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PRICE BEHAVIOUR OF COCONUT OIL IN RELATION TO MAJOR OILS IN INDIA *

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ABSTRACT

Studies conducted on the wholesale prices of four edible oils *viz.*, coconut oil, groundnut oil, sesame oil and mustard oil for the period 1970-71 to 1987-88 revealed that coconut oil had commanded a relatively higher price over other oils during most of the years. The compound growth rates worked out for these oil prices was almost of the same order (8 to 9.6 per cent). But instability in prices were more for coconut oil than other oils. Wholesale price indices showed that prices for these edible oils increased rapidly over the years. Relative price indices of different oils in relation to coconut oil revealed that the relative increase in prices of groundnut oil, sesame oil and mustard oil over the years was much higher than that of increase in coconut oil prices. Correlation studies revealed that the prices of these edible oils move very closely with each other with correlation coefficient between 0.88 to 0.90. Regression analysis showed that the wholesale prices of any oils could be predicted with higher precision knowing the price of any other oil.

INTRODUCTION

Indian edible oil sector has the dubious distinction of stagnant production, spiralling prices and massive imports for nearly two decades. Eventhough the imports are being maintained at a very high level it has had hardly any effect on price. The trend indicates that with small setbacks now and then, edible oil prices have been inclined upward most of the times. As it appears this rising trend will remain unabated till the supply meets the surging demand. Indian vegetable oil scenario further indicates that coconut oil has by and large consistently commanded a price premium over other oils. This study has been pursued in order to understand the relationship between the prices of coconut oil and other edible oils.

MATERIALS AND METHODS

For this study the average wholesale prices of four major edible oils *viz.*, coconut oil, groundnut oil, sesame oil and rapeseed mustard oil for the period 1970–71 to 1987–88 was collected from the Directorate of Economics and Statistics, Ministry of Agriculture, Government of India. The monthly, wholesale price index numbers of edible oils were also obtained from the same source. The figures concerning to the production and imports of vegetable oils were received from the Ministry of Commerce, Government of India.

The absolute differences were worked out to determine the price premium of coconut oil over other edible oils. Compound growth rates (CGR) and coefficient of variations (CV) were worked out for individual oil prices. The annual wholesale price indices for individual oils were constructed by taking 1970–71 as the base, while the relative price indices of different oils in relation to coconut oil were computed by

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dividing the index number of an individual oil with the corresponding year index number for coconut oil. Correlation analysis was carried out between prices of different edible oils. Regression equations were fitted to predict the price of any oil by knowing the price of the other oil.

RESULTS AND DISCUSSION

The average annual wholesale prices of coconut oil, groundnut oil, sesame oil and mustard oil for different years are shown in Table I. It is clearly evident from this table that coconut oil had always commanded a relatively higher price over other oils barring three years out of 18 years under reference. This sort of consistent behaviour of coconut oil could be explained by its distinct advantages over other oils in certain end uses. According to an estimate, while over 90 per cent of the supplies of groundnut oil, sesame oil and mustard oil are used as edible oil, in the case of coconut oil only about 38 per cent of the supplies are being utilised in edible oil sector and the remaining 62 per cent in non-edible oil sector, mainly household toiletry (Thampan, 1988). Coconut oil occupies third place in Indian vegetable oil sector next only to groundnut oil and mustard oil, but its production is about one-seventh of the production of groundnut oil and two-fifth of the mustard oil as it constitutes only 7 per cent of the total vegetable oil production in the country (Das, 1984). It is pertinent to note here that unlike the edible oil sector, in the household toiletry the demand is insensitive to price changes. Coconut oil is considered indispensable and price inelastic for tioletry uses in India because of its special quality which other vegetable oils do not enjoy. Besides, the individual household requirement on toiletry is so small that the total expenditure in this item do not disturb the family budget with the price rise. The processors and traders are well aware of this fact and they take full advantage of the situation for which coconut oil prices rule much higher than that of other oils in India.

The annual growth rate of coconut oil prices during 1970–71 to 1987–88 was 9.57 per cent, while it was 9.60 per cent in the case of groundnut oil, 8.0 per cent in sesame oil and 8.2 per cent in mustard oil. It reveals that despite the differences in absolute prices of individual oils, the rates of growth were more or less of the same order. However, the C.V. was found out to be higher for coconut oil than other oils. (Table I)

Table II reveals the absolute differences of the average annual wholesale prices of individual oils from that of coconut oil. Though groundnut oil is considered as the kingpin among the Indian vegetable oils the usual premium commanded by coconut oil over the groundnut oil varied between Rs. 130 and Rs. 771 per 100 kg at wholesale level during the period 1970–71 to 1987–88 except for a couple of years when the groundnut oil prices ruled slightly higher than coconut oil prices. Similar situation was noticed in the case of sesame oil and mustard oil. However, while coconut oil prices continued to rule higher than that of the other edible oils in India they became much harder from the year 1983-84 as a result of which the premium for coconut oil appeared to be substantial. In other words, coconut oil which had always commanded a relatively higher price owing to its superior qualities in certain end uses, started commanding an even better premium since 1983-84 with its declining or stagnant supplies. The record premium of 1984-85 was rather more related to the drastic shortfall in the supplies of coconut oil in that year owing to the delayed effect of unprecedented droughts of 1982 and 1983 in the main coconut and copra producing State of Kerala (Das, 1986).

