

Does Reform Lead to Change in The Import Pattern of Oil and Oilseeds of India?

OPEN ACCESS

Manuscript ID:
ECO-2023-12016872

Volume: 12

Issue: 1

Month: December

Year: 2023

P-ISSN: 2319-961X

E-ISSN: 2582-0192

Received: 06.10.2023

Accepted: 25.11.2023

Published: 01.12.2023

Citation:

Loganathan, V. "Does Reform Lead to Change in The Import Pattern of Oil and Oilseeds of India?" *Shanlax International Journal of Economics*, vol. 12, no. 1, 2023, pp. 114–121.

DOI:

<https://doi.org/10.34293/economics.v12i1.6872>




This work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License

V. Loganathan

Assistant Professor, Department of Economics

Directorate of Distance Education Madurai Kamaraj University, Madurai, Tamil Nadu, India

 <https://orcid.org/0000-0003-2802-6723>

Abstract

India has completed two and a half decades of economic reforms. The present study is an attempt to evaluate the impact of reforms on India's oil and oil seeds export and imports in terms of quantity and also value. The impact has been measured through decadal value, Compound Growth Rate (CGR), Instability Index (II) and Dummy Semi-Logarithmic Regression Estimation. The CGR of export of oilseeds has moved from negative to positive during the reform period viz. cotton seed, rapeseed oil, coconut oil, and copra. most of the oilseed has fallen under a low Instability Index group. The import of other oilseeds, olive oil, sesame seed and oil palm has been increased during the reform period compared to the pre-reform period. The estimation of the semi-log regression model confirmed that there has been a positive and significant change in the import of oilseeds and oils during the reform period.

Keywords: Compound Growth Rate (CGR), Instability Index (II) and Dummy Semi-Logarithmic Regression Model (DSRM)

Introduction

India's major economic reforms were implemented during the 1990s. Due to economic reforms, the Government of India has liberalized its economy in all sectors. The main focus of these reforms has been on Liberalization, Openness, and Export promotion activity These reforms have been increased agricultural trade as a whole. FAO data of oil and oil seeds includes copra, oil rapeseed, oil vegetable, oil castor beans, groundnuts oil coconut, sesame seed, oil vegetable, oil linseed, oil palm, oil palm kernel other oilseeds, olive oil, total crops, and linseed in the case of edible oil. But the import of palm oil has been increased after the globalization in India. It is used in a wide variety of food products like cooking oil, shortening and margarine. The highest value of the percentage share of oilseeds and oil in total agricultural import at 50.67 per cent in 2011. The lowest value is noted for the year 1976 at 0.59 per cent. The percentage share of oilseeds and oil in total agricultural import is noted between 50.67 per cent and 0.59 per cent during the study period. The linear trend line shows that upward movement of the percentage share of oil seeds and oil in total agricultural import. It is also noted, from the year 1995 the percentage share of oilseeds and oil imports has a tendency to increase over the period of time. (Loganathan, 2023)

Objective

- To measure the performance of import of oil seed and oil in pre- and post-reformperio

Material and Methods

The study is based on secondary data. To analyses the trade of oil seeds and oils during pre-reform and reform periods. The data have been collected from Food and Agriculture Organization website (www.faostat.fao.org) from 1970 to 2013. These data have been deflated by the WPI series which has been calculated by the researcher by using monthly data available in the office of the economic adviser. The following tools have been applied to analyses the data. Compound Growth Rate: It is applied to measure and compare the growth rate of a variable during a particular period. The compound growth rate can be calculated by using the following formula.

$$Y_t = ab^t$$

Where

- Y_t = Value of Variable for the year t.
- t = Time Variable (1, 2, n) for each year,
- a = Constant
- b = (1+r)
- r = Compound Growth Rate

The log transformation of the above function is:

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

The compound growth rate in percentage

$$(CGR) = [\text{antilog}(\ln b) - 1] * 100$$

Instability Index

The instability in a variable can be measured by different methods, such as Standard Deviation, Coefficient of variation, Cuddy Della Valle Index (CDI), etc. This study applied CDI to measure instability in a variable. This index is the most commonly used measure to find out instability in time series data. This was originally developed by Cuddy and Della Valle in 1978. This index is better compared to CV, due to its efficiency in adjustment with the trend in time series data. So, it is a better method to calculate instability in time series data. The index can be calculated by using the following method.

$$I_x = \text{SEE}/y * 100$$

Where

- I_x = Instability Index
- SEE = Standard Error of the trend line Estimates.
- Y = Average value of the time-series data

