Journal of Agricultural Development and Policy, 2019
Volume 29, No. 1, 88-95

Growth Performance of Indian Spice Trade

Venkata Prasad Babu Anantha and Baljinder Kaur Sidana
Department of Economics & Sociology, Punjab Agricultural University, Ludhiana, Punjab, India

Abstract

The present study examined the growth performance of Indian spice trade from 1995-96 to 2016-17. Based on National Horticulture Mission (NHM), the total study period was divided into two periods i.e. pre-NHM and post-NHM periods. The compound growth rate and cuddy-della valle indices were employed to determine the growth rate and instability in trade of spices, respectively. The findings revealed that growth rate was the highest in spices as compared to agricultural commodities in both exports and imports. The spices share in exports increased from nearly four per cent to eight per cent of total agricultural exports during the span of 22 years. The study also found that chilli is the largest exporting spice and pepper is the largest importing spice in the country. Besides this, compound growth rate of almost all the major spices in India registered positive growth rate in both export and import coupled with higher instability indices in these commodities. Hence, appropriate measures may be taken to increase the spices exports from the country.

Key words: Trade, Instability, Spices

JEL Classification: Q17, O47, C46

Introduction

Since ancient times, India has been a major procurement centre for many spices as India is often referred as "Land of spices" owing to the cultivation of 75 varieties of spices in its agro-climatic regions, out of 109 shortlisted by ISO. In the beginning, ancient Egyptians and Romans controlled the spice trade but in the middle ages, Arabs dominated the spice trade. In order to diminish the monopoly of Arabs, the Europeans (which were the major importers of spices) have searched new maritime routes to India and South-east Asia. The visits of Vasco da Gama and Pedro Alvares Cabral to the Calicut, Kerala also accentuated the importance of Indian spices and established supremacy of Portugal over Indian spice trade. Indian spices have remarkable significance in the world market on account of its taste and flavour. They are not only meant for dietary purpose but also used for medicinal and curative purposes since time immemorial. But gradually, the artificial chemicals, flavours and medicines dominated the natural ones like spices on account of lesser cost, easy preparation and availability. However, the conscious consumers in the world are now switched towards natural ones like chilli, cumin, pepper, cardamom etc.,

Corresponding Author email: avprasadbabu484@gmail.com

instead of synthetic chemicals, drugs and medicines owing to the growing awareness of ill effects of artificial ones (Anonymous, 2011). India is not only the largest producer andconsumer but also the largest exporter of spices in the world. Hence, India is sometimes rightly called as the "Spice Hub of the World". Indian spices exports touched 10.28 lakh tonnes valued at US$2.78 billion during 2017-18. Mainly, chilli occupied the largest share (23.7%), followed by mint products (18%) and spice oils and oleoresins (14.8%) in terms of export value of total spices during 2017-18 (Spice Board of India, 2019). It necessitates the importance of processed and value added spices in the country as well as in the international market. But the haunting thing is that more than 90 percent of spices produced in our country is domestically consumed and the remaining is exported as raw and value added products. Yet, India is pioneer in export of spices and continued the monopoly of spices in the world market since time immemorial. In addition to this, some of the major exporting countries increased the spices cultivation in order to reap the benefits and now the competition in spice trade has risen to a remarkable level. On looking all these aspects, there is a need to focus on the growth and instability in export and import of major spices in India in order to know the present position of India and measures need to be taken to compete in the international market.

Data Sources and Methodology

The study was carried out on time series data of export and import of major spices from India during 1995-96 to 2016-17. The data was collected from secondary sources such as Spice Board of India and from other websites such as Indiaagristat.com, fao.org. in, nhb.gov.in. Based on National Horticulture Mission (NHM), the study period was divided into two periods namely pre-NHM and post-NHM periods i.e., 1995-96 to 2005-06 and 2006-07 to 2016-17 respectively. The major spices considered for the analysis include chilli, cumin, coriander, turmeric, pepper and processed products such as mint products and spice oils and oleoresins as it covers 80 per cent of export value of total spices from India. The growth and instability of major spices in these two periods and the period as a whole were critically examined by employing suitable tools such as compound growth rate and Cuddy-Della Valle index respectively.

