



SDI Review Form 1.6

Journal Name:	Journal of Advances in Mathematics and Computer Science
Manuscript Number:	Ms_JAMCS_45962
Title of the Manuscript:	Modeling with the power variance form of the gamma distribution
Type of the Article	Original Research Article

General guideline for Peer Review process:

This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty**', provided the manuscript is scientifically robust and technically sound. To know the complete guideline for Peer Review process, reviewers are requested to visit this link:

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PART 1: Review Comments

	Reviewer's comment	Author's comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
Compulsory REVISION comments		
Minor REVISION comments	- Why Gamma dist. Why not some other. The author should have justified the selection of Gamma dist without evaluating its merits. And then attempt to establish its superiority methodologically. To me a proper justification of the selection of Gamma distribution to be used in the model must be given in the Introduction section. - The comparison is made only with Exponential family; To me other comparisons should be made. - Using SE instead of MSE or other criteria is quite old. Wouldn't be better to justify the usage of SE to accentuate your approach. Secondly, the numerical difference in SEs of the two approach is too small. Are we using some other criterion based difference (and not the difference on numerical scale). Please do consider writing about the magnitude of the difference. - How the approach being used is different from - Madan, D. B., & Seneta, E. (1990). The variance gamma (VG) model for share market returns. <i>Journal of business</i>, 511-524. - Gelman, A. (2006). Prior distributions for variance parameters in hierarchical models (comment on article by Browne and Draper). <i>Bayesian analysis</i>, 1(3), 515-534.	1. The authors thank you for your valuable recommendations. We agree that a justification for the Gamma distribution should be included in the Introduction. Based on your comments, we have added text to clarify the motivation for using the Gamma distribution (highlighted). 2. Thank you for your feedback. The authors focused on the comparison to distributions in the exponential family as these distributions are widely used and have known mean-variance relationships. We have inserted a sentence in the manuscript explaining this choice (highlighted). 3. We appreciate your comments. Based on your suggestion, we have rewritten the second example discussion to address the magnitude of difference in the standard errors (highlighted). However, we report MSE as the criterion to be used as a comparison between the fit of the two models throughout the paper (simulation and both examples). We have inserted some additional text to clarify this comparison (highlighted). 4. Thank you for your careful review and for suggesting these papers. A detailed discussion of the publications is provided below. a. The paper by Madan and Seneta (1990) introduces a two parameter Gamma distribution parameterized in terms of time for applications in stochastic processes. The data evaluated are assumed to be normally distributed, conditional on a variance that is gamma distributed. In our manuscript, we extend the traditional Gamma distribution to a three parameter case described by the mean-variance parameters (power variance form). The power variance form does not require any distributional assumptions and is demonstrated to be an approximation to many common distributions. b. The paper by Gelman (2006) addresses the Bayesian analysis of hierarchical linear models. He evaluates prior distributions for hierarchical variance parameters (variance of the random effects), including the inverse-gamma, folded-central-t, uniform, and the proposed half-t distributions. The power variance form proposed in our manuscript is used as an approximation to the outcome of the data, rather than the variance component. In addition, we focus on cross-sectional data and implement a generalized least squares estimation approach.
Optional/General comments		



PART 2:

	Reviewer's comment	Author's comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
Are there ethical issues in this manuscript?	<u>(If yes, Kindly please write down the ethical issues here in details)</u>	