four predictive methods are compared to find the best approach inpredicting daily crude oil prices during the period of 23 July 2007to 27 June 2022 using a total of 2643 observations. The models applied are the Autoregressive Integrated Moving Average (ARIMA), Random Forests (RF), Decision Trees (DT) and Support Vector Regressions (SVR). The performances are evaluated based on three statistical error measures, namely the Mean Absolute Error (MAE), the Mean Square Error (MSE) and the Coefficient of Determination (R^2),in order to identify the best performing model. The results of the analysis show that the SVR performs the best in forecasting crude oil' when compared with the other two methods.

Stochastic volatility model with correlation model, a generalization of DCC-GARCH model*

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This paper proposes to model some time series of observed covariance matrices using a matrix distribution such as Wishart distribution. We adopt the idea of DCC-GARCH model to model the mean matrix of the distribution via modeling the correlation matrix as well as the volatility of each component. We use Rstan to perform model fitting under the Bayesian approach. We perform simulation studies to assess the accuracy of estimation under two scenarios, with varying shape parameters and long-term correlation coefficient. We apply the proposed models to some time series of observed covariance matrices for Bitcoin and Ethereum in the crypto market. We also extend the mean matrix of the covariance matrix model by incorporating leverage effect.

Sama Circular Model, SARIMA and Decomposition Techniques In Forecasting Women's Economic Empowerment in NSW Australia*

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Economic empowerment is the capacity of women and men to participate in, contribute to and benefit from growth processes in ways that recognise the value of their contributions, respect their dignity and make it possible to negotiate a fairer distribution of the benefits of growth. Economic empowerment of women is important to the society in various ways. Economically empowered women contribute to the economy of the family, health care of family members, education of children and more. The study is aimed to forecast the economic empowerment of females in New South Wales (NSW), Australia. The employment data were obtained from the Australian bureau of Statistics. The data series follows an irregular wave like pattern. The Decomposition techniques, Seasonal Auto Regressive Integrated Moving Average (SARIMA) and Sama Circular Model (SCM) were tested for forecasting. Time Series plots and Auto Correlation Functions were used for pattern recognition. The Auto Correlation Functions (ACF) of residuals and Ljung-Box Q statistics (LBQ) were used to test the independence of residuals. The Anderson Darling test was used to test the normality of residuals. Forecasting ability of the models was assessed by Mean Square Error (MSE) and Mean Absolute Deviation (MAD). Results revealed that the SARIMA and SCM are suitable for the purpose. However, the pattern of SARIMA forecasts does not follow the actual data whilst the SCM forecasts does, hence the SCM is superior to SARIMA in this context. It is recommended to foresee the women's economic empowerment in the other states of Australia