

India-Australia Economic Cooperation and Trade Agreement, Exchange Rate and India's Agricultural Exports: An Empirical Analysis

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Abstract

The India-Australia Economic Cooperation and Trade Agreement (ECTA), which came into effect in 2022, has the objective of strengthening bilateral trade by improving market access and reducing trade barriers. Besides the trade agreement, the exchange rate plays an important role in influencing export performance. Although previous studies have examined the impact of trade agreements or exchange rate movements separately, little evidence is available on their combined effect on India's agricultural exports after the implementation of ECTA. Therefore, this study examines the impact of the India-Australia ECTA and the exchange rate on India's agricultural exports. The study uses secondary data on exports from UN Comtrade and exchange rate data from the Reserve Bank of India, along with the relevant government reports and documents from official publications. The study covers the time period from 2016 to 2024. Multiple regression analysis was used to estimate the impact of ECTA and the exchange rate on agricultural exports. The findings show that the exchange rate has both a positive and significant impact on agricultural exports, suggesting that depreciation of the Indian rupee makes Indian agricultural products more price-competitive in the international market. The ECTA coefficient shows that it has a positive relationship with exports. The coefficient for ECTA is found to be statistically insignificant, as pointed out. So this increase in exports can't be attributed entirely to policy. The study says that ECTA and exchange rates are helpful in boosting agri-exports. There should be efforts to increase the Indian agricultural production capacity, enhance product quality to international standards and improve utilisation of the ECTA advantages over the longer time horizon.

Keywords: India-Australia ECTA, Agricultural Exports, Exchange Rate, International Trade

Introduction

International trade refers to the exchange of goods and services between nations, providing countries to have wider markets and products beyond their domestic boundaries. Trade plays

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an important role in boosting economic growth by generating employment, earning foreign exchange, and creating a competitive market in the economy. For consumers, international trade provides a wide variety of commodities, and for producers, it gives access to expand into a larger international market. Agriculture is an important part of a developing economy, even though its share has reduced over time in Gross Domestic Product (GDP). Agricultural exports still remain a major source of employment, ensure food security, and contribute to foreign exchange earnings through agricultural exports.

Australia is an important trading partner for the Indian economy. Australia is a developed nation with better technology and a stable political economy, providing us with good market conditions for trade. To further strengthen economic cooperation, India and Australia signed the Economic Cooperation and Trade Agreement (ECTA) in April 2022, which came into force on 29 December 2022. The main objectives of ECTA were tariff reduction, better access to markets, increasing bilateral trade, and strengthening economic cooperation. It is expected to create better export opportunities for Indian products.

Agricultural trade has become an important part of the overall trade between India and Australia. India exports a variety of agricultural products like rice, tea, coffee, spices, fruits, vegetables, marine products, and processed goods. Similarly, India imports products like coal, gold, petroleum goods, and engineering goods. After the implementation of ECTA, trade is expected to improve and create new opportunities.

The exchange rate is another important factor influencing international trade. It refers to the value of one nation's currency relative to other nations' currencies. The exchange rate is a macroeconomic variable that has a significant impact by creating price competitiveness of exports in the market. A depreciation of the Indian currency generally makes exports much cheaper and more easily accessible to foreign consumers, whereas with appreciation, exports become relatively expensive. Therefore, both trade policy and exchange rate movements will be important for determining agricultural export performance.

Several studies have been conducted to examine the performance of India's agricultural exports, while others have analysed the role of exchange rate movements and free trade agreements in promoting international trade. Previous studies have shown that exchange rate, trade liberalisation, production, and market access are important factors affecting export performance (Ohlan, 2013; Mousavi & Leelavathi, 2013; Roy, 2020). Similarly, studies on regional trade agreements have shown that free trade agreements improve bilateral trade by reducing trade barriers and expanding market opportunities (Chandran, 2018; Khati & Kim, 2023).

However, most of these studies have studied these factors separately. Since the India-Australia ECTA is a recent agreement, empirical evidence on its impact on India's agricultural exports remains limited. Therefore, the current study examines the combined impact of ECTA and exchange rate on India's agricultural exports to Australia.

