4 Beyond the landlord: worldwide empirical analysis of port authority strategies


Abstract

Research applying a strategic management perspective to port authorities (PAs) is limited and mostly consists of specific case studies or comparative analyses of PAs in a specific geographical area. In response, this chapter offers a worldwide survey of 94 PAs, the results of which address their strategic scope, i.e., the set of activities they undertake. While many PAs are described as ‘landlords,’ they often provide services that are not generally associated with this landlord role. A factor analysis of the survey results shows consistent and recurring patterns of strategic activities. Statistical analysis, aimed at exploring the relationship between PA’s institutional position and strategic scope, indicates that PAs with more autonomy and a more business-like structure have a wider strategic scope and more business-like goals. At the same time, this might imply a shift in focus from goals at the macro level to goals at the firm level, as well as PAs moving from a more facilitating role towards a more entrepreneurial role.

Keywords: port authority, strategic scope, typologies, survey.
4.1 Introduction

Most port authorities (PAs) are publicly owned organizations that act in a highly competitive environment (Verhoeven, 2010). At a global scale, most PAs act as landlords, responsible for the development and management of the seaport. In the landlord model, the private sector undertakes the commercial port operations. However, this landlord ‘label’ is an increasingly incomplete and inaccurate description of PA’s role. In the last two decades, many PAs have changed from public, administrative organizations embedded in local or national governments into autonomous and commercially-operating organizations. Changes in the commercial and operational environment (e.g., globalization of port actors, increased importance of port (hinterland) networks, pressure from environmental stakeholders and increased insistence on PA accountability) have altered the perspective on the role, position and functions of PAs (Notteboom and Winkelmans, 2001; Bichou and Gray, 2005; Cullinane and Song, 2002; Baltazar and Brooks, 2007; Verhoeven, 2010). Given these changes to their missions and goals, PA’s strategies (i.e., how to reach these goals) and their scope of activities have also been impacted. Traditionally, the goals of PAs have been strongly linked to the performance of the port as such. However, PAs increasingly need to demonstrate a strong financial performance (e.g., return on investment) as well as secure their license to operate. Ports like Rotterdam in the Netherlands, Copenhagen-Malmo in Denmark, Sydney in Australia and Tauranga in New Zealand are good examples. In addition, PAs must increasingly strive to reduce the negative external effects of port activities, like pollution and congestion. As a consequence, PAs, regardless of their institutional structures and geographical regions, are more and more required to engage in activities beyond the landlord function (Heaver et al., 2010; Verhoeven, 2010). For example, PAs may invest in port community systems and in hinterland nodes and links: the PAs of Rotterdam, Antwerp and Sines have invested in Port Community Systems; the PA of Barcelona has stakes in inland terminals; and the PAs of Los Angeles and Barcelona have investments in inland rail connections. None of these activities are associated with the concept of a pure ‘landlord’ PA.

Port governance has been widely studied (Goss, 1990a; Brooks, 2004; Cullinane and Song, 2002; Ng and Pallis, 2010). Many of these studies identify and classify activities in ports and consequently assess whether they are publicly or privately owned and/or managed. According to this research, the position and function of the PA is central to the port’s governance structure (Baird, 2000; Brooks, 2004; de Langen, 2004; Wang and Slack, 2004). However, the studies on port governance generally do not address the PA’s scope of activities; they typically treat the scope as an outcome of the institutional setting and forces, rather than as a strategic choice.

In 1990, Goss (1990b) developed a number of distinct strategies for PAs, mainly addressing the position of the PA vis-à-vis the private port operators. Notteboom and Winkelmans (2001) observed that, because of changing logistics, the strategic scope of PAs should extend beyond that of a traditional facilitator. In their paper they emphasize port networking, i.e., establishing partnerships with overseas or neighboring ports and with inland ports, as the most important additional role for PAs. Later on, de Langen (2004, 2008) developed the concept of port clusters as a way to rethink the role of PAs, namely as ‘cluster managers’. In line with this approach, Chlomoudis and Pallis (2004) developed the concept of the smart PA, which emphasizes the
PA’s coordination role. Notteboom and Rodrigue (2005), building on the port regionalization concept, argued that the PA should maintain a larger role in the hinterland. Meanwhile, Wang and Slack (2004) discussed the role of the PA in the specific governance settings of Shanghai and Ningbo. Verhoeven (2010, 2011) analysed the European port system and identified a “renaissance” of PAs, with development paths leaning more towards active and entrepreneurial organizations.

