Economic Analysis of Marketing of Betel (*Piper betle L.*) Leaf in Kurunegala and Gampaha Districts of Sri Lanka

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ABSTRACT

. Production and sale of Betel (*Piper betle*) leaf is a typical farm enterprise in Kurunegala and Gampaha districts of Sri Lanka and it has become one of the main sources of income of farmers in these districts. Farmers in this industry are facing various problems in marketing their produce especially in the process of exportation. This study was carried out to assess the present system of marketing and work out the degree of market competitiveness in Betel market in Kurunegala and Gampaha districts, which represents the major Betel cultivating districts in Sri Lanka. This paper further identifies the marketing channels, marketing functions, constraints associated with Betel marketing and propose possible solutions.

Data were collected from a pre-tested survey questionnaire among Betel farmers, intermediaries and buyers. Lorenz co-efficient of inequality and Gini coefficient were used to explain the degree of market competitiveness and concentration ratio were used to explain the market power. Price indices were calculated using secondary data from 2001 to 2004 to study the price behaviour.

Result showed that there was a higher degree of market competitiveness and strong oligopsonist structure in marketing of Betel industry with 80% of concentration ratio. No significant price difference was found between two districts in most of the months. The major constraint identified was seasonal fluctuations in market price followed by high cost of production and lack of quality leaves. Majority of the farmers suggested that the government involvement is essential to improve the efficiency of Betel marketing.

KEYWORDS: Betel Leaf, Market Concentration, Marketing Channels, Constraints.

INTRODUCTION

The Betel (*Piper betle*) belongs to the genus Piper of the family Piperaceae. It is a dioceous plant, native to central Malaysia and has spread throughout the tropical Asian countries namely Sri Lanka, India, and Bhutan (Purseglove, 1971). The economically important part of the Betel vine is leaf mainly used for chewing.

Sri Lankan Betel industry has a long standing history dating back to 340 AD. Betel has been used for domestic consumption from ancient times. Now it is grown for domestic consumption as well as for exportation. In addition it is used for medicinal and cultural purposes. Betel vine cultivation has become popular among Sri Lankan farmers due to the easiness of cultivation and possibility of harvesting throughout the year (Senevirathna and Rathnasoma, 2002). According to the research conducted in 1997 by economic research unit of Department of Export Agriculture the Cost of production for Betel is estimated as Rs.127.00 per 1000 leaves as an average of four years annual cost.

Kurunegala and Gampaha are the main districts that produce Betel for export market (Senivirathna and Rathnasoma, 2002). Betel is cultivated mostly as a home garden crop in small scale. But in Kurunegala and Gampaha districts it is mostly cultivated as an intercrop with Coconut. Harvest is sold to either village collectors or regional market places. There are regional market places in "Giriulla", "Kuliyapitiya", "Narammala", "Kurunegala", and "Banduragoda". Generally Price for Betel is decided for 1000 leaves or weight basis (Personal Communication, 2004).

Sri Lanka is still the leader in the export market of Betel leaves in the world. The industry has earned Rs. 276 million from exports in the year 2003 which exceeded the export earnings from cashew and essential oils (Central Bank of Sri Lanka, 2001). Pakistan is the major buyer of Sri Lankan products. The rest is exported to Maldives, Middle East and Singapore (Anon, 1996). At present, Sri Lanka exports around 45,000 kg of Betel leaves to the Pakistan per week (Personal Communication, 2005). Ten percent of the Pakistan market share was lost due to competition from the India in year 2004 (Table 1) (Anon, 2004).

Recent reduction of the volume of Betel exports in the export market was one of the major draw backs faced by the industry. The main cause for this was inefficiency in the Sri Lankan Betel industry. This has resulted loss of market share in Pakistan market with higher competition from India (Table 1) and production of Betel by Pakistan farmers. India is producing Betel at lower cost. Therefore price of Indian Betel is lower than Sri Lankan Betel. In order to minimize the negative impact on Sri Lankan Betel industry, marketers propose strategies in view of two objectives namely increasing market efficiency and product diversification (Anon, 1996).