Review of literature

Studies on Agricultural Export Performance

Export-Oriented Growth in Indian Agriculture-Evidence and Prospects Ohlan (2013) conducted a study on the export-oriented growth hypothesis in the context of Indian agriculture and analysed it with time series data for the period 1970-71 to 2009-10 with the help of ARDL bounds testing, Johansen cointegration, and Vector Error Correction Model (VECM). It was found that agricultural exports and agricultural GDP had a positive and significant relationship in the long run; hence, an increase in agricultural exports contributes to agricultural development and rural income, so an export-oriented policy can be helpful to development in the agricultural sector in the long term.

Suresh and Mathur (2016) analysed the growth, instability and competitiveness of the major agricultural exports of India with the help of growth rate analysis, Cuddy-Della Valle index of instability and revealed comparative advantage (RCA). In this study, it was revealed that India's exports of rice, sugar, spices, cotton, and maize have significant growth rates. The paper found that the export of India is sensitive to various factors, and an important prerequisite to improve the productivity of agricultural exports, and also the role of infrastructure and logistics will help sustain the competitiveness in the international market for exports of agricultural products.

Kumar, Naidu, and Shafiwu (2024) analyse the determinants of agricultural exports of India. The authors utilise a System Generalised Method of Moments (System GMM) approach with panel data for forty agricultural products. The study suggests that agricultural production, growth of GDP, trade openness, and exchange rate positively influence export performance. To sustain India's long-term agricultural exports growth, the authors recommend reinforcing domestic production and institutions.

Studies on Exchange Rate and Agricultural Exports

Exchange rate volatility and India's agricultural exports Mousavi and Leelavathi (2013) explored the link between exchange rate fluctuations and India's agricultural annual data over the period 1980–2010, employing the Augmented Dickey-Fuller (ADF) test, Johansen cointegration and Granger causality test. They find that there is no cointegration between fluctuations of exchange rates and agricultural exports in the long run, which signifies that production capacity, infrastructural facilities and policies regarding trade contribute mainly towards exports.

Alkhiteeb and Sultan (2015) investigate the effect of macroeconomic determinants on India's agricultural exports by using ARDL, Vector Error Correction Model (VECM) and Granger causality methods. According to them, the factors affecting India's agricultural exports include agricultural production, international demand and the exchange rate.

Further, they find that real effective exchange rate appreciation has a detrimental impact on the export competitive position of the economy. Roy (2020) used a double log-linear regression analysis on the determinants of agricultural exports at the commodity level for India to explore the impact of production, lagged exports, exchange rate, world income, and government stock on agricultural export performance. Their estimates showed that the exchange rate, production,

and global demand have positive impact on agricultural exports.

Studies on Trade Agreements and Agricultural Trade

According to Chandran (2018), who examined the effects of the India–ASEAN free trade agreement using the augmented gravity model, the RTA was found to have a positive impact on bilateral trade flows, but the benefits are larger for ASEAN countries due to higher export competitiveness. He suggested India should enhance domestic competitiveness to achieve the full benefit of the future FTAs.

Khatri and Kim (2023) studied the effect of ASEAN-India FTA on Indian exports using the augmented gravity model. Even though the FTA expanded the overall trade, the impact on India's exports was not significant due to the lack of access in terms of the trade barriers of non-tariff. This would suggest that alone, FTAs may not enhance export performance if stronger competitiveness and elimination of the NTMs are not accompanied.

Research Gaps

Most of these studies have studied these factors separately or have focused on trade agreements other than the India-Australia ECTA, so very few studies have jointly examined the effect of ECTA and exchange rate on India's agricultural exports to Australia. Since ECTA is a very recent agreement, limited empirical evidence is available. Therefore, the present study attempts to fill this gap by analysing the combined impact of these factors.

Research Objective

- To examine the impact of the India-Australia ECTA and exchange rate on India's agricultural exports.

