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Volatility modeling for IDR exchange rate through APARCH model with student-*t* distribution FREE

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The aim of this study is to empirically investigate the performance of APARCH(1,1) volatility model with the Student-*t* error distribution on five foreign currency selling rates to Indonesian rupiah (IDR), including the Swiss franc (CHF), the Euro (EUR), the British pound (GBP), Japanese yen (JPY), and the US dollar (USD). Six years daily closing rates over the period of January 2010 to December 2016 for a total number of 1722 observations have analysed. The Bayesian inference using the efficient independence chain Metropolis-Hastings and adaptive random walk Metropolis methods in the Markov chain Monte Carlo (MCMC) scheme has been applied to estimate the parameters of model. According to the DIC criterion, this study has found that the APARCH(1,1) model under Student-*t* distribution is a better fit than the model under normal distribution for any observed rate return series. The 95% highest posterior density interval suggested the APARCH models to model the IDR/JPY and IDR/USD volatilities. In particular, the IDR/JPY and IDR/USD data, respectively, have significant negative and positive leverage effect in the rate returns. Meanwhile, the optimal power coefficient of volatility has been found to be statistically different from 2 in adopting all rate return series, save the IDR/EUR rate return series.

Topics

Education, Bayesian inference, Gaussian processes, Monte Carlo methods, Random walks

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