

## Impact of WTO on Trade Performance of Tea and Coffee in India

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### Abstract

*The impact of the World Trade Organisation (WTO) on export-import performance of India's tea and coffee was assessed from 1970 to 2021 using secondary data from FAOSTAT. The study divided the data into pre-WTO (1970-1994) and post-WTO (1995-2021) periods, employing statistical tools like Compound Annual Growth Rate (CAGR), Coefficient of Variation (CV), and Revealed Comparative Advantage Index (RCA). Over this period, the contribution of tea exports to India's total agricultural exports steadily declined, while coffee exports exhibited fluctuating trends, ultimately decreasing in 2021 compared to 1990. India's share in global tea exports consistently decreased, hitting a low point in 2021. In contrast, coffee's global share experienced modest growth from 1990 to 2021, though not significant. CAGR was higher in the post-WTO era than the pre-WTO period for both tea and coffee, while CV values were lower post-WTO. Regarding the RCA index, India showed a stronger advantage in the pre-WTO period for both commodities, which diminished in the post-WTO era. Despite WTO benefits, India's tea and coffee sectors face challenges, emphasizing the need for diversification, quality control, and strategic positioning to maximize WTO advantages.*

**Key words:** Export and Import, Tea, Coffee, WTO, RCA, CAGR and CV

**JEL Classification:** F10, O24, C32, C43

### Introduction

Agriculture plays a pivotal role in India's socio-economic fabric, contributing significantly to the country's GDP, employment, and overall well-being of its populace (Ghani et al., 2023). With a diverse climate and rich agro-ecological diversity, India is blessed with abundant natural resources that support the cultivation of various agricultural commodities (Kashish and Dhawan, 2017). Tea and coffee, two of the world's most famous beverages, have had a profound impact on global trade for centuries. These two commodities, with rich histories and diverse flavours, are cultivated in various regions and exchanged across borders, contributing to economic growth and cultural exchange. In India, these aromatic crops are not only cherished as daily rituals but also play a vital role in the nation's economy (Thomas and Sheikh, 2010). These commodities hold a unique place in the nation's history, having contributed significantly to the country's trade revenue.

Tea, often referred to as the world's most consumed beverage after water, is produced primarily in countries like China, India, Sri Lanka, and Kenya. Tea-producing nations often engage in robust export activities, seeking markets in

North America, Europe, and the Middle East (Shinoj and Mathur, 2008). The global tea trade has not only fuelled economic growth in these regions but has also brought diverse tea cultures together, showcasing the art of tea preparation and consumption (Chen and Lu, 2021). Coffee, another globally cherished beverage, is predominantly grown in countries along the equator, such as Brazil, Colombia, Vietnam, and Ethiopia. Arabica and Robusta are the two primary species of coffee beans, each possessing unique flavours and growing conditions (Karuri, 2020). The coffee trade has created a network of producers, roasters, and consumers worldwide. Coffee beans are often exported in bulk to coffee-producing countries, where they are roasted and distributed to global markets (Barros et al., 2019). This process connects people across continents through a shared love for coffee, leading to the growth of specialty coffee shops and a thriving coffee culture.

India, historically known as one of the largest producers and exporters of tea and coffee, has witnessed significant shifts in its trade dynamics over the years. Tea and coffee have long been integral to India's cultural fabric and economic landscape. The pre-WTO period, spanning from 1970 to 1994, was characterized by a relatively stable global trade environment. India had established itself as a formidable

player in the tea and coffee sectors, with a rich history of production and export. During this period, the country faced its own set of challenges, both domestic and international, in sustaining and expanding its share of the global market. However, the landscape dramatically changed with the advent of the WTO in 1995 (Radhika et al., 2024). This ushered in a new era of trade regulations, agreements, and international commitments, which significantly impacted the strategies and performance of India's tea and coffee industries (Cerasa and Buscaglia, 2017).