To develop the new strategies for the fulfillment of the above objectives marketers should have better information system and good knowledge on Betel industry. Lack of information on market and industry *viz.* market price of Betel, area under cultivation, number of people engaged in the industry, total domestic production *etc.*

Table 1. Amount of Betel leaves imported to Pakistan

Country	Year 2003		Year 2004	
	Quantity (mt)	%	Quantity (mt)	%
Sri Lanka	4057	83.29	3803	73.18
India	192	3.94	672	12.93
Bangladesh	417	8.56	492	9.47
Thailand	205	4.21	230	4.43

Source: Export Agriculture Division, Export Development Board of Sri Lanka

Also there is a suspicious among the most stakeholders that there is a market collusion or unfair competition in Betel leaf marketing. This was the main cause to create inefficiency in the industry, especially in pricing of Betel.

This study was carried out to assess the present system of marketing and work out the degree of market competitiveness in Betel market in Kurunegala and Gampaha districts. This study further identifies the marketing channels, marketing functions, constraints associated with Betel marketing and propose possible solutions.

METHODOLOGY

a) Questionnaire survey

Primary data were collected using a pre- tested structured questionnaire from the farmers in Kurunegala and Gampaha districts, which represent the major Betel cultivating districts in Sri Lanka, from February 2005 to May 2005. Random sample of 75 farmers were selected from both districts and a separate pre-tested structured questionnaires were used to collect the data from 30 intermediaries as well as 10 buyers. "Apaladeniya", "Kuliyapitiya", "Yakwila", "Welpalla", "Narammala", "Walpita", "Banduragoda", "Divlapitiya", "Imbulgoda", "Dompe", "Udugampola", and "Kirindiwela" areas were selected to represent both districts for the survey. Microsoft excel software was used to analyse the data.

b) Secondary data

Secondary data were gathered from the reports of Export Agriculture Division of Export Development Board and Hector Kobbekaduwe Agrarian Research and Training Institute (HARTI).

Market competitiveness was judged by means of Lorenz curve and working out the Gini coefficient. The data which were collected from the export agriculture division were displayed by the Lorenz curve shown in Figure 1 and the Gini coefficient was calculated from the curve.

Gini coefficient often varies between '0 to 1. When the value reaches more closely to 0, the equality in the market get increased. In other words unfair competition in the market gets reduced. If the value is equal to 1, there is a perfect unfair competition in a market.

Four-firm concentration ratio (CR4) was used to analysis the market power. If the market share of the largest four firms is less than or equal to 33%, it generally indicates a competitive market structure, while a concentration ratio of 33% to 50% and above 50% may indicate a weak and strongly oligopsonist market structures respectively (Kohl and Uhl, 1985). CR4 was obtained by calculating the market share of the four largest traders to the total market share in the industry.

Price Indices were calculated for each month with the data gathered from year 2001 to 2004.

$$P = \frac{A}{B} \times 100$$

Where,
P = Price Index
A = Monthly average
B = Overall moving average

RESULTS AND DISCUSSION

1) Degree of market Concentration in Betel Leaf Marketing

Market concentration was worked out using present data collected from year 2001 to 2004. Lorenz curves were plotted for each year (Figure 1).

Gini coefficients were calculated for each year (Table 2) and market concentration was analyzed using four-firm concentration ratio (CR4).

Table 2. Gini coefficient values from year 2001 to year 2003

Year	2001	2002	2003	2004
Gini coefficient	**0.72**	**0.79**	**0.85**	**0.68**

The values for Gini coefficients were closer to one (Table 2) and according to the Lorenz definition, it reflects an unfair competition in the Betel export market. The values showed more than 0.5 for each year. It indicates a higher degree of unfair competition in the export market. CR4 value was 80% in year 2004. It indicates a strong oligopsonist market structure in the Betel industry. Therefore few people gain advantage while others couldn't get the total benefit from the Betel marketing. This was one of the reasons to discourage the farmers in this industry.