These studies, which offer both conceptual and empirical contributions based on specific ports or regions, suggest the emergence of a research stream on PA strategies (see also Woo et al., 2011). In this chapter, we add to this emerging research stream by empirically investigating the strategic scope of PAs on a global scale. More specifically, we investigate whether there are recurring configurations of strategic scope and to what extent these relate to PA’s contextual factors. In order to explore the factors that influence this strategic scope, we distributed a survey to all major PAs worldwide. Our research provides a basis for further theory development and empirical analysis regarding PA’s strategies.

The chapter is organized as follows: Paragraph 4.2 describes the methodology and conceptual approach. Paragraph 4.3 provides the results of our survey-based empirical research and the subsequent analysis. Paragraph 4.4 gives the conclusions, limitations of the study and recommendations for further research.

4.2 Methodology

The empirical data for this research was acquired through a survey of PAs. We developed a set of 445 PAs that represented the largest ports worldwide. PAs were included in the send list if they met the following criteria:

- Minimum throughput of 2 million Tons or 200,000 TEU, or the largest port in a country.
- Presence of private terminal operators. Thus, public full-service ports are excluded.
- Port has multi-user characteristic. Thus, single-user ports are excluded.

With these criteria, we developed a list of PAs based on information from the World CIA Fact book (in which the major world ports are listed) and descriptive information on the ports by the Port World Source (www.worldportsource.com). The survey construct is described in the next three sections.
4.3 Research construct

The aim of this paper is to analyse and understand the strategic scope of PAs. The strategic scope is one of the fundamental issues in strategy research (Foss and Mahnke, 2000). Strategy and organization research focuses on the relationships between organizational environment, strategy process, strategy content, and organizational performance (Pettigrew and Whipp, 1991). The organizational environment is in large part formed by the institutional environment, which has brought institutional theory into the field of organizational research (Rodrigues and Child, 2008). Institutional theories of organizations state that organizations are influenced by normative pressures, sometimes arising from external sources such as the state, and at other times arising from within the organization itself (North, 1986; Zucker, 1987). Such theories posit three main factors that differentiate organizations’ strategic actions and performances: internal goals and values, the legitimacy of external control, and the relative control or power of the organization (Zucker, 1987). Strongly institutionalized organizations may serve many important legitimating functions, as institutionalization increases stability by creating routines that enhance organizational performance. However, more efficient alternatives may possibly be ignored (Zucker, 1987), but come into sight over time.

PAs are traditionally institutionalized organizations, and their institutional context, which differs among countries, strongly influences the way in which they develop strategically (Ng and Pallis, 2010; Child et al., 2012). Depending on the institutional context PAs are bounded by political influences or have gained more autonomy and strategic freedom. At the same time, PAs act in a dynamic environment where competition and environmental pressures are increasing, while customers and users are globalizing and integrating both horizontally and vertically. The recent changes in PA governance, which provided many PAs with greater autonomy and delegated decision-making (Verhoeven, 2010), have allowed PAs, while still subject to different levels of strategic freedom, to extend their role in shaping the port’s competitive position (Jacobs and Notteboom, 2011). The question underlying our research, then, is: What strategic role and actions do PAs develop in response to these new opportunities, and to what extent are the PA’s actions impacted by their institutional structure? Figure 5 illustrates the research construct.
The straight arrows signify explanatory value in the form of a causal relationship: variables in the institutional context influence the strategic scope of the organization, which comprises both the strategic goals and values and the strategic activities. The two-sided arrow signifies interrelatedness: the set of strategic activities is expected to relate to internal goals and vice versa.

4.3.1 Measurement constructs

The three research constructs (institutional structure, strategic goals and strategic scope) were measured with different items. These items were identified based on an in-depth analysis of not only the relevant literature, but also the annual reports and strategic documents of a limited number of ports (see Appendix 4.1). We acknowledge that the majority of these ports are in developed countries. However, the goals and scope dimensions of these ports are very broad, and their strategic development and performance are quite mature (see results from World Economic Forum reports). Given such, we expect that the inclusion of more ports from developing countries is unlikely to have led to other scope items selected in the construct.