Dummy Semi-logarithmic Regression Model

It is an alternative for the Chow Test to test the significant change of the intercept and slope of the

model. It is also revealing whether reform influences the export and import of oil seeds and oils if influence which was contributed more towards export or import growth (intercept or slope) change could be found through this estimation.

$$\ln \bar{Y} = \alpha + \beta_1 \text{time} + \beta_2 D + \beta_3 CD + \mu$$

-----overall study period equation

$$\ln \bar{Y} = \alpha + \beta_1 \text{time} + \mu$$

-----Pre-reform period equation

$$\ln \bar{Y} = (\alpha + \beta_2) + (\beta_1 + \beta_3) \text{time} + \mu$$

-----Reform period equation

Where $\ln \bar{Y}$ = log of Total oils and oil seeds export and import,

D = Dummy Variable CD = Interaction of Dummy and Time,

μ = Error Term

α = Intercept,

β_1 = Slope co-efficient,

D=0 for the period 1970 to 1990,

D=1 for the period 1991 to 2013

$(\alpha + \beta_2)$ = Reform period intercept

$(\beta_1 + \beta_3)$ = Reform period slope co-efficient

Result and Discussion

The export performance of Oilseeds and Oil export during pre-reform and reform periods has been discussed below:

The Import Performance of Oilseeds and Oils during the Pre-reform and Reform Periods

The import performance of oilseeds and oils during pre-reform and reform periods has been discussed below:

Decadal Value of Oilseeds and Oils Imports

Table 4 displays the decadal value for oilseeds import. The oilseed import consists of eight oil coconut, oil, rapeseed, sesame seed, oil, vegetable, oil, linseed, Oil palm, Oil palm kernel other oilseeds, olive oil, total crops, and linseed. The highest value of oil coconut import is observed at Rs. 13.00 crore in 2000 and the lowest value is observed at Rs.0.13 crore in 1980. There are ups and downtrend also observed in the import of oil coconuts.

The highest value of oil, rapeseed import is observed at Rs.125.73 crore in 2017 and lowest import is observed at Rs.0.07 crore in 1970. There is

an ups and down trend also observed in import of oil, rapeseed. The highest value of sesame seed import is observed at Rs.353.82 crore in 2017 and the lowest value is identified at Rs. zero crore in 1980. There is an increasing movement is observed in import of sesame seed value after 1980.

The highest value of oil, vegetable import is observed at Rs.33.78 crore in 2017 and the lowest value is observed at Rs. zero crore in 1990. There is an ups and down trend also observed in import of oil, vegetable. The highest value of oil, linseed import is found at Rs.10.12 crore in 2017 and the lowest value is noted at Rs.0.02 crore in 1970. There is an increasing movement observed in import of oil, linseed value after 1970. The highest value of other oilseeds import is observed at Rs.552.58 crore in 2017 and the lowest value is observed at Rs.2.87 crore in 1990. There is an ups and down trends are observed in the import of other oil seeds. The highest value of olive oil import is observed at Rs.121.35 crore and lowest value is observed at Rs.0.05 crore in

1980. There is an ups and down trends are observed in import of olive oil. The highest value of total value of oil seeds import is observed at Rs.5.40 crore in 1970 and the lowest value of import is noted at Rs.zero crore in 1980.The highest value of the total value of crop import is noted at Rs.1.56 crore in 1980 and lowest value of import is observed at Rs. zero crore in 1990, 2000, 2010, and 2017. The highest value of oil, palm import is observed at Rs. 21021.04 crore in 2017 and the lowest value is noted at Rs. 0.01 Crore in 1970. There is an increasing trend has visible for the impart of oil palm. The highest value of oil kernel import is noted at Rs. 819.9 crore in 2017 and the lowest value is observed at Rs. Zero crore in 1970. The import of oil palm kernel also witnessed an increasing trend during the study period. The highest value of total value of oil seeds import is observed at Rs.1199.64 crore in 2017 and lowest value of import is observed at Rs.8.71 crore in 1990. There is an increasing movement is observed in import.

