

ABSTRACT

Cryptocurrency is a digital asset with high volatility that is rapidly growing in the global financial system. This study aims to analyze the effect of cryptocurrency volatility on Rupiah exchange rate volatility and identify causal relationships and risk transmission (volatility spillover) between the two markets. The study uses a quantitative approach with time series data from 2015–2025, covering Bitcoin, Ethereum, Tether (USDT), the Rupiah exchange rate against the US dollar, and the BI Rate as control variables. The analytical methods used include the Augmented Dickey-Fuller (ADF) test, the ARCH test, the GARCH (1,1) model, the GARCH-X model, and the Granger causality test. The results show that cryptocurrency volatility does not yet have a significant effect on Rupiah exchange rate volatility. The Granger causality test indicates no significant causal relationship between cryptocurrency volatility and Rupiah exchange rate volatility. The GARCH-X model estimation results also indicate that cryptocurrency volatility is unable to consistently explain Rupiah exchange rate volatility. This finding suggests that risk transmission (volatility spillover) from the cryptocurrency market to the domestic foreign exchange market has not yet been significantly established. This study concludes that Rupiah exchange rate volatility is still more influenced by domestic fundamental factors than by global cryptocurrency market dynamics. This indicates that the Indonesian cryptocurrency and foreign exchange markets still have a relatively low level of integration due to differences in market mechanisms and regulatory frameworks.

Keywords: Bitcoin, Cryptocurrency, GARCH, Ethereum, Rupiah Exchange Rate, Volatility.