



Research Article

GROWTH, INSTABILITY AND COMPETITIVENESS IN EXPORT OF TOBACCO FROM INDIA

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Abstract: India is the major exporter of tobacco in the world. It exports different types of tobacco and tobacco products viz., stripped, wholly stemmed cigar cheroots, smoking tobacco, homogenized, flue-cured, sun-cured, extract and essence, FCV tobacco, unmanufactured tobacco and various tobacco products. So, the present study analyzed the growth, instability and comparative advantage in tobacco export from India during 2001-02 to 2019-20. Results of the study revealed that Belgium, UAE, Afghanistan, Russia, Egypt, Korea RP, Netherland Saudi Arab and Nepal are major exports destination for Indian tobacco. Among the major destination Korea RP registered highest growth of 30.70 per cent per annum during study period. The growth rate in tobacco exports to world was estimated as 10.43 per cent and significant at 1 per cent level. The highest instability was noticed for Saudi Arab (52.17 per cent) followed by Netherland (45.27 per cent), Korea RP (44.05 per cent), Afghanistan (39.83 per cent) and Egypt (36.48 per cent), remaining countries reported moderate instability. The study also calculated the comparative advantage in export of tobacco. The RCA estimate for the year 2001-02 was 0.70 and corresponding RSCA estimate was -0.18 which points toward an unfavorable condition for Indian tobacco exports in the global market. The situation was hardly improved over the years, with RSCA values still possessing a negative value of -0.28 in 2019-20.

Keywords: Tobacco, Growth rate, Instability, RCA and RSCA

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Introduction

In the 16th or 17th century, tobacco may have been brought to India by the Portuguese. Progress in tobacco cultivation in India began in 1787 with the establishment of the Calcutta Botanical Gardens and continued with research initiated with the establishment of the Imperial Agricultural Research Institute presently the Indian Council of Agricultural Research (ICAR) in 1903.

Indian tobacco industry is one of the largest commercial sectors and an important source of direct and indirect employment in on-farm and off-farm situations, and provides a livelihood to millions of people in many regions of the country. India is the second largest tobacco producer behind China. Over 0.45 million hectares of land are used for tobacco farming in the nation. India accounts about 10% of the overall area used for tobacco cultivation in the world. It makes up 9% of the total tobacco production worldwide. For the past five years, the nation's average tobacco crop production has been approximately 800 million kg [1]. The nation produces a variety of tobacco products, including flue-cured Virginia, country, burley, bidi, rustic, hookah, cigar rapped, cheroot tobacco, oriental tobacco, and chewing. India's major tobacco manufacturing states are Gujarat, Andhra Pradesh, Uttar Pradesh, Karnataka, West Bengal, Telangana and Bihar. Out of these Gujarat, Andhra Pradesh and Uttar Pradesh account for around 45%, 20% and 15% of the country's total production respectively. Karnataka accounts for around 8% and rest of the state's account for about 2-3% of the country's total tobacco production. The exports of tobacco both unmanufactured and manufacturer during 2020-21 was US\$ 847 million. India is the only country which produces tobacco in both rabi and kharif seasons. It exports to more than 115 countries in the world

Materials and Methods

The study was based on the secondary time series data on export value, which was compiled from the various public sources viz. official websites of Agricultural and Processed Food Products Export Development Authority (APEDA),

Ministry of Commerce and Industry- Director General of Foreign Trade (DGFT), Directorate General of Commercial Intelligence and Statistics (DGCI&S), Ministry of Agriculture & Farmer Welfare, Food and Agriculture Organization (FAO) Rome, Italy, UN Comtrade Database of India and other for the period from 2001-02 to 2019-20.

Growth rates analysis

By taking time as the independent variables and their respective values of tobacco export as the dependent variables, the compound growth rates were estimated by using following exponential growth function.

By taking logarithms on both sides, the equation takes the form.

$$\text{Log } Y = \text{Log } a + t \text{Log } b + \text{Log } U_t$$

Where,

Y_t = Dependent variable (export value)

t = Time (Independent variable $t = 1, 2, \dots, n$)

a = Intercept and

b = Regression coefficient

U_t = Error terms with usual assumptions

Compound growth rate was worked out as follows

$$\text{C.G.R. (r)} = [(\text{antilog of log } b) - 1] \times 100$$

Students 't' test was used for testing the significance of growth rates.

