Stable process models in finance

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The geometric stable process (=exponential stable process) is one of the remarkable model for the asset price processes with the strong fat tail property. This process is an incomplete market model, and so there many equivalent martingale measures.

The importance of the stable process models was pointed by Fama(’63), and the option pricing models based on the stable processes have been studied by many researchers (Edelmann(’95), Rachev and Mittnik(’00), Carr and Wu(’03), etc.) But in their pricing models the martingale measure were nor clear.

We see that, by adopting the minimal entropy martingale measure (MEMM) as the suitable martingale measure, we can construct the option pricing model based on the stable processes in general setting. And we also see that this model is fitting very well to the market prices of currency options.