



EXPORT PERFORMANCE OF TURMERIC IN INDIA

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Abstract: The present study entitled export performance of turmeric in India was carried out by using secondary data with objective to know growth rate, cuddy della instability index and NPC in the production, consumption, export of turmeric in India. The time series data was collected for the period 1995-2015 divided in to three periods i.e. period- I (1995-96 to 2004-05), period- II (2005-06 to 2014-15) and Period- III (overall 1995-96 to 2014-15). The overall study reveals that production and export quantity and export vale was registered significantly positive i.e. 4.33 per cent, 6.24 per cent and 15.04 per cent. Whereas, consumption was found non- significant. The highest instability was found in export value in overall period with 32.42 per cent. Indian turmeric experienced highest export advantage of more than 56 per cent during the year 2006-07. During the twenty years (1995-96 to 2014-15) of study period the level of domestic price related to international price was much lower, which facilitated export advantage, but except in the year 2002-03, 2009-10, 2012-13.

Key words: Export, turmeric, India.

Introduction

India is popularly known as the “Spice Bowl of the World” as a wide variety of spices with premium quality is grown in the country since ancient times. In Vedas, as early as 6000 BC, scruples evidences are available regarding various spices, their properties and utility. Among the commodities that were traded during that period, spices occupied a major portion due to their superior quality and diversity which attracted foreigners to India. According to the International Organization for Standardization (ISO), 65 spices are grown in India. The spices are grown throughout the country from tropical to temperate climate. India has the highest number of spice varieties in the world.

Turmeric is called as Golden Spice which is widely cultivated in different countries such as India, China, Myanmar, Nigeria, Bangladesh, Pakistan, Sri Lanka, Taiwan, Burma, Indonesia, etc. Among these countries, India occupies the first position in area with 178.47 thousand hectares and also in production with 846.25 thousand tonnes during 2015-16. In India, turmeric is grown in 18 states and Telangana, Andhra Pradesh, Tamil Nadu, Karnataka,

Orissa and West Bengal are the major turmeric-producing states. Turmeric, with its brilliant yellow colour, has been used as a dye, medicine, and flavouring since 600 BC. In 1280, Marco Polo described Turmeric as "a vegetable with the properties of saffron, yet it is not really saffron." Turmeric has been used medicinally throughout Asia to treat stomach and liver ailments. It also was used externally, to heal sores and as a cosmetic. Turmeric has been used for many centuries.

India is the leader in terms of production, consumption and export. During the year 2014-15, the production of turmeric is about 846250 tonnes and about 86000 tonnes (10.16%) of turmeric is exported with the value Rs.74,435 lakhs. India exports about 10 per cent of its turmeric per annum. The key export destination for Indian turmeric are Iran – 12 per cent, Bangladesh – 8.46 per cent, Malaysia – 6.87 per cent, SriLanka-5.62 per cent, USA – 5.48 per cent, UK – 4.14 per cent, Japan – 3.69 per cent and south Africa -2.92 per cent. All these countries together account for 62per cent of the India’s total exports. Remaining 38 per cent is

being shipped to Europe, North America, Central and Latin American Countries during 2014-15.

Objectives

1. To study the growth and instability in production, consumption, value and export of Turmeric in India.
2. To study the export competitiveness of Turmeric in India.

Methodology

This section analyses the impact of new economic policy on growth and instability and NPC in area, production, value, domestic consumption and export of turmeric and their respective values were collected from various publications, official records and web sources such as Hand Book of Statistics on the Indian Economy, India stat, India budget, Indian spice Board statistical News, Food and Agricultural Organization (FAO) of the United Nations etc. for the year 1995-96 to 204-15. For the purpose of comparison, the period of study has been sub-divided into two periods, i.e first period is (1995-96 to 2004-05) and second period is (2005-06 to 2014-15) and third is overall period (1995-96 to 2014-15).

Compound Growth Rate

To arrive at normal years, a simple average of estimates for twenty years from 1995-96 to 2014-15 have been taken. The normal year was considered as base year for estimating growth rates. By taking time as the independent variables and the area, production, productivity, consumption and export volume and their respective values of the turmeric as the dependent variables, the compound growth rates were estimated by using following regression equation.

$$Y=ab^t$$

Taking logarithms on both sides
 $\log Y = \log a + t \log b$

Where,

Y= Area/ production/ productivity/ export of Turmeric in India

a & b= parameters to be estimated

t= time period

Then compound growth rate were worked out by using following formula,

$$CGR = [\text{Antilog}(\log b) - 1] * 100$$

Instability Analysis

Instability index was used to examine the extent of variation and risk involved in the parameter such as domestic and international prices, area, production, productivity and export of turmeric. In order to study variability in import and export trade of Turmeric an instability index was used as a measure of variability. The coefficient of variation (CV) was calculated by using the following formula:

$$CV(\%) = \frac{\text{Standard deviation}}{\text{Mean}} * 100$$

The trend coefficient was tested for its significance. Whenever, the trend coefficient was found to be significant, the variation around the trend rather than variation around mean was used as an index of instability. The formula suggested by Cuddy and Della (1978) was used to complete the degree of variation around the trend.

$$\text{Instability index } (\%) = CV * \sqrt{1-R^2}$$

or

Where,
$$I_x = \frac{SD}{\bar{Y}} \sqrt{1-R^2} * 100$$

I_x = Instability index,

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\bar{Y} = Average value of the time series data

R^2 = Coefficient of multiple determination obtained from the time series

SD= Standard Deviation

The Instability Index refers to an average year-to-year per cent variation for a constant percentage trend.