Table 1 Decadal value in Oil and Oilseeds Import (Rs in crores)

| Year | Oil Coconut | Oil, rapeseed | Sesame seed | Oil, vegetable | Oil, linseed | Other Oilseeds | Olive oil | linseed | copra |
|------|-------------|---------------|-------------|----------------|--------------|----------------|-----------|---------|-------|
| 1970 | 0.88 | 0.07 | 0.00 | 0.02 | 0.02 | 6.56 | 0.06 | 5.40 | 0.03 |
| 1980 | 0.13 | 30.99 | 0.00 | 1.23 | 0.06 | 3.43 | 0.05 | 6.39 | 1.56 |
| 1990 | 1.18 | 1.64 | 0.04 | 0.00 | 0.93 | 2.87 | 0.88 | 1.17 | 0.0 |
| 2000 | 13.00 | 66.90 | 0.10 | 3.53 | 4.69 | 14.56 | 6.34 | 1.56 | 0.0 |
| 2010 | 4.07 | 1.50 | 27.07 | 17.79 | 7.52 | 139.90 | 41.80 | 0.67 | 0.0 |
| 2017 | 2.26 | 125.73 | 353.82 | 33.78 | 10.12 | 552.58 | 121.35 | 0.0 | 0.0 |

| Year | Oil palm | Oil palm kernel | Total Value of Oil Seeds |
|------|----------|-----------------|--------------------------|
| 1970 | 0.01 | 0.0 | 13.05 |
| 1980 | 122.25 | 0.32 | 160.41 |
| 1990 | 148.45 | 4.32 | 161.48 |
| 2000 | 3144.95 | 67.31 | 3322.94 |
| 2010 | 11113.65 | 634.36 | 11988.33 |
| 2017 | 21021.04 | 819.9 | 23040.58 |

Source: Food and Agriculture Organization

Note: All the values are deflated by Wholesale Price Index calculated by author based on monthly index.

The CGR for Import of Oilseed and Oils Overall Study Period

Table 4 explain CGR of import of Oilseed and Oils in terms of quantity and value. The CGR for import of copra (-16.14), oil, rapeseed (-4.11),

linseed (-4.40), oil, linseed (6.60), and oil, vegetable origin (7.03), and total oilseeds and oil (8.50) have fallen under low CGR. The CGR for Oilseeds (17.35), oil, vegetable total (13.99), and oil, coconut copra (15.48), have listed under medium CGR.

The CGR for import of sesame seed (21.53), have grouped under high CGR. The CGR of import in terms of quantity has registered higher value than import CGR in terms of value for oilseed (8.76) oil, coconut copra (15.48) and sesame seed (21.53).

Pre-reform Period

The CGR for import of copra (-5.35), other oilseed (-11.84), and sesame seed (-12.98) has listed under low CGR the CGR for import of olive oil total (12.52) and total oilseeds and oil (13.50) have listed under medium CGR. The CGR for import of oil, rapeseed (40.35), linseed (21.53), oil, vegetable (20.44), oil, palm (35.50), oil, palm kernel (65.60), oil, coconut copra (56.04), and oil, linseed (21.89) have listed and high CGR oil and oilseeds. The CGR of import in terms of value has registered higher value than import CGR in terms of quantity for oil, coconut copra (3.56), and oil, vegetable origins (25.35).

Reform Period

The CGR for import of copra (-20.23), oil, rapeseed (-2.18), linseed (-18.14), and oil, coconut copra (-0.20) and total oilseeds and oil (18.60) has

listed under low CGR. The CGR for import of oil, vegetable origin (16.99) total oilseeds and oil (18.60) have listed under medium CGR. The CGR for import of other oil seeds (52.50), oil, vegetable total (25.86), oil, palm (36.40), oil, palm kernel (28.15), Sesame seed (55.27), have fallen under high CGR. The CGR of import in terms of value has registered higher value than CGR of import in terms of quantity export oil, vegetable origin (12.18), other oilseeds (21.77), and Sesame seed (27.63).

The import of copra, oil, rapeseed, linseed, and oil, coconut copra moved to low CGR during the reform period from high CGR during the pre-reform period. The import of oil, vegetable origin has been shifted to medium CGR oilseeds during the reform period from high CGR oilseeds during the pre-reform period. On the other hand, import of other oilseeds, olive oil and sesame seed moved to high CGR oilseeds during the reform period from low CGR during the pre-reform period. Overall, the import of Copra, oil, rapeseed, linseed, oil, coconut copra, and oil, vegetable have been decreased and import of other oilseeds, olive oil, sesame seed has been increased during the reform period compared with the pre-reform period