Growth rate analysis

To estimate the growth rate in export and import of major spices, compound growth rates were calculated by fitting exponential growth function of the form,

$Y_t = ab^t e^u$

Log transformation of the above function is

$\ln Y_t = \ln a + t (\ln b) + u$

$\ln b = \ln (1+r)$

$b = 1+r, \quad r = b - 1$

$r = [\text{Antilog} (\ln b) - 1]$

The compound growth rates were calculated by using the formula

$$CGR (\%) = r \times 100$$

Where,

Y_t = export quantity or value/ import quantity or value of major spices for the year 't'

t = Time variable,

a = Constant, u = Error term

ln b = Regression coefficient of time, r = CGR

The significance of these compound growth rates was tested at 1 per cent, 5 per

cent and 10 per cent level of significance by using student's t-test. If the calculated t-value was greater than table t-value then the growth rate was significant and vice versa.

Instability analysis

For calculating instability, Co-efficient of Variation (CV) can be used. But, CV does not describe exactly how the trend value inherit in the time series data. Hence, Cuddy-Della Valle (1978) suggested an instability index, which explains clearly the trend value inherited in the time series data. Hence, this index was used because it is a better measure of instability.

Instability Index = CV x $(1-\bar{R}^2)^{0.5}$

CV = (Standard deviation/ Mean) x 100

Where,

CV = Coefficient of Variation

$\bar{R}^2$ = Co-efficient of multiple determination adjusted from trend value

Results and Discussion

Before stepping into the growth and instability in export and import of spices, the status of spices sector in agricultural trade has to be examined critically in order to know the impact of spices in agricultural trade. At present, spices account for nearly eight per cent of total agricultural export earnings during 2016-17 (Table 1). Positively, the share of spices in agriculture export earnings has become doubled i.e., from four per cent to eight per cent during 1995-2016.The growth rate in spices exports was 15.17 per cent per annum during the overall period. Moreover, the growth rate in spices exports was higher than agricultural commodity exports in all the study periods.In case of import, the spices accounts for 2.87 per cent of total agricultural imports during 2016-17. The growth rate of spices import was 17.48 per cent per annum during the overall period. Besides this, the highest growth rate was registered in spices imports compared to agricultural imports during both pre-NHM and post-NHM periods. The highest growth rate in spices exports and imports was mainly due to the raising demand of spices in the national and international markets. It earmarks that the spices have a remarkable importance in the national and international markets .

Among the spices export, chilli occupied the largest share (29%), followed by mint products (14%) and spice oils and oleoresins (13%) during 2016-17 (Figure 1). The other spices from which India has got the highest export earnings were cumin, pepper, turmeric and coriander during 2016-17. Similarly, the shares of selected spices import from total spices import during 2016-17 have been presented in the figure 2. Among the spices imports, pepper registered largest share (54%), followed by processed products (24%) and coriander (11%) during 2016-17.

Growth and instability in export of Indian spices

The growth rate and instability in export quantity and export value of the major spices in India has been presented in theTable 2. The results revealed that all the major spices except pepper have registered positive growth rate in export quantity and export value during all the study periods. The negative growth rate in pepper export was mainly due to the decrease of pepper production in the major producing states of pepper. Besides this, another reason is increase of pepper export from competing countries in the world market. The highest growth rate in export quantity

Table 1: Spices share in agriculture trade: 1995-96 to 2016-17 (Rs. in Crore)

