



AMIC – INFOSERIES – 3
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Coconut Update

INTRODUCTION

Coconut (*Cocos nucifera*), the most familiar palm of the tropics. It is highly valued globally with its multifarious use to be rightly labeled as "The Tree of Life". It was considered as *Sriphala* or "Fruit of Gods". The secrets of coconut's amazing healing powers are currently being unlocked by the modern medical science.

According to FAO Statistics, 2007, global production of coconuts is 61504133 Tonnes with Indonesia, Philippines, India, Brazil and Sri Lanka as the major contributors to coconut production. As per the recent Government of India statistics 2008-09, India has emerged as the largest producer of coconut in the world with a production of 15,840 million nuts. India accounts for 26.9 per cent of the world's production. Following globalization, the domestic coconut market economy has been pushed towards a situation of competition, where coconut oil has to compete with the other low price edible oils in the international market. In India, the four south Indian states namely Kerala, Tamil Nadu, Karnataka and Andhra Pradesh account for around 90 per cent of the coconut production in the country.

That price plays a part of extreme importance in the working of the economic system requires no demonstration. The production, distribution and consumption of goods are, of course, fundamental activities, but as the modern economic system is organized they are

conditioned and influenced at every point by prices and price relations (Mills, 1927). The price of coconut is shaped by variations in production, global demand and supply situation and price of other vegetable oils. It is against this background that the present attempt to study the price behavior of coconut is being made.

METHODOLOGY

The study attempts to analyze the different components of price of partially dehusked coconuts. Domestic price prevailed at Thrissur market, which is fast emerging as the major coconut market in Kerala. The month wise modal price of partially dehusked coconut were collected, covering a time span of 10 years from January 2000 to December 2009.

A time-series model provides a description of the random nature of the process (stochastic processes) that generated the sample of observations under study (Pindyck *et al.*, 1984). The classical multiplicative decomposition model was performed on coconut prices, by employing time series econometrics as illustrated by Anderson, 1971; Croxton *et al.*, 1979 and Enders, 1995. This approach assumes that any time series can be decomposed into four essential components, viz., trend, seasonal, cyclic and irregular components as shown below:

$$Y(P) = T * C * S * I$$

where, Y (P) = Monthly average price of Coconut

T = Secular trend

C = Cyclical movement

S = Seasonal index, and

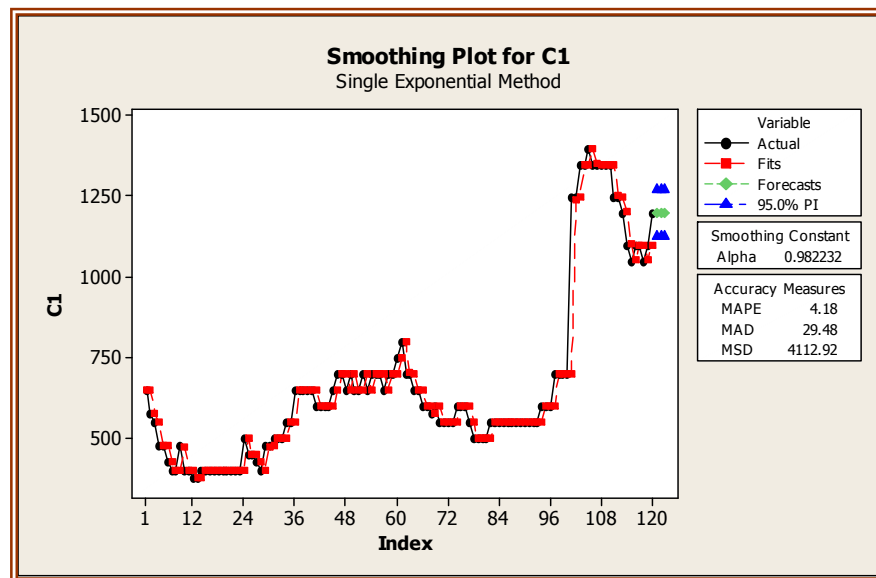
I = Irregular movement

Trend Analysis of Coconut Prices

Trend lines were fitted using various functional forms like linear, quadratic, cubic, compound, growth, logarithmic, sigmoid, exponential, inverse, power and logistic functional forms and no satisfactory fit was observed based on R^2 values and standard errors. When the regression analysis can not closely approximate the trend, smoothing to represent the simple trend is preferred (Anderson, 1971). Hence, trend lines were fitted with single exponential

smoothing as plotted in the Fig.1, which had a mean absolute percentage error (MAPE) value of 4.18 per cent.

Fig. 1. Single Exponential Smoothing for price of Coconut



Seasonal Effect

The seasonal variations refer to systematic though not necessarily regular intra-year movements in economic time series. Seasonal indices were worked out to capture the seasonal patterns in the price data. The seasonal indices were worked out for prices of partially dehusked coconut and the results tabulated and presented graphically in Table1 and Fig.2.

