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Colombia and India: Analysis of the Trade Relationship (2000-2019)*

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ABSTRACT

Colombia and India: Analysis of the Trade Relationship (2000-2019): Colombia has shown a growing interest in links with Asian countries. Proof of this is the signing, in 2009, of the Bilateral Agreement for the Promotion and Protection of Investments with India —it entered into force on July 3, 2012—; the Free Trade Agreement (FTA) signed with South Korea in 2013, and in force since July 15, 2016; the progress of negotiations to achieve a trade agreement with Japan; and the start of trade missions between companies from Indonesia and Colombia. This paper analyzes the trade relationship between India and Colombia during 2000-2019. To this purpose, the origin and evolution of the relationship between these two countries is identified. Then, it analyzes their trade link from the analysis of data on imports, exports, and trade balance, and by estimating the revealed comparative advantage, import intensity, relative trade balance and Balassa indices. In addition, the trade opportunities derived from the results obtained are highlighted. Finally, conclusions are presented.

Keywords: Asia, Latin America, Colombia, India, trade, investment.

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INTRODUCTION

The international economic environment is witnessing multiple changes that increase the attention on certain sectors of the economy: services, information and communication technologies, electronic commerce, digital payments, among others. In this regard, the Latin American Integration Association (ALADI in Spanish), the Development Bank of Latin America - CAF and the Economic Commission for Latin America and the Caribbean (ECLAC) affirm that, over the last 20 years, Asia has become a dynamic element of the world economy due to the impetus given to innovation and development in these sectors. Proof of this is the growing importance of its countries as trading partners, the capacity they have achieved to become an important source of financing for Latin America and the Caribbean (Álvarez, Bárcena and García 2014), the world leadership they have achieved in the field of new technologies, as well as in their incorporation into all activities of life in society.

In this sense, Colombia has shown a growing interest in links with Asian countries. Proof of this is the signing, in 2009, of the Bilateral Agreement for the Promotion and Protection of Investments with India —it entered into force on July 3, 2012—; the Free Trade Agreement (FTA) signed with South Korea in 2013, and in force since July 15, 2016; the progress of negotiations to achieve a trade agreement with Japan; and the start of trade missions between companies from Indonesia and Colombia. Similarly, it is evident, according to Miranda, Peláez and Velandia (2016), Colombia's desire to enhance trade relations with other Asian countries such as China and Singapore through agreements for the promotion and protection of investments.

This position is in line with the South American country's objectives of improving its financial results, developing a favorable investment climate, and correcting its financial position in the international context, seeking, as far as possible, to move towards external equilibrium with a level trade

balance (DANE 2020), and balancing the inflow-outflow of capital (Hurtado y Zerpa 2019). Goals that are difficult to achieve due, among other things, to Colombia's lag in its international trade indexes with respect to other Latin American and Pacific Alliance countries (Miranda et al. 2016), local problems that prevent maintaining a stable country risk outlook, and the drawbacks to achieve productive diversification.

In addition, the structure of Colombian trade is characterized by: 1) exports concentrated in primary sector products —minerals, oil and its derivatives, coal, coke and agricultural products—, 2) imports concentrated in industrial sector products —basic, light and automotive industry—, and 3) trade relations concentrated in a few markets, with the United States, China, Mexico, Panama, Brazil, Ecuador and the European Union as the main partners (Ocampo 2014; DNP 2020). This implies that the South American country shows a relatively limited trade diversification, concentrated in low value-added products and with little integration in global value chains.

A similar situation occurs in the trade link between Colombia and the countries of the Asian continent. Because of the predominance of: 1) import of heavy machinery, equipment, vehicles, electrical appliances, iron manufactures, reactors, maritime and river navigation, and other industrial products; and the export of minerals, edible products, meats, crustaceans, oil products and starches (with South Korea and Japan). 2) import of electrical appliances, mechanical appliances, castings and garments; and export of fuels, minerals, fruits, foodstuffs and rubber materials (with China). And 3) import of fuels and minerals, pharmaceuticals, electrical appliances, and mechanical appliances, fish and crustaceans, garments and synthetic fibers, light industrial products; and exports of minerals, energy products, foundry products, iron and steel, inorganic and organic products, as well as food, minerals and fuel products (with Indonesia) (Ocampo et al. 2013; Torres 2013; Ocampo 2014; Zerpa and Andrade 2020; Herrera et al. 2020).

Faced with this situation, this paper investigates the feasibility of establishing trade relations with Asian countries —other than South Korea,

China, Indonesia and Japan—, taking into consideration the specific case of India. The reasons for selecting this South Asian country are multiple: 1) consolidated democracy in a social environment with different political and ideological positions and diverse cultures; 2) continuously growing economy, the value of its Gross Domestic Product (GDP) has grown at rates above 5 per cent per year in the last ten years; 3) example of price stability, success achieved through an anti-inflationary policy that allowed going from an inflation rate of 12.4 per cent in 2009 to 3.4 per cent in 2019; 4) low unemployment, with rates below 10 per cent in the last decade; 5) high population volume, more than 1.3 billion inhabitants who require a large amount of goods and services to cover their basic needs; 6) developed pharmaceutical and automotive industries; and 7) growing technological power, with successful experiences in e-commerce, financial services, communication media, payment systems, among others. Furthermore, in terms of international trade in goods, India stands out for its continuous negative balance of trade with the rest of the world, i.e., a country with a large need for imported products.

