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India's rice export: An economic analysis

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Abstract

In the world, rice dominates overall crop production and overall food consumption in rice-producing Asia. India is the second largest producer of rice after china. The study explores the export of Rice in India is selected for the study and to study the performance of rice area, production, and productivity of rice and to work out the export competitiveness of rice in India.

The data was collected from the secondary sources i.e India-Agri-Stat official websites, APEDA, FAO and Government of India for the period 1992-93 to 2016-17. The period of study has been divided into two periods, period I (1992-93 to 2001-2002), period II (2002-03 to 2016-17) and overall period (1992-93 to 2016-17).

The following specific objectives were considered the study:

1. To study the export performance of rice in India.
2. To work out the export competitiveness of rice in India.

While studying growth in export, period II and overall period showed positive and highly significant growth with highest growth during period II of export value at 19.77 per cent. Highest CV was observed during overall study of export value at 112.84 per cent with highest instability during period I of export quantity at 59.03 per cent. Saudi Arabia and Kuwait were observed to be highly stable destination countries for the export of rice from India. The results of growth, is a positive and significant growth in export quantity and value of Rice from India.

Indian rice experienced highest export advantage for rice export it is observed that, during the year 2010-11 at 28.20 per cent with the NPC of 0.72 followed by the year. Indian Rice experienced the lowest export advantage at 75.89 per cent with the NPC 0.24 during the year 2009-10 as the domestic price of Rice was very low as compared to the than the international price. It is concluded that, more or less fluctuations within the gulf countries because NPC increasing means there was decrease in international price in the world market compare to the domestic market.

Keywords: India's rice, economic, export

Introduction

Worldwide, India stands first in rice area and second in rice production, after China. It contributes 21.5 per cent of global rice production. Within the country, rice occupies one-quarter of the total cropped area, contributes about 40 to 43 per cent of total foodgrain production and continues to play a vital role in the national food and livelihood security system.

In 2017, Basmati rice became the number one export commodity of India. Basmati rice exports from India increased to Rs.8,168 crore during the April-June 2016-17 as compared to Rs.6,196 crore in the same quarter 2015-16, as per the estimates by Agricultural & Processed Food Products Export Development Authority (APEDA). India was the largest exporter of rice in 2016-17 followed by Thailand and Vietnam and Pakistan. India exports rice to large number of countries but major importers are a few countries. Thus, India has a unique opportunity to increase its export of agriculture products particularly in the free trade regime (rules) under WTO and provisions under Agreement on Agriculture (AOA). There is need to study the export and factors which are responsible for to enhance the exports from the country. Looking into the scope and importance of this crop for the Indian economy and their problems, in export front, the study has undertaken with to study the export performance & to work out the export Competitiveness of rice in India.

Methodology

The study was based on the secondary data, collected for the period of 25 years from 1992-93 to 2016-17. The data was collected from various government publications, Food and Agriculture Organization, Rome (FAO website), APEDA, AGMARKNET, etc. For the

purpose of comparison, the period of study was divided into two sub periods, Period I (from 1992-93 to 2001-02), Period II and overall period (1992-93 to 2016-17).

Growth and instability indices

The compound growth rates were estimated by using following exponential growth function.

$$Y = ab^t$$

Where,

Y = dependent variable for which the growth rate was estimated

a and b = parameters of exponential regression

t = Time variable

$$\text{Compound growth rate} = \text{antilog}(\log b - 1) \times 100$$

Significance of growth rate was judged by student's 't' test.

Coefficient of variation and instability

In order to study the variability in the export of rice, coefficient of variation and "Cuddy and Della's instability index" were used as the measures of variability.

Coefficient of variation (CV)

$$C.V. (\%) = \frac{\sigma}{\bar{x}} \times 100$$

Where, C.V. = Coefficient of variation

σ = Standard deviation

\bar{x} = Arithmetic mean

Cuddy and Della Index

Coefficient of variation defines above does not take trend components prevailing in time series data. In order to have a meaningful measure of instability the formula suggested by

Cuddy and Della (1978) was used to compute the degree of variation around the trend. The formula suggested by Cuddy and Della (1978) was used to compute the degree of variation around the trend.

$$\text{Index of Instability} = \frac{\text{standard deviation}}{\text{Mean}} \times 100 \times \sqrt{1 - R^2}$$

Where,

R^2 is the coefficient of determination of the trend equation (linear or exponential) yielding highest R^2 .

