
University of Oxford

This talk will examine two of the most important volatility models in finance: ARCH and Stochastic Volatility models. Then, it will describe some aspects of neural networks and the concepts of penalised- and quasi-likelihood methods. In respect of these considerations, a novel model will be introduced together with a new estimation procedure for financial time series analysis based on a penalised quasi likelihood (PQL). Results will be provided by using foreign exchange market data and simulation methods. The talk concludes with the measuring of market risk in accordance to the recommendation of the Basel Accords. All calculations are implemented in R.

*KEYWORDS:* Time-Varying Volatility, Stochastic Volatility, Recurrent Neural Networks, Penalised Quasi-Likelihood, Foreign Exchange Market, Basel Accords.