



Trade Competitiveness of Jute in India: Environmental Aspects

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

The study was aimed to investigate the comparative advantage and competitiveness of Indian jute. The study was based on secondary data for the period of 30 years (1989-90 to 2018-19). The collected data were sub-divided into three periods and Export Performance Ratio (EPR) was used to measure the comparative advantage of Indian jute. The global competitiveness of jute was evaluated using Nominal protection Coefficient (NPC). The results showed that, the Indian jute had a comparative advantage during all the periods of the study. During all the sub-periods viz, period I, period II and period III and overall period almost all the years, jute export registered the EPR/RCA values greater than unity indicated that India had considerable potential in jute export. The positive RSCA from period I to period III could be attributed to increase in the exports due to increase in jute productivity with the introduction of quality seeds of jute. Jute was found to be moderately competitive as NPC during overall period, was less than unity also, the period-wise NPC values showed that, Indian jute was moderately competitive during period I and period III. While, period II had a non-competitive market with NPC value of 1.39 which might be due to the reduction in area

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under jute in the country and increasing demand that led to increase in the domestic price of jute during the years under period II. Hence, it is suggested that the efforts are needed to address the constraints in cultivation and efforts are needed to increase productivity through advanced technologies. Development of market infrastructure, storage and transport will increase export. In order to face competition and increase India's market share in world market India need to consistently supply high quality jute at competitive prices.

Keywords: *Jute; export performance ratio; revealed comparative advantage; nominal protection coefficient.*

1. INTRODUCTION

Jute (*Corchorus spp.*) is a dicotyledonous natural fiber crop which is popularly known as the golden fiber. Two species of jute namely, white jute (*Corchorus capsularis*) is a predominately self pollinated and tossa jute (*Corchorus olitorius*) is a partially cross pollinated grown in India from pre-historic times. These species are cultivated for fiber purpose. Jute is however, our potential foreign exchange earner and must finds its place in our economy. It is estimated that more than 4 million farm families are engaged in jute farming and majority of them belongs to small and marginal categories. Besides, 0.5 million people are involved in raw jute and finished good trading and ancillary activities.

Among the different textile fiber production in the world, Jute stands second after cotton. Jute occupies nearly 0.4 per cent of the total area under agricultural land in the country Price (Policy for Jute, 2021). It is not only the strongest but also the cheapest fiber of all the other natural fibers. Due to the golden colour of its fiber and higher monetary value, Jute is called as the "Golden Fiber" and as jute has an eco-friendly and biodegradable nature, it is contemplated as "fiber of the future". It has some advantageous properties like good insulation and antistatic, moderate moisture retention and low thermal conductivity [1,2]. Production of Jute fibre creates huge employment generation to the villagers as from the entire jute plant, only 6 per cent fibre is obtained and the fibre extraction is totally completed manually that requires a long labour intensive process.

For cultivation of jute there are series of agro-climatic conditions and because of which it is grown in a handful of countries. Among the important jute producing countries in the world, India had gained the first position in 2020 by producing about 1807 thousand tonnes of jute on an area of 691 thousand hectares and contributing a share of 67.21 and 49.47 per cent

to the world's total production and area of jute, respectively. The other important jute producing countries during the year were Bangladesh, Mainland China, Nepal and Zimbabwe. Out of these five major countries, India and Bangladesh together contributed nearly 98 per cent to the total area and production of jute in the world. While, Mainland China with a yield of 3.87 tonnes/ha had the highest productivity among the major jute producing countries in the world followed by India (2.62 tonnes/ha), Nepal (1.35 tonnes/ha), Bangladesh (1.18 tonnes/ha) and Zimbabwe (0.61 tonnes/ha) (FAOSTAT, 2020).

The major jute exporting countries in the world were Bangladesh, India, United Republic of Tanzania, Kenya, Belgium and Indonesia. The world's total jute export was 225.17 thousand tonnes, out of these, nearly 157 thousand tonnes was alone exported by Bangladesh and hence Bangladesh dominated the group of major jute exporting countries with 69 per cent share to the total world export of jute [3,4]. Next to Bangladesh was India which contributed nearly 11 per cent share to the world's total export of jute with an export of 25 thousand tonnes. Therefore, 80 per cent of total jute export of the world was captured by only two countries, Bangladesh and India (FAOSTAT, 2020).

The major jute importing countries of the world during the year 2020 were Pakistan, India, Mainland China, Nepal and Brazil. Out of 205.88 thousand tonnes of world's total import of jute, 67.32 thousand tonnes was imported by Pakistan alone. With these quantum of jute imported by Pakistan, it had a share of nearly 33 per cent to the world's total import of jute. The countries like Pakistan, India (20.07 per cent), Mainland China (12.51 per cent) and Nepal (12.17 per cent) together had a share of 80 per cent to the world's total import of jute. The other countries mentioned in the table which had a share of 39.95 per cent includes Spain, Saudi Arabia, Russian Federation, Republic of Korea, etc. (FAOSTAT, 2020).