Export competitiveness

Competitiveness is the objective of a nation to grown, successfully to maintain the share world trade. The export competitiveness was studied using:

$$NPC = \frac{P_d}{P_b}$$

Where,

NPC = Nominal Protection Coefficient

P_d = Domestic Price of Commodity

p_b = Border price or reference price

When there is no protection given to the commodity its domestic price is equal to its border price and NPC is equal to 1.

NPC more than 1 indicates that protection is given to the commodity and therefore trade liberalization would reduce the domestic price; conversely NPC is less than 1 indicates that commodity is taxed and liberalization would raise the domestic price. (Tamanna Chaturvedi and Chaurasia, 1999).

Result and Discussion

Export Performance of rice in India

The percentage share of agricultural export with respect to national export and the per cent share of rice export with respect to agricultural export is shown and studied in Table.

Table 1: India's share of agricultural export to national export and total rice export to agricultural export (value in crore)

Year	Total national export	Total agricultural export	Total rice export	% share of agricultural export in total national export	% share of rice export in total agricultural export
1992-93	53688.26	9040.30	897.99	16.84	9.93
1993-94	69748.85	12586.55	1286.71	18.05	10.22
1994-95	82673.40	13222.76	1205.79	15.99	9.12
1995-96	106353.35	20397.74	4568.08	19.18	22.40
1996-97	118817.32	24161.29	3172.36	20.33	13.13
1997-98	130100.64	24843.45	3371.00	19.10	13.57
1998-99	139751.77	25510.64	6280.75	18.25	24.62
1999-2000	1590952.00	25313.66	3125.92	1.59	12.35
2000-01	201356.45	28657.37	2943.42	14.23	10.27
2001-02	209017.97	29728.61	3173.16	14.22	10.67
2002-03	255137.28	34653.94	5888.31	13.58	16.99
2003-04	293366.75	37266.52	4167.84	12.70	11.18
2004-05	375339.53	41602.65	6768.92	11.08	16.27
2005-06	456417.86	49216.96	6221.26	10.78	12.64
2006-07	571779.28	62411.42	7035.89	10.92	11.27
2007-08	655863.52	79039.72	11754.38	12.05	14.87
2008-09	840755.06	85951.67	11164.40	10.22	12.99
2009-10	845533.64	89341.33	11254.43	10.57	12.60
2010-11	1142921.92	117483.61	11585.92	10.28	9.86
2011-12	1465959.39	187609.33	24108.72	12.80	12.85
2012-13	1634318.84	232041.11	33858.20	14.20	14.59

2013-14	1905011.09	262778.96	47049.92	13.79	17.90
2014-15	1896445.47	239681.04	48026.43	12.64	20.04
2015-16	1716378.05	215395.68	38201.99	12.55	17.74
2016-17	1849428.80	227554.07	38442.79	12.30	16.89
CGR	16.06***	14.71***	16.01***		

Note: ***, **, * showed Significance at 1%, 5% and 10% level of probability respectively.

(Source: www.indiaagristat.com)

The percentage share of agricultural export with respect to national export is shown in table 1. Though the export of agricultural commodities has increased by many folds, the share of agricultural export in national export has decreased from 16.84 per cent during 1992-93 to 12.30 per cent during 2016-17. During the initial period of study, i.e., in Period I, the share of agricultural export decreased in 1999-2000 to 1.59 per cent and again increased in next year. From the start of Period II of study the share of agricultural export began to decrease from 13.58 per cent in 2002-03 till 10.22 percent in 2008-09. The share increased to 14.20 per cent in 2012-13 and again decreased to 12.30 during 2016-17. It needs attention of policy makers to promote and encourage

agricultural export from the country to increase agricultural prosperity and sound trade balance.

The results of share of total rice export was 9.93 per cent, during 1992-93 increased to 16.89 per cent during 2016-17 with the fluctuation in export quantity and value.

Thus a serious attention of policy makers is required in order to encourage and uplift the export of spices export stabilizing the export value and quantity.

