

# The potential for hub ports *on the Pacific coast* of South America

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**Jan Hoffmann**

*Transport Unit,  
Natural Resources and  
Infrastructure Division,  
ECLAC, Santiago, Chile  
jhoffmann@eclac.cl*

The external trade of a country is closely linked with its geographical location, with the transport services that cover the distance to markets, and the ports through which that trade passes. Recent advances in maritime transport, the growing international economic integration, and the privatization of ports in the countries on the Pacific coast of South America have given rise to expectations that ports could be developed that concentrate both domestic cargo and that of neighbouring countries for its subsequent redistribution: what are known as “hub ports”. The main conclusion of the present study is that the potential for hub ports on the Pacific coast of South America is very limited. In the past, countries tried to prevent the foreign trade of their neighbours from using their ports to gain some kind of commercial benefit. Now, however, the situation has been reversed, and ports compete with each other for the trade of neighbouring countries. In itself, this competition is positive, but the problem is that in many cases it has been raised to a political level which has turned simple competition between ports into international competition between hypothetical future “hub ports”. In view of the low degree of probability that the establishment of such ports on the west coast of South America will be a success, it might be more advisable to seek greater regional coordination of transport policies and of investments in port and land transport infrastructure, in order to promote integration between the countries of the Atlantic and Pacific coasts of South America.

# I

## Introduction

Hub ports (“puertos pivotes” in Spanish) are seaports that concentrate domestic and foreign cargo with different points of origin and/or destination for its subsequent redistribution.<sup>1</sup> They thus generate business for the local economy by transporting cargo that does not come from the actual hinterland of the port in question.

The question of whether or not there is potential for the emergence of such hub ports on the west coast of South America is important both for the economic integration of the South American countries and for their integration with other regions. For example, transport services between South America and the Asian Pacific Rim countries are crucial for the South American countries’ participation in the Asia-Pacific Economic Cooperation forum (APEC), and port links are fundamental elements for connecting the bioceanic corridors with maritime transport services.

In more general terms, in recent years there have been many studies which analyse the relation between geographical aspects and the development of countries in the light of such variables as distance and transport. Radelet and Sachs (1998), for example, seek to identify the determinants of transport costs and then go on to investigate the relation between those costs and growth rates. The results show a clear negative relation between the two variables. In view of the importance of the maritime mode in international transport, improving its efficiency and reducing its cost should form part of any development policy.

In recent years, the maritime transport industry has undergone a marked process of concentration, including alliances and mergers between shipping companies, and there has been an increase in the transshipment of containerized cargo in ports.<sup>2</sup> At the same time, the Latin

American countries are opening up their economies and their international trade is growing faster than their product, giving rise to a big increase in the need for international transport services.

Both these tendencies –the advances in the maritime transport industry and the greater economic openness of the countries– have helped to create expectations that ports could sell their services to neighbouring countries. Traditionally, ports served almost exclusively the foreign trade of the countries where they were located, but there are now possibilities for them to provide services for cargo from other origins destined for third countries. Such expectations have arisen with respect to ports in the four South American countries with Pacific coastlines: Chile, Colombia, Ecuador and Peru.

These four countries also share the characteristic that their ports are being privatized and that they are seeking investors to improve port infrastructure and productivity. At first sight, it would therefore seem reasonable that the governments should seek investors not only to improve the services for their own cargo, but also to generate extra business through the export of port services.

In itself, the idea of offering port services for other countries’ trade reflects a positive change of attitude. Thus, up to the early 1990s the idea was to avoid this happening, because exporters considered that the goods of neighbouring countries should not pass through their ports because they competed with domestic products, while farmers feared the entry of pests and diseases. Furthermore, the maritime authorities, which came under the respective navies, were against opening up their ports to countries with which they had border conflicts.

Today, however, in the context of greater regional political and economic integration and the progress made in privatizing ports, such opposition has lost its strength. Ports are competing for cargo and trying to attract pri-

<sup>1</sup>This definition is quite independent of the degree of industrialization of the port or its volume of traffic. We have tried to avoid using the term “megaport” because there is no generally accepted definition of this concept, and moreover its use is not necessary. The concentration of cargo may involve one or more modes of transport. If only maritime transport is involved, we speak of “transshipment”. If cargo arrives from another country by land and leaves the port by sea, we use the term “transit”.

