

# **Investment in the ports of Colombia and its Impact on the National Productive Apparatus**

*Inversión en los puertos de Colombia y su Impacto en el Aparato Productivo  
Nacional*

**Sara García Sierra**

**Sarigarcia1994@gmail.com**

**Catherine Giraldo Beltrán**

**caterinegiraldo@hotmail.com**

**International Business**

**Institución universitaria ESUMER**

**Medellín - Colombia**

**Abstract**

*Between 2007 and 2018, Colombian seaports have undergone infrastructure investments to make them attractive in the international merchandise traffic business in a highly competitive business that has escalated to another level with the appearance of cargo ships getting bigger. The research carried out was aimed to determine how the impact of this investment has been on the national productive apparatus, for which the generality of the investments was compared in all seaports, with the country's export balance and it was determined through the object of investments in the three paradigmatic ports of Colombia, such as Buenaventura, Santa Marta and Cartagena and the business model that is pursued with the master plans of the corresponding Regional Port Societies.*

## **Keywords**

Ports, Investment, Exports, Development, Business

## **Resumen**

Entre los años 2007 al 2018 los puertos marítimos de Colombia han sido objeto de grandes inversiones en infraestructura para hacerlos atractivos en el negocio del tráfico internacional de mercancías en un negocio altamente competitivo y que ha escalado a otro nivel con la aparición de buques de carga cada vez más grandes. La investigación realizada tuvo como objetivo determinar cuál ha sido el impacto de esa inversión en el aparato productivo nacional a través de las exportaciones para lo que se utilizó una metodología mixta, cualitativa describiendo el destino de las inversiones en los puertos marítimos de Buenaventura, Santa Marta y Cartagena como ejemplos de la generalidad de las inversiones en todos los puertos marítimos nacionales y cuantitativa al hacer una correlación con la balanza exportadora del país en tres rubros agrícolas representativos de diferentes sectores como son el café, las hortalizas y los productos terminados en cuero. El principal resultado es que existe poca relación entre las inversiones realizadas en los puertos y las exportaciones del aparato productivo nacional.

## **Palabras clave**

*Puertos, Inversión, Exportaciones, Desarrollo, Negocios*

## **Introduction**

Seaports are part of the international and internal supply chains of every country. In a globalized economy, the rules have changed and this coerce to reinvent the way to manage the seaports so that there are not disadvantages in a highly competitive maritime transport industry. In an international context, in the two first decades of XXI century, Colombia has signed important trade agreements in bilateral-free trade agreements and has also signed

with organizations of countries such as MERCOSUR and CARICOM, for which It needs a maritime port infrastructure of exportation as strategic support in the development of productive apparatus of the country.

Modern seaports equipped with high technology are needed to face the increasingly mobilization of goods in large size and deeper draught ships, international supply chains, shipping and robotization which is where the global transport industry of goods is heading to, as it is shown by the projections of global organizations. In the modern economy, a port ceased to be the boarding and disembark pier of goods to become in an economic unit with its own weight within the productive chain of a country. For Rúa (2006) the definition of the United Nations Conference on Trade and Development (UNCTAD) is correct.

The definition given by UNCTAD (United Nations Conference on Trade and Development) clearly shows this multifunctional nature: “Ports are interfaces between different modes of transport and are also, combined transport centers. In sum, ports are multifunctional, commercial and industrial areas where goods are not only in transit, but also handled, manufactured and distributed. Indeed, ports are multifunctional systems, which, to function properly, must be integrated into the global logistics chain. An efficient port requires not only adequate infrastructure, superstructure and equipment, but also good communications and, especially, a dedicated and qualified management team, with motivated and trained labor” (p. 2)

The purpose of the research is to analyze the investment policies in seaport infrastructure in Colombia and how it has impacted on the development of the national productive apparatus in , depending on the export of products and taking advantage of the comparative advantage, as it is the only South American country with presence of ports of great importance in the Caribbean and the Pacific ocean: Buenaventura and Cartagena, tenth and fifth respectively in the ranking of containers mobilizer ports of America according to the Economic Commission for Latin America (ECLAC) in 2017. In the same way, the port of Santa Marta is included as the main port of departure for coal and a comparative fact of the development of investment in ports with physical characteristics that are the result of the geographical conditions of its location.

A correlational analysis was also carried out between the investment in the ports and the country's exports, supported on the premise that, the investment will positively impact the national productive apparatus and therefore on the international supply and the export volumes of the country.

## **1. Theoretical framework**

Seaports are essential in the economy of a nation and reveal the character of its production and its economic development policies. Its main function is to serve as a departure gate for national production and as an entrance for the products that are needed for the support and development of the nation in the context of worldwide development. Therefore, the theoretical framework of this research is focused on the development of the infrastructure of the ports of Buenaventura, Cartagena and Santa Marta between 2014 - 2018 as a departure gate for Colombian production.

To recognize the evolution of ports as activators of the national productive apparatus, It is necessary to know about the Colombian productive apparatus. It is based on extractive activities, both mineral and vegetable, either for internal consumption and also for its commercial relationship with the world. For Ramoni and Orlandoni (2015), in the country the exports of commodities (basic goods such as essential raw materials for export) prevail over finished or industrialized products because they are suitable in international markets for their commercialization both, naturally and as a finished product in the receiving country industry. Petroleum, coal, ferronickel, gold and copper, among other minerals and coffee, bananas, sugar, and other vegetables, appear in the export offer, although the minerals are the ones that dominate exports.

Almost 80% of the products that Colombia offers to the world correspond to raw materials, whose structure seems to move towards the predominance of mineral products, in deterioration of agriculture.