Growth and instability of export of Rice in India

The growth and instability of rice exported from India were studied in the table 2

Table 2: Growth, coefficient of variation and instability analysis on export of Rice in India

Period	Parameters	Export quantity (MT)	Export value (Rs. Lacs)	Value per unit quantity (Rs./ton)
Period I	CGR	13.51	14.91**	1.23
	CV (%)	69.18	54.40	18.98
	Instability index	59.03	40.18	18.66
Period II	CGR	8.58***	19.77***	10.30***
	CV (%)	54.12	79.51	47.41
	Instability index	42.44	24.85	28.54
Overall period	CGR	9.49***	16.01***	5.95***
	CV (%)	73.85	112.84	56.69
	Instability index	45.84	36.06	34.56

Note: ***, **, * showed Significance at 1%, 5% and 10% level of probability respectively.

The results are indicated that, the growth rate for export quantity during period I study of period I revealed that, there was a positive but insignificant growth in export quantity of rice in India with 14.91 per cent. Whereas during period II and overall period positive and highly significant growth was observed in the quantity of rice exported from India with the growth rates of 8.58 and 9.49 per cent respectively.

The highest coefficient was observed 73.95 per cent in overall period. Period II showed least CV of all period at 54.12 per cent. Period I showed CV at 69.18 per cent. The coefficient of variation showed higher criteria for export quantity of Rice. The instability observed was highest in period I i.e. 59.03 per cent followed by period II i.e. 42.44 per cent. The overall study showed less instability at 45.84 per cent. It means there are fluctuations in the export of rice from India over the studied period of time. The growth of export is still positive and highly significant regardless of the fluctuations in the rice market.

The compound growth rate for export value during period I was significant with 14.91 per cent growth. The growth was observed to be positive and fairly significant. Period II showed highly significant and positive growth at 19.77 per cent. The growth for overall period of study for export value of rice was observed to be positive and highly significant with 16.01 per cent.

The coefficient of variation results was observed that, during period I, there were less fluctuation in the export value of rice than that of overall period. The period II showed, the fluctuations were increased in the export value of rice during

the second period of study. Higher fluctuations were observed during the overall period of study than both period I and period II.

Instability in the export value of rice during the period 1992-93 to 2016-17 (overall period) were observed to be 36.06. Instability was highest during the period I (1992-93 to 2001-02) with 40.18 per cent. The instability during period II was observed 24.85 per cent. It means there were fluctuations in the export value of rice during the overall study period.

The value per units of quantity, the period II and overall period showed positive and highly significant growth in the per unit value of exported rice. Whereas, period I showed positive but insignificant growth of rice export at 1.23 per cent of growth. Period II showed highest growth with 10.30 per cent and significant. And overall period study was observed that, the growth at 5.95 per cent.

CV was observed, during the overall period of study there were more or less fluctuations in the per unit value of rice exported from India over a period of time. The instability in the per unit value of rice export was very low fluctuations during the period I of the study with 18.66 per cent. Overall period showed relatively higher instability and fluctuation during the period of 1992-93 to 2016-17. But the fluctuation were relatively less than the fluctuations observed in export quantity and value.

The above study conclude that, there was a positive and highly significant growth in the export quantity and export value of rice with more or less fluctuations over the period of time during 1992-93 to 2016-17.

Table 3: Country wise growth and instability of export quantity of rice in India (in million tonnes)

Period	Parameters	Saudi Arabia	United Arab Emirates	Kuwait	Iran	Yemen Republic	other countries	total export of rice
Period I	CGR	9.63***	-0.41	10.32**	-11.17	117.66***	19.99	13.51
	CV	28.92	42.31	37.41	81.60	83.82	92.84	69.18
	Instability index	13.95	42.30	27.74	79.90	53.27	79.69	59.03
Period II	CGR	4.66***	14.18***	8.39***	60.82***	13.68***	7.39	8.58**
	CV	27.28	56.11	34.64	108.30	62.55	62.30	54.12
	Instability index	19.39	30.63	16.10	46.38	38.28	59.18	42.44
Overall Period	CGR	4.76***	13.43***	8.38***	21.61***	28.71***	9.77***	9.49***
	CV	37.19	90.19	55.67	149.81	94.24	81.91	73.85
	Instability index	18.96	40.35	21.67	115.89	62.15	66.36	45.84

Note: ***, ** & * showed Significance at 1%, 5% and 10% level of probability respectively.

