



A Forecast for Cocoa Bean Farm Gate Prices in Davao Region, Southern Philippines, Using Generalized Autoregressive Conditional Heteroscedasticity

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Abstract

The Davao Region is one of the top cocoa producers in Southern Philippines. The region aims to invest in cocoa production by enticing cocoa bean farmers to increase their production of the said commodity. This is possible if their cocoa beans produced have a good farm-gate price. Thus, this study was done to forecast the cocoa bean farm-gate prices in the Davao Region. The data for monthly cocoa bean farm-gate prices in Davao Region for the period of January 1990 to December 2015 was used as an input to the generalized autoregressive conditional heteroscedasticity (GARCH) to come up with a time series model. Mean squared error (MSE), root mean squared error (RMSE), mean absolute error (MAE), and Theil's inequality coefficient (U-statistics) were used as the forecasting accuracy criteria in identifying the best fit model. The results of the study revealed that the time series data was influenced by a positive linear trend factor and also indicates that no seasonal factor exists. Moreover, the best model is GARCH (1, 2). Furthermore, a ten-year forecast was done for fiscal years 2016–2025. By discovering the price movement of the cocoa beans in the next ten years, farmers should maximize their production and sell their produce when the prices are estimated to increase. In contrast, when the prices are estimated to decline, farmers should use storing techniques and employ timed planting decisions in order to lessen the reduction of their profits.