In fact, while the exports of the first group grew 70% on average between 2010 and 2014, exports of agricultural items and livestock increased just 18% during the same period. On the other hand, industrial exports barely managed to grow 6%. (p. 28)

In the modern world, the relationship between the infrastructure of seaports and international trade balance (BCI) of a country is natural and is evidenced in its development. Likewise, the greater the port facilities are, the better business opportunities and inclusion in the global supply chain. Therefore, the development policies of a port must transcend the merely pier function to become the country's link with the global marketing and transportation chain. According to Sánchez, Jaimurzina, Wilmsmeier, Pérez and Pinto (2015) "Cartagena increased its market share from 5.5% to 11.6% between 2005 and 2013, while other ports, such as Port of Spain and Point Lisas, have not increased its market share, despite the growth of total traffic "(p.75) However, it is important to establish to what extent the development policies of the ports are boosting the globalizing direction.

The global supply chain requires a business model that in turn implies changes in infrastructure to which ports have been forced. Larger ships with a greater volume of handling tons respond to a business model in which private investors participate and whose governance is directed to the necessary port reforms to overcome a unimodal vision of the ports, current in Latin American countries and from which the problems that are dragging and facing the region emerge. For Sánchez & Chauvet (2018) The consequence is a disintegration in the productive chain towards the inside of their nations.

The port is conceived not only as the product entry and exit gate but as a modal transport interchange for goods in transit, whether by air and / or land routes or to smaller ships for the same water route or its river component. Similarly, its activity has to be profitable, so changes in its infrastructure are an investment with a view to a long horizon in a competitive market that is decanting for the integration of shipping companies and port operators, to which they are adding large logistics companies

Castro, Soler, Umaña and Yepes (2015) carried out a qualitative research work on the conditions of the ports of Buenaventura and Cartagena in relation to the competitive advantages for their area of influence, both in the Pacific and in the Caribbean, through the description of the conditions of its facilities and concluding that its main problem is the capacity with respect to the draught of their access channels that limits the capacity of entry of ships placing both ports in a disadvantage position with others in the area. Expanding the entry capacity would result in the expansion of the country's marketing capacity and, therefore, would be more competitive.

Currently, the port infrastructure continues to have problems due to its inability to meet the commercial demands that emerge; However, it is important to recognize that there have been improvements in the ports, in other words, that there is a good port infrastructure, although it is still insufficient for new demands (p. 103)

There is a city-port relationship that conceives the port as an urban area and as an important part of the development of the urban area. According to Aguas, Peña, & Ospina (2017) The function of modern ports cannot be separated from the social and economic influence that exerts in the area in which it is located. A modern seaport is a complex infrastructure conformed of what might be called several approach areas. In a first area, it can be included everything that is in the location of the port such as the piers, the technology of deposit, loading and unloading of items that have different aspects from liquids and grains to finished items, access routes and security areas. A second area would be conformed by the city, or the geographical area in which is located, with support facilities, whether hotels and shops, alternate deposits, banks and other services, access routes, shipyards, etc. And a third area that implies the penetration or exit routes of the region in which it is located. For Bobadilla and Venegas (2018) it is important to determine what are the advantages of Colombian seaports in relation to the geography of ports in their area of influence.

Colombia is among the Latin American countries that have commercial port activity privileged by its geographical location. Buenaventura and Cartagena's ports provide Colombia with an important contribution to its economic development, since both are within the ranking of the 20 ports belonging to Latin America and the Caribbean published by ECLAC, and according to the figures of the

Container movement, in these countries, the ports occupy the fifth (5th) and nineteenth (19th) place (respectively), representing a great commercial achievement regarding border countries such as Balboa and Colón, in Panama; and Santos, in Brazil (Bobadilla & Venegas, 2018, Conclusions, para. 2)

Making the most of this comparative advantage determines a type of governance that implies changes in the administrative and legal structure of the ports. The port, as an autonomous economic unit, needs a governance model that includes national interests, the successful business of companies, job stability of workers and social commitment, which is decisive in improving the quality of life of citizens.

A desirable trade exchange balance is one whose measure, in payment currency or quantity of product handled, leaves positive numbers for the nation. For this to happen, exports must have a balance or exceed imports both in the generality of all products and in each particular item. Therefore, it is necessary to know the amount of Colombian exports for the years studied.

The corollary of a country's exporting productive activity is an International Trade Balance (BCI) of positive sign beyond the successful commercial management of its seaports in the current business model of the industry. According to the Economic Commission for Latin America (ECLAC) in 2018 the economic activity in Colombia showed signs of recovery that were not perceived since 2015 and the trade balance improved by about one point of GDP in the first half of the year, which, along with other factors helped to compensate the increase of the deficit of net factorial income. For ECLAC (2018) The improvement of the BCI was due to the increase of the value in dollars, of exports of goods and services (14.7%), traditional exports (20%) and also by external sales of non-traditional products (6.3%), excelling the manufacturing industry.

For Rodríguez, Frasser, and Andapiña, (2017) The productive apparatus of Colombia is conformed by a primary sector and a majority agro-producer that exports raw materials, for its value as commodities, like most of the Latin American countries. In this sector, mineral exports, especially energetic ones, are the backbone of export earnings. According to Córdoba & Zapata (2017) in the first half of 2017, oil exports and their derivatives had the highest volume of export earnings, followed by coal, coffee, industrial products and bananas.

The increase presented in this period (January-June 2017), in contrast to the same period of the previous year, according to the semi-annual report of the Bank of the Republic, it was mainly due to higher overseas sales of: oil and its derivatives (US \$ 1,149 m), coal (US \$ 1,105 m), coffee (US \$ 143 m), industrial products (US \$ 78 m) and bananas and flowers (US \$ 55 m). (p. 8 - 9)

Industrial products, with added value for their downstream development, are in a fourth place with export value far away from the first three products. Exports are a reflection of the country's productive development with an extractivist vision and little investment in technification and value-adding processes.

## **2. Methodology**

A mixed investigation was carried out, with a descriptive study that determined the volume of national investment in the development of the country's seaports and the destination of that investment, in the infrastructure of the seaports of Buenaventura, Santa Marta and Cartagena as an indicator of the business model proposed by the Colombian port industry but which influences the evolution of the country's productive apparatus and, therefore, economic development

The investigation was carried out in primary documentary sources such as official documents of the government of Colombia and the seaports of Buenaventura, Santa Marta and Cartagena, in the documents of their respective Regional Port Society (SPR), found in their institutional electronic portals, or those found in electronic documentary repositories of research networks and / or universities whose reliability can be verified by the rigor of their publication policies.