Large numbers of Betel farmers in both districts were operating with the few number of whole sellers in the industry, which has created less bargaining power of suppliers. In the export market Pakistan is the major buyer of Sri Lankan Betel.

Therefore high bargaining power of buyer has created in export market. There are some entry barriers in the industry which may be caused by the purchasing power and lack of timely information. These conditions were helped to create market collusion in the Betel industry.

A single buyer who had a higher bargaining power with large market share in the present Betel market was identified as a key feature in the market. This buyer had about 70% contribution in local market and 40% contribution in export market in year 2003. Regular contacts with the Pakistan buyers, loyalty of the farmers, political power, purchasing power and experience may have helped to contribute the high market share in the Betel industry. This buyer was arranging credit facilities for Betel farmers which cause to increase the loyalty and less power of the Betel farmers. These conditions were effecting to the unfair competition in Betel industry. However, the degree of competitiveness was reduced in year 2004 (Table2) with the intervention of government. Local market concentration was unable to calculate due to lack of information.

(2) Marketing channels for Betel

First, second channels were related to the local market while the third and fourth channels related to the export market. Some exporters also act as a whole seller in the Betel industry. Majority of the farmers used channel one for the local market and channel three and channel four for the export market. Most of the Kurunegala district farmers used channel three for the export market and Gampaha district farmers used channel four. Some agents were coming to farm houses to collect Betel leaves in Kurunegala district. Therefore farmers incurred no cost in marketing. But most of the farmers had to bare the marketing cost which had an average cost of Rs. 400.00 in both districts.

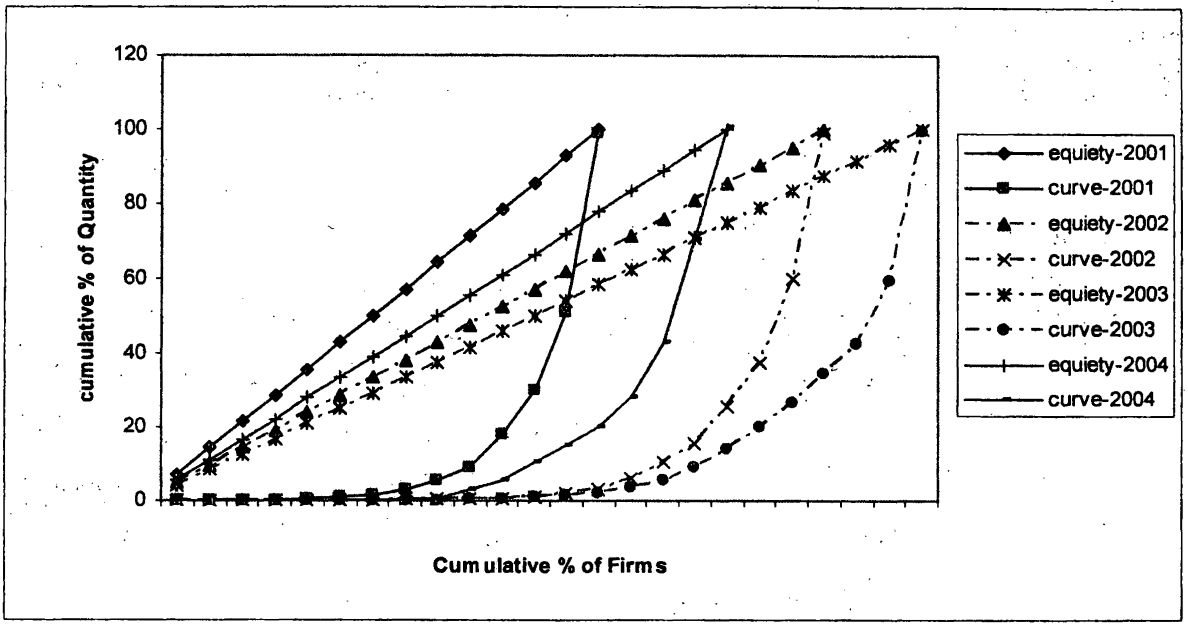

Figure 1. Lorenz curves for the Betel export market from year 2001 to 2004

Four marketing channels were identified in the Betel industry.

