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*RESEARCH PAPER*

# Growth, instability and comparative advantage in export of groundnut from India

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**Abstract :** Groundnut is the top exported commodity among the major oilseeds. India's groundnut exports during 2021-22 stood at US$ 629.28 million. India's major export destinations for groundnuts are Indonesia, Vietnam, Philippines, Malaysia, Thailand, Russia, Bangladesh, Nepal, Singapore, Iran, etc. An attempt was made through the present study to examine the growth, instability and comparative advantage in exports of groundnut from India. The results revealed that Groundnut exports to world registered highly significant growth rate of 16.09 % with high degree of instability of 36.11% per annum. Among the major destination highest growth were reported by Vietnam at the rate of 71.17 % followed by Thailand 55.18%, Russia 43.32%, Philippines 19.06%, Indonesia 13.51% etc. The instability in groundnut export was also shows high during the period. The study also calculated the comparative advantage among the major exporter of groundnut and revealed that India has highest comparative advantage among the major competitors. Because the value of revealed comparative advantage (RCA) and revealed symmetric comparative advantage (RSCA) was high in groundnut export by India among the major competitors. **Highlights :** India's major export destinations for groundnuts are Indonesia, Vietnam, Philippines, Malaysia, Thailand, Russia, Bangladesh, Nepal, Singapore, Iran, etc., India has highest comparative advantage among the major competitors.

**Key Words :** Groundnut, Destinations, Export, Growth, Instability, RCA

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## INTRODUCTION

Groundnut is an important oilseed crop in India which occupies first position in terms of area and second position in terms of production after soybean. Groundnut is grown in about 120 countries in the world in a total area of 35.06 million ha, with a world production of 71.83 million tonnes (Mt). Asia is the major groundnut producing region in the world. In this region, China and India are the major contributors with 18.04 and 9.95 Mt in 2020, respectively (FAOSTAT 2020). Gujarat is the largest groundnuts producing state in India, which is followed by Rajasthan, Tamil Nadu, Andhra Pradesh, Karnataka, Madhya Pradesh, Maharashtra, and West Bengal. The crop is grown in both kharif and rabi seasons. The kharif season has a share of more than 75% of the total production. Among the major oilseed groundnut is the

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leading exported commodity from India.During 2021-22, India exported groundnut to more than 80 countries. India's major export destinations for groundnut are Indonesia, Vietnam, Philippines, Malaysia, Thailand, Russia, Bangladesh, Nepal, Singapore, Iran, etc.

## MATERIAL 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 and S), Ministry of Agriculture and 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.

In this study to analyze the growth rate and instability, major destinations were identified, for groundnut exports, which altogether accounted more than 70 per cent share in India's total exports for groundnut. Further comparative advantage in exports of groundnut from India and other top exporting countries were worked out and compared India's comparative advantage with those of major exporting countries for the years 2001-02, 2007-08, 2013-14 and 2019-20.

**Growth rates analysis :**

The compound growth rates (CGRs) of export of groundnut from India was calculated by using the exponential function of the following specification

$$Y_{t=ab}{}^{t}U_{t}$$

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,

Yt = Dependent variable (exports value)

t = Time (Independent variable t = 1,2 .... n)

a = Intercept and

b = Regression co-efficient

Ut = 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 ' test was used for testing the significance of growth rates.

**Instability analysis :**

The instability index was analyzed by using the Cuddy Della Valle Index method developed by John Cuddy and Della Valle for measuring the instability in time series data (Cuddy and Della Valle, 1978). This index is inherently adjusted for trend, so is considered a better measure than the co-efficient of Variation. As CV, overestimates the level of instability in time-series data, which is characterized by long-term trends. Cuddy-Della Valle index corrects the co-efficient of variation.

