

REVIEWER'S REPORT

Manuscript No.: JNCS-028

Title: Testing the Assumptions of Geometric Brownian Motion Using Nairobi Securities Exchange Returns.

Recommendation:

Accept as it is

Accept after minor revision Yes

Accept after major revision

Do not accept (*Reasons below*).....

Rating	Excel.	Good	Fair	Poor
Originality		yes		
Techn. Quality		yes		
Clarity		yes		
Significance		yes		

Reviewer'sID: JPR-Dr. Bharti Bisht

Detailed Reviewer's Report

The manuscript, “*Testing the Assumptions of Geometric Brownian Motion Using Nairobi Securities Exchange Returns*,” addresses an important methodological issue in financial modeling by examining whether stock returns from the Nairobi Securities Exchange (NSE) satisfy the key assumptions underlying the Geometric Brownian Motion (GBM) framework. The study is relevant because GBM remains one of the most widely used models in financial economics for asset pricing, option valuation, and forecasting, yet its assumptions are often applied without adequate empirical validation, particularly in emerging markets. The abstract clearly states the research objective, study design, methodology, and principal findings. The use of logarithmic returns and established statistical techniques such as the Augmented Dickey-Fuller (ADF) test, Shapiro–Wilk test, Ljung–Box test, and Hurst exponent analysis provides an appropriate framework for evaluating stationarity, normality, and independence. The finding that monthly returns conform more closely to GBM assumptions than weekly returns is valuable and offers practical guidance for researchers and practitioners working with emerging market data. However, the manuscript would benefit from several improvements. The abstract should provide greater detail regarding the specific NSE index or stock sample analyzed, as the representativeness of the data is crucial for interpreting the findings. Additionally, while stationarity, normality, and independence are important assumptions, the study could discuss other empirical characteristics of financial returns, such as volatility clustering, heteroskedasticity, fat tails, and structural breaks, which are often observed in emerging markets and may challenge the suitability of GBM. The rationale for selecting weekly and monthly frequencies should also be explained more explicitly. Furthermore, the manuscript would benefit from a stronger engagement with existing literature on asset return behavior in African and emerging financial markets to better contextualize the findings. The reporting of statistical results is generally clear, but confidence intervals, effect sizes, and a more detailed interpretation of the Hurst exponent values would strengthen the analysis. Finally, the conclusion could discuss the practical implications of the findings for portfolio management, risk modeling, derivative pricing, and financial forecasting within the Kenyan market. Overall, the study presents a useful empirical contribution to the validation of GBM assumptions in an emerging market context and offers findings of potential interest to financial researchers and practitioners; however, moderate revisions are recommended to enhance methodological transparency, theoretical context, and practical significance before publication.

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