The major jute cultivating states in India are West Bengal, Assam, Bihar, Meghalaya and Nagaland as mentioned in Table 1. Out of these states, West Bengal tops the position with highest share in area (73.15 per cent) and production (78.70 per cent) of jute in India followed by Assam and Bihar. These three states together contributes nearly 90 per cent of area and production of jute in the country. From the 1807.26 thousand tonnes of jute produced in the country, 1152 thousand tonnes was consumed during 2019-20. The yield of jute in India is higher than the world average but it is below the potential yield (Directorate of Economics & Statistics, 2020).

Jute, a natural fiber that can be used in many different areas, supplementing or replacing synthetics, has been receiving increasing attention from the industry. The usages of jute are not only traditional uses, but also on the production of other value –added products such as, pulp and paper, geo-textiles, composites and home textiles [5,6]. Jute is an annually renewable energy source with high a biomass production per unit land area. It is biodegradable and its products can be easily disposed without causing environmental hazards. The roots of jute plants play a vital role in increasing the fertility of the soil. Jute plants have carbon dioxide assimilation rate and it clean the air by consuming large quantities of carbon dioxide, [7].

It is said that India being the largest producer of jute globally, fails to acquire the position in international trade. But, no such evidence through research has been found regarding it. Hence, to know the position of India in the international market, the study was carried out with the objective of to study the Export performance and competitiveness of jute in international trade.

2. METHODOLOGY

The study was carried out through secondary data. The secondary data related to export of jute has been collected from Food and Agricultural Organisation Statistics (FAO STAT) and data on domestic prices were gathered from INDIASTAT for the period from 1989-99 to 2018-19. For the analysis, the overall period was divided into three sub periods-Period I (1989-90 to 1989-99), Period II (1999-2000 to 2008-09) and Period III (2009-10 to 2018-19).

2.1 Analysis of Export Performance

A measure of international trade specialization that identifies the comparative advantage or

disadvantage a country has for a commodity with respect to rest of the world is known as the Export Performance Ratio (EPR). In the present study, therefore Export Performance Ratio was used to measure the comparative advantage of Indian jute. As the EPR is based on the observed trade flows, it is also called as Revealed Comparative Advantage (RCA). The Export Performance Ratio as suggested by Balassa [8] is expressed as-

$$RCA = \frac{S_{it}}{S_{wt}}$$

Where,

S_{it} = Share of jute in India's total agricultural export, and

S_{wt} = Share of jute in the total world agricultural export

If the $EPR/RCA = 1$ or $EPR/RCA > 1$, it implies that India has a comparative advantage in the export of jute and $EPR/RCA < 1$ implies that India has a comparative disadvantage in jute export. However, RCA suffers from the problem of asymmetry. The index will be made symmetry by the methodology followed by Samuel *et al.* (2014) as Revealed Symmetric Comparative Advantage. It is expressed by equation:

$$RSCA = \frac{(RCA-1)}{(RCA+1)}$$

It varies from -1 to +1 and a commodity is said to have a comparative advantage in its export if the RSCA value is positive and vice-versa.

2.2 Export Competitiveness

Export Competitiveness indicates to what extent a commodity of a country enjoys or does not enjoy competitive advantage in the international market. It is indicated by Nominal Protection Coefficient (NPC) which is the ratio of domestic price of jute (P_d) and international price of jute (P_r). The coefficient shed light on whether a country is competitive in the export of that commodity in the free trade scenario or not. In the present study, Nominal Protection Coefficient was computed to determine the extent of competitive advantage enjoyed by the Indian jute in the context of free trade by using the formula.

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

Here the International price was calculated by dividing export value with export quantity

and the international unit price of jute (US \$/ tonne) was converted into domestic unit (Rs./qtl).

Where,

P_d = Domestic price of jute (Rs./qtl)

P_r = International price of jute (Rs./qtl)

$NPC > 1$ or $NPC = 1$ indicates that the commodity is protected in the international market and

$NPC < 1$ indicates that the commodity is not protected in the international market.