Fig.2. Seasonality in Coconut prices

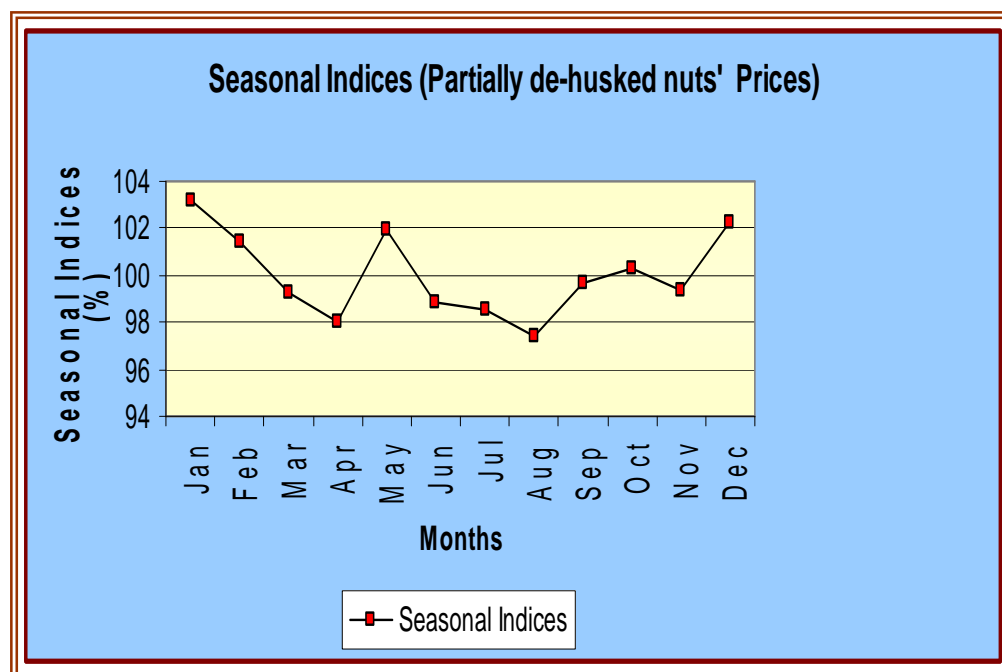


Table 1: Seasonal Index of Coconut Prices

Months	Seasonal Index
January	103.13
February	101.44
March	99.23
April	98.00
May	101.92
June	98.85
July	98.58
August	97.39
September	99.69
October	100.30
November	99.41
December	102.23

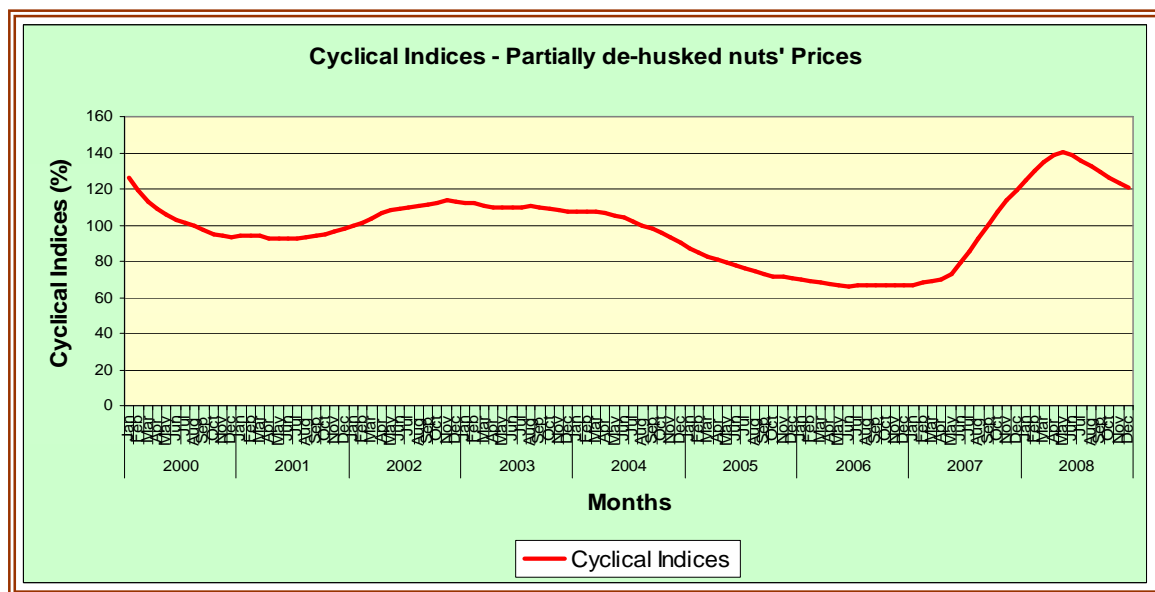
Coconut is a perennial crop having round the year supply, and hence no seasonality is ordinarily expected in its prices. Though no pronounced seasonality in prices were evident, it is interesting to note that the prices were found to peak during December to January, while the prices were found to be under downward pressure during the period from March to August. The period from October to December marks a period of low arrivals of coconut in the domestic market, synchronizing with the trough in production. Similarly, the period from March to September marks the maximum arrival of coconut in Kerala, synchronizing with the peak in production, induced by the corresponding rainfall variations, with the expected lag by thirty six months from primodia initiation to nut formation. Thus, the seasonality in production (both peak as well as trough) along with the seasonal nature of procurement of raw nuts and copra by the industrial users is understood to exert seasonal variations in price, keeping inter state movement of coconut and copra apart.