Similarly, A quantitative component was considered necessary by making a comparison the volume of the national investment of the ports in relation to exports starting from the assumption that the development of the national maritime port infrastructure, impacts positively the volume of exports. For this, a documentary review of the data of different agencies that are responsible for supporting national production was made; such as the Superintendence of Ports, the Ministry of Transportation (Mintransport), the National Infrastructure Agency (ANI), the National Tax and Customs Office (DIAN) and the National Administrative Directorate of Statistics (DANE); both in the amount of the investments of the ports and the amounts of exports. A comparative correlation was also made through a simple linear regression analysis, taking as variables the annual amounts of investments in seaports and the amounts of exports of three products present in exports of national agricultural production such as coffee, vegetables and leather products, between 2013 and 2018.

The selected products are grouped by product categories by the World Trade Organization (WTO) and they can be found in the data of its allied agency: the International Trade Center (ITC), such as: Product: 07 Vegetables , plants, roots and tubers; Product 09: Coffee, tea, mate, herbs and spices and Product 4 2 Articles of leather; saddlery goods; travel items, bags

The corollary of a nation's port business is the BCI, which is added to the balance of each seaport. It is the reflection of the foreign trade currently understood, according to Rohde (2015) as “the exchange of goods between two or more countries that it has been driven by the globalization process, which has facilitated the creation of commercial blocks and liberalization of the economies.”(p.10) Thus, the numbers of Export / Import in certain sectors of production can give signs about the evolution of both production and infrastructure, that is why establishing the sign of the international trade balance of Colombia between 2014 - 2018 of three specific items: coffee, vegetables and finished leather products, serves as a measure of the nation's export / import relationship and is a valid indicator of the nation's current commercial behavior. The period of time was limited by the access to data of the investments in seaports, available by the superintendence of ports.

The import and export volumes of the last five years (2014-2018) were investigated, adjusting to the disposition of data of the amounts of investments in seaports, in three items chosen from portals of international trade organizations recognized by the World Trade Organization (WTO) and academic research works with scientific support relative to the main subject of study, in order to identify the amount of investment in ports and how it impacts the productivity of exports and the productive apparatus of the country. The selection and analysis of the information was carried out through a matrix of systematization of the information according to categories of analysis determined by the design of the study objectives.

**Chart 1. Matrix of Information per Seaport.**

Objective: To determine the annual amounts and destination of the investment in the infrastructure: Cartagena Port				
N°	Year	Destination (type of infrastructure)	Amount (usd)	totals
1	2014			
2	2015			
3	2016			
4	2017			

5	2018			

**Source: Own elaboration**

The systematization matrix of the items, in which vegetables, plants, roots, tubers, coffee, mate, herbs and spices, leather goods; saddlery, bags; were evaluated; included the variables: Year, amount of exports, amount of imports and the balance as differential between exports and imports, and they were determined because each product requires a special condition in the ports for its preservation.

**Chart 2. Matrix of Information per Items**

Objective: To Determine the Trade Balance (usd)				
Item				
N°	Year	Exports	Imports	Balance
1	2014			
2	2015			
3	2016			
4	2017			
5	2018			

**Source: Own elaboration**

### 3. Results and/or findings

#### 3.1 Investment in Ports

By 2017, 97.7% of Colombia's exports were made by water routes. According to the DIAN (2018) that percentage increased for the first half of 2018, with the 98.6% leaving by the sea, representing 70 million tons. This data highlights the importance of having an efficient maritime port infrastructure. Likewise, for ANI (2017), as a Colombian government institution, Colombia's maritime port capacity, installed for the movement of tons, increased more than 55%, between 2010 and 2017. It is noted that this growth will reach 79% by 2021, which is 286 million tons in 2010 and 514 million tons by 2021

This growth was achieved thanks to the large investments made in the last 6 years, which exceed 2,200 million dollars.

At the end of the period between 2016 and 2021, it is expected that the current terminals have invested about 276 million dollars annually (ANI, 2017, Cartagena, Bolívar (@ANI\_Colombia), para. 4 and 5).

For this, significant investments have been determined by infrastructure needs of the ports that are determined in the investment master plans. For the five-year period 2010 - 2015, the annual distribution of the amounts invested, according to the Superintendence of Ports, was carried out with the following amounts.

**Chat 3. Investments in Colombian seaports per year**

<b>National Investment in Seaports</b>	
Year	USD
2010	325.512.298
2011	465.980.622
2012	522.569.270
2013	573.379.983
2014	827.681.128
2015	826.450.783

**Source:** Superintendence of Ports

Castro, Soler, Umaña and Yepes (2015), in the document *Port infrastructure in Colombia: asymmetries between the port of Buenaventura and the port of Cartagena for the year 2015*, a description of the ports of Buenaventura and Cartagena as a comparison of their business opportunities and as activators of national production. They argue that *Colombia has many challenges ahead* that need a management of port infrastructure projects and the regions in which they are based for development, the last one understood in commercial, infrastructure and social terms.

These challenges of transformation are guided by Master Plans for each of the SPRs for which according to the Ministry of Transportation (2016), the investments made from 2010 to 2016 are, in millions of dollars:

- Port of Caragena: 592 USD.
- Port of Buenaventura: 986 USD.
- Port of Santa Marta: 491 USD (Mintransporte, 2016).

Similarly, for ANI (2017) investments are aimed to increase the capacity to mobilize tons of the ports. From 286 million tons to 444 million tons between 2010 and 2017 for an increase of 55%.

