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Unconditional and conditional heavy-tailed distributions for returns of cryptocurrencies

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We investigate which distribution is most appropriate for modeling returns of cryptocurrencies. We study distribution of both unconditional returns and conditional returns. Four well-known heavy-tailed distributions Generalized Normal, Student t-, Normal Inverse Gaussian, Alpha stable and two recently suggested distributions and four GARCH models plain GARCH, range GARCH, TGARCH and EGARCH are studied. The results estimated for Bitcoin, Binance Coin, Ethereum, Solana and Ripple are unambiguous. For each cryptocurrency, the most appropriate distribution is the generalized normal distribution. This conclusion holds not only for returns, but also for conditional returns (residuals from a conditional mean model in the presence of heteroscedasticity), and for all considered volatility models. The most suitable GARCH model is the EGARCH model, and the range GARCH model performs very well in some cases.

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