**Table 2 Compound Growth Rate for Import of Oil and Oilseeds
(in terms of quantity and value)**

| Product/ Period | Low Compound Growth Rate*(LCGR) | Medium Compound Growth Rate**(MCGR) | High Compound Growth Rate***(HCGR) |
|-----------------------------------|---|---|---|
| Overall Period 1970-2017 | Copra (-16.14), (-12.9) Oil, rapeseed (-4.11), (-0.69) Linseed (-4.40), (-0.72) Oil, linseed (6.60), (10.62) Oil, vegetable origin (7.03), (12.86) Total oilseeds and oil (8.50), (9.40) | Oilseeds (17.35), (8.76) Olive oil total (13.99), (20.44) Oil coconut copra (15.48), (6.82) | Sesame seed (21.53), (10.18) Oil Palm (20.5) (11.5) |
| Pre-reform Period 1970-1991 | Copra (-5.35), (-6.20) Other oilseeds (-11.84), (-2.76) Sesame seed (-12.98), (4.39) Oil Palm (5) (3.5) | Olive oil total (12.52), (16.06) Total oilseeds and oil (13.50), (17.42) | Oil, rapeseed (40.35), (14.33) Linseed (20.44), (15.22) Oil coconut copra (56.04), (3.56) Oil, linseed (21.89), (13.65) Oil, vegetable origins (25.35), (21.53) |
| Reform Period 1992-2017 | Copra (-20.23), (-4.24) Oil, rapeseed (-2.18), (4.70) Linseed (-18.94), (8.70) Oil coconut copra (-0.20) (3.77) | Oil, vegetable origin (16.99) (12.18) Total oilseeds and oil (18.60) (19.25) | Other oilseeds (52.50), (21.77) Olive oil total (25.86), (27.25) Sesame seed (55.27)(27.63) Oil Palm (50.5) (25.5) |

Source: Compiled from Secondary Data,

Note: (.....) Indicates CGR value in terms of Quantity and Value, *= LCGR value less than 10, **= 10 < MCGR < 20, ***= HCGR value higher than 20

Instability Index for Import of Oil and Oilseeds Overall Study Period

Table 6 shows that the Instability Index for import of other oilseeds (1.09), oil, rapeseed (1.59), linseed (1.22), oil, palm (0.05), oil, palm kernel (0.98), oil, coconut copra (1.52), oil, linseed (0.99), oil, vegetable origin (1.41), and total oilseeds and oil have fallen under low Instability Index. The Instability Index for import of copra (2.42), olive oil total (2.10) sesame seed (4.41) has listed under high Instability Index and there is no oilseeds and oil have fallen under high Instability Index. The Instability Index of import in terms of value have higher value than the Instability Index in terms of quantity except oil, vegetable origin (1.40).

Pre-reform Period

None of the oils and oilseeds has fallen under low II. The Instability Index for import of other oilseeds (3.32), olive oil total (3.25), oil, rapeseed (3.17), linseed (2.85), sesame seed (3.98), oil, linseed (3.37) and total oilseeds and oil (4.50) oil, palm (3.25), oil, palm kernel (8.16) have grouped under medium Instability Index. The Instability Index for

import of oil, vegetable origins (6.03), copra (6.16), oil, coconut copra (7.11), has listed under a high Instability Index. The Instability Index of import in terms value higher than Instability Index in terms of quantity except sesame seed (3.20), copra (4.25), oil, coconut copra (7.11) and oil, vegetable origins (5.12).

Reform Period

The Instability Index for import of oil, vegetable origin (1.84), oil, palm (0.17), oil, palm kernel (0.15) has fallen under a low Instability Index. The Instability Index for import of other oilseeds (2.36), olive oil total (3.00), linseed (2.33), oil, coconut copra (3.11), and oil, linseed (2.38), and total oilseeds and oil (3.80) have grouped under medium Instability Index. The Instability Index for import of copra (5.98), oil, rapeseed (6.60), and sesame seed (7.93) has fallen under a high Instability Index. The Instability Index of import in terms of value is higher than the Instability Index in terms of quantity except linseed (2.20), oil, coconut copra (3.04), oil, linseed (1.80), copra (4.25), oil, rapeseed (5.45).