The post-WTO era, covering the years from 1995 to 2021, witnessed a shifting paradigm in global trade, driven by the principles and regulations established by the WTO. As India's tea and coffee sectors navigated this transformed trade environment, they encountered a series of challenges and opportunities. Trade liberalization, tariff reductions, and the dismantling of trade barriers were some of the key features of the WTO regime that had a direct bearing on India's export and import dynamics (Jyothi, 2014). Furthermore, intellectual property rights and sanitary and phytosanitary measures under WTO agreements added layers of complexity to the trading of these agricultural products (Adhikary and Maity 2011).

This study aims to meticulously analyse the impact of these changes on India's tea and coffee trade performance. By examining the trends, challenges, and opportunities that emerged during the pre-WTO and post-WTO periods, valuable insights into how India's tea and coffee industries have adapted to the evolving global trade landscape. Through a comprehensive examination of trade data, a holistic approach is taken to understand the intricate relationship between the WTO and India's tea & coffee trade.

### Data Sources and Methodology

The secondary data regarding export and import of tea and coffee pertaining to the year 1970 to 2021 have been collected from FAOSTAT. To examine the major exporting and importing countries for tea and coffee, data is compiled for last 5 years and taken as an average of 2017-2021. Moreover, to examine the impact of World Trade Organisation (WTO) proposals on the agricultural trade in India, secondary data have been divided into two periods:

Pre-WTO period: 1970-1994

Post-WTO period: 1995-2021

Descriptive statistics viz. averages and percentages were used to see the trade performance of major agricultural commodities. To examine the impact of WTO on the export of major agricultural commodities in India, few statistical tools were used like Compound Annual Growth Rate (CAGR), Coefficient of Variation (CV), Revealed Comparative Advantage (RCA) index and index method.

### Revealed Comparative Advantage (RCA) index

This formula quantifies the extent of a country's

specialization in a particular commodity, and it takes into account the relative share of that commodity in the country's total exports. The RCA was computed by the following formula:

$$RCA_{ij} = (X_{ij}/X_t) / (X_{wj}/X_{wt})$$

Where,

RCA<sub>ij</sub> = Revealed Comparative Advantage for country i in product j.

X<sub>ij</sub> = value of country i's export of product j

X<sub>t</sub> = value of country i's total agriculture export

X<sub>wj</sub> = value of world export of product j

X<sub>wt</sub> = value of world total agriculture exports

The revealed comparative advantage index (RCA<sub>ij</sub>) can be straight forwardly interpreted. When its value surpasses 1, it signifies that the country holds a revealed comparative advantage in the respective product.

## Results and Discussion

India is a major player in the global tea and coffee markets. The country exports a substantial amount of its tea, particularly the renowned Assam and Darjeeling varieties, to various destinations. Imports of tea and coffee into India are relatively low, as domestic production is sufficient to meet most of the internal demand. However, specialty blends and premium quality varieties are occasionally imported to cater to niche markets (Sivanesan, 2013).

### Global Export and Import Trend of Tea and Coffee

Regarding global tea exports, the monetary value of exports amounted to be 2774.88 million USD in 1990, which subsequently increased to 8431.60 million USD in 2021, whereas the value of global tea imports amounted to be 3107.09 million USD in 1990 which further increased to 7423.68 million USD in 2021 as seen from Fig 1.

The total value of the world's coffee exports was 7003.87 million USD in the year 1990, and it reached 22315.42 million USD in the year 2021 as seen from Fig 1. Till 1995, coffee board had a pool marketing system but winds of liberalisation swept in 1995 making marketing of coffee a strictly private sector activity (Adhikary and Maity, 2011). The global import of coffee has increased from 8081.05 million USD in 1990 to 22582 million USD in 2021.