<sup>2</sup>This transshipment involves two port movements: a container arrives on one ship, is stored temporarily in the port, and then leaves on another ship. It is used above all to take advantage of the econo-

mies of scale offered by bigger ships and to increase the frequency of services to a given destination. Transshipment traffic has greatly increased in recent years thanks to technological advances, the use of bigger ships, and increased use of containers.

vate investors, and their geographical location on the Pacific rim has opened up expectations of potentially big business reflected in the press in headlines such as “Megaports in South America: Conquering the Pacific” (*El Mercurio*, 1998, p. D1).

The present article will analyse whether there really is a potential for hub ports on the west coast of South America and whether the ports on that coast have comparative advantages for moving the trade between South America and the Asia-Pacific countries.

## II

### South America's trade and its transport by sea

What is the relation between the geographical location of a country and investments in ports? Broadly, there are two possible interdependences:

- i) The port would be a means of modifying trade flows: improvement of the ports could help to offset geographical disadvantages and promote the country's external trade; in this case, the country would invest in its ports as part of its trade policy.
- ii) The trade flows and geographical location would be an opportunity for generating income through the supply of port services: the ports could take advantage of their privileged geographical location and offer their services for the foreign trade of their own and neighbouring countries; in this case, the country would invest in its ports in order to export port services.

Both these motives could play an important role in the potential development of hub ports in South America. The aim would be to reduce transport costs for the foreign trade of the country in question while at the same time attracting additional cargo from neighbouring countries, which would help the port to generate economies of scale and hence ultimately also reduce the costs of the country's own foreign trade.

#### 1. The port as a facilitator of foreign trade

Trade flows are influenced by the geographical location and distances between countries, as well as the presence or absence of transport services covering those distances. Countries which are close to each other have more bilateral trade than countries which are further apart. This is partly explained by historical, political, cultural and linguistic reasons, but also by transport costs and the time goods take to arrive. According to a regression made by Gallup and Sachs (1999), each 1,000 kilometres of dis-

tance between a country and its main markets raises the transport costs by one percentage point of the value of the goods.

In 1998, 99.75% of the total volume of the foreign trade of Argentina, Brazil, Chile, Peru and Uruguay with Asia, North America and Europe was transported by sea, and only 0.25% by air. The situation is somewhat different when the trade is analysed by value, however: since the goods of highest value and lowest weight tend to be transported by air, the share of sea transport in intercontinental trade goes down to 80.15% of the total value, while the share of air transport goes up to 19.85%.

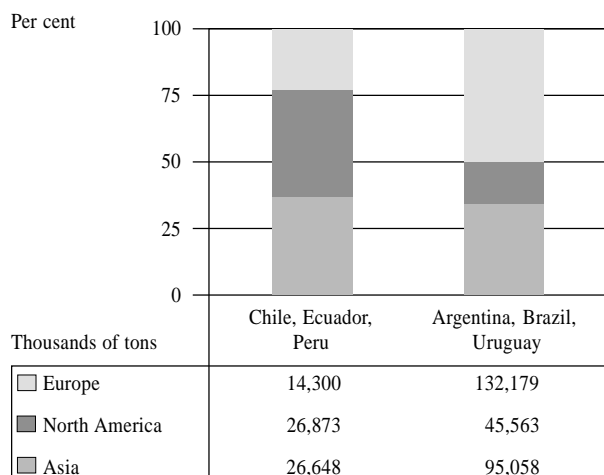
Within the trade of the South American countries which is transported by sea, it may be noted that Chile, Ecuador and Peru, which are on the west coast, have relatively less trade with Europe than Argentina, Brazil and Uruguay, which are on the east coast (figure 1).

It may be seen from the figure that, together, the latter three countries have 4.5 times more intercontinental trade by sea than Chile, Ecuador and Peru. Within this trade, the east (Atlantic) coast countries' trade with Europe was almost three times greater than their trade with North America, whereas the Pacific coast countries' trade with North America was almost double their trade with Europe. Although in terms of total volume the three Atlantic coast countries had 3.5 times more trade with Asia, in relative terms the Pacific countries' trade by sea with Asia was equally important for them.