Similarly, the growing interest of India and Colombia to strengthen their trade relations based on the variety of products that can be exchanged and the strategic geographical position they have (Miranda et al. 2016) is also taken into consideration. In this regard, in the period 2000-2014, Colombia became the third largest importer of Indian products among Latin American countries, and the 5th largest exporter of goods from Latin America to India (ECLAC 2012; 2016; Giordano et al. 2019). According to figures from the Colombian Ministry of Commerce, Industry and Tourism (2020), during 2018, the main destination of Indian exports was the United States representing 16 per cent of total exported goods, followed by United Arab Emirates (8.8 per cent) and China (5.1 per cent), while Colombia only accounted for 0.335 per cent of Indian goods sold abroad. On the import side, during the same year, China (14.5 per cent), the United States (6.3 per cent) and Saudi Arabia (5.6 per cent) were the economies that sold the

most products to India, and Colombian products represented 0.19 per cent of Indian.

On the other hand, Colombia is part of Latin America, a subcontinent long forgotten by Indian authorities and companies, but which is currently perceived with attention and interest from India (Tharoor 2012). It is also a country in the South American Andean region, whose exports to India are well below potential (Lederman, Olarreaga and Soloaga 2008; Lederman, Olarreaga, and Rubiano 2008).

This data demonstrates the potential for growth in the commercial relationship between India and Colombia. Evidently, due to its population size and the growth rate of its economy, India is a potential market for Colombian products, if progress is made in the development of competitiveness and in the improvement of macroeconomic indicators of the South American country.

Taking the above into account, this paper analyzes the trade relationship between India and Colombia during the period 2000-2019. To this end, the following section identifies the origin and evolution of the relationship between these two countries. Then, it analyzes their trade link from the analysis of data on imports, exports, and trade balance, and by estimating the revealed comparative advantage, import intensity, relative trade balance and Balassa indices. In addition, the trade opportunities derived from the results obtained are highlighted. Finally, conclusions are presented.

ORIGIN AND EVOLUTION OF THE COLOMBIA-INDIA RELATIONSHIP

Diplomatic relations between these two countries began in 1959, exactly on January 19, but it was only on July 14, 1970, when a trade agreement was officially signed, which was complemented in 1974 with a cultural agreement. Restrictions on the arrival of foreign products, which both countries had at the time, prevented the trade agreement from developing

properly. In 1972, diplomatic relations were expanded through the Colombian government's decision to establish an embassy in New Delhi, India, which led to the opening of an Indian embassy in Bogota, Colombia in 1973. The Colombian embassy established in India currently serves the function of connecting the country with other Asian countries such as Nepal, Indonesia, Sri Lanka, and Bangladesh (Embassy of India 2020).

In this order, Colombia was the eighth country in Latin America where India opened its embassy; after Brazil, Argentina, Chile, Mexico, Cuba, Peru, and Venezuela, respectively. The first Indian ambassador in the South American country was Madanjeet Singh, while the first Colombian ambassador in Indian territory was Leopoldo Borda (Barbosa, Posada and Serrano 2011; Embassy of India 2020); who highlighted the great ignorance that exists in the world about that Asian country, which has many superstitions, contradictions, and customs, dating from prehistoric times to the present (Heine and Seshasayee 2016; Seshasayee 2020).

Another relevant aspect of the beginning of relations between the two countries was the position they took within the framework of the Cold War. On the one hand, India did not align itself with any of the main countries in conflict —the United States and the Union of Soviet Socialist Republics—; and, on the other hand, Colombia aligned itself with the United States, even anchoring its trade policy to the strategies used by the North American country. At the end of the 1980s, with the world consolidating a new stage of globalization, Colombia-India relations began to strengthen through a greater flow of goods, cultural exchanges, and investment decisions. Starting in 1995, the two countries implemented a Bilateral Political Consultation mechanism that has managed to strengthen relations between the two economies, a space that has allowed, so far, the realization of eight political consultations (Rosales and Kuwayama 2007; Barbosa, Posada and Serrano 2011; Embassy of India 2020; Seshasayee 2020; Zerpa, Gangopadhyay and Hurtado 2021).

During the early years of the twenty-first century, political, cultural, and

economic relations between the two countries took on a new dimension. In 2001, President Andres Pastrana made the first State visit by a Colombian president to India. Since then, there have been multiple official visits by officials from the two countries that have advanced bilateral ties through greater agreements on visas, technological cooperation, and investment.