3. RESULTS AND DISCUSSION

3.1 Export Performance of Jute in India

The Export Performance Ratio (EPR)/ Revealed Comparative Advantage (RCA) and Revealed Symmetric Comparative Advantage (RSCA) for the export of jute from India were presented in Table 1. The table revealed that the Indian jute had a comparative advantage during all the periods of the study. During all the sub-periods viz, period I, period II and period III, almost all the years registered the EPR/RCA values greater

Table 1. Export Performance of Indian Jute

Period	Year	EPR/RCA	RSCA
Period I	1989-1990	4.88	0.66
	1990-1991	1.36	0.15
	1991-1992	2.97	0.5
	1992-1993	0.8	-0.11
	1993-1994	0.85	-0.08
	1994-1995	0.27	-0.57
	1995-1996	1.34	0.14
	1996-1997	2.03	0.34
	1997-1998	1.97	0.33
	1998-1999	1.79	0.29
Average (Period I)		1.83	0.16
Period II	1999-2000	1.66	0.25
	2000-2001	1.5	0.2
	2001-2002	1.21	0.09
	2002-2003	1.52	0.21
	2003-2004	2.94	0.49
	2004-2005	1.87	0.3
	2005-2006	0.59	-0.26
	2006-2007	2.2	0.38
	2007-2008	2.89	0.49
	2008-2009	4.16	0.61
Average (Period II)		2.05	0.27
Period III	2009-2010	6.96	0.75
	2010-2011	2.66	0.45
	2011-2012	1.51	0.2
	2012-2013	1.61	0.23
	2013-2014	3.73	0.58
	2014-2015	2.47	0.42
	2015-2016	2.42	0.41
	2016-2017	2.01	0.34
	2017-2018	1.64	0.24
	2018-2019	3.67	0.57
Average (Period III)		2.87	0.42
Overall Period		2.25	0.29

Note: Period I (1989-90 to 1998-99), Period II (1999-00 to 2008-09), Period III (2009-10 to 2018-19) and Overall period (1989-90 to 2018-19)

than unity with an average of 1.83, 2.05 and 2.87, respectively. While EPR value of overall period was observed 2.25 which was also greater than unity indicates that India had considerable potential in jute export.

The RCA suffers from the problem of asymmetry as pure RCA is not comparable on both sides of unity, as index ranges from zero to one, if a country is said not to be specialized in a given sector, while value of index ranges from one to infinity, if a country is said to be specialized [9]. The estimated RSCA indices give a clear indication of comparative advantage of India in jute and the indices reveal that India's comparative advantage in jute exports is increasing over the sub-periods. The value of

RSCA was 0.16 during period I and found to be increased during period II and III i.e. 0.27 and 0.42. However during overall period the RSCA recorded positive value of 0.29. The positive RSCA from period I to period III could be attributed to increase in the exports due to increase in jute productivity with the introduction of quality seeds of jute.

3.2 Competitiveness of Jute from India

In the current trade regime of globalization and liberalization, countries having export competitiveness in the commodity will only survive in the long run and shall harvest the international trade benefits. Therefore, to study the export competitiveness of Indian jute,

Table 2. Nominal Protection Coefficient (NPC) of Indian Jute (Price in Rs/Qtl)

Period	Year	Domestic Price	International Price	NPC
Period I	1989-1990	504	857	1.55
	1990-1991	532	753	1.96
	1991-1992	487	744	1.58
	1992-1993	463	554	1.51
	1993-1994	738	637	1.18
	1994-1995	811	674	0.94
	1995-1996	1383	1023	0.97
	1996-1997	934	777	0.92
	1997-1998	633	768	1.11
	1998-1999	916	845	1.16
Average (Period I)		743	763	0.97
Period II	1999-2000	970	893	1.2
	2000-2001	1082	744	1.15
	2001-2002	1062	805	1.31
	2002-2003	921	681	1.18
	2003-2004	792	594	1.1
	2004-2005	915	607	0.99
	2005-2006	1343	601	1.09
	2006-2007	1411	898	1.28
	2007-2008	1167	934	1.15
	2008-2009	1395	1716	0.95
Average (Period II)		1106	847	1.31
Period III	2009-2010	2155	3507	1.03
	2010-2011	2912	3184	1.38
	2011-2012	2154	2902	1.04
	2012-2013	2407	3206	1.12
	2013-2014	2491	3323	1.11
	2014-2015	2856	3785	1.2
	2015-2016	4000	4689	1.01
	2016-2017	3627	3541	1.06
	2017-2018	4110	3878	1.14
	2018-2019	4606	5140	1.44
Average (Period III)		3132	3715	0.84
Overall Period		1660	1775	0.94

Note: Period I (1989-90 to 1998-99), Period II (1999-00 to 2008-09), Period III (2009-10 to 2018-19) and Overall period (1989-90 to 2018-19)

Nominal Protection Coefficient (NPC) was used. The domestic prices were compared with international prices. The nominal protection coefficients of jute estimated for the period I (1989-90 to 1998-99), period II (1999-00 to 2008-09), period III (2009-10 to 2018-19) and overall period (1989-90 to 2018-19) under export and results of the analysis are presented in the Table 2. The incentives for the commodity were measured by the ratios between the domestic and international prices. If the ratio is more than one then the commodity is protected while commodity is dis-protected by the policy regime if ratio is below one.