1. Farmer → Whole seller → Retailer → Consumer
2. Farmer → Retailer → Consumer
3. Farmer → Regional Agent → Exporter
4. Farmer → Whole seller → Exporter

Table 3. Betel prices in local and export market in Gampaha and Kurunegala districts (Year 2004)

Market	Average farm gate prices	Average market prices
Local Market (Rs/1000 leaves)	Rs.150-200	Rs.400-600
Export Market (per kg)	Rs.170	Rs.400-500 (Pakistan Rupees)

Agents could get the commission from the exporters. Therefore price difference is not significant between channel three and channel four. Some farmer organizations were trying to develop direct export to the Pakistan. But still it was not successfully practiced in the industry. Intermediaries gain higher profit margin than the farmers in both Gampaha and Kurunegala districts (Table 3). This was due to high market power of private sector. Hundred percent of the Betel market was handled by the private sector. Intermediaries gain much advantage due to price fluctuation in the export market.

3) Analysis of the Marketing function

In Betel market there were several functions *viz.* pricing, packaging and transportation. All above three functions were analyzed separately for the local and export markets. Those marketing functions are same in both Gampaha and Kurunegala districts.

Pricing of the Betel in local market was based on the 1000 leaves. Normally low quality leaves called "Keti kola" are coming to the local market. Average market prices of 1000 leaves were around Rs. 200.00 throughout the year with little fluctuation. In export market, prices were based on the 1000 leaves or weight (kg) basis. High quality leaves which are called as "kalu bulath" are coming to export market. Average market prices of 1000 leaves were around Rs.1250.00 throughout the year. But the prices were subjected to fluctuate due to market demand and changes of the production with the rainy season and disease out breaks. Prices of the export market are based on the export demand. But all exporters were trying to maintain continuous prices for their underhand profits due to taxation. Local farm gate price indices for each month of the Kurunegala and Gampaha district showed not much difference for many months (Figure 2).

Farm gate prices were collected from the Hector Kobbekaduwe Agrarian Research and Training Institute and the prices of the farmers through the field survey. These indices were related to the local market. Export market price indices couldn't be calculated due to lack of information. January, March, June and September months showed significant difference in price indices in those two districts. March-April months showed higher price indices (Figure 2) due to overlapping of high demand during the festival season and the rainy period in both districts. Months of June-July showed the lowest price indices in both districts (Figure 2) due to high supply from both districts after rainy period (Table 4). Kurunegala district was shown higher price indices than the Gampaha district due to high quality leaves.

Packing was found to be simple in local market. The packaging material used is called as "Thattuwa" which contain huge amount of leaves with the supporting of Banana leaves. Nine kilogram baskets were used as a packing material for export market. It was made out of cane, which cost about Rs. 25.00. The export marketing cost has categorized in Table 5.

Table 4. Highest and Lowest price Indices in Gampaha and Kurunegala districts

District	Highest Index	Lowest Index
Gampaha	117.17(April)	85.38(July)
Kurunegala	120.83(March)	73.24(June)