These investments are approved and they receive contributions from Colombian State through respective government bodies and with follow-up of the Agencies. In total, according to the ANI data, the Master Plans for each port are composed like this:

- The Port of Buenaventura has a Constant Investment Master Plan worth of US \$ 450 million in 2007 to be executed between 2007 and 2034
- The Port of Santa Marta has a Master Plan worth of US \$ 127 million constant from 2008 to be executed between 2008 to 2033
- The Port Society of Cartagena has a Master Plan equivalent to US \$ 653 that should have been executed by 2017

### ***Port of Cartagena***

Cartagena is a natural, strategic port, as evidenced by all Colombian history since the arrival of the Spaniards. It has evolved along with the country having historical milestones that changed its development empowering it to respond to the international demand rather than the productive development of the nation. For 1993, one of



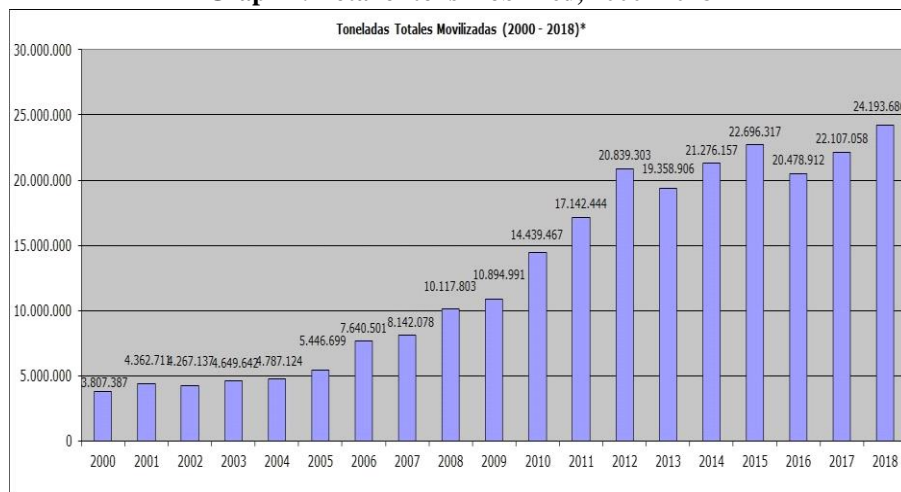
those milestones was that its administration passed to the newly born Cartagena Regional Port Society (SPRC) - Contained in concession for forty years and based on a series of investments as part of a master development plan that contemplated the investment in infrastructure, equipment acquisition, human capital, process purification and technology acquisition that seeks to increase the volume of load and enter into the regional and global map of connectivity as part of the global production chains.

By the year 2012, a second milestone is presented, the signing of the FTA with the US, which includes the port as a launch point, implies that the investments must face the commitment of access and reception of a greater volume of goods and consumables since, excluding coal and mineral oils, Cartagena is the first in exports to all countries, but, especially, it is the main Colombian port for Foreign trade withcar United States, Canada and Europe. It is also the first in the country to transfer cargo to other ports. Martínez, Malagón and Muñoz (2014) cite the SPRC-Contecar (2012)

The Port of Cartagena is also the main transfer port in the country. By 2012, from the total number of TEUs mobilized, 68% represented the transshipment load, 14% were imports, 10% were exports and 8% empty containers. (p. 7)

This work with containers, determines that cargo mobilization has been steadily increasing since 2000 in an ascending curve that allows determining the positive economic management of SPRC-Contecar. The following graph, taken from its 2019 report, evidences a 500% increase in mobilization over in period of 18 years.

**Graph 1. Total of tons mobilized, 2000- 2018**



**Source: SRPC-CONTECAR (2019)**

The port provides port services such as: loading and unloading of containers, filling, emptying and weighing of bulk ships, intrusive and non-intrusive inspection of containers, shredding and de-racking of tally stick, piloting, mooring and unmooring of ships and boat services and tugboats. Its infrastructure also provides cargo, maritime, logistics and cruise services. According to Granados, Moreno and Segura (2013), its main competitiveness problem with other ports in the region is the low draught of its access channel.

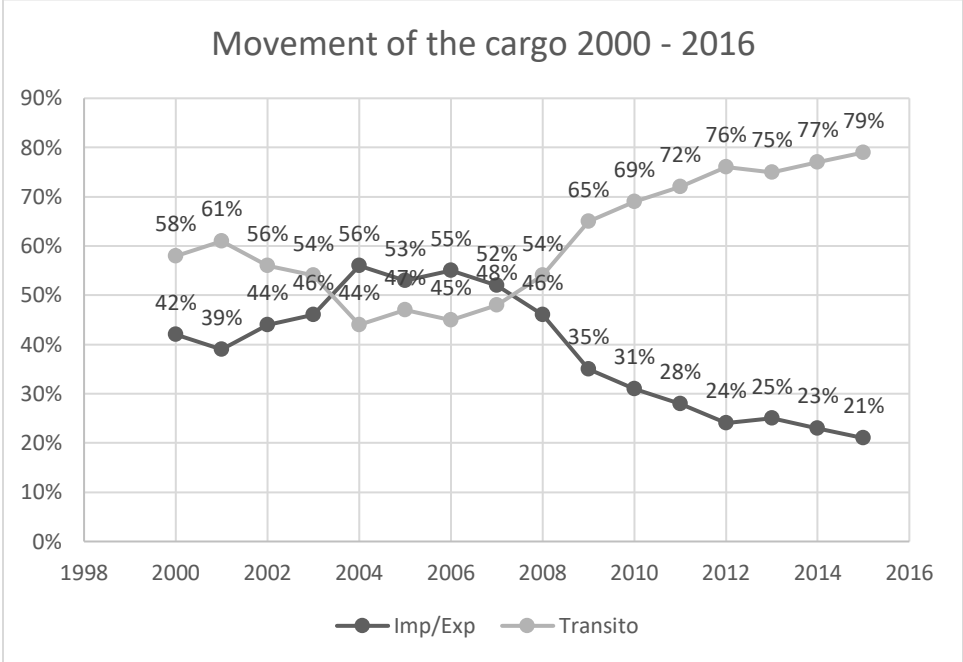
The solution to the capacity problems of the access channel to the bay of Cartagena lies in the construction of a new channel to the south of Bocachica. [sic] Located between the Abanico Island and the north of Barú; El Varadero channel is the hope of the port sector to allow the access to ships of larger quantity and greater capacity. (p. 54)

The report *Economic and social impact of the port of Cartagena*, highlights the importance of a permanent and transforming investment, for the infrastructure of the port indicating that between 2013 and 2019 the SPRC-Contecar invested about 600 million dollars, expanding the capacity and logistics technology to increase the load-flow and guarantee the passage of larger ships. This, points out the disposition of the investment towards

a very specific business model. Martínez, Malagón and Muñoz affirm that “The increase in the participation of transshipments in the loading of the port responds to the commercial positioning of Cartagena as an important commercial point” (p. 33).

