Acta Agronómica

UNIVERSIDAD NACIONAL DE COLOMBIA

Prospective analysis of the agricultural trade relations between Peru and India from 2019 to 2023 before the free trade agreement

Análisis prospectivo de las relaciones comerciales agrícolas entre Perú e India de 2019 a 2023 antes del tratado de libre comercio

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https://doi.org/10.15446/acag.v73n1.115375

2024 | 73-1 p 66-72 | ISSN 0120-2812 | e-ISSN 2323-0118 | Rec.: 2024-06-27 Acep.: 2025-02-05

Abstract

The primary objective of this research was to analyze the agricultural trade relations between Peru and India from 2019 to 2023. A quantitative methodology was employed, with a descriptive scope and a non-experimental design, using data from SUNAT and INFOTRADE (PROMPERÚ). The results indicate that the trade intensity index (TII) of Peruvian agricultural exports to India declined by 40 % in 2020 and 41 % in 2021 but rebounded in 2022 and 2023 with increases of 132 % and 8 %, respectively, resulting in an average annual growth rate of 15 %. Likewise, agricultural imports from India increased by 55 % in 2020, dropped by 47 % in 2021, grew by 34 % in 2022, and declined by 13 % in 2023, with an average annual growth rate of 7 %. Among exported products, blueberries, which had no recorded exports in 2019, reached $ 1,58 million USD in 2023, accounting for 27,39 % of total exports. Powdered tara increased from $ 597 000 USD in 2019 to $ 960 000 USD in 2022 but declined by 79,79 % in 2023. It is concluded that, despite growth in certain products, logistical and tariff barriers continue to constrain bilateral trade. It is recommended to expedite negotiations for a free trade agreement and enhance trade infrastructure.

Keywords: Agricultural trade, blueberries, logistical barriers, free trade agreement, Peruvian exports, trade intensity index.

Resumen

El objetivo principal de esta investigación fue analizar las relaciones de intercambio comercial agrícola entre Perú e India entre 2019 y 2023. Se utilizó una metodología cuantitativa, con un alcance descriptivo y un diseño no experimental, empleando datos de SUNAT e INFOTRADE (PROMPERÚ). Los resultados muestran que el índice de intensidad comercial (IIC) de las exportaciones agrícolas peruanas a India cayó un 40 % en 2020 y un 41 % en 2021, pero se recuperó en 2022 con un crecimiento del 132 % y en 2023 con 8 %, con un crecimiento promedio anual del 15 %. Las importaciones agrícolas desde India aumentaron un 55 % en 2020, cayeron un 47 % en 2021, crecieron un 34 % en 2022 y disminuyeron un 13 % en 2023, con un crecimiento promedio anual del 7 %. Entre los productos exportados, los arándanos pasaron de no registrarse en 2019 a alcanzar $ 1580 millones USD en 2023, representando el 27,39 % del total exportado. La tara en polvo creció de $ 597 000 USD en 2019 a $ 960 000 USD en 2022, pero cayó un 79,79 % en 2023. Se concluye que, a pesar del crecimiento en algunos productos, existen barreras logísticas y arancelarias que limitan el comercio bilateral. Se recomienda acelerar las negociaciones para un tratado de libre comercio y mejorar la infraestructura comercial.

Palabras clave: arándanos, barreras logísticas, comercio agrícola, exportaciones peruanas, índice de intensidad comercial, tratado de libre comercio.

Introduction

The commercial exchange in the agricultural sector between Peru and India represents a significant opportunity to boost economic growth and sustainability in both nations, in addition to supporting the work conducted to formalize a free trade agreement (MINCETUR, 2023). In this sense, this sector is especially crucial, given the complementarity between the economies of both countries. Specifically, while India excels in the production of grains, spices, and agricultural technology (Ivanov *et al.*, 2022), Peru is known for its variety of fruits and vegetables, which are in high demand in the international market (Arbulú *et al.*, 2024; Montes *et al.*, 2024). This is key to identifying and leveraging opportunities that benefit both countries, focusing on the transfer of agricultural goods and seeds and inputs for this sector, as well as the adoption of sustainable agricultural practices, as evidenced when two countries decide to enter into a free trade agreement (FTA) as a strategic alliance (Ando *et al.*, 2022; Jongwanich, 2024; Udbye, 2017). Effective collaboration between countries through commercial partnership proposals boosts export growth (Lombana, 2020), and, focusing on a key sector for Peru, development opportunities arise through its economy.

