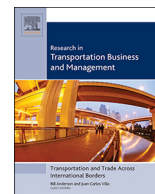




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## Competition vs. cooperation between neighbouring ports: A case study in Chile<sup>☆</sup>

Lourdes Trujillo<sup>\*</sup>, Javier Campos, Ivone Pérez

Department of Applied Economics, University of Las Palmas de Gran Canaria, Spain

### ABSTRACT

Since the mid-twentieth century, economic growth has yielded a major transformation in the maritime transport industry and, subsequently, in the way ports are organized and managed. The generalization of containerised cargo, accompanied by the increasing size of container ships, have not only changed port infrastructure and operations, but also affected many carriers' decisions, who now tend to concentrate their routes on few larger ports, instead of distributing them among nearby smaller ones. The way these changes might reshape competition and cooperation across ports is studied in this article using the Chilean experience as a case study. Thus, under the coverage of a theoretical model on inter-port competition in capacity and location variables, we analyse the relationship between the Chilean ports of San Antonio and Valparaíso, both serving the metropolitan area of Santiago, and separated by < 100 km. We particularly focus on their potential gains under the existing Government plans of building a large-scale port as a hub to attract ships of up to 18,000 TEUs, a prospective cooperation strategy of capacity sharing that could be viewed as a win-win alternative to competition.

### 1. Introduction

Recent estimates (UNCTAD, 2017) indicate that in 2016 seaborne trade accounted for 80% of total world trade in terms of weight, whereas in terms of value, its share was > 70%. The sustainability of this impressive growth depends on efficient coordination among ports as origin and ultimate destinations of the traded goods, and on the effective internal coordination of services and agents (shippers, port operators, freight forwarders and carriers) (Correcher, 2017).

This description is mostly true for countries whose geography makes them dependent on maritime flows. Chile's external trade, for example, is strongly determined by its ports and, therefore, the changes brought about in recent decades from the rise of containerisation and the subsequent increase in ships' average size have led to the need to modernise its port system, particularly following the recent expansion of the Panama Canal. Since the country considers it a first-order priority to develop its capacity to meet the expected demand (FDC Consultores, 2015), the Ministry of Transport and Telecommunications (MTT), responsible for proposing and coordinating long-term development strategies, is currently implementing the *National Port Development Plan* (MTT, 2013), the main axes of which includes building a large-scale port (PGE or *Puerto de Gran Escala*, using its Spanish acronym). Both the

existing ports of San Antonio and Valparaíso, have been proposed as potential candidates for the PGE, but the final location and its (co-operative or competitive) role with respect to the existing infrastructure remains a highly controversial issue.

In fact, to gain a foothold in a globalised market, most ports managed by different port authorities or private operators (even those located within the same region, as shown by Wang & Slack, 2004) increasingly use customer-oriented strategies both to attract new carriers and/or retain older ones. Among these strategies, the introduction of competition - either *for*, *in* or *between* markets - often becomes the most relevant.<sup>1</sup> The first one is usually carried out through concessions for specific harbour services (such as pilotage), the characteristics of which do not allow for too many competitors. Competition in the port is then used for those services that allow the concurrence of many operators under free entry and exit conditions. Finally, competition between ports, which constitutes the focus of this paper, is related to the rivalry with nearby ports with similar characteristics and (especially) when the port hinterland overlaps (Cabrera, Suárez-Alemán, & Trujillo, 2014).

It is precisely in this latter case where the competition vs. cooperation dilemma emerges. There are obvious arguments to favour competition between ports from the point of view of efficiency and equity, but the case for ports providing occasionally complementary

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<sup>\*</sup> Corresponding author.

E-mail address: [Lourdes.trujillo@ulpgc.es](mailto:Lourdes.trujillo@ulpgc.es) (L. Trujillo).

<sup>1</sup> See Meyer (1959), Verhoeff (1981) or De Langen and Pallis (2006).

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services instead of competing ones is also gaining momentum. Ishii, Lee, Tezuka, and Chang (2013) say, for example, that port competition mostly comes from problems related to excess capacity, and they find a positive empirical relationship between the amount of capacity investments and the degree of competition. On the other hand, in their report for the European Parliament, Buck Consultants International (2009) argue that increasing pressure on port capacity rather than enhancing competition, promotes cooperation.

The development of short sea shipping, increase in the ships' size and cargo volume, have led some ports to cooperate to meet the demand. Port size (Song, Cheon, & Pire, 2015), port functionality, corporate governance principles and free trade zones (Notteboom & Yang, 2017) have also led to port cooperation. According to González-Laxe (2004), ports should concentrate their efforts on achieving high productivity rates, which include, among other actions, the specialisation of ports and terminals. On the other hand, each type of ship, which has specific characteristics depending on the cargo it carries, require specialised facilities and technologies, which must be met by ports and port terminals. Serrano-Martínez (2000) points out that specialisation can be a primordial element to increase the market share of traffic for which there is sufficient demand, although it can also limit the development of a port by reducing its area of action. A disproportionate degree of specialisation in a port can become a source of vulnerability and, sometimes, may contribute to unnecessary duplication (Birkinshaw & Lingblad, 2005).

