

Review of: "A connection between Gompertz diffusion model and Vasicek Interest Rate model"

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Potential competing interests: No potential competing interests to declare.

Report on

A connection between the Gompertz diffusion model and the Vasicek Interest Rate model

The author has provided a new connection between the Gompertz diffusion model and the Vasicek Interest Rate model. This connection focuses on elementary stochastic calculus and Ito's calculus. The author started by proving the exponential of the Vasicek Interest Rate model, which is a Gompertz diffusion process, as well as he proved that the logarithm of the Gompertz diffusion process is a Vasicek Interest Rate model. New computations of the probability transition density function and the mean functions of the processes have quite simple formulations.

The paper is well-written and a good addition to statistical inference, specifically in the stochastic process area. It is acceptable for publication. The author is advised to incorporate the following comments before its publication:

1. In the galaxy of distributions, why is the Gompertz model important?
2. The authors must state more clearly in the paper their original contribution by specifying this fact and by highlighting the fact that starting from a certain point, they present the original and novel aspects of their research. The authors must state more clearly their original methods, their original results and conclusions, the novelty of their study.
3. Remark regarding the "Conclusion" section: I consider the authors should provide more details regarding the domains in which their modeling strategy can be applied, because it is not suitable to put the reader in the situation of interpreting, analyzing, continuing, or refining the study from the manuscript under review.
4. What benefits will the proposed methods bring? Is your contribution beyond existing studies?