On the other hand, from an economic and social perspective, strengthening this trade can contribute to stabilizing food prices and provide a competitive advantage over other countries with which there is no FTA (Ivanova, 2019). Moreover, the entry of key inputs into Peru ensures food stability. At a macroeconomic level, the expansion of agricultural trade not only fosters GDP growth but also promotes job creation (Ampuero *et al.*, 2021), especially in rural areas where agricultural activity is predominant and constitutes a significant source of income (Carvajal-García *et al.*, 2019).

From a global perspective, the agricultural sector is influenced by the growing demand for food due to the increasing population, which is expected to reach around 9,7 billion by 2050 (UN, 2024). This situation drives countries to seek new markets and diversify their export portfolios (Gnangnon and Priyadarshi, 2016). In this context, the volatility of agricultural product prices becomes a central issue (Martin and Anderson, 2012). Indeed, prices are subject to significant fluctuations due to factors such as extreme weather conditions, which are exacerbated by climate change, agricultural policies of key producing nations, and the concentration of products among major global producers (Mora and Olabisi, 2023).

Regarding the relationship between Peru and India, it is characterized by an incipient exchange but with significant growth potential, especially in India where its demand for products from other countries has grown significantly (Basu, 2022). Moreover, this country, with its vast population, presents a huge market for agricultural exports (Shilpa and Sharma, 2021), while Peru offers a variety of agricultural goods that can meet India's demand for new and exotic products, as it already does with significant trading partners (Seclen, 2022). Nevertheless, there are some challenges that limit trade such as the logistical and tariff barrier. In particular, the long geographical distance between both countries increases transportation costs, which can make Peruvian products less competitive in the Indian market compared to those from closer suppliers. This is similar to other agricultural markets where logistical costs are a key determinant of the final price (Nonalaya *et al.*, 2021). In India, custom tariffs and import regulations are restrictive and high, further complicating bilateral trade (Market Access Map, 2024).

Ur-Rashid and Khan (2024) also highlighted this in their research on the South Asian Free Trade Area (AFTA), which evidenced that trade in this region of Asia (Bangladesh, India, Pakistan, and Sri Lanka) presents severe challenges due to cumbersome procedures, the ruthless application of non-tariff measures (NTMs), and port restrictions. Specifically, they indicate that India, representing the most important economy in the SAARC region, has a coverage rate of 45,52 % and a frequency index of 43,71 % regarding its import activities. However, the application of restrictive measures such as quantitative restrictions and intricate bureaucratic processes generate very high costs and present a challenge for trade relations that other countries want to establish. Therefore, the study recommends establishing mechanisms that enable member countries to recognize certificates and tests approved by exporting countries, as well as streamlining export and import processes through free trade agreements (Ur-Rashid and Khan, 2024).

The lack of direct and specific trade agreements in the agricultural sector also limits this exchange. Indeed, although Peru and India are part of multilateral forums and have framework agreements for cooperation, the absence of a specific free trade agreement that addresses the needs and opportunities in the agricultural sector represents a significant gap that must be filled to facilitate greater trade flow, although, by 2024, substantial progress has been made through negotiation rounds (El Peruano, 2024). For Peru, agribusiness trade with India is not only an economic opportunity but also a strategic necessity to diversify markets and reduce its dependence on traditional export destinations such as the United States and Europe (Yllescas-Rodríguez *et al.*, 2021). Peru, due to its diversity of microclimates, produces a unique variety of agricultural products such as quinoa, blueberries, ginger, and various types of

peppers (Guevara and Montenegro, 2023; Montes *et al.*, 2023), which are in high demand in international markets, including India. However, it is essential for this Latin American country to strengthen its capacity in terms of international certifications and compliance with quality standards required by demanding markets (Castillo and Mori, 2023; Olaza, 2023).