3.3 Nominal Protection Coefficient of Jute

The global competitiveness of jute was evaluated using Nominal protection Coefficient which is a measure of actual divergence or distortion domestic prices and international prices.

The underlying rationale is that such divergence represents the presence of market interventions such as taxes, subsidies and other policy instruments. The NPC less than unity would indicate global competitiveness of the commodity under consideration. If NPC is less than 0.5, it is highly competitive and if it ranged between 0.5 and 1.0, it can be judged as moderately competitive. The commodity is not competitive for export if it exceeds unity [10].

Jute was found to be moderately competitive as NPC during overall period, was less than unity (0.94) also, the period-wise NPC values showed that, Indian jute was moderately competitive during period I (0.97) and period III (0.84), were in between 0.5 to 1.0. From these results, it can be inferred that the domestic prices of jute have been consistently lower than the international prices. Indicating Indian jute trade is advantageous in this regard. While, period II had a non-competitive market with NPC value of 1.39 which might be due to the reduction in area under jute in the country and increasing demand that led to increase in the domestic price of jute during the years under period II [11].

4. CONCLUSION

The results of this study leads to the conclusion that, the Indian jute had a comparative advantage during all the periods of the study. During all the sub-periods viz, period I, period II and period III, almost all the years, jute export registered the EPR/RCA values greater than

unity. While EPR value of overall period was observed 2.25 which is also greater than unity indicates that India has considerable potential in jute export. The positive RSCA from period I to period III could be attributed to increase in the exports due to increase in jute productivity with the introduction of quality seeds of jute. Jute was found to be moderately competitive as NPC during overall period, was less than unity also, the period-wise NPC values showed that, Indian jute was moderately competitive during period I and period III. While, period II had a non-competitive market with NPC value of 1.39 which might be due to the reduction in area under jute in the country and increasing demand that led to increase in the domestic price of jute during the years under period II. Hence, it is suggested that the efforts are needed to address the constraints in cultivation and efforts are needed to increase productivity through advanced technologies. Development of market infrastructure, storage and transport will increase export. In order to face competition and increase India's market share in world market India need to consistently supply high quality jute at competitive prices. Increase efficiency in production has to increased so as to reduce unit cost of production.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Singh OP, Anoop M, Singh PK. Revealed Comparative Advantage, Competitiveness and Growth Performance: Evidences from India's Foreign Trade of Agricultural Commodities. *Indian Journal of Agricultural Economics*. 2020;75(4):560-577.
2. Sossa CO. Comparative Analysis of The Competitiveness of Beninese and Brazilian Cotton Export in International Trade from 2006 to 2018. *Revistade Economia e Sociologia Rural*. 2022; 60(4):1-17.
3. Padmane RR, Shende NV, Mundhe SK. Export Performance of Raw Jute in India. *Asian Resonance*. 2019;8(2):269-271.
4. Saini S, Gulati A. Price Distortions in Indian Agriculture, *International Bank for Reconstruction and Development World Bank*. 2017;1-109.
5. Bhavani Devi I, Srikala M, Ananda T, Subramanyam V. *Direction of Trade and*

- Export competitiveness of export of chillies in India. *Agricultural Economics Research Review*. 2016;29(2):267-272.
6. Charyulu DK, Prahadeeswaran M. *Agricultural Market Integration and Trade Competitiveness of Indian Agriculture*, CMA Publication no. 243, New Delhi: Allied Publishers. 2013;1-6.
 7. Mohammad SI, Sheikh KA. The Impact of Jute on Environment: An Analytical Review of Bangladesh. *Journal of Environment and Earth Science*. 2012;2(5):24-31.
 8. Balassa B. Trade Liberalisation and revealed Comparative Advantage. *The Manchester School*. 1965;33(2):99-123.
 9. Samuel J, Basavaraja H, Pushpanjali, Rejani R. Growth and Export Competitiveness of Raw Cotton in India-an Economics Analysis. *Agricultural Research and Technology Open Access Journal*. 2015;1(1):01-05.
 10. Srikalaa M, Bhavani Devi I, Rajeswari S, Naidu GM, Prasad SV. Trade Direction and Export Competitiveness of Rice in India. *Oryza*. 2017;54(4):445-451.
 11. Price Policy for Jute, Commission for Agricultural Costs and Prices, Department of Agriculture, Cooperation and Farmers Welfare, Government of India. 2008-09;1-22.

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