It is reaffirmed by the SPRC report (2018) stating that the increase in container movement is due to the change in the company's business model to position itself as a transshipment port highlighting that between 2006 and 2012 they increased their cargo volume five times of cargo from 744,441 units to 2,345,132 in 2016.

**Graph 2. Movement of the Port of Cartagena according to the type of cargo**



**Source:** Own Elaboration based on dato frm SPRC (2016)

The investment master plan sought the way to position Cartagena as an important location for cargo transshipment from large ships of 16,000 TEUs (Twenty-foot Equivalent Unit) for which an infrastructure expansion was projected in a three years stage as described below.

**Chart 4. Infrastructure investment plan SRPC**

Description	2014	2017
Attention to draught ships	6,000	16,000 TEUs
Depth of dock	14,5 mts	16,5 mts
Number of piers	8	8
Docking area	1,700 mts	1,700 mts

Pier cranes	12 gantry type	21 gantry type
	3 MHC cranes	3 MHC cranes
Yard area (hectares)	40	115
Storage Cells	53,000	85,000
RTGs cranes (patio)	55	92
Intakes for refrigerated with temperature sensors	2,300	3,900
Tracto-trucks	154	200
Rails door tracto-trucks	12	18

**Source:** Own elaboration base on data from SPRC (2016)

The investment determines a business model that gives preference to the transit of containers towards and from ports that do not accept large draft ships. To make this possible, ships that contain up to 16,000 TEUs of cargo must be served, so it is necessary to deepen the entry channels in two steps from 14.5 meters to 16.5 meters.

In the same way, the number of gantry cranes is increased since their design allow a quick unload-. The area of the yards is increased by three times and all its support infrastructure increasing the storage cells by 32,000 and almost doubling the number of cranes in the yards.

It increases by 1,300 the intakes for refrigerated and in 46 the tractor-trucks, as well as their lanes of displacement. The whole set allows a greater and faster container mobilization.

### ***The port of Buenaventura***

The port of Buenaventura is the main representation of Colombian industry in the Pacific. By 2017, the port mobilized 71% of the cargo operated by the Colombian Pacific. For González (2018) cited by El País (2018), the port was ranked among the top 10 Latin American ports, reaching a record of one million containers mobilized. The region is considered as an optimal point of entry into the country, which makes the port one of the most important in the nation.

According to Martínez, López and Ojeda (2015) by the first quarter of the last century, the port represented a fifth of the country's foreign trade and about 15% of coffee exports. For Álvarez, Daza and Gómez (2018) Their structural export problems are more related to the deficiencies in the access roads in the region than with the infrastructure of the port itself, considered a multi-purpose maritime terminal. Among its services it can be found: filling and emptying, repair of dry and refrigerated containers, storage, handling and portage of cargo, power supply, port control, non-intrusive inspection, bailment management, weighing, loading, unloading and packing. According to Machado (2017) by 2016, the port moved 50% of imports, 75% of the incoming cargo from Asia, 70% of coffee exported and almost the totality of the sugar.

**Chart 5. Port Movement Statistics SRPBUN 2016**

Total ships served	1,303
Tons mobilized (millions)	15,2
Tons exported (millions)	4,2
Transit/import of tons (millions)	11,1
Quantity of Containers (TEUs)	911,533
Customs income (billion pesos)	5,47

**Fuente:** Own elaboration based on data from SRPBUN (2016)

The chart highlights that the largest quantity of tons is mobilized between importation and container transport for 73%.

Although exports represent only 27% for the country, the economic management of the port is successful as it is part of the global business model. That vision is decisive in the management of its investments.

**Chart 6. Investment Plan Management 2019 SRPBUN**

<b>Investment in the Port of Buenaventura al 2019</b>	
Reinforcement of the pier 7 y 8	Docking line will increase in 1,287m.
Crossdocking platform	Refrigerated chambers with high technology to guarantee exporters of refrigerated cargo, safety conditions in their products without losing the cold chain.
LED lighting project	Use of green technologies. It started by the replacement of luminaires with LED devices, increasing the brightness factor to 51 lux (higher than international standards for ports) and less than 40% of energy consumption.
Slab replacement	Maintenance program for slabs and support beams for containers
Support beams for containers	Leveling in yards for container crumbling at 6 tal and modification of yards according to the concept of HPC consultancy
Satellite Dining Project	Spaces for the improvement of working conditions and that increase the level of welfare of employees

SPB central file adjustments	It will guarantee the preservation of all the documentation of the SPB, complying with the provisions of Agreement 049 “Conditions of Buildings and establishments for Archives” - General Archive of the Nation
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**Source:** Own elaboration based on data from SRPBUN (2019)

The Port Society invested 83 million dollars in infrastructure in 2018 and 600,000 were intended for the implementation of crossdocking technology (González, > z2018), which allows the inspection and mobilization of refrigerated loads and reduce the times of export and import with a capacity to carry out 5,000 operations per year.

Due to its location in the Pacific, it is a strategic port in the business of cargo transshipment to the ports of less draught of its area of influence, and its most important investment is aimed at deepening access channels gradually until 16 meters For that purpose, in 2018, 2.5 million dollars were invested in maintaining the dredging of the access channel.