Are these trade flows by sea the result of the distances and shipping and port services involved? Later on, we will examine the comparative advantages of ports on the two coasts for trade with the various continents. For the moment, however, we may note that the relative weight of the intercontinental trade of the countries in question corresponds approximately to the distances between the South American coasts and the other conti-

FIGURE 1  
**Three South American countries on the Pacific coast and three on the Atlantic: Volume of their intercontinental trade by sea,<sup>a</sup> 1998**

(Percentages and thousands of tons)



Source: International transport database of the ECLAC Transport Unit.

<sup>a</sup> Includes imports and exports. Trade with Africa accounts for less than one per cent of total trade. Data for Ecuador include trade by air. North America comprises only the United States and Canada. Asia includes the Asian countries and also Australia and New Zealand.

nents. The MERCOSUR countries (Argentina, Brazil and Uruguay) are closer to Europe than Chile, Ecuador and Peru. In order to reach Europe, ships from the latter countries must go through the Panama Canal, which involves extra costs and delay. Both coasts of South America are approximately the same distance from Asian ports.

Can trade be promoted through investments in port infrastructure? The answer is affirmative, provided that such investment reduces costs and/or raises productivity. Such improvements reduce the “economic distance”: i.e., they reduce the negative impact of the geographical distances involved. The recent (and ongoing) port privatization and modernization operations and maritime transport liberalization measures taken by the South American countries can be expected to give rise to a general increase in intercontinental trade.

Can trade be promoted if a specific region makes investments in its port infrastructure? In principle, the answer would be yes, but probably not in the specific case of South America, where all the ports serve trade with all continents, so that there do not seem to be any reasons to expect changes in direction of the main maritime trade flows to the various continents. The situation might be different if the road transport infrastructure were

changed, for example in order to facilitate the access of Chilean goods to Argentine ports, which would probably lead to an increase in Chile’s trade with Europe.

To sum up, trade flows and international transport services influence each other mutually. Both are partly the result of the geographical location of the countries and the distances to the main markets. The impact of trade flows on the volume of port traffic is stronger, however, than the influence that greater port efficiency could have on the volume of trade.

## 2. Geographical location as a factor for the establishment of hub ports

Do the ports on the Pacific coast of South America have sufficient comparative advantages to become hub ports? What are the possibilities of concentrating cargo in Chile, Colombia, Ecuador and Peru for its subsequent redistribution?

In its *Review of Maritime Transport* (UNCTAD, 1999, p. 93), UNCTAD notes that in South America there are a number of ports which are impatient to become hub ports, and on the west coast several Chilean ports will compete with Callao (Peru) or Guayaquil (Ecuador). According to *El Mercurio* (1998), “Chile and Peru are vying to establish megaports on their coasts which could link up with bioceanic corridors to become the leading port of the region for trade with Asia”. Many articles in the specialized press highlight the “intense competition” between the ports along the west coast of South America (see, for example, *Schednet News*, 1999).

In Ecuador, Manta is being mentioned as an “international transfer port”. The review CAMAE (1999), for example, describes its “geographical advantages” and “technical advantages”, claims that “international megafirms need to have a port of this category on the South American coast”, and highlights its potential for “serving as a port for unloading containers arriving in large ships from abroad and then distributing them to other ports in smaller vessels” and “Minimizing costs and maximizing the transport of cargo between different ports of Asia, Europe and the United States and South America”.

In mid-1998 the United States Trade Development Agency (TDA) authorized the expenditure of US\$ 362,000 on a prefeasibility study in this respect. According to CAMAE (1999), “the project was considered to be viable, so that the TDA included it among the 125 projects eligible for investment in South America and registered the Transfer Port project under code TRAN-39: “Ecuador - Expansion of the Port of Manta” and the “recommended

capital expenditure programme for the Port of Manta amounts to US\$ 135,996,240".

