FORECASTING SRI LANKAN BLACK TEA PRICES

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Tea is the second major income sector of Sri Lankan economy. Sri Lankan tea marketing chain has producers, consumers and brokers. Tea price volatility breaks the strength of the marketing chain by causing loses or less earnings for these members. As a result, they may fail to cooperate for tea trade in future. This can cause difficulties for Sri Lanka to compete with other international competitors. Forecasting tea prices can help the members of the tea marketing chain to devise better strategies for profit. This study considers forecasting of the real prices of the three major black tea growns, namely high, medium and low. Two multivariate time series techniques, Vector Autoregressive (VAR) and Vector Error Correction (VEC) models, and two univariate techniques, Seasonal Autoregressive Integrated Moving Average (SARIMA) and multiplicative decomposition are used to develop models.

VAR and VEC models are built using an optimal lag of two. Johannes procedure explains the prices are cointegrated for original price series but not in log transformed series. VAR and VEC models show the low quality tea prices has the price leadership. We use "vars" and "urca" packages in R 2.11 software version to fit VAR (2) and VEC (2) models.The optimal SARIMA models obtained for High, Medium and Low growns series are respectively, $\text{SARIMA}(0,1,0)\times(0,1,1)\,\text{SARIMA}(0,1,0)\times(0,1,1)\,\text{ARIMA}(0,1,1)$.It was noted that the low quality tea prices are not seasonally affected. Since the data show increasing seasonal variations with trend line, in decomposition model we considered multiplicative decomposition type. To fit both univariate models we use MINITAB 14 software version.

MAPE (Mean Absolute Percentage) shows the VAR (2) has relatively good prediction capacity of tea prices than univariate models. Thus we forecast tea prices using VAR (2) model for next three years. We hope these forecasts will help producers plan their future

strategies. Theil's U statistic demonstrates that the fitted VAR (2) model has good forecasting ability.

Key words: Tea prices, Vector Autoregressive model, Vector error correction model, Seasonal Auto Regressive Integrated Moving Average model, Multiplicative decomposition, Stationary, Cointegration.