Table I. *Average wholesale prices of the major edible oils in India* (*Rs.*/100 *kg*)

Year	Coconut oil	Groundnut oil	Sesame oil	Mustard oil
1970–71	700	422	479	518
1971–72	540	410	508	471
1972–73	565	704	740	535
1973–74	1020	809	877	764
1974–75	1115	749	848	874
1975–76	800	518	768	535
1976–77	1055	821	921	707
1977–78	1100	715	786	1008
1978–79	1180	801	903	924
1979–80	1220	968	1260	1024
1980–81	1580	1292	1268	1261
1981–82	1320	1353	1271	1318
1982–83	1545	1550	1434	1170
1983–84	2385	1614	1603	1485
1984–85	3250	1630	1506	1465
1985–86	1710	1353	1263	1039
1986–87	2414	2106	2073	1847
1987–88	3097	2332	2357	2382
C.G.R. (% yr^{-1})	9.57	9.60	8.00	8.20
C.V. (%)	53.27	48.97	42.47	45.46

The wholesale price indices and relative price indices of major indigenously produced edible oils of India are presented in Table III. Although the prices of coconut oil seemed to be much better, all through the period since the early seventies in the previous tables, here the picture that emerged out suggests that the prices of all the edible oils were steadily rising over the base year 1970–71 position as it was observed from the CGRs. Relative price indices of different oils in relation to coconut oil revealed that relative increase in prices of groundnut oil, sesame oil and mustard oil over the years was generally higher than that of increase in coconut oil prices. This phenomenon could be attributed to the widening of the supply-demand gaps in edible oils owing to the population explosion as well as the increasing in the purchasing power of the people in one hand and near stagnation of the production and the higher inflationary pressures on market economy on the other. The monthly wholesale price index numbers for edible oil which has been shown in Table IV further reveals that though the prices of this group of commodities were moving upward, they exhibited a good deal of

Table II. *Price premium of coconut oil over other edible oils in India during* 1970–71 *to* 1987–88 (*Rs./100 kg*)

Year	Coconut oil-Groundnut oil	Coconut oil-Sesame oil	Coconut oil-Mustard oil
1970–71	278	221	182
1971–72	130	39	69
1972–73	(—) 139	375	30
1973–74	211	143	256
1974–75	366	267	241
1975–76	282	32	265
1976–77	234	134	348
1977–78	385	314	92
1978–79	379	277	256
1979–80	252	(—)40	196
1980–81	288	312	319
1981–82	(—)33	49	2
1982–83	(—)5	111	375
1983–84	771	782	900
1984–85	1620	1744	1785
1985–86	357	447	671
1986–87	308	341	567
1987–88	765	740	715

instability. The uncertainty in the edible oil price trend could be attributed to several factors, the single biggest factor being the manipulation and manoeuvering techniques of the powerful oil lobby. The seasonality of demand as well as seasonality of supply of edible oils could be second largest factor contributing to the violent price fluctuations (Das, 1987).

The supply position of vegetable oils in India during the eighties is furnished in Table V. While the indigenous production of all the vegetable oils together remained between 2.8 and 3.2 million tonnes, the imports varied between 0.9 and 2 million tonnes a year. Inspite of the record imports of edible oils, per capita consumption stood at 6.45 kg per annum. This figure is much below the world average of 11 kg and far lower the average consumption of developed countries which was estimated at 22 kg a year (Das, 1985). Under this situation, the magnitude of the supply gap in Indian edible oil sector could well be realised. In view of the vast demand-supply gap, even two million tonnes import had no desired effect on edible oil prices. Moreover, it is not only the total availability of edible oils, but also the availability of individual oils, had significant influence on the price behaviour of that commodity on question.