Strategic Goals

PAs generally have specific strategic goals that relate to their responsibilities and function. As entities, they combine public and private goals and can be characterized as hybrid or shared value organizations (Verhoeven, 2010; Koppell, 2013; Van der Lugt et al., 2013; Porter and Kramer, 2011). Given the differences in institutional structure and market environment, strategic goals may differ between PAs (Ng and Pallis, 2010). To confirm this assumption, we developed a measurement construct based on a list of PA’s potential strategic goals. These goals were developed via a literature review as well as a scan of select PA’s websites and annual reports. Eleven strategic goals were identified, which are described below. Along with each goal, we provide an example of a PA that explicitly states the goal in its communication.
A first common strategic goal of PAs is port competitiveness, with the implicit assumption that this will contribute to local, regional and national economic growth (Port Metro Vancouver). Two related goals are creating employment and facilitating trade (de Langen, 2008; Port of Houston Authority; St. Johns Port Authority). Maximizing throughput volumes (Port of Tauranga Ltd.) is a fourth goal mentioned by PAs and often used as a primary performance indicator for ports. More recently, PAs have developed a rather value-oriented approach (Robinson, 2002) and begun to express the two strategic goals of maximizing value added of the port as a whole (Antwerp Port Authority) and maximizing added value for the individual companies (Barcelona Port Authority) located in the port. Other trends include an increasing importance assigned to accessibility, i.e., the integration of ports in their forelands and hinterland (Port of Rotterdam NV, Antwerp Port Authority; Notteboom and Rodrigue, 2005), as well as sustainability, i.e., the port’s environmental impact (Port of Los Angeles). For more private, autonomous and financially self-supporting PAs (for example, in the UK and Australia, Port of Tauranga Ltd.) the clear generation of incomes and profits constitutes the main strategic goals. A final goal mentioned by a few PAs is that they strive to become internationally leading PAs (Port of Rotterdam NV, Port of Los Angeles).

Institutional context
Institutions shape the context in which an organization operates. Institutions are defined as customs and rules that provide a set of incentives and disincentives for organizations (North, 1986). Indicators of institutional environment should reflect external pressures on the organization, such as those created by the state via law and regulation (Zucker, 1987). The institutional context of the PA as we define it consists of a set of both external and internal aspects: it is the sum of the items ownership, institutional structure, level of institutional autonomy, level of strategic freedom and composition of the Board of Commissioners (see also Verhoeven and Van Outrive, 2011).

The ownership of the PA is expressed by the share of public and private shareholders. The institutional structure of the PA refers to its formal relationship with the government and to the distance from the government—i.e., whether the PA is integrated into the local or national government, whether it is an autonomous governmental body with more or less autonomy, whether the PA is corporatized and acts as a state enterprise or corporation, or whether the PA is privatized. Strategic freedom relates to both its institutional freedom (i.e., whether it is subject to strict laws and regulation) and financial freedom. The composition of the Board of Commissioners refers to the background of the members: whether they are from a political background or a private company background⁹.

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⁹ For private PAs, this argument does not hold: their Boards of Directors are fully focused on the company goals, regardless of the background of the board members.
Scope of activities
In the landlord model, a PA plans and develops a port. Commercial operations and services are performed by private sector companies (Goss, 1990a). Even though the landlord PA has restricted involvement with commercial operations and services (Heaver et al., 2010), PAs do engage in activities that go beyond the landlord function (e.g., Rotterdam Port Authority invests in inland terminal capacity, in a port community system, and in solving congestion problems). Recent literature also highlights the increasing importance of new PA activities, such as the role of community or cluster managers (de Langen, 2004; Verhoeven, 2010). Schendel and Hofer (1979) argue that firms can expand along two generic scope dimensions: product/market combinations and geographical territories. Collis and Montgomery (1997) add a third scope dimension: the scope of activities in the (vertical) value chain. We apply these three dimensions to PAs. PAs not only develop new products and services, but also extend the geographic space within which these activities take place: from the local level (the port area) to the regional level (inland networks) and even to the global level (Verhoeven, 2010), as evidenced, for example, by PAs participating financially in port projects in emerging economies. In addition, PAs engage in alliances and long-term contracting, therewith extending their scope in their value chains. Our search for concrete strategic activities that go beyond the landlord function is structured along the three perspectives: product, geographical and vertical boundaries. In the following, we briefly address these perspectives.

A functional perspective on the role and position of the PA was introduced by Goss (1990a) and enhanced by Baird (2000) and Balthazar and Brooks (2007). Baird (2000) distinguished between the landlord, the operator and the regulator function. In the landlord model, the PA executes the landlord function, has responsibility for a part of the regulator function and leaves the operator function to the private companies. Balthazar and Brooks (2007) specified in more detail the different functions that belong to the ports’ domain and also delineated between the responsibilities of actors who are private, public, or a mix of both. Verhoeven (2010) extended the basic functions of the landlord PA based on Baird’s work by adding community manager functions and entrepreneurial functions. Community managers or cluster managers (also see de Langen, 2004, 2008) invest in facilitating activities like IT, promotion and marketing, and training and education. Entrepreneurial PAs undertake activities outside of their primary functions with the aim of developing their business.