Instability analysis

The present study applies the Cuddy Della Valle Index and coefficient of variation (CV) for measuring the instability. Cuddy Della Valle index (CIDV) de-trends the given series by using coefficient of determination (R^2) which is a better measure to capture instability in agricultural exports. A low value of this index indicates the low instability in exports and vice-versa [2].

The magnitude of instability in export of tobacco was worked out by using the following methods:

The Instability Index (I_x) was measured as follows:

$$\text{Instability Index } (I_x) = CV \sqrt{1-R^2}$$

Coefficient of variation (C. V) was calculated as follows:

$$\text{Coefficient of Variation (C.V)} = (\text{Standard Deviation } (\sigma)) / (\text{Mean } (\bar{X})) \times 100$$

$$CV = \sqrt{\frac{\sum(X - \bar{X})^2}{N}} \times 100$$

Where,

Adjusted R^2 = Coefficient of determination

N = No. of observations

The magnitude of the instability index was explained under the following range accordingly Cuddy Della Valle Instability Index:

Low Instability = between 0 to 15 Per cent

Medium Instability = greater than 15 and lower than 30 Per Cent

High Instability = greater than 30 Per Cent

Comparative advantages in rice export

The literature provides a number of measures to analyse the competitiveness of agricultural exports. One crude method is to compare the producer prices in major exporting countries, expressed in common currency. An analysis of the competitiveness was undertaken by examining the producer prices in various competing countries. However, these figures may not represent the competitiveness fully due to the presence of large extent of costs on account of transportation. In this context, a widely used concept of competitiveness is the Revealed Comparative Advantage (RCA) [3], constructed based on the tenets of David Ricardo's theory of comparative advantage. The idea behind the usage of RCA is that it is possible to evaluate comparative advantage on the basis of a country's specialization in exports of a commodity with reference to some group of countries or the global trade. The index is based on the premise that countries specialize and export those agricultural

commodities which they can produce at lower relative cost. Put in different way, if a country is able to produce a commodity at a lower relative cost compared to other countries, then with trade, that country should divert more of its scarce resources to the production of that particular good [4]. The lower cost of production is largely a function of comparative advantage in physical and capital endowments. Given a trade policy, the changes in the quality and composition of the human and capital endowments would bring forth shifts in the trade pattern [5]. A country's comparative advantage is "revealed" by the value of RCA, if RCA is more than unity, then the country has a comparative advantage and there is scope of agricultural trade between India and other countries of the world.

The estimate of RCA was computed by the following formula:

$$B = (X_{ij} / X_{ik}) / (X_{nj} / X_{nk})$$

Where,

B = RCA

X_{ij} = Exports of country 'i' of commodity 'j'

X_{ik} = Exports of country 'i' of a set of commodities 'k'

X_{nj} = Exports of a set of countries 'n' of commodity 'j'

X_{nk} = Exports of a set of countries 'n' of a set of commodities 'k'

Hence, country 'i' refers to India, commodity 'j' refers to any of the selected commodities, set of commodities 'k' refers to total exported commodities and set of countries 'n' refers to world.

Further, revealed symmetric comparative advantage suggested by Dalum *et al.*, (1998) [6] was also calculated, because of RCA suffers from the problem of asymmetry as 'pure' RCA is basically not comparable on both sides of unity, as the index ranges from zero to one, if a country is said not to be specialized in a given sector, while the value of the index ranges from one to infinity, if a country is said to be specialized. Revealed symmetric comparative advantage (RSCA) was used in following formula:

$$RSCA = (RCA - 1) / (RCA + 1)$$

Since, this method measures the ranges between -1 and +1 and indicates the free from the skewness problem.