Measuring Price Competitiveness through Nominal Protection Coefficient (NPC)

The price cum cost comparisons, at best, becomes preliminary indicators of competitiveness. Therefore exports competitiveness of agricultural

commodities has also been assessed by the computing the Nominal Protection Coefficient (NPC). NPC is the simplest of indices and measures the divergence of domestic price from international price and determines the degree of export and import competitiveness of the commodity in question.

The measure is given by

$$NPC = Pd / Pb$$

Where,

NPC= Nominal protection co-efficient of the commodity

pd = Domestic price of commodity

pb= World reference price (border price) of commodity, adjusted for transportation, handling and marketing expenses.

NPC greater than unity indicates effective incentives to producers compared to free trade scenario and NPC lower than 1 indicates that the commodity is not protected. Similarly, NPC<1 indicates that the commodity is exportable and possesses export competitiveness. NPC>1 indicates commodity is importable and the commodity is not export competitive. The expression 1-NPC reveals price wedge for exports, depending upon the sign. For example, if NPC = 0.75, it indicates, export

enjoys price advantage to the tune of 25 per cent (given 1- NPC multiplied by 100). On the other hand NPC= 1.20, it indicates export disadvantage to the tune of 20 per cent.

Result and Discussion

Growth and instability analysis on production, consumption, export and their respective values of turmeric in India

The result of growth, co-efficient of variation and instability in production, consumption and export quantity and their respective values of turmeric in India during the reference period are illustrated in the Table 1.

The Table 1 shows that the compound growth rate for production of Turmeric was estimated at 2.81 per cent for the first period of study, which was higher than the CGR estimated for the second period with 2.63 per cent but a less growth rate of 4.33 per cent was found for the overall study period. The overall estimated compound growth rate of production in India registered at 4.33 per cent per annum, which means the production increase annually by 4.33 per cent. The coefficient of variation in production under turmeric was estimated at 28.95 per cent over the study period.

Table 1: Growth and instability on production, consumption and export of turmeric in India

Particulars	Parameters	Growth and instability		
		Period I (1995-96 to 2004-05)	Period II (2005-06 to 2014-15)	Overall (1995-96 to 2014-15)
Production (In tonnes)	CGR (%)	2.81*	2.63	4.33***
	CV (%)	14.99	16.50	28.95
	Cuddy DellaInstability (%)	12.29	14.36	13.87
Consumption (in tonnes)	CGR (%)	2.75	2.21	4.19
	CV (%)	14.86	17.24	28.84
	Cuddy DellaInstability (%)	12.28	15.79	14.76
Export (In tonnes)	CGR (%)	4.00	7.90***	6.24***
	CV (%)	21.99	27.48	41.05
	Cuddy DellaInstability (%)	18.67	13.67	17.52
Export value (In Rs.)	CGR (%)	9.23**	23.03***	15.04***
	CV (%)	33.25	56.56	91.86
	Cuddy DellaInstability (%)	23.08	22.56	32.42

Note: ***, ** and * denoted at 1% 5% and 10% respectively.

In case of consumption of turmeric, the growth in India was estimated at 2.75 per cent for the first period of study, which was higher than the CGR estimated for the second period with 2.21 per cent but a less growth rate of 4.19 per cent was found for the overall study period. During the overall reference period for 20 years of the study, the co-efficient of variation in consumption under turmeric was estimated at 28.84 per cent level.

The Table 1 reveals that in case of export quantity, high instability found in overall period with 17.52 per cent than second period with 13.27 per cent but less than first period with 18.67 per cent. The export value shows high instability found in first period with 23.08 per cent than second period with 22.56 per cent but less than over all period with 32.42 per cent.

Regarding consumption high instability was found in the overall period with 14.76 per cent than in the first period with 12.28 per cent but less than second period with 15.79 per cent. The production shows high degree of instability in the overall period with 13.87 per cent than in the first period with 12.29 per cent but less than second period with 14.36 per cent under the study.

The growth rate of export of turmeric quantity in the first period (1995-96 to 2004-05) was estimated at 4.00 per cent per annum. In the second period (2005-06 to 2014-15) export has been

increased with a growth rate of 7.90 per cent per annum was obtained. However, growth has further declined to 6.24 per cent during overall study period. During the overall reference period for 20 years of the study, the co-efficient of variation in export under turmeric quantity was estimated at 17.52 per cent level and the Table 1 also inferred that there is a high degree's of variation in the parameter with a high growth rate under study.