In Peru, the port of Callao is that which has the highest hopes of becoming a hub port. According to a brochure designed to promote private investments, "Peru's strategic location in South America makes its seaports highly attractive as potential outlets for seaborne trade between Latin America and Asia. Furthermore, the foreign trade of Peru and other emerging economies of Latin America is expected to keep on growing, thus further increasing the demand for port services" (Comisión de Promoción de Concesiones Privadas, 1998). Another brochure, in this case published by the National Ports Corporation (Empresa Nacional de Puertos - ENAPU), states that "Peru's ports enjoy a privileged geographical location on the Pacific Rim which enables them to act as ports that link up with the countries of the Atlantic coast and interior of South America through a vast network of railroads, highways and navigable rivers suitable for intermodal transport" (ENAPU, undated). The specialized press, too, mentions that Callao is well located for taking transshipment cargo to and from the whole of the west coast of South America (Lloyds List, 1999).

Private investments amounting to some US\$ 300 million are expected to be made under the concessions for the port of Callao. In 1999 a US\$ 240 million soft loan from the Japanese government for its modernization was rejected. The granting of a concession for a container terminal, which was planned for 1998 or 1999, was postponed until the year 2000. One of the reasons for the postponement was the existence of doubts as to whether the port should not be divided into several terminals in order to increase in-port competition and avoid a monopoly. On the other hand, if Callao wanted to become a hub port it might be better not to divide it but rather to try to put it in the most competitive position possible compared with other ports.

In Chile, the port best known for its aspirations to become a hub port is Mejillones, north of Antofagasta. Indeed, in the local press it is usually called a "megaport". As far back as 1996, in a working paper of the regional government of Antofagasta entitled "Megaport of Mejillones" (Schellmann, 1996), it was claimed that the bay of Mejillones has "unrivalled natural advantages" and that "the megaport of Mejillones is a strategic point

where the hinterland of the great production areas of the Gran Chaco joins up with the Asia-Pacific Basin". According to *El Diario* (1999), a Chilean government representative said that "Mejillones is winning the battle to become a megaport of the South Pacific".

With regard to the amounts of investment involved, when the Mejillones project was begun it was estimated that the total investment would be some US\$ 600 million and it was planned to grant the concession in late 1998. After various postponements, however, in late 1999 the concession was awarded to a consortium of Chilean firms which undertook to invest a total of around US\$ 100 million by the year 2002. This consortium is currently seeking finance from commercial banks and multilateral financial institutions. This first phase of the project is mainly limited to the construction of installations for handling copper exports, although the documentation soliciting loans to finance the project continues to stress the long-term potential for attracting cargo from neighbouring countries and for the transshipment of containers.

Other Chilean ports with expectations of attracting more transshipment or transit traffic are, in particular, Arica, Iquique, Valparaíso, San Antonio and Talcahuano/San Vicente, although none of them are usually described as "megaports". According to the newspaper *Estrategia* (1998), the Mayor of Iquique "announced that the Ministry of Public Works had approved the deepening of the Northern port from 16 to 17 metres draft for a new berth that will take vessels with a capacity of 7,000 containers. 'The new vessels operating now have got bigger, and Iquique does not want to be left out of the world market. It is not only the megaport being built at Mejillones that has the right to receive such ships', he added". According to the Web page for the Iquique Free Zone (2000), that Zone is "in a strategic geographical position" and is "South America's principal place of business, where markets of the Pacific Basin and the Southern Cone of the American Continent connect".

In short, there are expectations of the possible establishment of hub ports in all the South American countries on the Pacific coast, based on the growth of trade, regional and world economic integration, the privatization of ports, and the perceived advantages of a strategic geographical location.

# III

## Transshipment centres in the world

In terms of volume, most maritime cargo is transported as liquid bulk (above all petroleum) and dry bulk (grains, coal, iron ore). In terms of the value of goods and freight charges, containerized cargo is more important.

Analysis of potential hub ports generally centers on their possibilities of concentrating containerized cargo transported by sea. This cargo is transported by regular liner services. Bulk cargo, in contrast, is generally transported in chartered vessels and is less suitable for transshipment operations.

### 1. A business decision

The selection of the mode of transport for a foreign trade operation generally depends on a mainly commercial decision: the goods must arrive at their destination as soon as possible and at the lowest cost and risk.

#### a) *Journey time*

Rapid delivery is increasingly important. The average value of each ton of merchandise is going up all the time, and this also raises the capital costs. Just-in-time delivery is becoming more and more common. The incidence of a transshipment operation on the total journey time depends on various factors: on the one hand, the transshipment operation in itself involves extra costs and time, and may also mean a diversion from the direct route in order to reach the transshipment centre. On the other hand, however, the goods may be loaded on a faster ship at that centre.