Results and Discussion

Growth and Instability in Tobacco Export

It was observed from [Table-1] that Belgium, UAE, Afghanistan, Russia Egypt, Korea RP, Netherland, Saudi Arab and Nepal were found important buyers of Indian tobacco. The growth rate in tobacco exports to all destinations except Russia was significant. Only Russia had obtained lowest and insignificant growth at the rate 1.23 per cent with moderate instability. It was also indicated that Russia was not important market for Indian tobacco; however, previously it was the largest importer of unmanufactured tobacco from India. The highest compound growth was registered by Korea RP of 30.70 per cent per annum during study period. The growth rate in tobacco exports to world was estimated as 10.43 per cent and significant at 1 per cent level. The highest instability was noticed for Saudi Arab (52.17 per cent) followed by Netherland (45.27 per cent), Korea RP (44.05 per cent), Afghanistan (39.83 per cent) and Egypt (36.48 per cent), remaining countries reported moderate instability. The value in of instability index in exports to world was found moderate at 21.87 per cent during the period 2001-02 to 2019-20.

Table-1 Growth rate and instability in exports of tobacco and manufactured tobacco substitute from India (2001-02 to 2019-20) (Value terms)

SN	Destination	CAGR (In per cent)	Instability (In per cent)
1	Belgium	13.79**	29.18
2	UAE	13.90**	17.12
3	Afghanistan	20.77**	39.83
4	Russia	1.23	21.81
5	Egypt	12.64**	36.48
6	Korea Rp	30.70**	44.05
7	Netherland	7.06*	45.27
8	Saudi Arab	9.12**	52.17
9	Nepal	11.49**	16.64
10	World	10.43**	21.87

** Significant at 1 per cent level of significance, * Significant at 5 per cent level of significance.

Table-2 Value of RCA and RSCA for exported tobacco from India and other major countries

Country	Year			
	2001-02	2007-08	2013-14	2019-20
Balassa RCA				
India	0.70	0.92	0.83	0.99
Brazil	1.30	1.60	1.27	0.90
Poland	0.58	1.67	2.62	3.81
Germany	1.67	2.03	1.82	1.41
USA	1.56	0.83	0.45	0.42
Belgium	0.56	0.68	0.99	1.34
RSCA				
India	-0.18	-0.04	-0.09	-0.01
Brazil	0.13	0.23	0.12	-0.05
Poland	-0.27	0.25	0.45	0.58
Germany	0.25	0.34	0.29	0.17
USA	0.22	-0.09	-0.38	-0.41
Belgium	-0.28	-0.19	-0.01	0.15

High growth and moderate instability in Indian tobacco exports to world due to different types of tobacco were produced under diverse agro-ecological situations spread all over the country. Indian tobacco was of high quality, low cost, organically cultivated and pesticide residue free compared to the other exporting nations. India was only country in the world there was tobacco produced in both kharif and rabi seasons. Similar findings were found by Bharati *et al.* (2019) [7], Sumit *et al.* (2022) [8].

Comparative advantage in exports of tobacco

India and other major countries' RCA and RSCA values of tobacco from 2001-02 to 2019-20 are summarized in [Table-2]. The table reveals that India experienced a comparative disadvantage in the tobacco exports sector throughout the period under study. The RCA estimate for the year 2001 was 0.70 and corresponding RSCA estimate was -0.18 which points toward an unfavorable condition for Indian tobacco exports in the global market.

The situation was hardly improved over the years, with RSCA values still possessing a negative value of -0.28 in 2019. The lower value of RCA and RSCA because tobacco cultivation is not promoted in recent years even government is not providing incentive for its cultivation [9, 10].

Conclusion

It was also observed that only Germany maintained its comparative advantage during the whole study periods though its comparative advantage started getting eroded over the years. Otherwise, all countries had fluctuated trends during the study periods.

Application of research: Among the major destination Korea RP registered highest growth of 30.70 per cent per annum during study period. The situation was hardly improved over the years, with RSCA values still possessing a negative value of -0.28 in 2019-20.

Research Category: Agricultural Economic

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Study area / Sample Collection: Sri Karan Narendra Agriculture University, Jobner, 303329

Cultivar / Variety / Breed name: Tobacco

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Ethical approval: This article does not contain any studies with human participants or animals performed by any of the authors.

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