### Major Exporting and Importing Countries of Tea and Coffee

China, Sri Lanka, and Kenya together accounted for about 50 percent of the global tea export (Table 1). These nations have continually upheld substantial levels of tea exports, positioning themselves as significant participants in the global tea market. India is a prominent nation in the global tea export market, standing at 4<sup>th</sup> position and accounted for about 9.18 percent of the global tea export during 2017

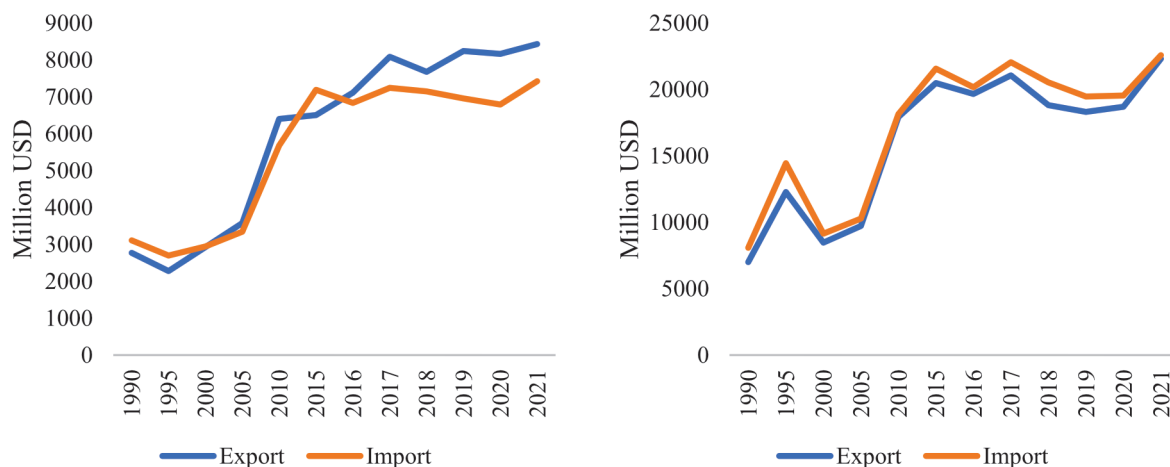


Fig 1: Export and import performance of tea and coffee at global level, 1990 to 2021

Table 1: Major exporting and importing countries of tea and coffee, Avg (2017-2021)

Tea				Coffee			
Exporting Countries	Share (%)	Importing Countries	Share (%)	Exporting Countries	Share (%)	Importing Countries	Share (%)
China	26.03	Pakistan	7.88	Brazil	24.50	USA	23.67
Sri Lanka	15.58	USA	6.94	Colombia	12.74	Germany	13.64
Kenya	15.57	China	6.36	Viet Nam	12.18	Italy	6.65
India	9.18	Russia	6.46	Honduras	5.56	Japan	5.65
UAE	3.53	UK	5.05	Ethiopia	3.97	Belgium	3.86
Poland	2.9	Iran	4.29	Germany	5.24	Switzerland	3.33
Germany	3.01	Saudi Arabia	3.31	Guatemala	3.7	Canada	3.22
Japan	1.86	UAE	3.23	Indonesia	4.55	France	2.92
UK	1.66	Germany	3.19	Belgium	3.41	Spain	3.11
Viet Nam	2.42	Morocco	3.044	Peru	3.45	Netherlands	2.6
		India	0.7	India	2.75	India	0.6
Other Countries	18.25	Other Countries	49.56	Other Countries	17.95	Other Countries	30.76

Source: FAOSTAT, 2023

to 2021.

As far as the tea import is concerned, Pakistan occupies the top position in terms of imports, with a share of 7.88 per cent of the global tea import. In addition, a lesser quantity of tea was imported by India, accounting for 0.70 per cent of the total import. United States and China are in close proximity, with the former contributing 6.94 per cent and 6.36 per cent to the global coffee import.

In case of coffee, Brazil, the foremost coffee exporter, contributed approximately 24.50 per cent of the total world coffee export as observed from Table 1. Columbia is the second largest exporter of coffee at a world level with a share of 12.74 percent. The contribution of Vietnam to the global coffee export was 12.18 percent. India accounts for

only 2.75 per cent of the global coffee export. United States of America is the foremost coffee importer, accounting for approximately 23.67 per cent of the global coffee import followed by Germany (13.64%), Italy (6.65%), Japan (5.65%) and Belgium (3.86%) from 2017 to 2021. India imported merely 0.60 per cent of the global coffee import which suggests that India's involvement as a coffee-importing nation is comparatively less as compared to its role in exports.