Thus, in 2001, agreements were signed for visa exemption for holders of diplomatic and official passports, for the facilitation of business visas, and for cooperation between diplomatic academies. Likewise, in 2003, a political consultation and cooperation agreement was signed between India and the Andean Community countries, and efforts related to economic cooperation were launched (Bhojwani 2012). Later, in 2005, the Memorandum of Understanding on cooperation in science and technology between Colombia and India was established; in 2007 the Memorandum of Understanding on cooperation in urban development; in 2009 the Memorandum of Understanding on cooperation in defense, as well as cooperation in the bamboo sector; in 2010 the agreement of cooperation in Health; in 2011 the memorandum of understanding for cooperation in the field of geology and mineral reforms; in 2014 the memorandum of understanding in sports; and for the period 2012-2016, the cultural exchange program between the two countries was implemented (Embassy of India 2020).

And in investment, during the last twenty years Indian companies have made large investments in Colombia. In that period, more than 1 billion dollars have been invested in the South American country, a figure surpassed only by the Indian investment made in Brazil and Venezuela, but with similar proportions to that received by Mexico. According to Seshasayee (2020), most of this investment has been in the mining, manufacturing, and services sectors. The oil initiative led by ONGC Videsh Limited (OVL) stands out, which invested more than 650 million dollars with the purpose of producing more than 100,000 barrels of oil per day, with 7 projects for exploration and exploitation of hydrocarbons in Colombian territory (Bhojwani 2012; 2014).

In addition to this investment, another 45 Indian companies have invested in various sectors of the Colombian economy, such as automobiles and motorcycles, agrochemicals, information technology and pharmaceuticals. Indian pharmaceutical companies sell generic drugs under their own brand names, taking advantage of alliances with local companies that acquire distribution rights (Bhojwani 2015). In other words, resources with the capacity to generate high levels of employment, income and added value (Heine and Seshasayee 2016; Seshasayee 2020), as part of a business strategy that seeks to take advantage of the best conditions to increase production and diversify markets, both for final products and raw materials.

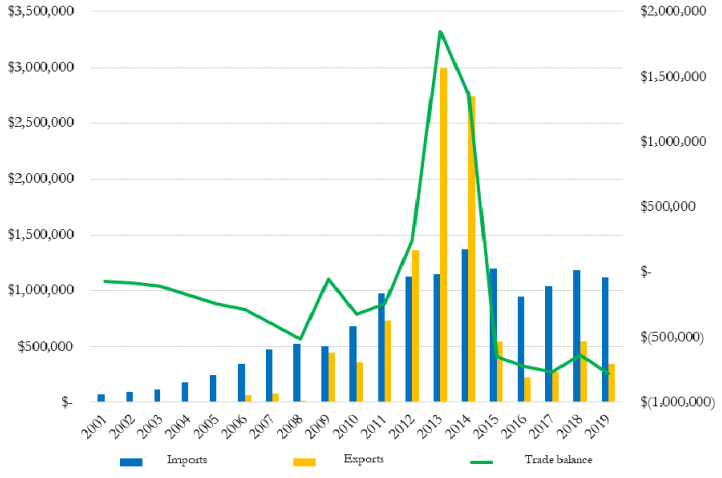
Thus, the Colombia-India bilateral relationship progressed from a hesitant beginning, during the second half of the twentieth century, conditioned by the local problems of each country and the international geopolitical context, to a period of important results in political, economic, and cultural matters. The latter resulted from the greater recognition of each country's role in the world and the opportunities it offers —India: diversification of exports to Asia, Colombia: entry into Latin American markets—; as well as the greater arrival of Indian capital to Colombia and the implementation, in each country, of incipient strategies to disseminate the culture of the two regions.

BILATERAL TRADE BETWEEN COLOMBIA AND INDIA (2000-2019)

In relation to trade between these two countries during the period 2000-2019 (see Figure 1), there have been considerable fluctuations between imports from India to Colombia and exports from Colombia to India. For the period between 2001 and 2019, the average annual export from Colombia to the Asian country was USD 567 million, reaching a total for that period of USD 10,773 million. On the other hand, the average exports from India to Colombia was over USD 703 million, with total exports for the reference period of USD 10,350 million. The balance of this trade flow, that is, the

behavior of the trade balance —exports minus imports— between these two countries, stands out for reaching, on average for the period 2001-2019, a deficit of USD 136 million, and accumulating a total negative balance of USD 2,577 million. This result shows that the trade flow between the two countries has generated greater benefits to exporters of the Asian country, considering the behavior of the trade balance.

A detailed analysis of these results shows that Colombia began exporting significant quantities of goods to India only in 2009, when the value of exports exceeded USD 400 million, an amount that in previous years had not exceeded USD 100 million. Despite this increase in the level of exports, imports from India continued to be higher during that year, so the bilateral trade balance remained negative.



Note: Authors' calculations based on Trade Map (2000-2019).

Figure 1. Colombia-India Trade Balance (2001-2019), in thousands of dollars

The only period in which the bilateral trade balance favored Colombia during this century was between 2012 and 2014. In that period there was a considerable increase in Colombian exports, even maintaining this trend

for two consecutive years, resulting in a positive trade balance of more than USD 1 billion —USD 1,849 million for 2013 and USD 1,369 million in 2014—. After this, since 2015 and up to the present, the level of exports from Colombia to India dropped sharply by around USD 400 million, while the level of imports of Indian products has remained above USD 1 billion.