Table III. *Wholesale price indices and relative price indices of major edible oils in India*

Year	Wholesale price indices (Base year 1970–71)				Relative price indices of different oils in relation to coconut oil		
	Coconut oil	Groundnut oil	Sesame oil	Mustard oil	Groundnut oil	Sesame oil	Mustard oil
1971–72	77	97	106	91	126	137	118
1972–73	81	166	154	103	204	190	127
1973–74	146	191	183	147	131	125	101
1974–75	167	177	177	169	106	105	101
1975–76	114	122	160	103	107	140	90
1976–77	151	194	192	136	128	127	90
1977–78	157	169	164	194	108	104	124
1978–79	168	190	188	178	113	112	106
1979–80	174	229	263	198	131	151	114
1980–81	225	306	264	243	136	117	108
1981–82	188	320	265	254	170	141	135
1982–83	220	367	299	226	166	136	103
1983–84	341	382	335	287	112	98	84
1984–85	463	386	314	283	83	68	61
1985–86	268	320	263	201	119	98	75
1986–87	318	499	432	357	157	135	112
1987–88	442	552	492	460	125	111	104

Though some of them are close or near substitutes, the characteristic qualities of each oil and the differential food habits and tastes of the people make the supply management more complex a subject to deal with. Again, it is true that the technological advancements have made it possible to displace one oil by other oils in certain end uses, but there are still several areas in industrial sector such as the pharmaceuticals, cosmetics, plastics, synthetic resins, paints, etc. where coconut oil has an edge over others. Hence, the availability of one or a group of oils has limited influence on the demand pattern of other oils.

The correlation matrix on edible oil prices during 1970–71 to 1987–88 is presented in Table VI. This study indicates that the prices of groundnut oil, sesame oil and mustard oil moved very closely with each other and with that of coconut oil during the period under reference, 'r' values being as high as 0.88 to 0.90. In other words, there was a strong sympathetic movement among the edible oil prices irrespective of the fluctuations in the supply of individual oil prices in the course of the period. As all these four oils are vulnerable to substitution in edible oil uses to certain extent the prices had behaved in the expected lines (Das, 1984).

Table IV. *Wholesale price index numbers of edible oils in India (Base 1970–71)*

Month	1983–84	1984–85	1985–86	1986–87	1987–88
July	292	347	284	359	488
August	307	342	283	390	510
Sept.	313	329	276	402	486
Oct.	309	324	282	399	492
November	309	318	287	388	503
December	319	316	298	403	495
January	327	312	300	418	482
February	319	298	295	411	457
March	310	299	296	407	446
April	317	294	303	413	448
May	323	287	326	440	433
June	339	281	340	463	431
Average for the year	315	312	297	408	473

Table V. *Supplies of vegetable oils in India during the eighties*

Particulars	Unit	1981–82	1982–83	1983–84	1984–85	1985–86	1986–87	1987–88
Production	Million tonnes	3.051	2.779	3.299	3.231	3.032	3.104	3.232
Imports	,,	0.920	1.347	1.575	1.430	1.180	1.486	2.000
Total supplies	,,	3.971	4.126	4.874	4.661	4.212	4.590	5.232
Population	Million	699	715	732	750	769	789	811
Per capita supplies	Kg/year	5.68	5.77	6.66	6.21	5.48	5.82	6.45

Table VI. *Correlation coefficients (r) between different edible oil prices in India during 1970–71 to 1987–88*

	Coconut oil	Groundnut oil	Sesame oil	Mustard oil
Coconut oil	1.0000	0.9000**	0.8847**	0.8956**
Groundnut oil		1.0000	0.9832**	0.9550**
Sesame oil			1.0000	0.9628**
Mustard oil				1.0000

** Significant at 0.01 level

Table VII. *Regression equations for predicting average wholesale prices of major edible oils in India (Rs./100 kg)*

Dep (y)	Index (x)	a	b	r^2
Coconut oil	G. nut oil	31.11	1.2923**	0.810**
	Ses. oil	-162.27	1.4147**	0.783**
	Mus. oil	-72.92	1.4441**	0.802**
G. nut oil	Coc. oil	193.25	0.6267**	0.810**
	Ses.oil	—149.81	1.0948**	0.967**
	Mus. oil	—32.16	1.0724**	0.912**
Ses. oil	Coc. oil	341.60	0.5533**	0.783**
	G. nut oil	170.86	0.8830**	0.967**
	Mus.oil	116.68	0.9709**	0.927**
Mus. oil	Coc. oil	253.00	0.5555**	0.802**
	G. nut oil	121.73	0.8505**	0.912**
	Ses. oil	—33.06	0.9548**	0.927**

** Significant at 0.001 level.

After observing the degree of relationship on the movement of one oil price with the other, an attempt was made to fit regression equations for predicting the average wholesale prices of one oil with the help of another oil price. Table VII shows the twelve regression equations for different combinations in order to predict the prices of one edible oil with any other three edible oils. It could be seen from this table that all the equations give good fit with r^2 ranging between 0.78 to 0.96 suggesting that a high percentage of variation in one oil price is explained by the other oil price.

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