From another perspective, Baroni (2021) specified in his research that during the period 2018 - 2019, Latin America's participation in Indian foreign trade decreased to 3,59 % due to economic recessions and falls in the prices of basic export products. Moreover, India faces a sustained trade deficit with the region, mainly due to its limited presence in global trade and high tariffs, particularly in the agricultural sector, where the average tariff reached 36,4 % in 2014 - 2015, as well as sanitary and phytosanitary measures and technical barriers increased. Consequently, this situation makes trade with South America difficult due to the pattern of inter-industrial trade exchange. On the other hand, nearly 20 % of the oil and 22 % of the vegetable oil imported by India come from Latin America, showing a significant concentration in the region's export portfolio. Therefore, Latin America presents promising prospects for India, not only in terms of food and energy security but also in the field of South-South cooperation. In this regard, both parties face the task of improving market research, fostering mutual understanding, and promoting the communication of shared advantages. Additionally, efforts should be directed towards improving infrastructure and logistics and, at the same time, reducing operating expenses.

Therefore, this study represents a crucial contribution to understanding economic cooperation between Peru and India. From a theoretical perspective, it applies international trade theories, such as comparative advantage and the Heckscher-Ohlin theory (Palmieri, 2019) to understand the interactions between these different economies. From a methodological perspective, a quantitative analysis of historical trade flows is conducted using models that allow comparisons with other significant economies for Peru. Finally, from a practical perspective, this analysis supports the Peruvian government's efforts to finalize the FTA with India.

The main objective of this research was to analyze the agricultural trade exchange between Peru and India between 2019 and 2023. Specifically, this analysis focuses on Peru's agricultural exports to India and the agricultural imports from the Asian country. Consequently, this study seeks to understand the dynamics and trends characterizing these trade flows, providing a detailed view of the bilateral trade in the agricultural sector between both countries.

Methods

This study corresponds to a quantitative research type, as it is based on the measurement and analysis of statistical data. Specifically, it has a descriptive scope, as it performs an analysis of trade flows between Peru and India. Additionally, it identifies variables and phenomena related to the main products traded between both countries, without aiming to establish causal relationships or intervene in the subject of study. The design is non-experimental, focusing on the observation and analysis of data without directly manipulating the variables (Hernández and Mendoza, 2018). In this regard, the research was based on data extracted from SUNAT and INFOTRADE (PROMPERU) records, focusing on tariff items from the agro-industrial sector, which were crucial for analyzing the agricultural exports and imports of several basic products between India and Peru.

Data collection for this research covered a 5-year period, from 2019 to 2023. During this time frame, researchers focused on analyzing agricultural exports and imports of important basic products between India and Peru, allowing a comprehensive analysis of trends in the agricultural export sector. A documentary analysis was conducted using a rigorous data extraction protocol from the Infotrade platform managed by PROMPERU. This platform provided data on Peru's exports and imports of products from India. The study applied a methodology that integrates and allows the joint interpretation of some trade flow indicators and predictive results on trade exchange. Thus, this research attempts to contribute by presenting a prospective overview of trade relations between Peru and India, in the face of a potential negotiation of a FTA. Consequently, this analysis provides a clear understanding of bilateral trade flows between both countries through the elaboration of a ranking of subheadings that identifies those agricultural products Peru should prioritize in potential trade negotiations with India.

This study employed analytical tools such as the trade intensity index (TII), average annual growth, and percentage variation rate to explore and analyze results related to the research questions. Specifically, the TII was calculated to assess whether the trade value between the two countries exceeds or falls short of expectations based on their significance in global trade. Hence, it was calculated as follows, using an adapted version of the World Bank's trade intensity index (2022):

$$IICXij = (xij/Xit)/(xwj/Xwt)$$

$$IICMij = (mij/Mit)/(mwj/Mwt)$$

Where:

IICXij: Trade intensity index of Peruvian agricultural exports to India

xij: Agricultural exports from Peru to India

Xit: India's total exports to Peru

xwj: Peru's total exports to India

Xwt: Peru's total exports to the world

IICMij: Trade intensity index of Peruvian agricultural imports from India

mij: Agricultural imports from Peru to India

Mit: India's total exports to Peru

mwj: Peru's total imports from India

Mwt: Peru's total world imports to the world

These tools are essential for understanding data trends and patterns during the specified period, as well as for making informed interpretations of India's agricultural export sector.