### ***Port of Santa Marta***

It is a multifunctional terminal whose operation is mainly coal, fuel and palm oil. Also loading containers, grains and general cargo. It is the only port with 18-meter of deep-sea draught with no dredging for post-Panamax ships. Santa Marta has the third largest cargo volume in Colombia. It has 1,060 meters of piers with depth from 5.44 meters to 19 meters. According to Pírela (2018) Santa Marta is the closest Caribbean city to the center of the country, so its land freight rates are cheaper and more competitive. According to García, Henao, Rodríguez, Campo and Herrera (2016) “The type of frequent cargo in this port area is liquid bulk” (p. 44) but also one of its strengths is the coal export operation. It has an annual storage capacity of seven million tons, and a load of 24 thousand tons per day. In that order of strengths, it is the only port on the Atlantic Coast with rail service, which allows loading and unloading directly at the piers.

**Chart 7. Mobilized Totals SRP Santa Marta 2018**

Coal (tons)	2,966,657
Solid Bulk (tons)	1,960,477
Containes (TEUs)	195,087
Liquid Bulk (tons)	579,163
Veicles (unit)	41,362

**Source:** Own elaboration based on data from SPSM (2018)

The SPR of the port of Santa Marta shows in its Annual Report of 2017 a report of increase in all the activities of the port, whose corollary is the positive economic efficiency of the management. The same document reveals

the existence of an investment project for the reception of the different materials, from containers, passing to refrigerated spaces to repowering of pier infrastructure. For SPR Santa Marta (2018), the document is the compilation of the results of an investment project in the port as a business that responds to an international freight transport industry with its own determinants, and it also gives an indication of what a seaport needs to adapt it to a new business vision.

**Chart 8. Investment Plan SPR Santa Marta**

<b>Port of Santa Marta</b>			
Investments and proposals (2011-2020) (USD)			
Description	2011	2020	Totals
Container Terminal Infrastructure	17,800,000	16,292,341	34,092,341
Terminal Equipment Containers	21,800,000	3,200,000	25,000,000
Bulk Terminal Infrastructure	7,730,120	10,465,629	18,195,749
Terminal Equipment Bulk - General Cargo Terminal Equipment	4,385,000		4,385,000
General Cargo Terminal Infrastructure		2,730,358	2,730,358
Piers with sheet piles	2,672,317	2,619,574	5,291,891
Port repowering	48,883	6,899,779	6,948,662
Security (scanners)	2,700,000	2,700,000	5,400,000
Total	57,136,320	44,907,681	102,044,001

**Source:** Own elaboration based on data from SPR Santa Marta

Most of its investment leans towards the infrastructure for the mobilization of containers in the transfer of ships of different draught, for which it is destined to an investment of something more than 59 million dollars until 2020.

In the sum of the terminal infrastructure (Containers, bulk and general cargo) 62% of the investment is assigned to the container terminal.

### 3.2. International Trade Balance (BCI)

The management of the ports is decisive in the productive and commercial structure of the country, since export facilities, with the minimum of product losses, are an interesting reason that boost the producer and the marketer.

A BCI leaves a trade deficit for a country when the value of exports is lower than the one of the imports. But it is not only a reflection of the export behavior of a country, but of the behavior of international markets. Therefore, the products may vary from a commercial sign, being positive for some years and negative for the next.

**Chart 9. Trade Balance: 3 Items (Dollars)**

<b>Year</b>	<b>Vegetables, plants, roots and tubers</b>	<b>Coffee, tea, maté and spices ...</b>	<b>Leather goods, saddlery, bags ...</b>
2014	-136,348	2,472,180	-110,936
2015	-148,535	2,553,567	-86,883
2016	-176,488	2,437,052	-75,111
2017	-155,712	2,543,477	-98,862
2018	-126,479	2,228,893	-110,664

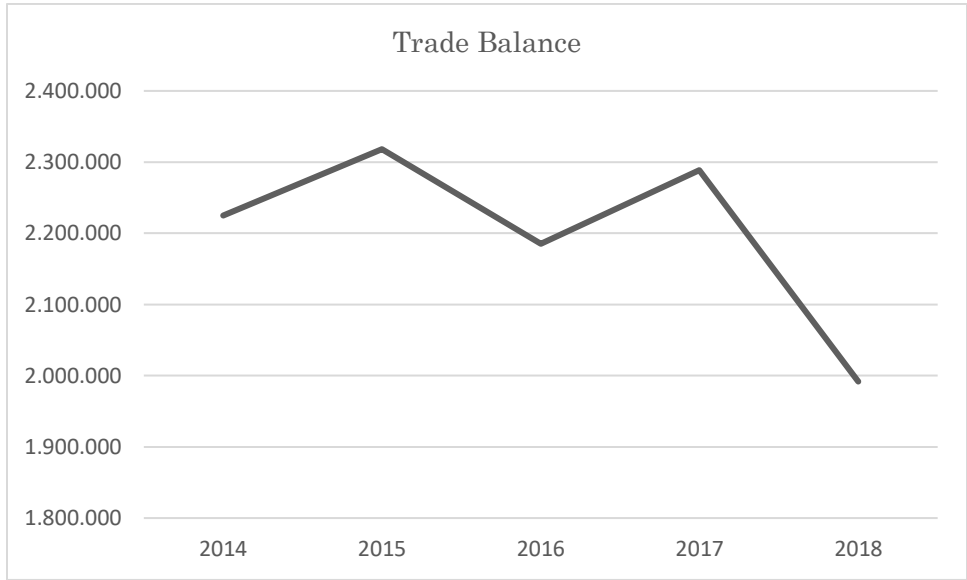
**Fuente: Own elaboration based on data from ITC (2019)**

The chart presents three paradigmatic items of the varied Colombian export and import production that shows the character of the consumer behavior, namely: vegetables, plants, roots and tubers; leather goods, saddlery goods, travel goods, bags; Coffee, tea, mate and spices.

A quick reading tells us that Colombia consumes more than it produces in the field of vegetables, plants, roots and food tubers. A culturally agricultural country has a historical trade deficit in basic consumer products. Similarly, finished leather products show a negative sign whose reduction tendency was reversed for 2017.