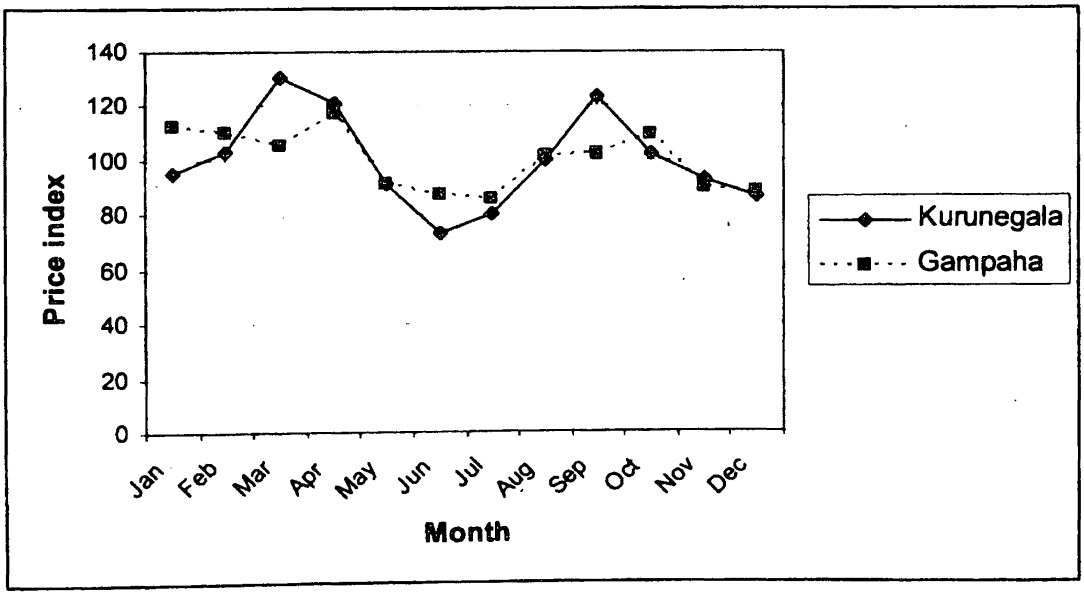

Figure 2. Local market farm gate price indexes for Kurunegala and Gampaha districts

Table 5. Export marketing cost to the Pakistan

Type of cost	Amount (Rs.)
Local transport	10.00 per 9 kg (depend on the person and the fuel prices with the distance to the air port.)
Packaging	30.00 per 9 kg (including labour cost)
Import duties	150.00 per kg (duties free up to 1200 MT per year according to the free trade agreement-2005)
Sales tax	12.5 %
	Turnover tax, determined based on the value of sales arbitrarily.

Pakistan importers had to bare high marketing costs for the Sri Lankan Betel (Table 5). Average cost was 441.00 of Pakistan Rupees per kg. Therefore the selling price fluctuates 400 to 500 Pakistan Rupees per kg (Table 2), which was higher than the other competitors.

Both Gampaha and Kurunegala, production was distributed all over the market in Sri Lanka. Eighty five percent of production was transported using trucks and fifteen percent of production was transported by train in local market. Most intermediaries had their own trucks for transportation. In the export market air cargo was used as the mode of transportation. Every two days per week, Betel leaves were exported to Pakistan through the flights which involve higher transportation cost than India (Table 6).

Table 6. Comparison of Freight rates with other countries (Year 2004)

Country	Freight by Air C and F Karachi US Dollar ($) per kilo	Freight by Air C and F Lahore US Dollar ($) per kilo
Sri Lanka	1.10 to 1.90	1.35 to 2.14
Bangladesh	0.38	0.48
India	0.43	0.57

Source Export agriculture division, 2004

Table 5 and Table 6 show that marketing and transportation cost were higher in Sri Lanka than the other competitors. This was the main cause which reduces Sri Lankan market share in Pakistan Betel market recently which would be a disadvantage for Sri Lankan Betel industry. But in terms of quality of Sri Lankan Betel we are enjoying higher comparative advantage.

4) Constraints for Betel production and market

Constraints for the Betel were identified from farmers, Intermediaries and buyers separately. Lack of guaranteed price was the major problem in Kurunegala and Gampaha district farmers (Table 7, 8, 9).