**Table 3 Instability Index for Import of Oil and Oilseeds
(in terms of quantity and value)**

| Period / II | Low Instability Index (LII)* | Medium Instability Index (MII)** | High Instability Index (HII)*** |
|--------------------------------------|---|---|---|
| Overall Study Period 1970 to 2017 | Other oilseeds (1.09), (2.08) Oil, rapeseed (1.59), (1.75) Linseed (1.22), (1.50) Oil coconut copra (1.52), (1.31) Oil, linseed (0.99), (1.25) Oil, vegetable origin (1.41), (1.40) Total oilseeds and oil (1.50), (1.65) | Copra (2.42), (2.60) Olive oil total (2.10), (2.16) Sesame seed (4.41), (5.36) | ----- |
| Pre-reform Period 1970to 1991 | ----- | Other oilseeds (3.32), (2.34) Olive oil total (3.25), (2.91) Oil, rapeseed (3.17), (3.45) Linseed (2.85), (3.50) Sesame seed (3.98), (3.20) Oil, linseed (3.37), (1.53) Total oilseeds and oil (4.50), (4.75) Oil, palm (4.50) (10.19) | Copra (6.16), (4.25) Oil coconut copra (7.11), (4.35) Oil, vegetable origins (6.03), (5.12) Oil, palm kernel (8.16), 4.66) |

| | | | |
|-------------------------------|--|---|--|
| Reform Period 1992 to 2017 | Oil, vegetable origins (1.84), (2.69) Oil, palm (0.17) (0.27) Oil, palm kernel (0.15) (0.22) | Other oilseeds (3.32), (2.34) Olive oil total (3.25), (2.91) Oil, rapeseed (3.17), (3.45) Linseed (2.85), (3.50) Sesame seed (3.98), (3.20) Oil, linseed (3.37), (1.53) Total oilseeds and oil (4.50), (4.75) Oil, palm (4.50) (10.19) | Copra (5.98), (4.25) Oil rape seed (6.60), (5.45) Sesame seed (7.93), (9.89) |
|-------------------------------|--|---|--|

Source: Compiled from Secondary Data

Note: (.....) Indicates II Value in terms of Quantity and Value, *= LII value less than 2,

= 2 <MII<5, *= HII value higher than 5

The Instability Index of import of oil, vegetable origin has been shifted to a low Instability Index during the reform period from high Instability Index during the pre-reform period. It is exhibited that the import of oil, vegetable origin has been increased during the reform period and it has become an unavoidable import of India. The Instability Index of import of oil, rapeseed and sesame seed moved to a high Instability Index during the reform period from the medium Instability Index during the pre-reform period. It tells that the imports of oil, rapeseed and sesame seed have not made frequently and these have been done whenever needed. Though the Instability Index of import of other oilseeds, olive oil, linseed, and oil, linseed have come under medium Instability Index during reform and pre-reform period. The Instability Index has been comparatively low during the reform period, compared to the pre-reform period. Overall, the import Instability Index of oilseeds has a low value for most of the oilseeds during the reform period, it has been inferred that demand has been increasing continuously.

Semi-logarithmic Regression Model for Import of Oilseeds and Oils

The Result of Regression Model by using dummy variable is given below:

Semi-logarithmic Regression Equation for Overall Study Period

$$\ln \bar{Y} = 2.539 + 0.869 \text{ time} - 1.338 D + 1.314 CD$$

(0.0) (0.006) (0.002) (0.04)

$$R_2 = 0.97 \text{ -----Equation 4}$$

$\ln \bar{Y}$ = log of Total value of oilseeds and oil imports

D = Dummy Variable

CD = Interaction of Dummy and Time.

From the Equation-1 the following Equation can be derived

Semi-logarithmic Regression Equation for the Pre-reform Period

$\ln \bar{Y} = 2.539 + 0.869 \text{ time}$ -----Equation 5
Semi-logarithmic Regression Equation for Reform Period

$\ln \bar{Y} = 1.201 + 2.183 \text{ time}$ ----- Equation 6

Equation 4 explains the relationship between time and log of the total value of oilseeds and oils. In this Equation, p-values are given in parenthesis. Since this is a semi-logarithmic model antilog of coefficient value directly gave us the percentage change of the total value of oilseeds as an increase of one year.

Equation 5 gave intercept and slope value during the pre-reform period. The antilog of intercept (2.539) is Rs.12.66 crore, this is the median import value of oilseeds during the pre-reform period. The antilog of the slope coefficient (0.869) is 2.38per cent, it has been inferred that 2.38per cent of total imports of oil seed and oils has increased as an increase of one year during the pre-reform period.

Equation 6 shows that intercepts and slope value during the reform period. The intercept and slope values are significant at 5 per cent level of significance. It is explained that the reform has been shifted the intercept downward and slope upward. The antilog of intercept (1.201) is Rs.3.32 crore. This is the median import value of oilseeds and oils during the reform period. The antilog of the slope coefficient (2.18) is 8.87per cent, it has been concluded that 8.87per cent of total imports increased as an increase of one year during the reform period. The estimation of the semi-log regression model confirmed that there has been a positive and significant change in the import of oilseeds and oils during the reform period.

