RETAIL PRICE VOLATILITY AND FORECASTING: THE CASE OF COCONUT IN SRI LANKA

K.B.M.T. Dilrukshi[1], K.V.V.N. Jayalath[2] and S.N. Disanayake[1]

[1]*Department of Agricultural Systems, Faculty of Agriculture, Rajarata University of Sri Lanka, Anuradhapura, Sri Lanka*
[2]*Agricultural Economics and Agribusiness Management Division, Coconut Research Institute, 61150, Lunuwila, Sri Lanka*

Coconut (*Cocos nucifera* L) is an essential food item for Sri Lankans. The frequent fluctuations in the retail price of coconut are a major policy concern. High retail prices of coconuts experienced over recent years have led to the view that volatility has increased. This study first examines the volatility of the retail price of coconuts and then uses the estimated variance to forecast future prices. The literature suggests that volatility is best captured in conditional heteroskedastic models. The study used time series secondary data of coconut production and retail prices for a period of 30 years (from January 1991 to July 2020) for the analysis. Among the different types of functional forms tested, the Generalized Autoregressive Conditional Heteroscedasticity (GARCH) (1,1) model was selected as the best fit model according to the Akaike's Information Criterion. The model was tested for autocorrelation and heteroskedasticity using the Durbin-Watson statistic and the Breusch-pagan test respectively and confirmed its validity. Coefficients of past values of the error term and past values of conditional variance are positive and significant at a 5% level indicating that the price volatility is present in coconuts during the period considered. Coefficients of lagged conditional variance and lagged squared error terms are 0.771 and 0.179 respectively and their summation is closer to one confirms that a particular volatility shock is persisting for some period. The estimates of the root mean square error of the price forecasting model, which used to forecast the prices for a period of one year starting from June 2020 shows the robustness of the prediction. Furthermore, it shows that the average retail price of coconut for the forecasted period is Rs.54.40/nut. The estimates of the prevalence and persistence of retail price volatility in coconuts and higher forecasted prices, necessitate such management through various policy interventions.

Keywords: Coconut, Conditional Heteroscedastic Models, GARCH, Price Volatility