According to Miranda et al. (2016), the determining factor for this drop in Colombian exports to India since 2015 was the collapse of oil prices, the main Colombian export product to the Asian country. This situation not only affected the relationship between the two countries, but also had a generalized influence on Colombian trade, which in that year evidenced a contraction of about 35 per cent. Given the above, it is evident that Colombia needs to encourage a deeper trade relationship with India, given the potential of the Colombian productive sector, the opportunity offered by the Indian raw materials and food markets, as well as the possibility of reversing the continuous trade deficit with the South Asian nation.

Table 1. Main products in the Colombia-India trade relationship (2019)

Exports	Thousands of USD	Participation (%)
Coal	149,835	43.3
Basic Chemicals	71,510	20.7
Crude Oil	52,782	15.2
Other minerals	28,018	8.1
Metallurgy	15,197	4.4
Others	28,840	8.3
Imports	Thousands of USD	Participation (%)
Basic Chemicals	314,126	26.9
Automotive	293,600	25.1
Machinery and equipment	153,296	13.1
Textiles	147,934	12.7
Metallurgy	134,153	11.5
Others	124,310	10.6

Note: Authors' calculations based on Mincit (2020).

In relation to the main product groups traded between Colombia and India, Table 1 lists the main products exported to India and imported from this country by Colombia during 2019. It is evident the importance of mining extraction, especially coal and other mining products that agglutinate more than 50 per cent of Colombian exports, as well as the decrease in the level of participation of oil. Imported goods include basic chemical products, automotive products -vehicles and spare parts-, machinery and equipment, as well as textiles in general.

On the other hand, for 2019, the industrial sector manages to position itself as the most influential with a share in exports of 29.2 per cent, far surpassing the agricultural sector that only represented 0.1 per cent of exports to India (Mincit 2020). Overall, exports of mining-energy products accounted for 70.6 per cent of total exports in that year, leaving the remaining 29.4 per cent to exports of non-mining-energy products.

These figures are relevant to contextualize Colombia's trade relationship with Asian economies. The South American country's trade balance with Asian countries is negative, reaching an average balance of USD 8 billion between 2012 and 2014. Within this framework, Colombian exports to the Asian continent are distributed in descending order as follows: China (57 per cent), India (27 per cent), South Korea (5.23 per cent) and Japan (4 per cent) (Procolombia 2015; Mincit 2019; INCP 2020). This increases the need for Colombia to multiply efforts to increase its productive capacity, increase the competitiveness of its products and diversify its trade relations with Asian destinations.

In the case of India, as presented before, its exports to Colombia have averaged approximately USD 1 billion per year since 2011. A result that makes the South American country the third largest destination for Indian exports in the context of Latin America, after Brazil and Mexico. Within the portfolio of products exported by India to Colombia, motorcycles, textiles, pharmaceuticals, agrochemicals, and machinery stand out, goods that find space within the large size of the local Colombian market and in Colombia's

strategic location to meet the needs of Latin American consumers (Seshasayee 2020; Misra 2021). Thus, it is evident that Colombia's trade relationship with Asian countries is not the best, but it has all the potential to improve to the extent that the export of more products is encouraged to improve the existing figures.

Empirical methodology

To achieve the stated objective, the methodology used by Miranda et al. (2016) in their research is used, that is, by using the Revealed Comparative Advantage (RCA) index and the Import Intensity Index (III), to determine the Colombian products with comparative advantages or disadvantages in the international market.

First, the RCA is estimated considering that this index allows a comparison between the participation of a certain product in the country's total exports, and the participation of the product's world exports in the world's total exports. The value obtained can be in a range between 0 and infinity, clarifying that values between 0 and 1 represent a comparative disadvantage of the country with respect to the product, while results greater than 1 show a comparative advantage. For this purpose, the following formulation is used.

$$RCA = \frac{\left(\frac{X_{cj}}{X_c}\right)}{\left(\frac{X_{wj}}{X_w}\right)} \qquad (1)$$

Where: Xcj represents the value of the country's exports of product j. Xc is the value of the country's total exports. Xwj corresponds to the value of world exports of product j. And Xw is the value of total world exports.

For the result obtained to range between -1 and 1, for ease of interpretation, the following calculation should be performed to normalize the result:

$$NRCA = \frac{(RCA-1)}{(RCA+1)} \qquad (1.1)$$

In this way, the Normalized RCA (NRCA) index is obtained, which implies that when the result is between 0 and 1, the country has a comparative advantage in the good under analysis; and when the result is between -1 and 0, a comparative disadvantage is evident.

On the other hand, the Import Intensity Index (III) is an adaptation of the RCA and focuses specifically on the import capacity of the country analyzed. The III compares the share of a product in the country's total imports with the share of world imports of the product in total world imports. If the value of the indicator is greater than 1, the country is said to be an intensive buyer of the product under study, but if it is less than 1, it is recognized that the country is not an intensive buyer of the product of interest. Its mathematical representation is detailed below.

$$III = \frac{\left(\frac{M_{pj}}{M_p}\right)}{\left(\frac{M_{wj}}{M_w}\right)} \qquad (2)$$

Where: Mpj represents the value of imports of product j into the country. Mp is the value of the country's total imports. Mwj is the value of world imports of product j. And Mw is the value of total world imports.