Table 7. Constraints of farmers on Betel production and marketing

Constraints	Farmers Reporting %		Total %
	Kurunegala	Gampaha	
Lack of guaranteed price	80	73.34	76.67
High cost of production	70.05	65	68
High labour cost	35	49.78	42.39
Lack of infrastructure	33.34	23.34	28.34
Lack of credit facilities	6.67	30	18
Water scarcity	17.78	0	9
Lack of knowledge	1.34	2.34	1.84

The most significant effect was the lack of guaranteed price in the industry. This was due to fluctuation of market prices throughout the year because of the rainy season and pest and decease out breaks. Especially the Bacteria Leaf Blight disease has caused severe damage to the industry. On the other hand export market demand also affected to the Betel market price.

Table 8. Constraints of Intermediaries on Betel Marketing

Constraints	Intermediaries reporting %
lack of guaranteed price	86.67
lack of proper market	60
high marketing cost	53.34
lack of quality leaves	46.67
lack of credit facilities	30

Table 9. Constraints of Buyers reporting on Betel Market

Constraints	Buyers reporting %
lack of guaranteed price	90
lack of quality leaves	15.34
lack of availability	9.67

High cost of production was another problem faced by the Betel farmers. Especially, the cost of fertilizer and sticks for vertical support were created the high cost of production in the industry. Few farmers in Kurunegala and Gampaha district received fertilizer subsidy for Betel with the formation of the farmer organization programs. Irrigation water supply was another significant constraint found in Kurunegala district during dry season. As a result, irrigation cost was high. Gampaha district received sufficient rain and water is not a major problem. Labour scarcity was the major cause for high labour cost for both districts but severe in Gampaha. This may be due to more job opportunities other than the farming in urban environment.

All above factors lead to poor management practices in Betel cultivation resulting poor quality leaves coming to the Betel market. Especially in export market quality is very important to compete with the other exporting countries like India and Bangladesh.

Credit facilities also created a problem in production and marketing of Betel. Although government already arranged an insurance scheme for the Betel farmer, it has not implemented efficiently so far. This was due to the lack of information about the insurance scheme among the farmers and lack of officers related to the scheme.

Lack of proper market places and poor infrastructure facilities were other crucial problems in Betel marketing, most intermediaries facing resulting higher marketing cost. Some farmers have to bare high transportation cost due above problems. Transportation of "ini" or vertical supporting materials also became a problem in the industry.

Farmers' knowledge and attitude also created a barrier for arranging the smooth market for Betel. Most farmers had negative attitude towards the government intervention. It may be due to instability

of the government and their policies. Therefore farmers were reluctant to involve in the government arrangements like farmer society systems and market places. Farmers were linked strongly to the private intermediaries. This was the benefit for the intermediaries. As well as certain government policy issues also act as a constraint for the Betel market.

CONCLUSIONS

The study confirmed that there is an unfair competition in Betel export market, resembling imperfect competition. This condition can be concluded as strong oligopsony market structure, in which few firms are dominating in the industry. No significant price difference was found in Gampaha and Kurunegala districts. Prices of the Betel were subjected to fluctuate throughout the year due to demand and supply condition in the industry. Farmers were not able to get the maximum benefit from the Betel production because of the existence of unfair competition. This has benefitted for the Intermediaries in the industry but create marketing inefficiency, discouraging Betel farmers.

Major constraints identified were seasonal price fluctuation, high cost of marketing, and low quality of the leaves. Marketing costs are comparatively higher than other export competitors, which is harmful to the performance of the industry. Government should identify the constraints and develop a more favorable environment to increase efficiency of the Betel marketing and develop this industry in Sri Lanka.

ACKNOWLEDGEMENTS

Authors wish to thank the staff of the Export Agriculture Division of Export Development Board, staff of the Economic research unit of Agriculture Department, Hector Kobbekaduwe Agrarian Research and Training Institute (HARTI) and Mr. Wajira Rupasinghe for providing necessary information and data. Authors gratefully acknowledge the support of Prof. S.J.B.A. Jayasekara, Dean, Faculty of Agriculture and Plantation Management, Dr. A.M.T.P. Athauda, Head, Department of Agribusiness Management for their guidance. Sincere thanks are due for Dr. W.J.S.K. Weerakkody and the staff of the computer unit for assisting and giving computer facilities.

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