

Modeling of stochastic volatility to validate IDR anchor currency

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Abstract

This study aims to assess the performance of stochastic volatility models for their estimation of foreign exchange rate returns' volatility using daily data from Bank Indonesia (BI). The model is then applied to validate the anchor currency of Indonesian rupiah (IDR). Two stylized facts are incorporated into the models: A correlation between the previous returns and their conditional variance, and return errors following four different error distributions namely Normal, Student-t, non-central Student-t, and generalized hyperbolic skew Student-t. The analysis is based on the application of daily returns data from nine foreign currency selling rates to IDR from 2010 to 2015, including the AUD, CHF, CNY, EUR, GBP, JPY, MYR, SGD, and USD. The main results are: (1) Mixed evidence of positive and negative relationships between the return and its variance were found, especially significant correlations being found for the IDR/AUD, IDR/CHF, IDR/JPY, IDR/SGD, and IDR/USD returns series; (2) the model with the generalized hyperbolic skew Student's t-distribution specification for the returns error provides the best performance; and (3) anchoring the IDR to established hard currencies is more appropriate than anchoring it to other currencies.

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