There is an obvious difference with coffee, tea, mate herb and spices, but it must be highlighted that Colombia is one of the largest producers and exporters of coffee in the world, so that the product is one of the axes of Colombian economy. The results of this particular balance are better appreciated in the following chart.

**Chart 3. Trade Balance: Items**

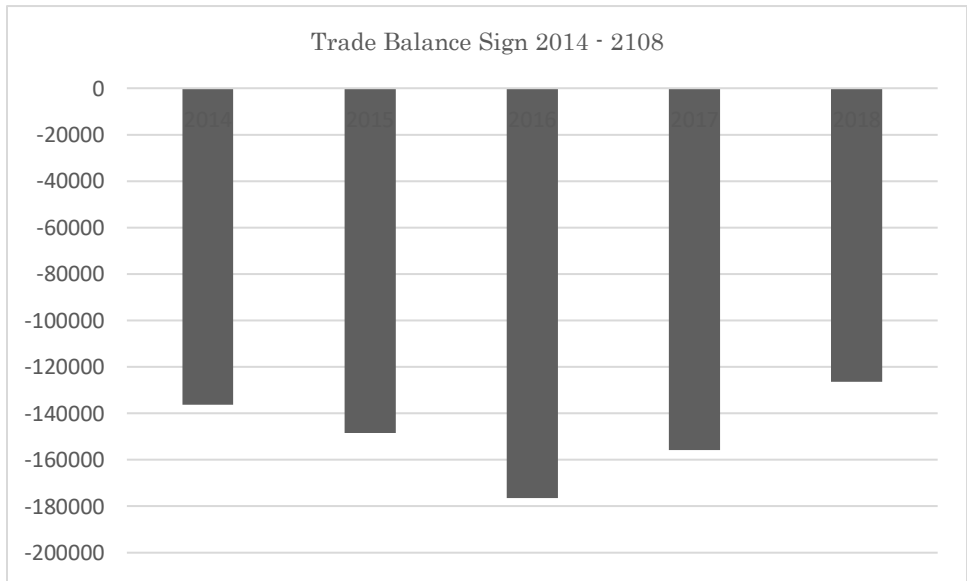


**Source:** Own elaboration based on data from ITC (2019)

The chart shows an irregular behavior of the combined balance of the 3 items with elevations in 2015 and 2017, but with decreases in 2016 and 2018. The strongest decline occurred between 2017 and 2018, when the balance fell by \$ 300,000.

In Colombia, the trade balance has been historically negative. It imports more than what is exported, and large exports are raw material such as bulk, coal, crude oil and green coffee. Even with the income of these three items, Colombia maintains a BCI deficit that impacts the balance of payments and determines the behavior of its roles in the international stock markets. The following charts, shows a better visual understanding of the phenomenon.

**Chart 4. Colombian BCI 2014 – 2018**



**Source:** Own elaboration based on data from ITC (2019)



The period studied in 2016, it is the one that shows the greatest deficit for the Colombian BCI, above 17,000 million dollars.

In general, the deficit in the period studied remains above 12,000 million dollars

### 3.3. Correlation between investments vs. International Trade Balance

To determine the impact the investments in the ports have generated on the productive apparatus of the country, a simple linear regression analysis was carried out, for which it was used the data of the investments obtained in the present study for the years between 2013 and 2018. For the Trade Balance, it was necessary to take the ITC (2019) data presented in Chart 7. On the other hand, given that information about the investment in ports was found dispersed and presented for each of them in different years, it was decided to calculate the average annual investment with the data obtained independently for each port. In the case of Cartagena, the data was taken from the document *Economic and social impact of the Port of Cartagena* in which is presented the distribution of the Investment plan of this for the same years of the current study. The information of the investment of the Port of Buenaventura was taken from two sources: The Investment Plan of the Port Society (2016) which presents the biennial plan 2015-2016 and the investment reported by González (2018) for the 2017-2018 period. On the other hand, for the port of Santa Marta, the information was taken from the accumulated investment data in 2018 reported in its Management Report for the Second Half of 2018.

The following chart, summarizes the average annual investment for the study period:

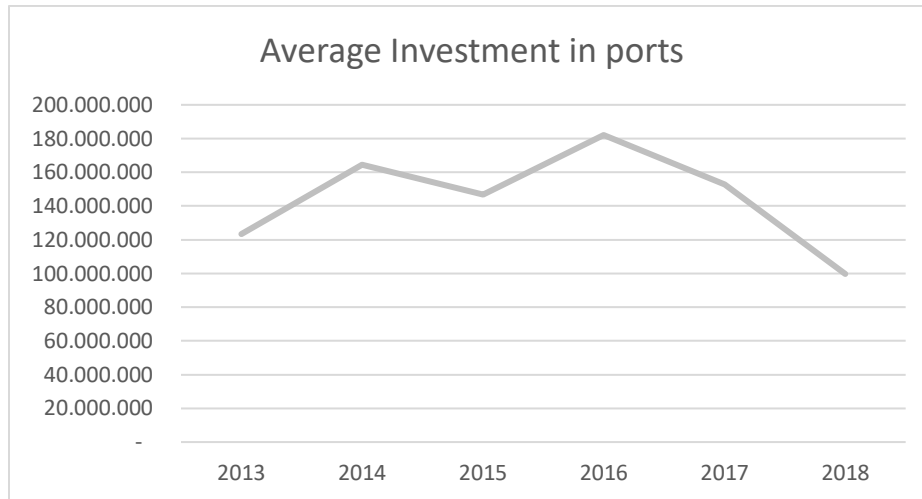
**Chart 10. Average annual investment in the ports of Cartagena, Santa Marta and Buenaventura between 2013 and 2018 (dollars)**

<b>Port / Investment</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>Total</b>
<b>Cartagena</b>	64.733.900	105.928.200	88.273.500	123.582.900	94.158.400	41.194.300	<b>517.871.200</b>
<b>Santa Marta</b>	18.833.333	18.833.333	18.833.333	18.833.333	18.833.333	18.833.333	<b>113.000.000</b>
<b>Buenaventura</b>	39.666.667	39.666.667	39.666.667	39.666.667	39.666.667	39.666.667	<b>238.000.000</b>
<b>Investment</b>	<b>123.233.900</b>	<b>164.428.200</b>	<b>146.773.500</b>	<b>182.082.900</b>	<b>152.658.400</b>	<b>99.694.300</b>	<b>868.871.200</b>

**Source:** Own elaboration based on information given by each SPRE

The average annual distribution is established like this:

**Chart 5. Average investment in the ports of Cartagena, Santa Marta and Buenaventura between 2013 and 2018**



**Source: Own Elaboration**

There was a strong and sustained investment between 2013 and 2016 with a close average of 150,000,000 million dollars. In 2016, the highest peak is presented with an average investment of (US) \$ 182 million and then decrease to US \$ 99 million for the year 2018.