Furthermore, when dealing with small geographic environments, competition may result in an increasing waste of resources (García-Alonso, Sánchez-Soriano, & Vallejo-Pinto, 2007), suggesting the need to establish a process of co-competence; that is, to cooperate to attract traffic from other ports, and reduce the region's overall degree of competition (Li & Oh, 2010).<sup>2</sup> Thus, regional port systems may sometimes prefer non-competitive solutions (Wang & Slack, 2004), which could lead to *port clusters* (Vaggelas, Pallis, & Kladaki, 2017) or other types or coordination mechanisms, where some kind of cooperation is mutually beneficial. Cooperation between ports may yield mutually advantageous solutions that improve the overall competitiveness of all ports in the same region (Hwang & Chiang, 2010; Song, 2002; Song, 2003; Yap & Lam, 2006).

A final argument lies in the idea that, since container traffic is developed in a highly competitive environment, marked by the increase in the size of ships and alliances between shipping operators, port cooperation can be also presented as a counteracting option (Avery, 2000; Merk et al., 2015; Wilmsmeier & Sanchez, 2010; Wilmsmeier & Sanchez, 2017). Bartlett and Ghoshal (2000) argue in this case that port alliances allow the benefits of economies of scale through the pooling of resources and concentration on core activities, while taking advantage of the specific strengths and capabilities of each company and the efficient use of complementary resources.

With the existing literature in mind, and with the sole aim of analysing the role of neighbouring ports while possibly shedding some light on this issue, the structure of this paper is as follows: Section 2 firstly characterises some of the major features of the Chilean port system and, then, describes in detail the PGE building location problem in Chile. Section 3 develops a theoretical model that provides a stylised view of the debate by comparing the cooperative versus the competitive solution. The article concludes with a discussion of policy implications in Section 4.

## 2. Competition vs. cooperation in the Chilean port system

Until a few decades ago, 'regulation and centralisation' characterised most Latin American ports (Silva, 2008); national governments were

<sup>2</sup> Particularly if we assume that the economic area of influence of most ports is linked to the nearby hinterlands and can be estimated at about 450 km in radius (González-Laxe, 2007).

responsible for their construction, maintenance, administration and operation. The sector had several characteristics that did not favour international trade, such as low investment; poor quality of services, equipment and facilities; and high port fees (Hoffmann, 2000). The spread of containerised cargo and the emergence of container ships forced the region to develop modern and efficient ports that, through the improvement of commercial relations, could contribute to faster development. To cope with this, port reforms took place in Chile (1981), Colombia and Venezuela (1991), Argentina, Mexico and Uruguay (1992), Brazil (1993) and Panama (1994). Many of these reforms increased competition by changes in the legal framework, followed by decentralisation, liberalisation and the introduction of private participation.<sup>3</sup>

### 2.1. The Chilean port system today

According to the OECD (2017), Chile's exports represents 28% of GDP, with > 90% of external trade handled through the National Port System (SPEC, in its Spanish acronym). The SPEC encompasses all the commercial ports in the country, either public (for public usage) or private (those that offer an exclusive service to their owners, namely, 15 mining ports and 17 oil tankers) (Gobierno de Chile, 2005). The commercial port system for public use is currently managed by 10 state enterprises and 14 private companies. These are commonly known as *Port Authorities*, and were created with the purpose of promoting competition, decentralising the former state-monopoly *Port Company of Chile* and opening former state ports to the private sector. These authorities are public companies that have their own assets and their relationship with the government is managed through the *Ministry of Transport and Telecommunications* (MTT), whereas the *Public Enterprises System* (SEP) exercises operating control of its management.<sup>4</sup>

Port Authorities are responsible for the administration, operation, development and conservation of ports and terminals, and may carry out construction works for expansion, improvement, conservation, repair and dredging of ports and terminals. The companies can operate directly or via third parties by means of port concessions in the cases of berthing facilities and several port services. Despite this broad decentralisation, investment decisions are centralised in the MTT, which coordinates long-term development plans.

Most Chilean ports are medium-sized and handle different types of cargo. In Northern Chile, ports specialise in mining products, such as coal, copper or iron. Ports in the central region handle containers and agricultural products, and the ports located in the South specialise in fruit and forestry products for export. The larger ports, San Antonio and Valparaíso, handle a high volume of containerised cargo with an average container ship turnaround time slightly above one day in 2015 (OECD, 2016). Although other Chilean ports present lower ship turnaround times (for example, Callao) this figure is like other international container ports.

#### 2.1.1. Valparaíso port authority

Valparaíso is one of the biggest Chilean port in terms of containerised cargo and number of passengers. Currently, it handles > 9 million tons of general cargo and attracts around 40 cruise vessels and 100,000 visitors per season (SEP, 2016). The port is structured into two mixed cargo and passenger terminals, one cruise passenger terminal (all of them managed by means of licenses,<sup>5</sup> and an extra-port area of

<sup>3</sup> According to Estache and Trujillo (2004, 2008), private participation led to technological, productive and quality improvements in services. Only in the 1990s did the total investment in port infrastructure and services match the total over the previous four decades.

<sup>4</sup> The Valparaíso Port Authority and San Antonio Port Authority were created in 1998, following open corporation rules.

<sup>5</sup> In line with its expansion plan, since 2016 the port has 3 new ship-to-shore gantries (terminal TPS) and the most modern passenger terminal in Latin America. It has capacity for 6000 passengers on two cruise vessels simultaneously (SEP, 2016).

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