### India's Scenario of Export and Import of Tea and Coffee

India has been a significant exporter of tea over the years. The contribution of India to the global tea export has hovered between as high as 21.4 percent in 1990 to as low as 8.16 percent in 2021 (Table 2). This is mainly due to

**Table 2: India's contribution (%) of export and import of tea and coffee in global export and import, 1990- 2021**

Year	Tea		Coffee	
	Export	Import	Export	Import
1990	21.41	0.00	1.79	0.00
1995	15.76	0.03	3.01	0.02
2000	14.76	0.32	2.06	0.01
2005	10.40	0.73	2.62	0.37
2010	10.85	0.64	2.12	0.24
2015	10.42	0.75	2.61	0.55
2016	9.31	0.55	2.78	0.56
2017	9.50	0.54	3.02	0.66
2018	9.97	0.38	2.72	0.65
2019	9.87	0.79	2.73	0.61
2020	8.48	0.99	2.47	0.55
2021	8.16	0.80	2.80	0.52

Source: FAOSTAT, 2023

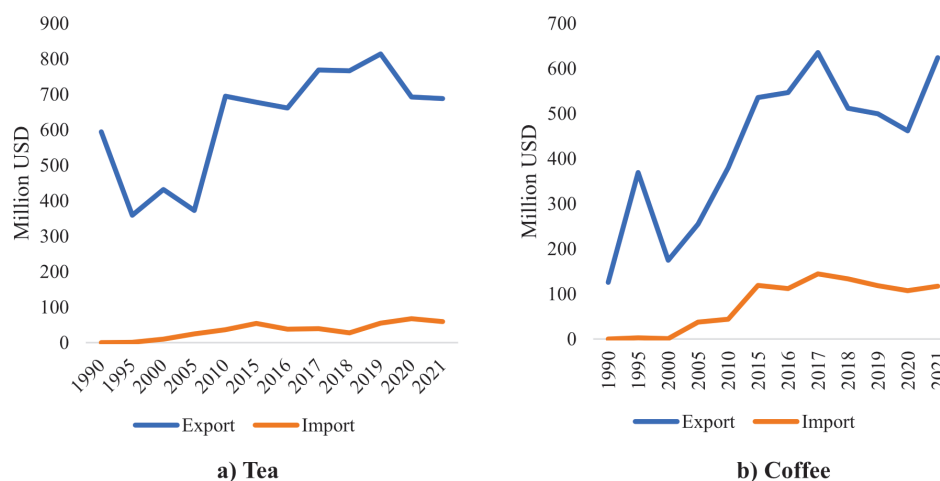
the fact that India faces stiff competition from other major tea-producing countries like China, Kenya, and Sri Lanka (Sivanesan, 2013). India's import of tea has been relatively low throughout the study period, during 1990 the tea import to the global tea was almost negligible which increased by 0.64 percent in 2010 thereafter the share reached at 0.80 percent in 2021. The data clearly revealed that India's import of tea has been increasing over the years.

Regarding coffee, India's contribution to global coffee exports have generally been lower than its contribution to tea exports, ranging from around 1.79 per cent to 3.02 per cent. India's coffee imports had been relatively low as well, with values below one per cent except for a few years. This is mainly because India is one of the world's largest coffee producers hence it does not import as much coffee relative

to other Asian markets that rely on imports to meet their coffee demand (Falake and Walters 2005). Overall, India plays a significant role in the global tea market as a major exporter, while its role in the coffee market is less dominant but still noteworthy.

### Trend of India's Export and Import of Tea and Coffee

Indian tea exports consistently exceeded imports during the entire study period with an export value of 594.18 million USD in 1990 and reached at 687.89 million USD in 2021 (Fig 2). Arya 2013 observed that the industry encountered a significant challenge in the form of a substantial decrease in prices from 1999 to 2006. During the crisis, over 130 tea gardens ceased operations, were abandoned, or temporarily



**Fig 2: Export and import performance of tea and coffee at India level, 1990 to 2021**

paused their activities. However, a significant number of these tea gardens have since returned, coinciding with the gradual increase in tea prices starting in 2008. The import of tea by India was merely 0.86 million USD in 1995 but thereafter the import has exponentially increased and reached at 59.41 million USD in 2021.

