Review Form 1.7

Journal Name:	**Asian Journal of Probability and Statistics**
Manuscript Number:	**Ms_AJPAS_118093**
Title of the Manuscript:	**ASYMPTOTIC PROPERTIES OF A THREE PARAMETERS GUMBEL DISTRIBUTION ESTIMATORS USING SIMULATED DATA**
Type of the Article	

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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 1. **Is the manuscript important for scientific community?** (Please write few sentences on this manuscript) 2. **Is the title of the article suitable?** (If not please suggest an alternative title) 3. **Is the abstract of the article comprehensive?** 4. **Are subsections and structure of the manuscript appropriate?** 5. **Do you think the manuscript is scientifically correct?** 6. **Are the references sufficient and recent? If you have suggestion of additional references, please mention in the review form.** **(Apart from above mentioned 6 points, reviewers are free to provide additional suggestions/comments)**	**yes** **yes** **yes** **yes** **yes** **yes**	
Minor REVISION comments 1. **Is language/English quality of the article suitable for scholarly communications?**	I can not give their opinion, I have no formation in English	
Optional/General comments	**The article addresses the asymptotic properties of the estimators of a Gumbel distribution with three parameters, introducing a new parameter based on the method proposed by Marshall and Olkin. Below, I present an analysis of the article highlighting its main points and the relevance of the research.** **Summary and Context** **Context: Distributions of extreme values, such as the Gumbel, Weibull and Fréchet distributions, are fundamental in several areas that deal with rare and extreme events. The Gumbel distribution is widely used in extreme value theory.** **Objective: To improve the flexibility and robustness of the Gumbel distribution by introducing a new parameter, resulting in a Gumbel distribution with three parameters. The introduction of new parameters aims to make the distribution more applicable in various practical areas, such as life studies, risks, engineering, among others.** **Methodology** **Gumbel Distribution with Three Parameters: The new distribution incorporates a shape parameter (δ), in addition to the location (ω) and dispersion (τ) parameters.** **Parameter Estimation: Distribution parameters were estimated using the Maximum Likelihood method (MLE), which is a common statistical technique for estimating**	

	parameters of probabilistic models. **Asymptotic Properties: The properties of the estimators were investigated using simulated data, focusing on verifying whether the estimators are efficient, sufficient and consistent as the sample size increases.** **Results** **Maximum Likelihood Estimators (MLE): The estimators for the three parameters were considered efficient, sufficient and consistent. This means that, as the sample size increases, the estimators converge to the true values of the parameters.** **Distribution Flexibility: The new distribution has proven to be more flexible and better for modeling normal, skewed and extreme data, compared to distributions with fewer parameters.** **Conclusions** **Robustness and Flexibility: The introduction of a third parameter made the Gumbel distribution more robust and flexible, allowing better adaptation to different types of data.** **Practical Applications: The new distribution has the potential to be widely used in several areas such as risk management, modeling of extreme natural phenomena and other applications that require analysis of extreme values.** **Relevance and Impact** **Extreme Value Theory: The research contributes to extreme value theory by providing a more flexible tool for analysis.** **Multidisciplinary Applications: The distribution can be applied in several practical areas, increasing the relevance of the study for scientists and professionals from different fields.** **Criticisms and Suggestions** **Empirical Validation: It would be interesting to see an empirical application of the new distribution on real data from different fields to further validate its effectiveness and flexibility.** **Comparison with Other Distributions: A more detailed comparison with other distributions of extreme values could strengthen the argument about the superiority of the new distribution.** **Conclusion** **The paper demonstrates that adding a new parameter to the Gumbel distribution improves its statistical properties and makes it more adaptable to different data sets. The conclusions based on asymptotic properties are robust and suggest that the three-parameter distribution can be a valuable tool for analyzing extreme data.**	

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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?	*(If yes, Kindly please write down the ethical issues here in details)*	

Reviewer Details:

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