



SCUOLA
NORMALE
SUPERIORE

Seminario di Finanza Quantitativa

Mercoledì 8 maggio 2019
ore 11:00

Scuola Normale Superiore
Pisa
Sala Riunioni Collegio Puteano

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Terrà un seminario dal titolo:

“The Alpha-Heston Stochastic Volatility Model”

Abstract:

We introduce an affine extension of the Heston model where the instantaneous variance process contains a jump part driven by α -stable processes with $\alpha \in (1, 2]$. In this framework, we examine the implied volatility and its asymptotic behaviors for both asset and variance options. In particular, we show that the behavior of stock implied volatility is the sharpest coherent with theoretical bounds at extreme strikes independently of the value of $\alpha \in (1, 2)$. As far as variance options are concerned, VIX^2 -implied volatility is characterized by an upward-sloping behavior and the slope is growing when α decreases. Furthermore, we examine the jump clustering phenomenon observed on the variance market and provide a jump cluster decomposition which allows to analyse the cluster processes. The variance process could be split into a basis process, without large jumps, and a sum of jump cluster processes, giving explicit equations for both terms. We show that each cluster process is induced by a first “mother” jump giving birth to a sequence of “child jumps”. We first obtain a closed form for the total number of clusters in a given period. Moreover each cluster process satisfies the same α -CIR evolution of the variance process excluding the long term mean coefficient that takes the value 0. We show that each cluster process reaches 0 in finite time and we exhibit a closed form for its expected life time. We study the dependence of the number and the duration of clusters as function of the parameter α and the threshold used to split large and small jumps.

Tutti gli interessati sono invitati a partecipare.