Results and discussion

According to Table 1, the trade intensity index of Peruvian agricultural exports to India decreased by 40 % in 2020 compared to 2019 and by 41 % in 2021. However, in 2022, it increased by 132 %, and in 2023, by 8 %. This suggests that, on average, the trade intensity of agricultural exports has grown at an average annual rate of 15 %.

In Table 2, the trade intensity index of Peruvian agricultural imports from India increased by 55 % in 2020 compared to 2019. In 2021, it decreased by 47 %, while in 2022, it increased again by 34 %. In 2023, the decrease was 13 %. This suggests that, on average, the trade intensity of agricultural imports has grown at an average annual rate of 7 %.

Table 3 shows a steady increase in agricultural product exports from Peru to India during the period from 2019 to 2023. In 2019, the total export value was $ 4801 thousand USD, but it significantly decreased in 2020 to $ 1774 thousand USD, representing a reduction of 63,06 % compared to 2019. However, in 2021, the total export value increased to $ 3296 thousand USD, 85,12 % more compared to the previous year. This growth continued in the following years, with increases of 49,46 % in 2022 and 10.28 % in 2023, reaching a peak value of $5765 thousand USD. The main exported products include blueberries, ginger, mangoes, cocoa beans, vegetable juices and extracts, tara seeds, Brazil nuts, quinoa, nuts, and powdered tara, among others. Among these, blueberries and powdered tara experienced a notable increase in export value throughout the analyzed period.

Blueberries went from no exports in 2019 and 2020 to reaching a value of $ 1580 thousand USD in 2023, becoming a significant part of total exports during this year, when they accounted for 27,39 % of the total value of agricultural exports to India. Meanwhile, powdered tara recorded exports worth $ 597 thousand USD, rising to $ 960 thousand USD in 2022 before decreasing to $ 194 thousand USD in 2023, a 79,79 % decline compared to the previous year. On the other hand, some products, such as ginger and vegetable juices and extracts, exhibited fluctuations in their export values over the analyzed years. Ginger peaked in 2021 at $ 38 thousand USD, while vegetable juices and extracts reached their highest value in 2022 with $ 690 thousand USD.

Table 1. Trade intensity index of Peruvian exports to India (in thousands of USD)

	2019	2020	2021	2022	2023
Agricultural exports from Peru to India	4 801	1 787	3 296	4 941	5 765
Exports from Peru to India	1 786 927	1 155 178	2 543 011	2 302 482	2 526 369
Total exports from Peru	48 013 997	46 442 824	41 924 640	60 919 778	63 642 603
Total Indian exports to Peru	834 137	771 556	984 464	1 021 488	1 051 329
EII	0,1547	0,0931	0,0552	0,1280	0,1381

EII: Export trade intensity index.

Table 2. Trade intensity index of Peruvian imports from India (in thousands of USD)

	2019	2020	2021	2022	2023
Agricultural imports from Peru to India	18 109	19 922	21 630	23 235	25 499
Imports from Peru to India	834 137	771 556	984 464	1 021 488	1 051 329
Total imports of Peru	40 199 571	33 850 083	46 589 106	54 687 912	48 797 020
Total Indian imports to Peru	1 786 927	1 155 178	2 543 011	2 302 482	2 526 369
ITII	48,84 %	75,66 %	40,25 %	54,03 %	46,85 %

ITII: Import trade intensity index.

Table 3. Main agricultural product exports from Peru to India from 2019 to 2023 (in thousands of USD)

		2019	2020	2021	2022	2023
HS	**Total**	**4801**	**1774**	**3296**	**4941**	**5765**
810 400 000	Blueberries	0	0	166	742	1 580
910 110 000	Ginger	0	0	38	0	838
804 502 000	Mangoes	0	0	0	6	722
180 1001 900	Cocoa beans	1	1	2	56	516
1 302 199 900	Vegetable juices and extracts	73	264	361	690	376
1 302 391 000	Tara seeds	0	29	200	924	283
801 220 000	Brazil nuts	132	60	735	745	274
1 008 509 000	Quinoa	216	142	30	80	261
2 008 199 000	Other nuts	0	5	0	0	228
1 404 902 000	Powdered tara	597	424	699	960	194
	Others	3782	848	1064	738	493