Year	Exports			Imports		
	Spices	Agricultural commodities	% age share of spices	Spices	Agricultural commodities	% age share of spices
Pre-NHM Period						
1995-96	804.43	20397.74	3.94	–	7209.5	–
2000-01	1833.52	28657.37	6.40	255	12931	1.97
2005-06	2627.62	49216.96	5.34	539	23640	2.28
Post-NHM Period						
2006-07	3575.75	62411.42	5.73	789	32018	2.46
2011-12	9783.42	182801	5.35	2094	80550	2.60
2016-17	17664.61	226651.9	7.79	4607	160568	2.87
Trends in growth rate (% per annum)						
Pre-NHM Period	9.33***	8.10***	–	12.11**	7.55***	–
Post-NHM Period	18.29***	16.07***	–	24.30***	19.24***	–
Overall Period	**15.17*****	**14.48*****	**–**	**17.48*****	**15.61*****	**–**

*Note: ** and *** indicate significance at 5 and 1 per cent level respectively and for import, data has taken from 1998 onwards to calculate the compound growth rate in pre-NHM period and overall period*

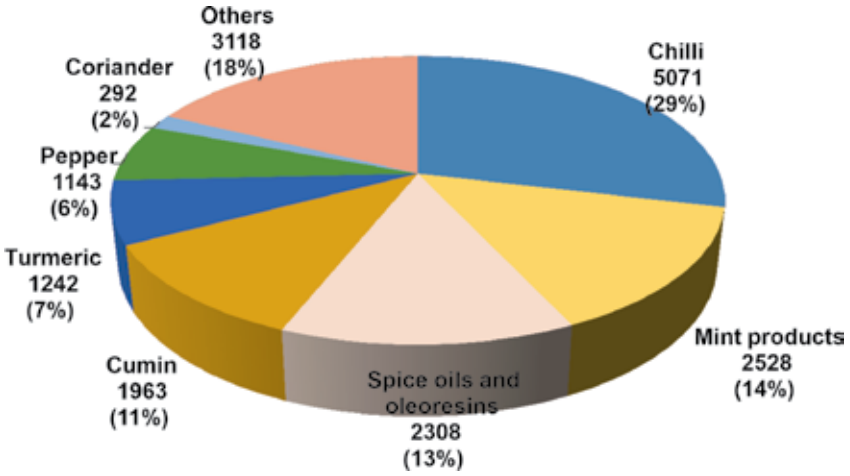

Fig 1: Share of export value of major spices in India during 2016-17

was found in cumin (16.37%), followed by mint products (12.77%) and chilli (11.4%) during the overall period. These results were in line with the findings of Boyal and Mehra (2016) in cumin. In case of export value, cumin registered highest growth rate of 22.9 per cent, followed by chilli (18.55%) and turmeric (15.43%) during the overall period. these results were in par with the findings of Yogesh and Mokshapathy (2014), who found that among the spices, cumin recorded the highest growth rate during the period