Research Methodology

The present study adopts an empirical research design to examine the impact on agricultural exports. The study relies on secondary data and econometric analysis. Agricultural export data were collected from the United Nations Comtrade database (UN Comtrade), while annual exchange rate data were obtained from the Reserve Bank of India (RBI), and other data were taken from the Ministry of Commerce and Industry. The study covers the period from 2016 to 2024, including both pre-ECTA and post-ECTA periods.

Variables used:

Variables	Description	Nature
Agricultural exports	Annual value of India's agricultural exports to Australia	Dependent variable
Exchange rate	Annual average exchange rate	Independent variable

ECTA	Dummy variable (0= Before ECTA, 1= After ECTA)	Independent variable
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- **Agricultural exports** were selected as the dependent variable because they measure India's export performance to Australia.
- **Exchange rate** was included because it affects export price competitiveness.
- **ECTA** was included as a dummy variable to capture the policy effect after its implementation.

Expected relationship:

Variables	Expected Relationship
ECTA	Positive (+)
Exchange rate	Positive (+)

Model Specification:

To measure the impact, we have used a multiple regression model.

$$\ln(AE) = \beta_0 + \beta_1(ECTA) + \beta_2(ER) + \mu$$

Where:

- $\ln(AE)$: Logarithmic value of agricultural exports
- ECTA: Dummy variable representing the implementation of ECTA, where 0 = Before ECTA and 1 = After ECTA
- ER: represents the exchange rate
- β_0 : represents the intercept coefficient
- β_1 and β_2 : represent slope coefficients
- μ : disturbance term

We have used the logarithmic value of agricultural value to reduce the problem of heteroscedasticity, which is caused by the wider difference between the export values. The log transformation reduces the effect of large values, improves comparability, and makes coefficient interpretation easier. Whereas, in the exchange rate, we have taken the annual average exchange rate, as it keeps changing on a daily basis.

The study employs multiple linear regression analysis to estimate the impact of the India-

Australia ECTA and exchange rate on agricultural exports. Multiple regression was selected because it allows estimation of the effect of more than one independent variable on agricultural exports. It also helps us to measure the individual effect of ECTA and the exchange rate, holding other variables constant. Microsoft Excel was used for data compilation and regression analysis.

Data and Results

Descriptive Analysis of India's Agricultural Exports to Australia

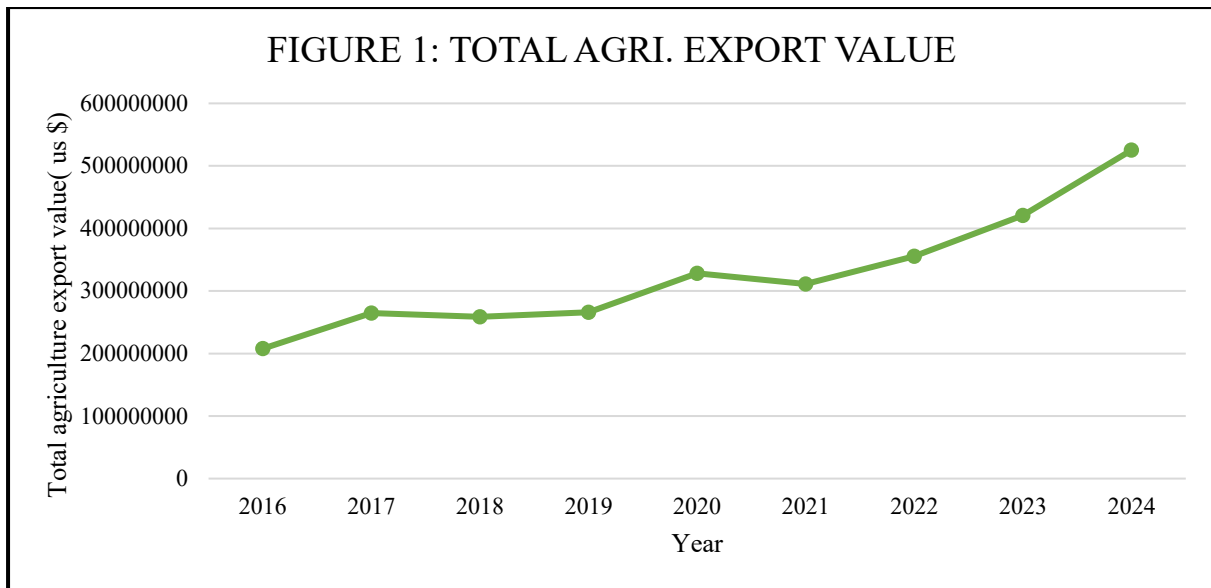
The agricultural export data used include products classified under 01-24 of the Harmonised System (HS), which covers the major agricultural commodities exported from India to Australia. Before analysing the impact of ECTA and the exchange rate. It is important to examine the trends in total agricultural exports, as they provide an overall picture of India's export performance during the study period.