As with the RCA, the III index is normalized to obtain results between -1 and 1. Thus, if the III obtains a value between 0 and 1, it indicates that the country is a high importer of the specific good analyzed. In the opposite case, if the result of the III is less than 0, it is inferred that the country is a low importer of that product.

Given the above, the objective of the research is to determine those products in which Colombia and India show a NRCA and III index with convenient values, as appropriate. In other words, the aim is to relate the disadvantages and advantages of each of the countries with respect to the

different products or existing tariff items. To calculate the indexes, the Trade Map database was used, from which the values corresponding to exports and imports of each type of product, country and in general were obtained, considering the period of interest: 2000-2019.

Considering the availability of information, the indexes were calculated from 2001 to 2019. It should also be noted that, since indices were obtained for each year, the averages of these were generated before normalizing their result, to obtain an overall picture of the country's export and import performance for a given product group. The products were classified according to their tariff heading, using groups of up to 4 digits. Similarly, to determine the tariff headings with export potential from Colombia to India, the following condition was defined: RCA of Colombia greater than 0, RCA of India less than 0 and III of India greater than 0.

In a complementary manner and taking as a basis the tariff items that meet the conditions presented above, the Relative Trade Balance (RTB) index and the Balassa Index (BI) were estimated, with the objective of knowing the current behavior of bilateral trade between Colombia and India. First, the RTB was determined, an index that is constructed on the trade balance —exports minus imports—, as reference information in the numerator, in relation to the total trade exchanges that the country carries out with the rest of the world (Durán and Álvarez, 2008). Its formula is as follows:

$$RTB = \left| \frac{(X_{ijt} - M_{ijt})}{(X_{iwt} + M_{iwt})} \right| \qquad (3)$$

Where: Xijt are the exports of product k from country i to market j. Mijt are the imports of product k of country i from market j. Xiwt represent the exports of product k from country i to the world. And Miwt are the imports of product k of country i from the world.

On the other hand, the BI measures the degree of importance of a product within exports from one market to another market, versus the importance of exports of the same product in exports of the same product to the world

(Durán and Álvarez, 2008). Its formula is as follows:

$$BI = \frac{\left(\frac{X_{ij}}{TX_{ij}}\right)}{\left(\frac{X_{iw}}{TX_{iw}}\right)} \qquad (4)$$

Where: Xij are the exports of product k from country i to market j. TXij represent the total exports of country i to market j. Xiw are the exports of product k from country i to the world. And TXiw are the total exports of country i to the world.

The values obtained were handled in the same way as the previously calculated indices, i.e., they were normalized so that their result ranges between -1 and 1. In the case of the RTB, a positive value represents an advantage by reflecting the existence of a competitive sector with potential, while a negative value indicates a net importer sector that lacks competitiveness with respect to third markets. The IB is analyzed differently, since a value between 0.33 and 1 reflects a comparative advantage for the country analyzed; a value between -0.33 and -1 represents a comparative disadvantage for the country; and a value between -0.33 and 0.33 shows a tendency towards intra-product trade, in other words, exchanges are carried out between the same product groups (Durán and Álvarez, 2008).

The purpose of calculating these indices is to confirm the commercial viability of the products -tariff items- previously selected by RCA and III, for which it was necessary to show values greater than 0.33 in the case of BI and positive values for RTB. In this way, it was determined whether those pre-selected products already have trade between the countries of interest or whether, on the contrary, a market opening should be carried out for the specific product; in this way, the trade intensity between Colombia and India was estimated.

Results: Trade opportunities between Colombia and India

Given the objective of the research, as well as the methodology proposed above, the trade opportunities between India and Colombia were established by analyzing the different tariff items —up to 4 digits— included in the Trade Map database. A total of 1,259 4-digit tariff items belonging to 97 different product groups were identified, which are distributed according to the trade action carried out, whether export or import, and the country of origin or destination. The international trade indexes calculated reflect the comparative advantages of each country with respect to the different products traded, i.e., they make it possible to determine their export or import vocation. In this way it is possible to identify situations of commercial complementarity between the countries analyzed, to establish the products with the greatest opportunity for commercial exchange.

That said, the tariff headings of the groups of products that present a positive revealed comparative advantage (RCA) for Colombia and a negative one for India, as well as a positive import intensity (III) for the South Asian country under study, are presented below (see Table 2). These products constitute the pre-selection group for the identification of trade opportunities between the two countries, specifically for the export of products from Colombia to India. It should be noted that the indexes presented are already normalized and averaged to facilitate their analysis in the period of interest (2000-2019).