In Table 1 view of the export value of turmeric during the first decade a positive and significant growth rates are observed i.e. 9.23 per cent at 5 per cent level of significance. Similarly the growth rates for exports values were increased to 23.03 per cent at 1 per cent level of significance. However growth has further declined to 15.04 per cent at 1 per cent level of significance during overall study period. During the overall reference period for 20 years of the study, the co-efficient of variation in export under turmeric value was estimated at 32.42 per cent level.

Thus the second hypothesis was accepted and there is positive export performance of turmeric with 6.24 and 15.04 per cent growth rate in quantity and value respectively during over all study period under study.

Exports competitiveness of turmeric in India

The competitiveness of turmeric in India is illustrated in the Table 2.

Table 2: Export competitiveness of turmeric in India (Rs. /kg)

Year	Domestic Price Pd (In Rs./kg)	Border price Pb (In Rs./kg)	NPC=(Pd/Pb)	1-NPC	1-NPC* 100
1995-1996	22.00	30.73	0.71	0.29	29
1996-1997	20.88	36.91	0.56	0.44	44
1997-1998	27.40	46.89	0.58	0.42	42
1998-1999	37.50	60.64	0.61	0.39	39
1999-2000	40.88	52.27	0.78	0.22	22
2000-2001	31.00	46.26	0.67	0.33	33
2001-2002	25.05	36.77	0.68	0.32	32
2002-2003	39.40	33.96	1.16	-0.16	-16
2003-2004	48.00	33.22	1.44	-0.44	-44
2004-2005	43.00	56.49	0.76	0.24	24
2005-2006	45.00	54.61	0.82	0.18	18
2006-2007	25.00	56.01	0.44	0.56	56

2007-2008	36.00	45.54	0.79	0.21	21
2008-2009	48.00	58.23	0.82	0.18	18
2009-2010	145.00	67.67	2.14	-1.14	-114
2010-2011	120.00	166.04	0.72	0.28	28
2011-2012	75.00	156.96	0.47	0.53	53
2012-2013	105.00	86.22	1.21	-0.21	-21
2013-2014	95.00	124.29	0.76	0.24	24
2014-2015	120.00	128.5	0.93	0.07	7

In the era of globalization, foreign trade policies have given high importance to boost up the agricultural exports. This has resulted in cutthroat competition among the world nations in the trade scenario of various commodities and in this connection a country's exports will be decided by its efficiency promotion and its price competitiveness. Under the WTO regime, the bilateral agreements between the countries as per which the trade of different items have taken place is of not much importance. Hence, examining the export competitiveness of the commodities of interest for a country is almost importance. In this context, the competitiveness of Indian turmeric export was examined using Nominal Protection Coefficient (NPC). The nominal protection coefficients of turmeric were estimated for the year 1995-96 to 2014-15 under exportable hypothesis and the results of the analysis are presented in Table 2.

Trade competitiveness basically depends upon the level of domestic prices relative to international prices. If domestic price of a commodity is lower than the net export price, the commodity is export competitive otherwise it is not.

From Table 2, it can be seen that since 1995 the domestic price of turmeric was lower than international price. Indian turmeric experienced highest export advantage of more than 56 per cent during the year 2006-07. During the twenty years (1995-96 to 2014-15) of study period the level of domestic price related to international price was much lower, which facilitated export advantages but except in 2002-04, 2009-10, 2012-13.

From the Table 2 it can also be revealed that Indian turmeric experienced a massive import advantages during the year 2002-04, 2009-10, 2012-

13. Nominal protection coefficient was found highest in the year 2009-10 at 2.14 levels i.e. domestic price of turmeric was much greater than international price and which was facilitate for import of turmeric in a massive quantity.

Conclusions

1. The growth rate in production and consumption was 4.33 and 4.19 per cent respectively over the study period.
2. Turmeric export was Rs.115.57 crores in 2000-01 which have increased to Rs. 744.35 crores in 2014-15. The turmeric export grew with a compound growth rate of 23.03per cent per annum.
3. The growth rate of export of turmeric quantity in the first period (1995-96 to 2004-05) was estimated at 4.00 per cent per annum. In the second period (2005-06-2014-15) export has been increased with a growth rate of 7.90 per cent per annum was obtained. However growth has further declined to 6.24 per cent per annum during overall study period.
4. The instability analysis of turmeric in India showed more stability during the first period in case of production and consumption was 12.29 per cent and 12.28 per cent. In case of export and export value a high stability was found in the second period with 13.67 per cent and 22.56 per cent. High instability found in export value in overall period with 32.42 per cent.
5. Indian turmeric experienced highest export advantage of more than 56 per cent during the year 2006-07. During the twenty years (1995-96 to 2014-15) of study period the level of domestic price related to international price was much

lower, which facilitated export advantages but except in 2002-04, 2009-10, 2012-13.

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