Under HS classification, it includes the following products: cereals such as rice and wheat, tea, coffee, spices, edible fruits and nuts, oilseeds, sugar, meat and meat products, fish and seafood, dairy products, vegetables, and other agricultural commodities.

Table1: Export Trend from India to Australia

YEAR	TOTAL AGRI. EXPORT VALUE (US\$)
2016	207778105
2017	264517205
2018	258883555
2019	265951730
2020	328231447
2021	311384268
2022	355613773
2023	420883483
2024	525153558

Source: Compiled by author using data from the United Nations Comtrade Database



Source: Prepared by the author using data from the United Nations Comtrade Database

Table 1 and Figure 1 show that there is an upward trend in agricultural exports to Australia during the period 2016 to 2024. However, the growth was accompanied by fluctuations in certain years. The highest export value is observed in 2024 at USD 525153558. A temporary slowdown can be seen in 2018 and 2019, after which exports recovered and continued to rise.

Although agricultural exports showed an upward trend during the study time period, descriptive analysis alone cannot determine whether the rise is entirely due to the implementation of ECTA, the exchange rate, or other factors. Therefore, multiple regression analysis was used to estimate the individual and combined effects of ECTA and exchange rate on India's agricultural exports.

Regression Results:

Table 2: Log Export Value and Exchange Rate

Log Export Value	ECTA (Dummy Variable)	Exchange Rate
19.15	0	65.96
19.39	0	64.75
19.37	0	69.55
19.40	0	73.14
19.61	0	73.86
19.56	0	75.16
19.69	0	81.29
19.86	1	83.08
20.08	1	85.08

Source: Compiled and calculated by the author using data from the United Nations Comtrade database and the Reserve Bank of India.

Table 3: Model Summary

STATISTIC	VALUE
R²	0.888
ADJUSTED R²	0.851
F-STATISTIC	23.82
SIGNIFICANCE F	0.0014

Table 3 presents the value of R^2 is 0.888, which means that 88.8% of the variation in agricultural export value is explained by independent variables, which are ECTA and exchange rate. Even the adjusted R^2 is 0.851, which shows that even after adjusting for the number of variables, the model still explains 85.1% of export variation. The significance F value of 0.0014 ($p < 0.05$) shows that the regression model is statistically significant.

Table 4: Regression coefficient

VARIABLES	COEFFICIENT	STANDARD ERROR	T-STATISTIC	P-VALUE
INTERCEPT	17.483	0.557	31.40	0.00
ECTA (DUMMY)	0.184	0.128	1.437	0.200
EXCHANGE RATE	0.027	0.0077	3.547	0.012

Source: Authors' calculation using Microsoft Excel based on UN Comtrade database and Reserve Bank of India

Findings

The coefficient of the exchange rate is positive (0.027), showing that depreciation of the Indian rupee will cause an increase in Indian agricultural exports to Australia. Since the dependent variable is taken in logarithmic form, a 1 unit increase in the exchange rate will cause an approximate 2.7% rise in agricultural exports, holding other variables constant. The p-value is 0.012, which is below the 5% significance level, indicating that the relationship is statistically significant.

The ECTA dummy variable has a positive coefficient (0.184), suggesting that agricultural

exports were higher during the post-ECTA period. However, the coefficient is not statistically significant ($p=0.20$), showing that the increase cannot be entirely due to the implementation of ECTA. The insignificant result may be due to the short post-ECTA period or the influence of other economic factors.