Table 2. Products with export potential from Colombia to India (RCA - III)

Code	Description	RCA Colombia	RCA India	III India
2709	Crude oil or bituminous mineral oils.	0.65	-1.00	0.57
7108	Gold, including platinum-plated or unwrought gold, semi-manufactured or powdered gold.	0.57	-0.69	0.83
2701	Pullets; briquettes, avoids and similar solid fuels obtained from hard coal.	0.92	-0.78	0.66

Code	Description	RCA Colombia	RCA India	III India
1511	Palm oil and its fractions, including refined and not chemically modified.	0.57	-0.95	0.81
7404	Copper waste and scrap (excl. ingots and similar forms).	0.65	-0.80	0.24
3105	Mineral or chemical fertilizers, with two or three of the fertilizing elements: nitrogen, phosphorus, among others.	0.14	-0.80	0.67
3904	Polymers of vinyl chloride or other halogenated olefins, in primary forms.	0.75	-0.60	0.42
3206	Inorganic or mineral coloring matter; preparations based on coloring matter.	0.09	-0.27	0.20
7602	Aluminum waste and scrap (excluding ferrous scrap from ferrous metal manufacturing)	0.28	-0.93	0.57
2704	Coke and semi-coke of coal, of lignite or of peat, whether or not agglomerated; retort coal.	0.90	-0.39	0.72
3912	Cellulose and its chemical derivatives, in primary forms.	0.23	-0.24	0.24
1513	Coconut “copra”, palm kernel or babassu oils and their fractions, including refined.	0.60	-0.53	0.24
3809	Finishing and finishing products, dyeing accelerators or dye fixatives.	0.21	-0.30	0.01
4104	Tanned or crust hides and skins of bovine (including buffalo) or equine animals, without wool or hair on.	0.62	-0.11	0.27
8311	Wires, rods, tubes, pipes, plates, electrodes and similar articles, of base metal or carbide.	0.11	-0.18	0.07
5902	Tire cord fabrics made of high tenacity yarns of nylon or other polyamides.	0.52	-0.05	0.63
2801	Fluorine, chlorine, bromine and iodine.	0.09	-0.23	0.56
2522	Quicklime, slaked lime and hydraulic lime (excluding calcium oxide and calcium hydroxide).	0.30	-0.71	0.21
1520	Crude glycerol; glycerol waters and glycerol lyes.	0.54	-0.78	0.09
4103	Raw hides and skins, fresh or salted, dried, limed, pickled or preserved.	0.82	-0.35	0.00

Note: Authors’ calculations based on Trade Map (2000-2019).

Of the total number of products analyzed, only 20 have export potential from Colombia to India; while, in the opposite case, a total of 140 tariff items with export potential from India to Colombia were identified. This reflects the competitiveness of Indian products compared to the lack of competitiveness of Colombian products, as well as an import propensity on the part of Colombia towards products manufactured in India. This first result highlights the export potential of the Colombian economy in: a) oil derivatives: crude oils, vinyl chloride polymers, mineral or chemical fertilizers, coal, cokes and semi-cokes; b) mining: gold, copper, aluminum, lime, mineral dyestuffs, and base or carbide metals; c) agro-industry: palm oil and its fractions, and coconut, palm kernel or babassu oils; and d) manufacturing: finishing and finishing products, as well as hides and skins, tanned or raw. In other words, productive sectors that should be promoted to obtain greater benefits from trade with India.

On the other hand, and to corroborate the relevance of the pre-selected products with export opportunities from Colombia to India, the trade balance ratio between the countries (RTB) was also calculated for each product, considering Colombia's exports to India and the imports made by Colombia from India; and the Balassa Index (BI) was determined, to establish the importance of each merchandise in relation to Colombia's exports to India. The results obtained are presented below, clarifying that the cells where there is a dash (-) are since the index for the Colombia-India relationship is not very representative, or null, of the exchange of that item (see Table 3).

Table 3. Products with export potential from Colombia to India (RTB - BI)

Code	Description	RTB	BI
2709	Crude oil or bituminous mineral oils.	-0.92	0.28
7108	Gold, including gold in the rough, semi-manufactured or powdered state.	-0.96	0.17
2701	Coal; briquettes, ovoids and similar solid fuels obtained from coal.	-0.99	-0.05
1511	Palm oil and its fractions, including refined oils not chemically modified.	-	-

Code	Description	RTB	BI
7404	Copper waste and scrap (excl. ingots and similar forms).	-0.99	0.63
3105	Mineral or chemical fertilizers, with two or three of the fertilizing elements: nitrogen, phosphorus, among others.	-1.00	-0.97
3904	Polymers of vinyl chloride or other halogenated olefins, in primary forms.	-0.89	0.77
3206	Inorganic or mineral dyestuffs; preparations based on dyestuffs.	-0.99	0.25
7602	Aluminum waste and scrap (excluding slag from the manufacture of ferrous metals).	-0.95	0.79
2704	Coke and semi-coke of coal, lignite or peat, whether or not agglomerated; retort carbon.	-0.76	0.83
3912	Cellulose and its chemical derivatives, in primary forms.	-0.99	0.83
1513	Coconut, palm kernel or babassu kernel oils and their fractions, including refined.	-0.99	-
3809	Finishing and finishing products, dyeing accelerators or dye fixatives.	-0.99	0.63
4104	Hides and skins, tanned or crust, of bovine (including buffalo) or equine animals, without hair on.	-1.00	0.59
8311	Wire, rods, tubes, pipes, plates, electrodes, and similar articles, of base metal or carbide.	-0.94	-0.73
5902	Tire cord fabric of high tenacity yarn of nylon or other polyamides.	-0.99	0.30
2801	Fluorine, chlorine, bromine, and iodine.	-0.98	-
2522	Quicklime, slaked lime, and hydraulic lime (excluding calcium oxide and calcium hydroxide).	-	-
1520	Glycerol, crude; glycerol waters and glycerol lyes.	-0.91	0.55
4103	Hides and skins, raw, fresh or salted, dried, limed, pickled or preserved.	-	-