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

The Instability Index ($I_x$) was measured as follows:

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

Co-efficient of variation (C.V.) was calculated as follows:

$$\text{Coefficient of variation (C.V)} = \frac{\text{Standard deviation } (\sigma)}{\text{Mean } (\bar{X})}$$

$$CV = \frac{\sqrt{\frac{\Sigma(X-\bar{X})2}{N}}}{\bar{X}} x100$$

where,

Adjusted $R^2$ = Co-efficient 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 :**

To analyze the Comparative advantages, Balassa's index of Revealed Comparative Advantage was used. The Revealed Comparative Advantage technique is a measure for identify the international trade specialization in extent to which a country has a comparative advantage in a commodity with respect to another country or group of countries. 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 original index of RCA was first formulated by

Balassa, 1965 and it was computed as:

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

where,

B = RCA

Xij = Exports of country 'i' of commodity 'j'

Xik = Exports of country 'i' of a set of commodities 'k'

Xnj = Exports of a set of countries 'n' of commodity 'j'

Xnk = 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 commodity, 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 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

The experimental findings obtained from the present study have been discussed in following heads :

### Growth rate and instability in export of groundnut:

Growth and instability of the groundnut export from India are presented in Table 1. Indonesia was found top market for total groundnut exports from India. However highest growth and instability were observed by Vietnam,

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

| Sr. No. | Destination | CAGR (In %) | Instability (In %) |
|---|---|---|---|
| 1. | Indonesia | 13.51** | 29.54 |
| 2. | Vietnam | 71.17** | 74.35 |
| 3. | Philippines | 19.06** | 40.43 |
| 4. | Malaysia | 8.97** | 46.85 |
| 5. | Thailand | 55.18** | 65.54 |
| 6. | Russia | 43.32** | 62.78 |
| 7. | World | 16.09** | 36.11 |

** Significant at 1 per cent level of significance

**Table 2 : Value of RCA and RSCA for exported groundnut from India and other major countries**

| Country | Year | | | |
|---|---|---|---|---|
| | 2001-02 | 2007-08 | 2013-14 | 2019-20 |
| **Balassa RCA** | | | | |
| India | 7.28 | 10.43 | 9.29 | 9.96 |
| USA | 1.02 | 1.33 | 1.83 | 1.38 |
| Argentina | 5.85 | 4.91 | 4.16 | 6.46 |
| China | 6.53 | 4.58 | 1.76 | 1.59 |
| Brazil | 0.10 | 0.41 | 0.88 | 1.55 |
| Netherland | 0.68 | 1.133 | 1.91 | 1.19 |
| **RSCA** | | | | |
| India | 0.53 | 0.83 | 0.81 | 0.82 |
| USA | 0.01 | 0.66 | 0.29 | 0.16 |
| Argentina | 0.71 | 0.64 | 0.61 | 0.73 |
| China | 0.73 | -0.42 | 0.28 | 0.23 |
| Brazil | -0.82 | 0.06 | -0.06 | 0.22 |
| Netherland | -0.24 | 0.14 | 0.31 | 0.09 |

which registered growth of 71.17 per cent per annum with highest instability index of 74.35 per cent per annum. The lowest annual compound growth rate was registered by Malaysia with growth of 8.97 per cent during the study period. Others major designations *viz.*, Indonesia, Philippines, Thailand and Russia, were also recorded highly significant growth of 13.51, 19.06, 55.18 and 43.32 per cent, respectively. Groundnut exports to world showed very high and significant growth rate of 16.09 per cent per annum. Except Indonesia all selected destinations showed high degree of instability. The instability in exports to world was 36.11 per cent during period 2001-02 to 2019-20. The high growth and instability in groundnut exports was due to lowest price in domestic market and good demand for the groundnut in overseas market mainly pushed groundnut exports from the country. Similar results were found by Audichy *et al.* (2017), Reddy, (2022).

**Comparative advantage in exports of groundnut:**

With calculation of Balassa indices, the specialization of global peanut trade becomes apparent (Table 2) first, it is clear that India had highest comparative advantage among the most important groundnut exporters in the world during the study periods. The values of RCA for groundnut exports from India were 7.28, 10.43, 9.29 and 9.96 for the year 2001-02, 2007-08, 2013-14 and 2019-20, respectively. It was suggested that India had high potential for competitiveness. It clearly shows India's has lot of scope for Groundnuts Export. Because production of groundnuts currently is much higher than demand in the domestic market. There is need to promote export of groundnuts and its products to sustain present production trend. USA, Argentina, China and Netherland had also comparative advantage in global groundnut exports. It was noted that Brazil, despite being one of the greater groundnut exporters, had generally low comparative advantages. This was accordance with the findings of Jambor and Gibba (2017) in their study entitled Competitiveness in global agri-trade the case study of peanut in Hungary.

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