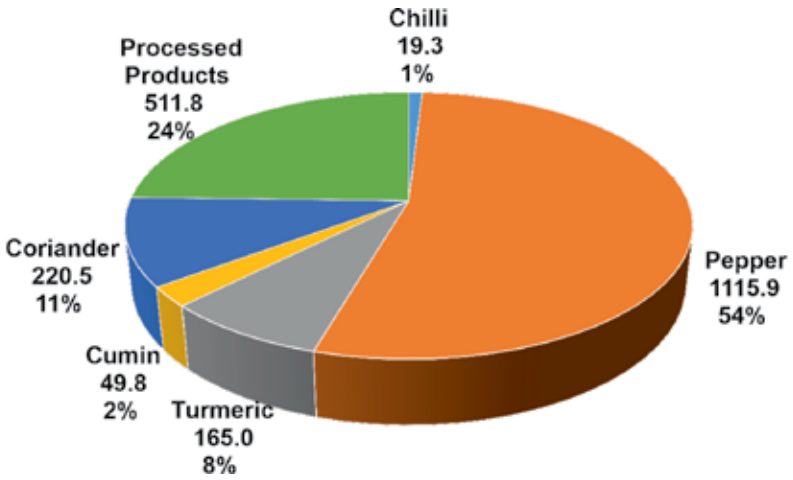

Fig 2: Share of import value of major spices in India during 2016-17

2005-06 to 2012-13. Apart from this, post-NHM period recorded superior growth rate over pre-NHM period in export quantity and export value of almost all the major spices. Moreover, post-NHM period recorded as the most stable period in terms of export value in all the major spices and total spices compared to pre-NHM period. These figures highlighted the impact of National Horticultural Mission, due to which growth rate has increased in all the spices. Also, foreign trade policy 2004-2009 had provisions for Special Agricultural Produce scheme which aims to promote export of spices through duty credit. However, instability was also found high in the spices as marked by the cuddy-dellavalle indices. The highest instability in export quantity and export value was found in cumin, pepper and mint products in the overall period. Similar findings were also found by Boyal and Mehra (2016) in cumin. The highest instability in the aforementioned spices was mainly due to the larger changes in export quantity and export value during the study period. Positively, all the major spices recorded stability in export value during post-NHM period compared to pre-NHM period. Moreover, stability was also observed in export quantity in all the major spices except cumin and processed spices during post-NHM period over pre-NHM period. Further, total spices registered stability in both export quantity and export value after National Horticulture Mission.

Growth and instability in Indian spices import

The growth rate and instability in import quantity and import value of the major spices in India have been presented in the table 3. The study found that all the major spices and total spices as a whole recorded positive growth rate in import value during the overall period. Highest growth rate in import value was registered in turmeric (43.9%), followed by coriander (40.68%) and processed products (24.39%) during the overall period. But in case of import quantity, coriander showed highest growth rate of 31.59 per cent per annum, followed by turmeric (28.29%) and processed products (11.64%). Besides this, coriander recorded highest growth rate in import quantity and value during both pre-NHM and post-NHM periods. Yogesh and Mokshapathy (2014) also supported the highest growth

Table 2: Growth and instability in export of major spices in India, 1995-96 to 2016-17

(Per cent)

Particulars	Pre-NHM Period		Post-NHM Period		Overall Period	
	Export quantity	Export value	Export quantity	Export value	Export quantity	Export value
Compound Annual Growth Rate						
Chilli	9.08***	9.70***	9.43***	19.68***	11.40***	18.55***
Cumin	7.81	14.15**	18.44***	25.38***	16.37***	22.90***
Pepper	-9.39***	-11.90**	-3.47	17.24***	-2.40**	6.48**
Turmeric	5.29***	10.05***	8.86***	21.42***	6.47***	15.43***
Coriander	6.50**	10.00***	4.43*	15.77***	5.90***	14.29***
Mint Products	25.59***	-21.89*	3.05*	11.36***	12.77***	4.83
Spice oils & Oleoresins	12.45***	13.24***	7.93***	17.93***	8.62***	13.51***
Total spices	4.49***	9.33***	9.95***	18.29***	8.08***	15.17***
Cuddy-Della Valle Index						
Chilli	15.85	97.91	6.96	6.49	11.99	21.18
Cumin	16.48	52.45	27.87	21.44	39.21	37.53
Pepper	39.69	40.32	21.98	28.41	31.07	63.80
Turmeric	47.76	39.13	13.25	21.73	15.21	28.69
Coriander	24.18	53.62	21.83	28.70	22.92	29.04
Mint Products	23.41	142.67	13.79	25.47	25.47	126.14
Spice oils & Oleoresins	5.07	15.87	8.30	8.77	9.90	17.59
Total spices	**9.43**	**12.89**	**6.21**	**11.27**	**12.07**	**19.06**

*Note: *, ** and *** indicate significance at 10, 5 and 1 per cent level respectively*

rate of coriander in the period of 2004-05 to 2012-13. However, negative growth rate was registered in processed products in the pre-NHM period. But after National Horticulture Mission, positive growth rate was registered indicating the demand of processed products not only in the international market but also in the domestic markets as well. Apart from this, total spices recorded 5.11 per cent growth rate in import quantity and 17.48 per cent growth rate in import value during the overall period. It indicates that still our country has the potential to produce and increase the exports from the country. However, instability was also found high in the spices as marked by the cuddy-dellavalle indices. Instability in cumin was highest during the overall period and also in the two sub-periods. . Turmeric and coriander appeared as the most instable commodities next to cumin in the study period.