In case of coffee, India's exports consistently surpassed imports during the whole period, beginning with 125.68 million USD in 1990 and reached at 623.86 million USD in 2021. Adhikary and Maity (2011) suggested that the observed surge in coffee exports signifies a rising international appetite for Indian coffee, resulting in amplified export quantities and values. Fig 2 revealed that imports reached at 117.14 million USD in 2021 as compared to 0.01 million USD in 1990.

### Impact of pre-WTO and post-WTO period on Export of Tea and Coffee

To see the impact of WTO on the export and import performance of tea and coffee, the data has been divided into two periods, i.e. pre-WTO and post-WTO period. The statistical tools like Compound Annual Growth Rate, Coefficient of Variation, Revealed Comparative Advantage index and Index method have been used. The detailed analysis of impact of WTO on India's agricultural trade is discussed in this section.

### Compound Annual Growth Rate (CAGR) and Coefficient of Variation (CV)

The information pertaining to comparison of CAGR and CV in Pre-WTO and post-WTO has been portrayed in Table 3. The annual growth rate of tea exports has increased from 3.06 per cent in the pre-WTO period in comparison to post-WTO period with a value of 3.53 per cent. Conversely, the export coffee from India has declined after the post-WTO period with a growth of 4.28 per cent in comparison to pre-WTO period (6.26 %). Although pre-WTO import statistics are unavailable, post-WTO data shows a notable increase in tea and coffee imports, with annual growth rates of 11.84

percent and 25.88 percent, respectively.

The Coefficient of Variation (CV) for tea exports, decreased slightly from 34.94 in the pre-WTO era to 31.74 in the post-WTO period, indicating a somewhat more stable export market afterwards. A similar trend is observed for coffee exports, with the CV declined from 48.58 to 42.74, clearly indicating the export volatility has reduced afterwards. In contrast, the CV for post-WTO tea and coffee imports is notably high at 59.64 and 91.04, respectively, indicating significant variability and fluctuations in import levels in the post-WTO era. It can be seen that while the CAGR of tea exports improved after WTO, coffee exports saw a decline in their growth rate. Import levels for both beverages surged after WTO, but the high CV values for post-WTO imports suggest greater unpredictability and variability in the Indian market for these commodities.

### Revealed Comparative Advantage (RCA) Index

The relatively high RCA values during pre-WTO period indicate that India had a very high comparative advantage in exporting tea. According to Table 4, RCA for Indian tea has declined from 21.78 in 1970 to 18.53 in 1994. After the establishment of the WTO in 1995, the RCA values for tea experienced a significant decline, dropping to much lower levels from 13.08 per cent in 1995 to 3.44 per cent in 2021. The RCA values still remain greater than 1, indicating that India continues to maintain a comparative advantage in tea production and exports, albeit at a reduced level compared to the pre-WTO period. According to Chaudhary and Negi (2017), India's declining export competitiveness is an outcome of the availability of low-cost tea from European countries and various value-added tea products exported from Vietnam and relatively higher prices of Indian tea in global markets.

In case of coffee, during the pre-WTO period, which spans from 1970 to 1994, the RCA values for coffee were relatively modest, ranging from 0.74 to 3.27. After the establishment of the WTO in 1995, the RCA values for

**Table 3: Comparison of Compound Annual Growth Rate (CAGR) and Coefficient of Variation (CV) in pre-WTO and post-WTO period for export and import of tea and coffee in India**

Commodities	Export		Import	
	Pre WTO	Post WTO	Pre WTO	Post WTO
Compound Annual Growth Rate (CAGR)				
Tea	3.06 ***	3.53 ***	NA	11.84 ***
Coffee	6.26 ***	4.28 ***	NA	25.88 ***
Coefficient of Variation (CV)				
Tea	34.94	31.74	NA	59.64
Coffee	48.58	42.74	NA	91.04