The table 3. shows that, the period II and overall period was positive and highly significant growth in the total quantity of exported rice. Iran showed highest growth rate during second period of study with 60.82 followed by United Arab Emirates, Yemen Republic, Kuwait and Saudi Arabia with growth rate of 14.18, 13.68, 8.39 and 4.66 per cent respectively. Whereas, overall period indicates that the highest growth rate in Yemen Republic (28.71 %) followed by Iran and United Arab Emirates i.e. 21.61 and 13.43 per cent respectively. Overall study showed positive but highly significant growth of total rice export at 9.49 per cent of growth and negative growth indicates in the country of Iran and United Arab Emirates i.e. 11.17 and 0.41 per cent respectively.

The highest CV was observed during the overall period in Iran with 149.81 per cent followed by Yemen Republic, UAE, Kuwait and Saudi Arabia with 94.24, 90.19, 55.67 and 37.19 per cent respectively. Highest instability was observed in Iran with 115.89 per cent and least instability was observed in

Saudi Arabia followed by Kuwait with 18.96 and 21.67 per cent respectively.

The result of Saudi Arabia and Kuwait showed positive and highly significant growth with the least fluctuations in the export market with respect to export quantity at 1 per cent level of significance. Hence, they showed more stable export destinations. UAE, Yemen republic and Iran also showed positive and highly significant growth rate during the overall study period with more or less fluctuations. The other countries showed growth of 9.77 per cent with great fluctuations. However, these are the less stable countries with respect to export quantity of rice. CV of overall study of other countries was observed 81.91 per cent with the instability of 66.36 per cent.

Growth and instability analysis of country-wise export value of rice in India

Table 4: Country wise growth and instability of export value of rice in India (In lacs rupees)

Period	Parameters	Saudi Arabia	United Arab Emirates	Kuwait	Iran	Yemen Republic	other countries	total export of rice
Period I	CGR	13.14***	1.43	13.63***	-8.09	115.93***	21.62	14.91**
	CV	40.03	27.79	45.00	79.27	79.48	80.41	54.40
	Instability index	20.51	27.54	26.05	78.42	44.62	64.01	40.18
Period II	CGR	13.92***	24.93***	19.23***	83.65***	25.72***	18.23	19.77***
	CV	104.67	117.06	110.12	180.41	143.53	135.12	125.83
	Instability index	36.33	57.21	40.80	70.63	46.33	90.36	39.32
Overall Period	CGR	11.25***	20.34***	15.29***	34.30***	37.68***	16.11***	16.01***
	CV	86.21	117.45	101.35	188.45	145.87	125.57	117.34
	Instability index	24.95	45.99	29.64	124.77	72.36	68.27	37.50

Note: ***, ** & * showed Significance at 1%, 5% and 10% level of probability respectively.

As shown in the Table 4., during the study of overall period, maximum growth rate in Export value of Rice was observed in Yemen republic with 37.68 per cent followed by Iran, UAE, Kuwait and Saudi Arabia with 34.30, 20.34, 15.29 and 11.25 respectively. Highest CV and instability was observed in Iran with 188.45 and 144.77 per cent respectively. Least instability was observed in Saudi Arabia followed by Kuwait with 86.21 and 24.95 per cent respectively. Similarly, the CV was very less among all countries in Saudi Arabia and Kuwait with 86.21 and 101.35 per cent respectively.

Total export value for period I and period II was observed positive and significant with 14.91 and 19.77 per cent respectively. Studied countries showed positive and highly

significant growth during second period with highest growth rate, CV and instability in Iran with 83.65 per cent, 180.41 per cent 70.63 per cent respectively.

The study concluded that, Saudi Arabia and Kuwait showed the positive and highly significant growth rate with the least variations and instability (i.e. countries with least market fluctuation) with respect to the export value of rice. Thus, the countries like Saudi Arabia, and Kuwait would be the stable importers of Indian Rice in the future, and countries like UAE, Iran and Yemen republic and other minor countries were least stable importers.