#### b) *Frequency*

A journey which is rapid in itself is not much use to an exporter if his cargo has to wait many days or even weeks for a direct transport service. One of the main advantages of passing through hub ports is that they concentrate cargo and make possible more frequent departures to the different destinations.

#### c) *Cost*

The extra cost of a transshipment operation may be partly offset by the advantage of being able to use bigger ships with lower operating costs. On the route between the United States and Asia, for example, it is estimated that

the use of the biggest ships (called "post-panamax" because they are too big to go through the Panama Canal) gives shippers a cost advantage of US\$ 27 per container compared with "panamax" ships, which are the largest ones that can use the Canal (Drewry Shipping Consultants, 1996; Hoffmann, 1999). The ships currently serving the South American Pacific ports are only about half the size of panamax ships.

Quite apart from the possibility of consolidating cargo of different origin, the volume of trade between ports on a given route could itself justify the use of bigger ships on intermediate stages. For example, if we assume that there are 50 containers of bilateral trade from each of 12 ports (i.e., 11 stages), then on the last stage the ship would only be carrying 550 containers (the trade with the remaining 11 ports), whereas on the sixth stage (between ports 6 and 7) it would be transporting 1,800 containers. The general formula is:

$$\text{Number of containers on the ship} = k(n-k)$$

where  $n$  = total number of ports on the route and  
 $k$  = number of the stage.

This example reflects quite realistically the case of trade between the west coast of South America and Europe or North America. There are various services which call in at 10 to 15 ports per voyage, and the number of containers unloaded in each port rarely exceeds 600.

#### d) *Risk*

Every transshipment operation involves the risk of loss or damage of the goods and delays due to errors or strikes. Insurance premiums therefore tend to be higher if transshipment services are used.

#### e) *Volume*

The journey frequencies and size of the ships used are naturally closely linked with the volume of the transactions that must be covered. If this volume is not large enough even to fill smaller ships running at a frequency of at least one departure per month, there will simply be no direct service at all, and it will be necessary to use feeder services that link the port with a hub port.

The traffic balances also depend on the volume of goods transported. If cargo is only available in one di-

rection, it is less profitable to establish a direct service, and it is more expedient to try to concentrate the cargo at places where the maritime transport flows can be balanced in both directions.

#### f) *The case of South America*

As a real example of the relation between journey lengths and frequencies, it may be noted that five different weekly services to Northern Europe depart from the MIT port on the Caribbean coast of Panama, whereas there are only three similar direct services from the west coast of South America, between one and three times per month. These services pass through the Panama Canal, and one of them calls in at MIT. On average, the journey between MIT and the Northern European ports on the five weekly services takes one day less than the Panama-Europe leg of the services from San Antonio and Callao. Altogether, the five weekly services departing from MIT also connect with a larger number of different ports in Europe.

Consequently, if for example a Peruvian exporter does not want to wait for the departure of one of the three direct services, he may be able to find another service that will take his goods to Panama, where they can take advantage of the next departure of one of the five weekly services to Europe.

Because of the increase in the number of mergers and alliances between shipping companies, such combinations of services are increasingly frequent. In the trade with Asia there are already a number of established services which link up North-South services from South America with East-West services in Panama or Los Angeles. There are even services which carry out transshipment at the Panamanian MIT port, on the Caribbean coast. In that case, the containers pass through the Canal twice.

Generally speaking, the connections between the west coast of South America and Asia are more suitable for the use of transshipment services, because the stage on which big ships can be used is much longer than in the services to Europe or North America.

In short, ports consolidate cargo so that it will reach its destination more cheaply and quickly. The decisions in this respect are eminently commercial and hardly involve political considerations.

## 2. Current transshipment centres

The biggest container ports are currently in Asia, the United States and Europe. There, the transshipment ports are located primarily at points where the main sea routes intersect. Tables 1 to 4 show the volume of container traffic in different regions of the world and the volume

TABLE 1

**The five main container ports in the world: port traffic in containers, 1998**  
(in TEU)

Port	Port traffic
Singapore	15,000,000
Hong Kong	14,582,000
Long Beach/Los Angeles (United States)	7,478,218
Kaohsiung (Taiwan)	6,271,053
Rotterdam	6,010,000

Source: Cargo Systems, 1999.