HS: harmonized system

The analyzed data on trade intensity reflect a continuous evolution and adaptation of trade and export practices that can be compared with the findings of previous research and international trade theories, such as comparative advantage and the Heckscher-Ohlin theory (Palmieri, 2019). The increases observed in agricultural exports from Peru to India, despite the decreases, suggest a potential growth trend that aligns with the observations of Ivanov *et al.* (2022) and Montes *et al.* (2024) regarding the strength and diversity of Peruvian agriculture. These factors also correspond to the opportunities identified in the economic complementarity between both nations, as suggested by Arbulú *et al.* (2024) and Jongwanich (2024). In this context, the implementation of a free trade agreement between Peru and India, according to Ando *et al.* (2022) and Udbye (2017), is presented as a key strategy to mitigate the logistical and tariff challenges that currently limit greater exchange, as pointed out by Nonalaya *et al.* (2021).

The trade alliance between Peru and India could enhance the transfer of agricultural goods, which could become a crucial factor to stabilize food prices in Peru, an aspect highlighted by Ivanova (2019) and reinforced by macroeconomic studies by Ampuero *et al.* (2021) and Carvajal-García *et al.* (2019). Additionally, the unexpected price fluctuations of agricultural products, discussed by Martin and Anderson (2012) and Mora and Olabisi (2023), highlight the importance of diversifying export portfolios and income sources, particularly in rural areas, which are critical challenges that both Peru and India must address together.

Finally, the results obtained corroborate previous theories and studies on the advantages and challenges of bilateral agricultural trade, as indicated Baroni (2021), who pointed out that Latin American countries have promising prospects in trade relations with India, reinforcing the need for policies that promote trade understanding and communicate shared advantages through treaties. All this underscores the necessity of well-defined policies and a free trade agreement that addresses unique opportunities in the agricultural sector between Peru and India.

Conclusions

Agricultural trade between Peru and India from 2019 to 2023 shows an evolution marked by fluctuations in both exports and imports. Despite the decline in the trade intensity index during 2020 and 2021, a notable recovery was evidenced in 2022, followed by further growth in 2023, resulting in an average annual growth of 15 %. On the other hand, agricultural imports from India have grown at a moderate rate of 7 % per year. These figures reflect that while there is growth potential, bilateral agricultural trade still faces obstacles that hinder its full consolidation.

Regarding key agricultural products in trade between both countries, blueberries, tara powder, vegetable juices and extracts, quinoa, and nuts stand out. Blueberry exports have gained particular importance, rising from nonexistent in 2019 to 27,39 % of total exports to India in 2023, with a value of $ 1,58 million USD. However, other products such as tara powder have experienced significant declines,

indicating instability in their commercialization. This volatility underscores the need for trade strategies that promote diversification and sustained growth of these products in the Indian market.

The analysis also identifies logistical and tariff barriers that hinder bilateral agricultural trade. Geographical distance and high transportation costs affect the competitiveness of Peruvian products, while tariff rates and restrictive custom procedures in India pose an additional obstacle. However, the growth potential is evident, especially given the increasing Indian demand for imported agricultural products.

To strengthen agricultural trade between Peru and India, it is crucial to consider signing a free trade agreement (FTA) that reduces tariffs and simplifies custom procedures. Additionally, improving logistical infrastructure and ensuring high-quality standards for Peruvian products are necessary to enhancing their competitiveness in the Indian market. This would promote a more dynamic and stable trade flow between both nations.

In conclusion, agricultural trade between Peru and India offers significant opportunities but requires strategic efforts to overcome logistical and tariff barriers. The recovery of the trade intensity index and the growth of products such as blueberries highlight the potential of the Indian market. However, the volatility of certain products underscores the need for a comprehensive approach, including signing an FTA and improving commercial infrastructure. If these advances are achieved, a more stable and beneficial exchange for both economies would be consolidated, favoring market diversification and the development of Peru's agricultural sector.

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