MACIEJ AUGUSTYNIAK, University of Montreal

A Discrete-Time Hedging Framework for Econometric Option Pricing Models

We present a quadratic hedging framework for a general class of discrete-time affine multi-factor models. A semi-explicit hedging formula is derived for our general framework which applies to a myriad of the option pricing models proposed in the discrete-time literature, including the multi-component fat-tailed GARCH model, the Lévy GARCH model, the affine realized volatility (GARV) model, and the heterogeneous autoregressive gamma (HARG) model for realized volatility. Additionally, we conduct an extensive empirical study of the impact of modelling features on the hedging effectiveness of S&P 500 options. Overall, we find that fat tails can be credited for half of the hedging improvement observed, while a second volatility factor and a non-monotonic pricing kernel each contribute to a quarter of this improvement. Interestingly, our study indicates that the added value of these features for hedging is different than for pricing. A robustness analysis shows that a similar conclusion can be reached when considering the Dow Jones Industrial Average. The talk will also cover some extensions of our methodology that incorporate stochastic interest rates and basis risk.