Note: \*\*\* indicates significance at 1 per cent

**Table 4: Comparison of RCA index of tea and coffee in pre and post WTO period in India**

Tea				Coffee			
Pre-WTO		Post-WTO		Pre-WTO		Post-WTO	
1970	21.78	1995	13.08	1970	0.75	1995	2.49
1975	20.78	2000	13.05	1975	1.25	2000	1.82
1980	27.32	2005	8.09	1980	2.02	2005	2.03
1985	21.62	2010	6.41	1985	1.74	2010	1.25
1990	22.86	2015	4.64	1990	1.92	2015	1.16
1991	23.95	2018	4.73	1991	2.12	2018	1.29
1992	19.86	2019	4.88	1992	2.60	2019	1.35
1993	14.82	2020	3.95	1993	2.46	2020	1.15
1994	18.53	2021	3.44	1994	3.27	2021	1.18

coffee experienced some fluctuations but remained below the pre-WTO levels. The values range from 1.15 to 2.49, with most values hovered around 1 to 1.8. Although the RCA values are still greater than 1 in post-WTO period, but comparatively lower than the pre-WTO period. This suggests that the country's relative advantage in coffee production decreased after the post-WTO period.

### Index Method

In pre-WTO period, tea showed continuous growth starting from 100 in 1970 which was taken as the base year and reached at 600.26 in 1994 (Table 5). In post-WTO period the growth in exports were almost similar to that in pre-WTO period. In 2021, the exports of tea reached 191.58 from 100 in 1995, which was considered the base year. Therefore, it can be seen that there has not been much increase in exports of tea during the two periods. Table 5 reveals that prior to the establishment of the WTO, there was a persistent rise in the amount of coffee that was exported; this figure increased from 100 in 1970, which served as the base year, to 961.87

in 2021. The quantity of coffee exported has not exhibited a very significant variance after the WTO was founded. The exports began increasing in 1995, starting at 100 and reaching approximately 168.89 in 2021. When compared to the period after the WTO was established, it is clear that the number of exports during the pre-WTO era was significantly lower than that of post-WTO period.

### Conclusion and Policy measures

India's tea industry is a global leader, exporting a substantial portion of its production to various countries, while its coffee sector, known for premium quality, is expanding its export markets despite rising imports to satisfy local consumption. Globally, exports and imports of tea have been continuously increasing from 1990 to 2021. In case of coffee, both exports and imports showed fluctuating results, but mostly increasing during the study period. India maintains its reputation for producing top-quality tea and coffee, but India's contribution to global tea export has been significantly decreasing throughout the years whereas

**Table 5: Comparison of pre and post WTO period on export of tea and coffee in India**

Tea				Coffee			
Pre-WTO (1975=100)		Post-WTO (1995=100)		Pre-WTO (1975=100)		Post-WTO (1995=100)	
1970	100.00	1995	100.00	1970	100.00	1995	100.00
1975	149.83	2000	120.2	1975	241.11	2000	47.27
1980	297.42	2005	103.78	1980	867.48	2005	68.92
1985	282.1	2010	193.47	1985	690.12	2010	102.81
1990	303.62	2015	188.81	1990	425.74	2015	144.96
1991	250.53	2018	213.37	1991	395.02	2018	138.53
1992	184.43	2019	226.64	1992	377.04	2019	135.28
1993	169.57	2020	192.75	1993	466.59	2020	124.98
1994	157.59	2021	191.58	1994	961.87	2021	168.89

India's contribution in global tea imports is very less. Contribution of India's coffee exports to global export has initially increased then almost remained constant during the study frame whereas imports increased although not very significantly. The Compound Annual Growth Rate (CAGR) was higher for the post-WTO era as compared to the pre-WTO period for both tea and coffee. However, the Coefficient of Variation (CV) values were lower in the post-WTO period in comparison to the pre-WTO period indicating that export variability has declined afterwards. In terms of Revealed Comparative Advantage (RCA), India showed a stronger advantage in the pre-WTO period for both tea and coffee, but this advantage decreased in the post-WTO period. The findings underscore the need for a multifaceted approach in the Indian tea and coffee industries, involving diversification of product offerings, enhanced quality control measures, and strategic market positioning to harness the benefits of WTO membership effectively. This multifaceted policy framework will be essential in revitalizing and sustaining India's position in the global tea and coffee trade arena.