Export competitiveness of rice in India

Table 5: Export competitiveness of Rice in India

Year	India's Domestic Price (India) in Rs./ton Pd	Border Price (International) in Rs./ton Pb	NPC= Pd/Pb	1-NPC	(1-NPC) *100
1992-93	5734.40	10812.36	0.53	0.47	46.96
1993-94	6313.90	13100.20	0.48	0.52	51.80
1994-95	7082.00	11466.92	0.62	0.38	38.24
1995-96	7538.50	12603.06	0.60	0.40	40.19
1996-97	8288.30	13629.67	0.61	0.39	39.19
1997-98	8513.30	12897.05	0.66	0.34	33.99
1998-99	9325.90	13871.91	0.67	0.33	32.77
1999-2000	10009.80	13996.36	0.72	0.28	28.48
2000-01	9700.50	13847.65	0.70	0.30	29.95
2001-02	9351.80	13978.61	0.67	0.33	33.10
2002-03	9423.10	14461.96	0.65	0.35	34.84
2003-04	9800.40	15249.17	0.64	0.36	35.73
2004-05	10113.30	15922.24	0.64	0.36	36.48
2005-06	10414.80	16700.54	0.62	0.38	37.64
2006-07	10998.40	18249.60	0.60	0.40	39.73
2007-08	12169.80	18320.16	0.66	0.34	33.57
2008-09	14933.40	25223.73	0.59	0.41	40.80
2009-10	6029.80	25005.15	0.24	0.76	75.89
2010-11	17656.00	24589.58	0.72	0.28	28.20
2011-12	18024.10	28109.36	0.64	0.36	35.88
2012-13	21158.30	31790.69	0.67	0.33	33.44
2013-14	24034.80	34941.11	0.69	0.31	31.21
2014-15	25276.50	36127.44	0.70	0.30	30.04
2015-16	25110.60	39659.51	0.63	0.37	36.68
2016-17	26367.50	51655.64	0.51	0.49	48.96

For assessing the market competitiveness of Rice, Nominal Protection Coefficient (N.P.C.) was used during the period of study to measure the degree of protection to the domestically produced commodity.

Trade competitiveness basically depends upon the level of domestic prices relative to international prices. If domestic price of the commodity is lower than the net export price, the commodity is export competitive otherwise not. The nominal protection coefficients of rice was calculated for the year 1992-93 to 2016-17 under exportable hypothesis and the results of the analysis were presented in table 5.

In table 5. observed that the highest export advantage for rice export was observed during the year 2010-11 at 28.20 per cent with the NPC of 0.72 followed by the year. Indian Rice experienced the lowest export advantage at 75.89 per cent with the NPC 0.24 during the year 2009-10 as the domestic price of Rice was very low as compared to the than the international price.

The results of moderate export competitiveness is observed with more or less fluctuations within the gulf countries importing rice from India rather than the SAARC countries, European countries, and other countries throughout the world. Hence, there is a scope to increase the export of rice from India to the countries other than Gulf countries. There was scope to increase the export of Rice with the highest advantage of 75.89 per cent during the overall study period.

The overall analysis was concluded Rice as a promising agricultural commodity for the purpose of export although the quantity of rice exported is reducing by each passing year. More than 25 per cent of the rice exported from India was found to be exported to the major gulf countries viz., Saudi Arabia, United Arab Emirates, Iran, Kuwait, Yemen Republic, etc. during the year 2016-17 which was 56.71 per cent during the year 1992-93. The monopoly market is observed while studying the market share and concentration,

showing the less diversification of the rice export. There is also a need to improve the export competitiveness of Rice export, as the commodity is observed to be least protected and have less comparative advantage for export. Therefore, relevant strategies should be checked out to promote its export in not only the gulf countries but also the SAARC countries and the other part of the world.

Conclusions

- The growth rate of rice export quantity and value of export in India found to be significant during overall period and was positive (i.e. 9.49 and 16.01 per cent respectively).
- There was more variation in the export quantity and export value of rice during the overall period since 1992-93 till 2016-17.
- There was an increase in trend in export quantity; export value of rice during overall period was positive and significant.
- Indian Rice experienced the lowest export advantage at 75.89 per cent with the NPC 0.24 during the year 2009-10 as the domestic price of Rice was very low as compared to the than the international price.
- The results of moderate export competitiveness is concluded that more or less fluctuations within the gulf countries because NPC increasing means there was decrease in international price in the world market compare to the domestic market.

References

1. Adhikari A, Sekhon MK, Manjeet Kaur. Export of Rice from India: Performance and Determinants. Agril. Econ. Research Reviews. 2016; 29(1):135-150.
2. FAO. Trade Yearbook (Various issues). Food and Agriculture Organization, Rome.

3. Maity S, Tanushree Dey. India's Rice Export: An Analysis of Growth and Instability. *International Journal of Social Science & Interdisciplinary Research*, 2014; 3(12).
4. Vishwanath Vinu. Export competitiveness of rice in Karnataka, 1998.
5. Yadav CP, Gupta BS. Export strategies of farm products. *The Bihar J. Agril. Mktg.* 1995; III:275-279.