

Forecasting Volatility of Cryptocurrencies using Bayesian GARCH Models

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Abstract:

Cryptocurrencies are very unstable and are extremely volatiled especially when compared to other financial markets, making it very hard for investors to dive in due to the high level of risk involved. Therefore, this study aimed at forecasting the volatility of some major cryptocurrencies from 2015 to 2023 using Bayesian GARCH models. The normal GARCH procedures often used in forecasting the cryptocurrencies volatility is not reliable especially when previous information of the data are needed. Therefore, the Bayesian GARCH procedure was adopted to offer a more flexible approach. The results showed that the 30th in – sample – forecasts for the BTC, ADA, BCH, BNB, EOS, ETH, LTC, USDT, XRP, and FIL when compared with the actual values were (39058, 41930); (0.3383, 0.6014); (229, 227); (246, 245); 229, 227); (1929, 2219); (73, 71); (1.00, 1.00); (0.51, 0.61) respectively. Similarly, the volatility levels measured by the Mean Squared Error (MSE) for USDT, ADA, XRP, FIL, EOS, LTC, BNB, ETH, BCH, and BTC were 0.00026, 0.12, 1.48, 18.13, 93.74, 27414, 55665, 1219369, 4101760, 1.523E+09 respectively. Therefore, in forecasting the volatility level of the cryptocurrencies, the best bayesian GARCH model was the USDT and its safer for investors, while the worst was the BTC Bayesian GARCH model.

Keywords:

Bayesian GARCH, Volatility, Cryptocurrencies, Mean Squared Error (MSE), Investment.