TABLE 2

**The five main container ports in Latin America and the Caribbean: Port traffic in containers, 1998**  
(in TEU)

Port	Port traffic
Buenos Aires (Argentina)	1,138,000
Cristóbal (Panama)	1,117,035
Santos (Brazil)	859,500
Kingston (Jamaica)	670,858
Puerto Cabello (Venezuela)	486,774

Source: ECLAC, 1999.

TABLE 3

**The five main container ports on the west coast of South America: port traffic in containers, 1998**  
(in TEU)

Port	Port traffic
San Antonio (Chile)	415,001
Guayaquil (Ecuador)	407,434
Callao (Peru)	378,013
Valparaíso (Chile)	255,687
Buenaventura (Colombia)	143,420

Source: ECLAC, 1999.

TABLE 4

**Main transshipment areas of the world: Port transshipment movements, 1998**  
(In TEU)

Area	Port movements
Southeast Asia	13,356,000
Far East	8,374,000
Northern Europe	6,312,000
Southern Europe	5,940,000
Middle East	3,077,000
Central America and the Caribbean	1,994,000
North America	1,623,000
Africa	1,215,000
South Asia	1,200,000
South America	230,000
Oceania	112,000

Source: Drewry Shipping Consultants, 1999.

of transshipment operations by regions, both measured by TEUs.<sup>3</sup>

At the world level, there were 185 million port movements during 1998, including movements of empty containers and transshipment operations. Of this total, 23% corresponded to transshipment movements (Drewry Shipping Consultants, 1999); the percentages by the main transshipment ports are given in table 5. The small amount of transshipment traffic currently registered in South America (table 6) is concentrated above all in Cartagena (Colombia) and Puerto Cabello (Venezuela).

To sum up, both the total volumes of cargo transported in South America and the percentage of transshipment within those totals are very small compared with other regions of the world. South America accounts for only 3.4% of world movements of containers in ports, and only 3.6% of this is transshipment traffic. Indeed, the South American region accounts for only 0.5% of the total transshipment operations in the world.

### 3. Requisites for a hub port

#### a) Land links

Many hub ports concentrate cargo by land, as for example in the case of those in Northern Europe and the United States. Hong Kong also receives most of its cargo by land. In order to be able to concentrate cargo in this way the port must naturally have links with other forms of transport, especially railways, which are important for obtaining high volumes of cargo. If the port is in an industrial area which offers other services for the cargo, this could be an additional advantage.

#### b) Maritime links

The world's main transshipment centre (where the cargo arrives and leaves by sea) is Singapore. In recent times there has been a tendency to establish ports which have almost no traffic of local origin and are devoted to trans-

TABLE 5

**Main transshipment ports:  
Transshipment as a percentage of  
port container traffic, 1998<sup>a</sup>**

Port	Transshipment (%)
Malta	93
Damietta (Egypt)	90
Algeciras (Spain)	84
Singapore	82
Gioia Tauro (Italy)	80
Kingston (Jamaica)	75
Colombo (Sri Lanka)	70
MIT (Panama)	70
Dubai	50
Kaohsiung (Taiwan)	43
Rotterdam (Netherlands)	40
Bremerhaven (Germany)	30
Hamburg (Germany)	30
Felixstowe (United Kingdom)	28
Antwerp (Belgium)	25
Pusan (Korea)	21
Hong Kong	18
Kobe (Japan)	15

Source: Data from Drewry Shipping Consultants and direct information from the ports.

<sup>a</sup> The data are for 1998 or the last available year.

TABLE 6

**South American ports: Transshipment  
as a percentage of port container traffic, 1999**

Port	Transshipment (%)
Cartagena (Colombia)	50
Puerto Cabello (Venezuela)	38
Callao (Peru)	6
Buenos Aires, Puerto Nuevo (Argentina)	3
San Antonio (Chile)	3
Guayaquil (Ecuador)	2
Santos (Brazil)	2
Rio de Janeiro (Brazil)	2

Source: Prepared by the author on the basis of various sources.

Algeciras (Africa-Europe route and North America-Eu-

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