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THE INFORMATION CONTENT OF IMPLIED VOLATILITY FROM EXCHANGE-TRADED CURRENCY OPTIONS: EVIDENCE FROM INDIA**Abstract:**

This study compares the predictive power of volatility implied from prices of dollar-rupee options traded on the National Stock Exchange of India (NSE) with volatility forecasts based on historical time-series data. Previous studies on this subject have mostly used the Black-Scholes at-the-money implied volatility from exchange-traded options. The results of such studies are prone to measurement errors in the input variables as well as errors in the option-pricing model used for computation. This study eschews these problems by employing a non-parametric measure of implied volatility known as the model-free implied volatility. Specifically, the interpolation-extrapolation technique of Jiang and Tian (2005) is applied to extract a model-free implied volatility from traded prices of dollar-rupee options. Two other measures of time-series volatility, viz, historical volatility based on spot exchange rate log returns and a conditional volatility estimated from a GARCH (1,1) model are used as competing forecasts. Both historical and realized volatility are based on intra-day volatility computed according to the Parkinson's (1980) formula. The parameters of the GARCH (1,1) model are estimated from a rolling five-year data set of daily exchange rate log returns. Non-overlapping data samples are used in order to avoid the 'telescoping' problem associated with daily options data. Ordinary Least Squares regression tests are conducted with model-free implied volatility, GARCH-based volatility and historical volatility as independent variables and realized volatility as the dependent variable. Univariate regression tests show that both model-free implied volatility and historical volatility contain significant information about future realized volatility as evidenced from the high values of adjusted R-squared and statistically significant regression coefficients. The forecasting power of GARCH (1,1) volatility is observed to be much lower. Encompassing regression tests using both model-free implied volatility and historical volatility, however, show that implied volatility does not subsume all the information contained in the historical volatility forecast although it appears to incorporate all information contained in the GARCH (1,1)-based volatility forecast. Implied volatility from dollar-rupee options is thus not an informationally efficient forecast of future realized volatility. This study contributes to existing literature by being the first of its kind in the context of the dollar-rupee pair which is an important emerging market currency. It is also one of the few studies to use the model-free implied volatility measure.

Keywords:

Currency options; model-free implied volatility; GARCH volatility; dollar-rupee options; non-overlapping data

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