

## Leverage Effect for Volatility with Generalized Laplace Error

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**Abstract :** We propose a new model that accounts for the asymmetric response of volatility to positive ('good news') and negative ('bad news') shocks in economic time series the so-called leverage effect. In the past, asymmetric powers of errors in the conditionally heteroskedastic models have been used to capture this effect. Our model is using the gamma difference representation of the generalized Laplace distributions that efficiently models the asymmetry. It has one additional natural parameter, the shape, that is used instead of power in the asymmetric power models to capture the strength of a long-lasting effect of shocks. Some fundamental properties of the model are provided including the formula for covariances and an explicit form for the conditional distribution of 'bad' and 'good' news processes given the past the property that is important for the statistical fitting of the model. Relevant features of volatility models are illustrated using S&P 500 historical data.

**Keywords :** heavy tails, volatility clustering, generalized asymmetric laplace distribution, leverage effect, conditional heteroskedasticity, asymmetric power volatility, GARCH models

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