Note: Authors' calculations based on Trade Map (2000-2019).

With the results obtained, and to definitively establish the products with the greatest export opportunities from Colombia to India, the values taken by both the RTB, and the BI are analyzed. In the case of the RTB, the results are not very, if at all, conclusive, since only negative or indeterminate values are obtained, reflecting the low proportion by product in terms of

exports and imports between Colombia and India, compared to the country's total exports and imports. That said, the RTB is not considered to definitively determine the products with the greatest opportunity for trade exchange in the bilateral relationship under study.

On the other hand, the BI allows determining the degree of importance of a product in exports from one country to another, compared to exports of the same product from the country of origin (Colombia) to the world. To definitively establish the products with the greatest export potential from Colombia to India, only those tariff items were selected whose BI was greater than 0.33, which reflects a favorable comparative advantage with respect to the country with which the trade link is to be established. Considering the results previously obtained, the final products with the greatest export potential and opportunity from Colombia to India are consolidated below, among which only eight product categories stand out, corresponding to petroleum derivatives, mining, and manufacturing —hides and skins, tanned leather— (see Table 4).

Table 4. Products with the greatest export potential from Colombia to India

Code	Description	RTB	BI
7404	Copper waste and scrap (excl. ingots and similar forms)	-0.99	0.63
3904	Polymers of vinyl chloride or other halogenated olefins, in primary forms.	-0.89	0.77
7602	Aluminum waste and scrap (excluding slags from ferrous metal manufacturing).	-0.95	0.79
2704	Coke and semi-coke of coal, lignite or peat, whether or not agglomerated; retort carbon.	-0.76	0.83
3912	Cellulose and its chemical derivatives, in primary forms.	-0.99	0.83
3809	Finishing agents, dyeing accelerators or dye fixatives.	-0.99	0.63
4104	Hides and skins, tanned or crust, of bovine (including buffalo) or equine animals, without hair on.	-1.00	0.59
1520	Crude glycerol; glycerol waters and glycerol lyes.	-0.91	0.55

Note: Authors' calculations based on Trade Map (2000-2019).

Implications for the Colombia-India relationship

Once the products with the greatest export potential between India and Colombia have been determined, according to the results of each of the indexes calculated, and taking as a reference point the tariff chapters of the different products selected, it is determined that the productive sectors that would obtain the greatest benefit are: 1) animal or vegetable fats and oils, 2) mineral products, 3) products of the chemical industry, plastic materials and related manufactures, and 4) hides and skins and leather. That said, it is possible to infer that the primary sector (raw materials, specifically mining and plant and animal derivatives) of the Colombian economy would be the main beneficiary of the intensification of trade relations between these two countries, followed by the secondary sector (transformation of raw materials, especially processing of vegetable fats and oils, chemical inputs, manufacturing, plastic materials, among others).

Specifically, the tariff chapters that would benefit most from increased exports of the products identified as having potential would be the following:

1) Animal or vegetable fats and oils; products of their cleavage; processed edible fats, animal, or vegetable waxes (15).
2) Mineral fuels, mineral oils, and products of their distillation; bituminous materials; mineral waxes (27).
3) Miscellaneous chemical products (38).
4) Plastics and articles of plastics (39).
5) Raw hides and skins (except furskins) and leather (41).
6) Copper and articles of copper (74).
7) Aluminum and articles of aluminum (76).

Complementary to the results obtained in this research, Hurtado and Zerpa (2020), understanding economic convergence as the phenomenon where economies grow in a stable manner and with low inflation, identified a high degree of convergence between the countries of the Andean Community and India, where Colombia specifically stands out. To determine such

convergence, macroeconomic indicators such as inflation rate, interest rate, public debt, budget deficit, exchange rate variation, GDP growth, output gap, real interest rate, unemployment and current account balance were considered. The high level of convergence shows the similarity of the economies of Colombia and India and allows inferring that there are high possibilities of integration to the extent that, from the economic and commercial point of view, the links between the two countries are deepened.