Overall, the regression results indicate that exchange rate movements have a statistically significant impact on India's agricultural exports; on the other hand, the impact of ECTA remains positive but statistically insignificant. The findings show that macroeconomic factors played a major role compared to the recent trade agreement during the study period.

The exchange rate was found to have a positive and statistically significant impact on agricultural exports. The findings are consistent with Roy (2020) and Alkhteb and Sultan (2015), who also showed that exchange rate movements influence export competitiveness. However, it is different from Mousavi and Leelavathi (2013), who showed no significant long-run relationship between the exchange rate and agricultural exports. The difference may be due to the use of a different methodology or a different study period.

The coefficient of the ECTA dummy variable is positive and statistically insignificant. This shows that although agricultural exports have risen, it may not be entirely due to the implementation of the agreement. The positive coefficient is consistent with Chandran (2018), who showed that regional trade agreements generally have a positive relationship in bilateral trade. However, the present study findings also align with Khati and Kim (2023), who found that trade agreements did not significantly increase India's exports because other barriers can also influence export performance.

In the present study, one of the possible reasons for the insignificant impact of ECTA could be that the agreement came into force in December 2022, providing us with very limited post-ECTA period for analysis. Other factors such as global demand, domestic production, logistics, and cold supply chains may influence export performance.

Policy Implications

1. Better utilisation of ECTA

Although ECTA has created opportunities for greater market access. The government should increase awareness among exporters and producers so they can utilise the opportunities more efficiently and boost their productivity.

2. Improving Export Competitiveness

The study showed the need to strengthen competitiveness in the export market. Therefore, improving product quality, adopting modern production techniques, and improving storage and transportation facilities will help Indian products to enter the foreign market easily.

3. Exchange rate stability

From the findings, it is found that the exchange rate has a significant impact. So, maintaining a stable exchange rate and political stability in the economy will definitely encourage the exporters to expand in the international market.

4. Diversification of Agricultural Exports

The findings show the need to diversify India's agricultural export basket to maximise the benefits. Rather than only exporting a limited number of commodities, policymakers should encourage the export of value-added products through diversification, branding, and improved processing facilities.

5. Export Market Information

If exporters are provided with timely market information, proper institutional support can boost export productivity. Agencies like the Ministry of Commerce and APEDA should strengthen export promotion programs by providing regular information on market demand, product standards, and export procedures.

Conclusion

The current study made an endeavour to study the effects of the India-Australia Economic Cooperation and Trade Agreement (ECTA) and the exchange rate on India's agricultural export performance to Australia during the period 2016-2024. By using secondary data and the technique of multiple regression analysis, this study investigates whether these factors jointly have significant impacts on the agricultural export performance of India. Findings show that India's agricultural export has generally increased over the years of study, but there has been an irregular fluctuation in a few years.

The result of the regression shows that the exchange rate have positive and statistically significant impacts on agricultural exports whereas the impact of ECTA is positive and statistically not significant which indicates that increase in agricultural export performance cannot solely attributed to the agreement but also it could be due to the reason that the time of post ECTAs are less (within a range of the selected years of the study) and other factors like the size of domestic market and export market (GDP), domestic production, and the prevailing international conditions and their influences (foreign demand) have also influenced India's agricultural export performance.

Moreover, the F-test of significance for the regression proves that the entire regression model is significant. This paper attempts to combine both variables, which have not been attempted by researchers previously, and provides an early evaluation of the policy to facilitate exporters, policymakers and researchers by bringing out the weaknesses. The Limitations of the Study The period of study ranges from 2016 to 2024, which is very small; the post-ECTA period is limited and may not fully highlight the impact of the agreement over the long run. Only two explanatory variables have been included, ECTA and the exchange rate, whereas GDP, Inflation, Foreign Demand, Domestic Production, etc., are factors that may affect the agricultural export. It can be included in further studies. Similarly, to strengthen the study, it is suggested that the commodity-wise study or the extension of the study may be carried out, and a comparison of ECTA with other similar agreements may be attempted to gain a better understanding of India's agricultural export.

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