Geographic expansion is also an option for PAs. Naturally, PAs are tied to a specific port and thus to a specific geographic location, thereby leaving two development directions for their strategic scope. The first one is internationalization, which is a common strategy among private, for-profit firms. Essentially, PAs can expand their activities to other ports in the world by exporting their knowhow and competencies (e.g., port management, traffic management or port communication services). The Ports of Rotterdam and Antwerp are examples of PAs pursuing an active overseas internationalization strategy. The second direction involves the hinterland. The natural domain of PAs is the port area; however, ports are also part of international transport networks, the performance of which increasingly determines the port’s competitiveness. In the last decade, both practitioners and academics have paid a lot of attention to the integration of ports in their
hinterlands, as well as the role that PAs might have there (Robinson, 2002; Notteboom and Rodrigue, 2005; de Langen, 2008; Heaver et al., 2010; Verhoeven, 2010). While clear, grounded answers have not yet surfaced, PAs have widely adopted the notion that there might be value in expanding their involvement into the hinterland networks. Relevant activities include investing in inland terminals and rail connections, setting up intermodal services, and developing information platforms that facilitate inland transport.

**Organization** economics affect how PAs operationalize the organizational dimension of their scope. The scope of an organization is a combination of its strategic core, which are the core assets and competencies of the organization, and its strategic networks (Reve, 1990). Firms and organizations can develop strategic activities in between the market and their own hierarchy to improve overall performance (Williamson, 1985). Concrete examples include contracting, allying, and introducing incentives. From their landlord position, PAs have a natural incentive to develop activities that can be characterized ‘between market and hierarchy’ (see Williamson, 1985), as they maintain a strong interdependence with the companies in the port complex. In order to achieve their goals, i.e., strengthening the port complex in a competitive and sustainable way, PAs depend on the performance of the individual port companies. In cases of market failure, unaligned incentives or unacceptably high transaction costs, PAs might expand their scope by initiating new partnerships or introducing coordination mechanisms with the aim of aligning incentives and improving the allocation of resources (Van der Horst and de Langen, 2008; Van der Horst and Van der Lugt, 2014). As an example, the Port of Rotterdam NV embeds conditions in its port operator contracts, provides incentives to help avoid congestion, and develops access rules for various infrastructures.

Taken together, the three perspectives on firm expansion—functional, geographical and organizational—provide a complete overview of possible expansion directions for PAs. Building on this foundation, we analysed the available documents (i.e., annual reports, strategic documents) of a select set of PAs, specifically focusing on their discussions of strategic scope. Because the perspectives overlap—i.e. functional activities can be develop in accordance with both geographical and organizational considerations—we listed all potential and logical functions for PAs beyond their landlord function. Furthermore, we assessed each function for the applicability of the geographical and organizational dimension. In sum, we specified 42 different items for PA’s strategic scope.

### 4.3.2 Survey content and process

The survey content was assembled based on the aforementioned research construct and measurement constructs. The survey consists of a set of questions addressing the institutional context, the strategic goals, the strategic role and related activities, and respondent-related attributes. Table 6 details the structure of the survey, including the types of variables and their scales.
TABLE 6: STRUCTURE OF SURVEY

<table>
<thead>
<tr>
<th>Variables</th>
<th>Description</th>
<th>Measurement</th>
<th>Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Institutional aspects</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>private ownership</td>
<td>Percentage shares in public hands</td>
<td>scale</td>
<td>%</td>
</tr>
<tr>
<td>public ownership</td>
<td>Percentage shares in private hands</td>
<td>scale</td>
<td>%</td>
</tr>
<tr>
<td>corporatized</td>
<td>Corporatized or not</td>
<td>binominal</td>
<td>yes/no</td>
</tr>
<tr>
<td>institutional structure</td>
<td>Way in which PA relates to government</td>
<td>categorical</td>
<td>4 categories</td>
</tr>
<tr>
<td>private character board</td>
<td>Share of board members of private background</td>
<td>scale</td>
<td>%</td>
</tr>
<tr>
<td>restriction in strategic freedom</td>
<td>Question on perceived level of strategic freedom</td>
<td>ordinal</td>
<td>5 point scale</td>
</tr>
<tr>
<td>restriction in financial freedom</td>
<td>Question on perceived level of financial freedom</td>
<td>ordinal</td>
<td>5 point scale</td>
</tr>
<tr>
<td>restriction in institutional freedom</td>
<td>Question on perceived level of institutional freedom</td>
<td>ordinal</td>
<td>5 point scale</td>
</tr>
<tr>
<td><strong>Strategic goals</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Importance of goal</td>
<td>11 strategic goals, question in level of importance per goal</td>
<td>ordinal</td>
<td>5 point scale</td>
</tr>
<tr>
<td><strong>Role and scope of activities</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level of effort into various strategic activities</td>
<td>43 items, question on level of engagement in activity</td>
<td>ordinal</td>
<td>4 point scale</td>
</tr>
<tr>
<td>Importance of types of roles</td>
<td>9 types of roles, question on level of importance</td>
<td>ordinal</td>
<td>5 point scale</td>
</tr>
</tbody>
</table>