As it is a productive infrastructure of the country, the ports must be contributors to the national production that is exported and that should be reflected in the annual export growth. A direct relationship between infrastructure investment in seaports and export growth is assumed.

To verify this relationship, a correlation analysis is carried out with the data obtained from the period of five years between 2014 and 2018. These are the results:

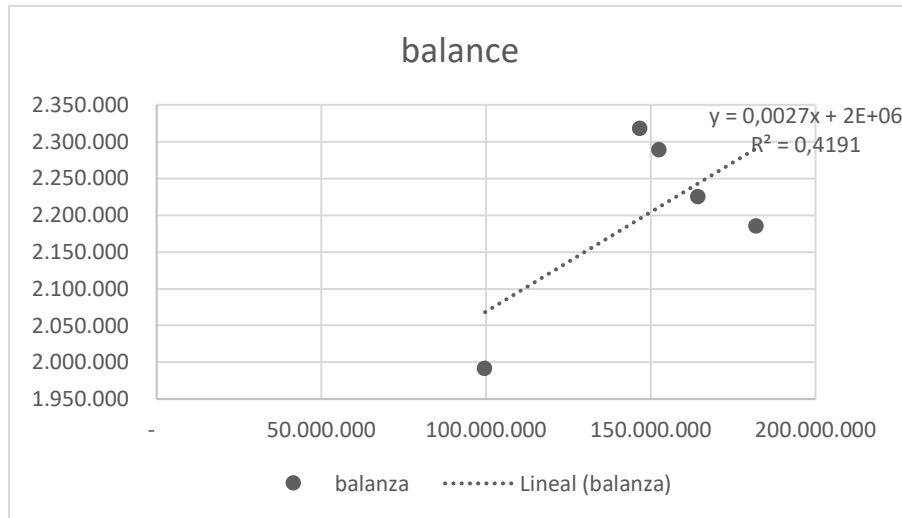
**Chart 11. Investments in Ports and Trade Balance**

Year	investments	Balance
2014	164.428.200	2.224.896
2015	146.773.500	2.318.149
2016	182.082.900	2.185.453
2017	152.658.400	2.288.903
2018	99.694.300	1.991.750

**Fuente:** Own elaboration based on data from SRP and DANE

With the previous data, a correlation analysis was made between the two variables of the study, obtaining the result presented below:

**Chart 6. Balance Correlation vs Ports Investment**



**Source:** Own elaboration

The chart shows a simple linear correlation of a positive sign that determines a direct relationship between the investment in the 3 seaports and the international trade balance of the 3 products. The greater the investment, the greater the volume of exports and the less investment, the lower the volume of exports.

There is a direct relationship between the investments made in the seaports of Buenaventura, Santa Marta and Cartagena and the volume studied of exports of the agricultural and livestock areas. However, the value of the coefficient of determination indicates that this relationship is low, which allows the speculation about the existence of other variables that intervene in the behavior of the BCI such as the speculation of values in the stocks of international exchanges or, deficiencies in the infrastructure of communications with seaports of the country.

#### 4. Conclusions

With the emergence of the SPR, Colombian seaports, entered into a globalized business model, which is being integrated by large global corporations, whose interest is the mobilization and transport of products and not the productive development of a particular country.

The investment in seaports in the period studied, is directly related with the export balance. This one is still negative, which means Colombia imports more than it exports. Its exports are of raw materials and its imports of consumer goods.

The emergence of the cluster business does not necessarily mean that the cargo volume that enters and leaves the country has increased. This business, has large areas of the ports as containers transit deposit. It leaves the economic activity of the port as positive, but in detriment of the export management, keeping the part that corresponds to BCI, in negative.

The destination of the maritime port investments of the SPR, privileged the reception of gigantic cargo ships of great draught, specialized in the transport of containers. Thus, the deepening dredging of access channels to the ports was the privileged infrastructure, followed by large cargo and unloading cranes, which reduce the working time in the port, accompanied by container yards. Investments in deposits of non-mineral raw materials, refrigeration and finished products will be postponed.

The investigation determined that investment in ports, positively impacts the national productive apparatus, in this historical stage of Colombian economy. However, this relationship is low, at least for the years of the research, allowing to conclude that productivity and exports not only depend on ports, but also on other variables such as markets, prices and road infrastructure... among others.

The impact of ports in economic and social aspects, as a promoter of the productive apparatus, is measured in its area of influence. Both in the social and economic situation and, therefore, in the development of the productive forces of their environment. The private business of seaports should be aligned with productive forces.

Regardless of the privacy of the shareholder majority, it is a good of the Colombian State and, in modern society, they are a constant and efficient source of income for the state coffers, according to customs reports.

But, what type of port favors the national production? Privileging the transit of containers over cooling structures, deposit export products, or even an investment in penetration routes or different modalities of transport of goods to and from the port, It is not necessarily a policy of underpinning national production.

Almost 100% of Colombian exports leave by water routes and it is a scenario that will not change in a long time, that is why seaports are strategic for the development of the economy and the maintenance of a healthy BCI in a global competition market which the country is obligated. They are an integral part of the production chain, but as a determining factor in the productive strategy of a region and the design of public policies that strengthen a productive economy.

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