Modeling Electricity Returns Using Generalized Skewed Distributions–Lambert W Random Variables

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Electricity returns are highly volatile, display seasonalities in both their mean and volatility, exhibit leverage effects and clustering in volatility, and feature extreme levels of skewness and kurtosis. Considering electricity applications, this paper proposes a model that accommodates skewness in the data. The paper applies a new class of generalized skewed distributions to electricity returns and studies its distribution properties. In particular, the Lambert W framework is used to model skewed distributions. Preliminary analysis reveals that the electricity returns are, in fact, skewed and, thus, can be modeled using the Lambert W framework. The findings from this paper suggest that the package; *LambertW* produces significant parameter estimates similar to GARCH modeling using *Rugarch* package which shows that Lambert $W \times F$ GARCH (and Stochastic Volatility) models provide a promising area of future research.

References

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