# TEMPERED STABLE LÉVY MOTION DELAYED BY INVERSE STABLE SUBORDINATOR

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We propose a new model (see [1]) for financial data description which is a combination of two independent mechanisms, namely tempered stable process $T(\tau)$ [2, 3] and inverse stable subordinator $S(t)$ [4]. As a result we obtain process $X(t) = T(S(t))$, which captures not only the tempered stable character of the underlying data but also such property as periods in which the values of an asset stay on the same level. We classify our system to the family of subdiffusive processes and investigate its tail behavior. Moreover we propose a Fokker-Planck equation (FPE) for the density $f(x,t)$ of the process $X(t)$

$$\frac{\partial f(x,t)}{\partial t} = {}_0D_t^{1-\gamma} \frac{\partial^{\alpha,\lambda}}{\partial x} f(x,t). \tag{1}$$

This FPE consists of two fractional operators. First one is the time operator of fractional Riemann-Liouville [5] derivative connected with inverse stable subordinator. The second one is the spacial operator connected with the external tempered stable process [3].

In the last step we calibrate our model to the real data and describe in details testing and estimation procedures

## References


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