Cyclical Effect

Price cycles represent deviations in price levels from the average trend due to business sequences of boom and recession that appear in an economy Cyclical movements

are of longer duration, usually extending to a few years and are of different periodicity. From the analysis of prices of nuts, a cycle extending from January 2001 to December 2006 could clearly be identified. Due to paucity of data, the second cycle from January 2007 could not be traced fully.

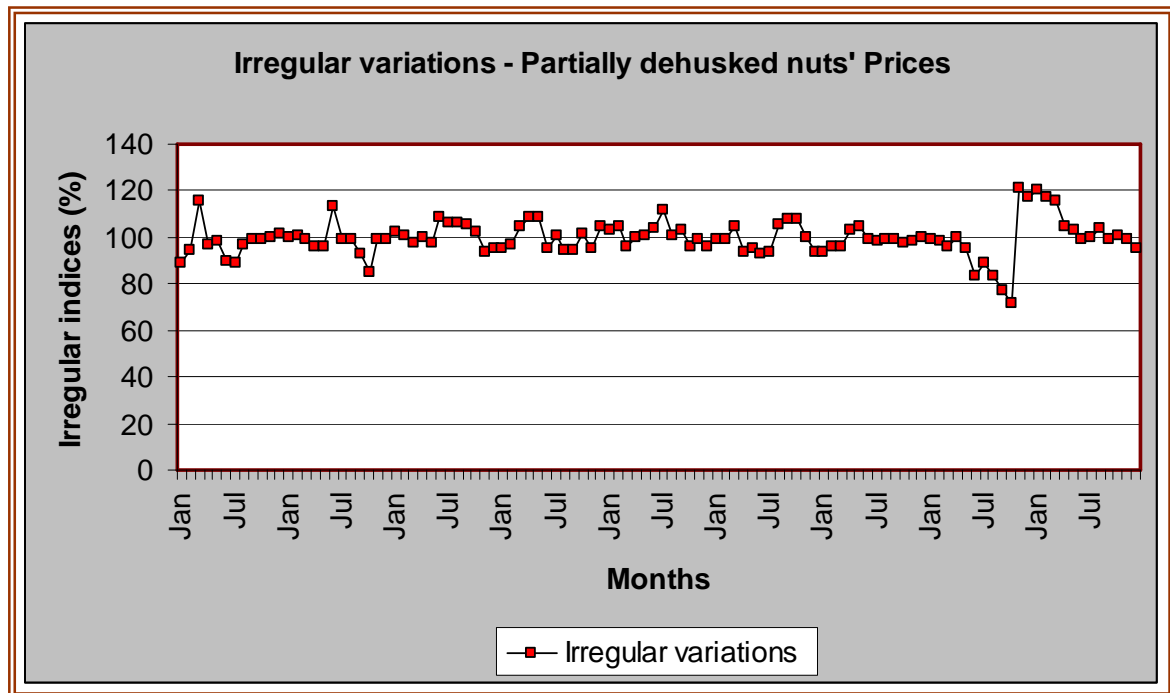
Fig. 3. Cyclical fluctuations in Coconut prices



Random Effect

The irregular variations in coconut price represents the “residues” left in the time series after the trend and calendar effects have been removed. Indices for irregular variations were worked out and the plot is presented below (Fig.4). The graph revealed that the coconut prices were subjected to considerable irregular variations due to random effects such as supply shocks on account of climatic deviations, or market shocks on account of demand shocks or high speculative factors.

Fig.4. Irregular variations in Coconut prices



CONCLUDING REMARKS

The study revealed that all the four components of classical time series viz. secular trend, seasonal variations, cyclical variations and irregular variations were present in coconut prices also. This information is a pointer to the farmers towards the decision whether to store or not to store the commodity. It helps to take a final decision on selling the commodity by combining the inputs on the latest market situation.



NB: For more details, please visit: www.kau.edu and www.kauhort.in