Conclusion and Policy Implications

It can be inferred from the above discussion

Table 3: Growth and instability in import of major spices in India, 1998-99 to 2016-17

(Per cent)

Particulars	Pre-NHM Period		Post-NHM Period		Overall Period	
	Import quantity	Import value	Import quantity	Import value	Import quantity	Import value
Compound Annual Growth Rate						
Chilli	4.58	2.15	-5.65	8.52	-2.32	5.98***
Cumin	-2.8	1.67	0.83	8.26	-5.15	2.91
Pepper	33.82***	13.32**	4.13**	26.52***	8.79***	20.34***
Turmeric	76.94***	96.84**	12.30*	28.48***	28.29***	43.90***
Coriander	65.72**	81.36***	37.74***	42.33***	31.59***	40.68***
Processed Products	-8.33**	-4.8	20.03***	33.30***	11.64***	24.39***
Total spices	9.81*	12.11**	6.71***	24.30***	5.11***	17.48***
Cuddy-Della Valle Index						
Chilli	44.13	48.63	53.72	49.48	48.67	50.23
Cumin	55.57	58.71	84.31	100.84	66.04	98.48
Pepper	23.07	21.00	13.26	15.67	26.01	24.40
Turmeric	53.24	70.34	56.37	48.92	52.84	56.25
Coriander	41.62	36.01	78.03	51.29	88.61	57.77
Processed Products	15.79	24.39	21.19	26.07	42.79	46.76
Total spices	**22.86**	**18.06**	**18.11**	**14.32**	**21.21**	**24.63**

Note*: *, ** and *** indicate significance at 10, 5 and 1 per cent level respectively and for import, data has taken from 1998 onwards to calculate the compound growth rate in pre-NHM period and overall period*

that spices account for nearly eight per cent of total agricultural export earnings and 2.87 per cent of total agriculture imports during 2016-17. The growth rate in both exports and imports was highest in spices compared to agriculture in the overall study period. Chilli occupied the largest share (29%) in case of export and pepper occupied the largest share (54%) in case of import. Besides this, all the major spices except pepper have registered positive growth rate in both export quantity and export value during the study period. Moreover, stability was also observed in both export quantity and export value in all the major spices and total spices except cumin and processed spices in export quantity during post-NHM period over pre-NHM period. Pertains to imports, all the major spices except chilli and cumin recorded positive and significant growth rate in both import quantity and import value during the overall period. Turmeric and coriander recorded highest growth rate coupled with highest instability in all the study periods. Besides this, cumin recorded as the highest instable spice among all the major spices in the overall period.

References

Anonymous 2011.Analysis of export of spices from India to Middle East.Gulf cooperation council.

Cuddy J D A & Della Valle P A 1978. Measuring the instability of time series data. *Oxford Bulletin Economics and Statistics* **40**: 79-85.

Babu P H 2017. Export performance of spices in India: an empirical study. *Parikalpana KIIT J Management* **13**: 66-73.

Lamba S, Midha K and Agrawal S 2015. Export of spices. *International Journal of Recent Research in Commerce Economics and Management* **2**: 256-66.

Yogesh M S and Mokshapathy S 2014. Growth of Indian export and import of spices. *International Journal Humanities Arts Medicine and Sciences* **2**: 41-46.

Boyal V K and Mehra J 2016.Growth rates of major seed spices in Rajasthan and export performance from India. *International Journal of Seed Spices* **6**: 92-95.

Received: January 21, 2019, Accepted: June 22, 2019