## References

- Adhikary M and Maity S 2011. India's coffee exports in the scenario of WTO: An analysis trend and structural shift. *International Journal of Economics and Business Research*, **3**: 684-704. <https://doi.org/10.1504/IJEER.2011.043060>
- Arya N 2013. Indian tea scenario. *International Journal of Scientific Research*, **3**: 1-10. <http://www.ijsrp.org/e-journal.html>
- Barros JF, Ferreira AL, Marcondes RL and Prioste RRW 2019. Coffee exports and industrialization in Brazil. *Applied Economics Letters*, **26**: 712-716. <https://doi.org/10.1080/13504851.2018.1489498>
- Chaudhry S and Negi YS 2017. Export Competitiveness of Tea Industry: An Analysis of Major Tea Producing Countries. *Journal of Arts, Science & Commerce*, **8**: 24-30. [www.researchersworld.com](http://www.researchersworld.com)
- Chen J and Lu Y 2021. From prosperity to decline: the world tea market and Chinese tea industry since modern times from the perspective of economics. *China Agricultural Economic Review*, **13**: 930-936
- Feleke S T and Walters L M 2005. Global coffee import demand in a new era: Implications for developing countries. *Review of Applied Economics*, **1**: 223-237. <https://ageconsearch.umn.edu/record/50274/>
- Ghani A, Kaur M, Arora K, Mouzam SM and Saini R 2023. Evaluating the performance, export competitiveness and direction of trade of Indian banana in the international market. *Indian Journal of Economics and Development*, **19**: 699-711.
- Jyothi KC 2014. Impact of policy of government on import and export of sugar from India. *IOSR Journal of Economics and Finance*, **3**: 40-42. [www.iosrjournals.org](http://www.iosrjournals.org)
- Karuri AN 2020. Adaptation of small-scale tea and coffee farmers in Kenya to climate change. *African Handbook of Climate Change Adaptation*, 1-19. [https://doi.org/10.1007/978-3-030-42091-8\\_70-1](https://doi.org/10.1007/978-3-030-42091-8_70-1)
- Kashish A and Dhawan V 2017. A study on production and trade performance of fruits in India. *Agricultural Research Journal*, **54**: 108-113.
- Radhika AM, Hoti A, Raju RK 2024. Tea Trade Scenario in the Pre and Post Liberalization Period in India. *Academic Journal of Interdisciplinary Studies*, **13**: 150-158.
- Shah S K and Vipal AP 2016. Tea production in India: Challenges and opportunities. *Journal of Tea Science Research*, **6**: 1-6. <http://doi.org/10.5376/jtsr.2016.06.0005>
- Shinoj P and Mathur V C 2008. Comparative advantage of India in agricultural exports vis-à-vis Asia: a post-reforms analysis. *Agricultural Economics Research Review*, **21**: 60-66. <https://econpapers.repec.org/ARTICLE/AGSAERRAE/47361.htm>
- Sivanesan R 2013. Tea industry in India – Analysis of import and export of tea. *International Journal of Business and Management Invention*, **2**: 9-15. <http://www.ijbmi.org/>
- Cerasa A and Buscaglia D 2017. Do the EU countries import at the same price? The case of coffee. *Agricultural Economics*, **48**: 397-408. <https://onlinelibrary.wiley.com/doi/abs/10.1111/agec.12342>
- Thomas S and Sheikh W 2010. Growth and composition of Indian agricultural exports during the reform era. *Abhinav Journal of Research in Commerce & Management*, **1**: 92-104. <http://www.abhinavjournal.com/>

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