Similarly, and in relation to the products identified as having the greatest export potential from Colombia to India —which would make it possible to level the values exported with those imported and reduce the trade balance gap—, there are important challenges that must be overcome. Among them, the lack of free trade agreements between India and Latin America puts each country at a disadvantage compared to other partner countries such as China, South Korea, and the United States, all of which have free trade agreements with Latin American countries. According to Seshasayee (2020), this makes it necessary, in the first instance, to advance trade agreements that enable and provide facilities for Latin American entrepreneurs, in general, and Colombian entrepreneurs, specifically, to market their products to the Asian country. A way to increase trade between the two countries and ensure growth opportunities for the business sectors of both economies (Bolivar, Cruz and Pinto, 2019). And an opportunity to consolidate trade links from the promotion of more complex productive activities that facilitate the growth of productivity and workers' wages.

This implies reaching a trade agreement that goes beyond tariff reduction and agreements on intellectual property and agriculture. That is, aspects such as the environment, information and communication technologies, e-commerce, services, investment and government procurement must also be considered. This requires political will on the part of the governments of Colombia and India, which so far does not exist.

Another challenge to be faced is the lack of direct maritime routes between India and Latin America, which generates significant delays and delays in

the delivery of goods, ranging from 35 to 75 days depending on the route and the country. In addition to the need for greater cooperation between countries; especially of the public-private cooperation type that allows high flows of foreign direct investment and greater technology transfer (Caro-Vargas 2021). In this way, it will be possible to implement strategies and actions that facilitate trade exchange by taking advantage of commercial and economic similarities, as well as the specific needs and capabilities of the import and export environment, respectively (Seshasayee 2020).

In addition, another major challenge of this bilateral relationship is the use of non-tariff barriers. That is, the use of non-tariff measures that influence the quantities and prices of traded products (Gallardo-Sánchez and Vallejo-Zamudio 2019). In the Colombian case, it is necessary to eliminate the use of safeguards, antidumping measures, as well as decrees and resolutions related to technical standards and sanitary measures. And, in the case of India, the elimination of barriers in the bidding and public procurement regime, import licenses, antidumping measures, and the simplification of the Indian import regime —given the classification of imported products as liberalized, prohibited, restricted or centralized—.

Given the above, it is inferred that the promotion of relations between Colombia and India, to take advantage of Colombian products with high export potential, requires the strengthening of political, economic and trade relations between the two countries. For which it is necessary to determine facilitating aspects that generate a balance in the commercial exchange, improving the conditions in comparison with Colombia's main commercial partners: the United States, China, Mexico, Panama, Brazil, Ecuador and the European Union. Even when trade exchange is viable, the lack of adequate policies limits the convenience of Colombia-India trade.

CONCLUSIONS

Over the years Colombia has significantly intensified its trade relations

with Asian countries, but the results obtained have not been the most beneficial. The overall trade balance of the South American country continues with negative figures, as well as the specific trade balance with each Asian country, highlighting the successive deficits with China and India. This situation keeps Colombia in a lagging situation compared to other Latin American countries that have a better position with respect to the Asian continent; and increases the need for policies to improve its trade relationship with that region of the world, especially with India.

Once the flow of goods between Colombia and India was analyzed for the 1,259 tariff items identified and available in the Trade Map database, it was possible to estimate the indexes of revealed comparative advantage (RCA) and import intensity (III) for both countries. By analyzing Colombia's export advantage vis-à-vis India's export disadvantage and its import intensity for each type of product, a total of 20 tariff items (1.59 per cent of the total) with export potential from Colombia to India were identified. On the other hand, and based on the same indexes, India presented a total of 140 products (11.12 per cent of the total) with export potential to Colombia, showing a clear superiority over the trade dynamics of the Latin American country.

Even though the RCA and III indices allow the precise identification of products with adequate and relevant dynamics to establish a bilateral trade relationship between the countries analyzed —considering the level of exports and imports—, they do not contemplate the direct trade activity between the two countries. For this reason, the relative trade balance (RTB) index and the Balassa index (BI) were calculated to corroborate the results previously obtained and definitively confirm the products with the greatest export potential.

The values obtained by the RTB were of little relevance to the research, given the low trade activity between the two countries compared to the total exports or imports of each of them. Even so, the BI made it possible to establish the products with the greatest potential for exporting from Colombia

to India, going from 20 products to only 8, which are consolidated as the ideal ones to intensify trade relations between the two countries, and represent productive activities that, if adequately promoted, would allow Colombia to level the trade balance with India.

Specifically, the products with the greatest export potential from Colombia to India are: 1) copper waste and scrap; 2) aluminum waste and scrap; 3) vinyl chloride polymers; 4) cokes and semi-cokes of coal, lignite, or peat; 5) cellulose and its chemical derivatives; 6) finishing products; 7) tanned hides and skins; and 8) raw glycerol. These products are mainly located in the primary and secondary sectors of the Colombian economy, and these are the sectors that would obtain the greatest dynamism and benefits from increased export activity.

These results require rethinking the trade policy being implemented and defining different measures to promote foreign sales by sectors with export potential to India. In this way, greater use will be made of Colombia's comparative advantage in the face of the marketing opportunities generated by the existing disadvantages in India. A great opportunity to consolidate the arrival of foreign exchange, job creation and growth of the Colombian economy.

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