

## ON EXTREME VALUE THEORY IN MODELLING NIGERIA MARINE AND AVIATION INSURANCE CLASS OF BUSINESS

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**Abstract:** *Extreme value theory is applied to model extreme occurrences, and it is applied in business and finance to measure tail risk. Marine and aviation class of insurance business is an important component of non-life business because it insures all risks relating to aviation and marine vessels which play a significant role in the economic development of Nigeria. Recent claims experience has necessitated the investigation of tail risks with small probability of occurrence but with high potential impact on company's survival. The study employs the Extreme Value Theory (EVT) to estimate the minimum expected claims for the marine and aviation insurance business using historical claims data. Diagnostics plot like the mean excess plot suggest the threshold to chosen, to fit Generalized Pareto model based on EVT and the excess distributions were obtained over a chosen threshold. Linear Q-Q plots and tail plots reveal that parametric model fits the data well. VaR estimate was finally obtained using the extreme value method at 5% confidence interval and the empirical results show that Extreme VaR is most suitable to calculate VaR as against the Historical and Gaussian methods. This will guide proper underwriting process and loss reserving in this class of business.*

**Keywords:** *Extreme Value Theory, Insurance Claims, Marine and Aviation Insurance, Tail risks, Generalized Pareto Distribution*