Time Fluctuation Models to Forecast Tea Production and Prices in Sri Lanka

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Tea Industry plays a prominent role in Sri Lanka economy. According to the central bank report, tea export revenue is the second highest export revenue and the highest agricultural export revenue in the year 2002. Sri Lanka is a leading tea exporter and the forth in the rank of tea production of the world.

The industry mainly consists of tea production, tea export and tea auctions. The paper tries to identify time fluctuation models of the above areas. But the investigation is limited up to the year 2002. Also the figures are given as monthly average values of the tea leaf and tea dust.

Monthly average tea production is given from the year 1982 to 2002 in million kilograms. The most important feature of the data is that while there is no any seasonality, a small positive trend is observed. Throughout the period, the average tea production is 19.665 ± 4.486 million Kgs. The de-trend data follow ARMA (2, 4) time series model. This implies that the present tea production value Y_t, depends on Y_{t-1}, Y_{t-2} and the four steps of noise terms. The forecasting values show a decline of the tea production.

Among the tea auctions of the world, Colombo tea auction is the leading one and thus we can consider the prices of this auction as the world tea prices. The prices are given in Sri Lankan rupees per one kg from 1984 to 2001. Here also there is a positive trend but there is no seasonal fluctuation of the data. The de -trend data follow an AR (1) model. This implies that the present tea price depends only on the last tea price and the noise term. According to the forecast values tea prices do not have any trend.

Key Words: Trend; De-trend; ARMA model; AR model; Noise term

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