Non-communicable Diseases in India

As the world entered the new millennium, chronic diseases accounted for 63 deaths worldwide in 2008. The global burden of NCDs is increasing and is a major barrier to development and achievement of Millennium Development Goals (MDGs). NCDs are more prevalent in developing nations and India is not exempted from it. The World Health Organization (WHO) defines noncommunicable diseases (NCDs) as chronic conditions of long duration resulting from a combination of genetic, physiological, behavioral, and environmental factors (WHO, 2018). Nearly 63 per cent of all deaths can be attributable to NCDs, making this the leading cause of mortality in the world. While more than 36 million people die each year due to NCDs, about 80% of NCD deaths occur in low and middle-income countries. India is a highly populous country with a population of more than 1.3 billion which is facing an immense burden of NCDs. (Nethan et al., 2017). In 2017, India State-Level Disease Burden Initiative Collaborators reported nationwide variations of disease burden, which highlights that the prevalence of and mortality due to NCDs have increased across all the states between 1990 to 2016 (India State-Level Disease Burden Initiative Collaborators, 2017). About 8.3 per cent of all deaths and 5 per cent of total disability-adjusted life years (DALYs) in 2016 were due to the contribution of cancer, which has doubled since 1990 (India State-Level Disease Burden Initiative Cancer Collaborators, 2018).

Summary

It is clear from the result and discussion that the reform has a positive impact on imports of oils and oil seeds that it is increased the negative BOT with India. The export of most of the traditional oil items viz. oil linseed, oil, rapeseed oil coconut has been increased in the period of reform and import of oil palm has been increased from low CGR from pre-reform period to high CGR during reform period. It has been inferred that the performance of oilseeds has registered well during the reform period, compared to the pre-reform period. The estimation of semi-logarithmic regression model has confirmed that there has been a positive and significant change in the export of oilseeds items during the reform

period. The import of other oilseeds, olive oil, sesame seed and oil palm has been increased during the reform period compared with the pre-reform period. The estimation of the semi-log regression model confirmed that there has been a positive and significant change in the import of oilseeds and oils during the reform period. From the above discussion, the quantity and value of import of palm oil shows increasing trend and it has become a major edible oil in India. But reviews are shown that the consumption of palm oil has link with increase of NCDs in world and also India. So Indian government could further investigate role of this oil palm in healthy life of people of India.

References

- Chand, Ramesh, et al. "WTO and Oilseeds Sector: Challenges of Trade Liberalisation." *Economic and Political Weekly*, vol. 39, no. 6, 2004, pp. 533-37.
- Gujarati, Damodar, et al. *Basic Econometrics*. Tata McGraw Hill Education.
- India State-Level Disease Burden Initiative Cancer Collaborators. "The Burden of Cancers and their Variations across the States of India: The Global Burden of Disease Study 1990-2016." *The Lancet Oncology*, vol. 19, no. 10, 2018.
- India State-Level Disease Burden Initiative Collaborators. "Nations within a Nation: Variations in Epidemiological Transition across the States of India, 1990–2016 in the Global Burden of Disease Study." *Lancet*, vol. 390, 2017.
- Loganathan, V. "The Export Pattern of Commercial Crops and Related Products of India: A Comparative Study." *Shanlax International Journal of Economics*, vol. 11, no. 3, 2023, pp. 43-50.
- Narayan, Seema, and Poulomi Bhattacharya. "Relative Export Competitiveness of Agricultural Commodities and its Determinants: Some Evidence from India." *World Development*, vol. 117, 2019, pp. 29-47.
- Nethan, Suzanne, et al. "Non Communicable Disease Risk Factors and their Trends in India." *Asian Pacific Journal of Cancer Prevention*, vol. 18, 2017.

- Sharma, Preeti. "Export of Indian Agricultural Products: Pre and After Trade Reforms." *International Journal of Research in Commerce, Economics and Management*, vol. 3, no. 8, 2013, pp. 138-45.
- Tandon, Anjali. "Growth, Performance, and Instability of India's Agricultural Exports: A Pre and Post Reform Analysis." *Indian Economic Journal*, vol. 53, no. 4, 2005, pp. 74-86.
- WHO. *Noncommunicable Diseases*. World Health Organisation, 2018.

Author Details

V. Loganathan, Assistant Professor, Department of Economics, Directorate of Distance Education Madurai Kamaraj University, Madurai, Tamil Nadu, India, **Email-ID:** loganathan.ias8@gmail.com