The survey was first tested through discussions with the respective port managers of Rotterdam, Antwerp, Zeeland Seaports, Groningen Seaports and Zeebrugge. Contact information for the ports’ executives was obtained through ESPO (for the European PAs) and IAPH (for PAs worldwide) as well as websites of specific PAs. The survey was sent in hardcopy and through email, along with a personal invitation letter supported by ESPO and IAPH. Respondents could either fill out the survey online or in hardcopy. To enhance the rate of response and reduce non-response bias, the survey was translated into French, Spanish and Chinese for the appropriate countries.

4.4 Analysis and Results

This chapter contains the analysis and results of the empirical research.

4.4.1 Data analysis

Of the 445 PAs who received the survey, 94 returned a valid response. We excluded responses that were only partially complete, as well as those lacking information on the respondent (these latter responses showed huge inconsistency by and large). The respondents of the 94 valid surveys were all executive managers involved in the PA’s strategic decision-making. The ports in the sample represent about 30% of the world’s port cargo tonnage. Table 7 describes the number of surveys sent, the number of respondents, and the corresponding response rates per region.
The overview shows that PAs from developing (non-OECD) countries in Africa, the Middle East and Asia provided the fewest responses. Most of the responding ports in Asia were based in a developed country. Latin America is also underrepresented. Collectively, this means that the results of the study are biased towards developed countries. However, the underrepresentation of ports in Africa, the Middle East and the developing parts of Asia does not negatively influence the reliability or relevance of the current analysis’ outcomes. Obtaining more insights on the strategies of PAs in developing countries remains a challenge for future research.

The non-responses percentage of 79% might imply a potential non-response bias. Since requesting additional responses from non-respondents was not an option, we checked for non-response bias in two ways: first, we looked at the means from the last seven respondents in the survey compared to the other respondents; and second, we assessed the variable “size” to see whether this could have created a bias. In both cases, we did not find any indication of a non-response bias. The data was analysed using STATA 12.1.

4.4.2 Analysis of institutional structure

We measured the institutional structure using a set of items related to the institutional structure of their organization (see Table 6 in paragraph 4.2.3). Our first analysis of the institutional structure focused on the relationship between the different items in the scale. Table 8 shows the result of a statistical test on the pair wise correlations between the individual items. A couple of patterns can be identified. Government ownership relates positively with the members of Board of Commissioners having a political background and perceiving less institutional freedom. Institutional autonomy relates positively with private ownership, with Boards of Commissioners members coming from a private background (or privately appointed Board of Directors of private PAs) and with perceiving fewer restrictions on strategic freedom.

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10 There were no striking differences between the results of the last seven observations and the other observations, although these latter were obtained after a last additional effort. The distribution of the size was quite congruent between the set of respondents and the set of PAs who received the survey.
TABLE 8: INTER-ITEM CORRELATIONS INSTITUTIONAL VARIABLES

<table>
<thead>
<tr>
<th></th>
<th>own_priv</th>
<th>own_pub</th>
<th>corp</th>
<th>inst_struc</th>
<th>board_priv</th>
<th>freed_strat</th>
<th>freed_fin</th>
<th>freed_inst</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>private ownership (own_priv)</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>public ownership (own_pub)</td>
<td>-0.8009*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>corporatized (corp)</td>
<td>0.2458*</td>
<td>-0.124</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>institutional structure (inst_struc)</td>
<td>0.1136</td>
<td>-0.1244</td>
<td>0.0907</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>private character board (board_priv)</td>
<td>0.1671</td>
<td>-0.0901</td>
<td>0.1553</td>
<td>0.3901*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>restriction strategic freedom (freed_strat)</td>
<td>-0.0715</td>
<td>0.0497</td>
<td>-0.1182</td>
<td>-0.3297*</td>
<td>-0.3129*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>restriction in financial freedom (freed_fin)</td>
<td>-0.0243</td>
<td>0.0356</td>
<td>-0.2064*</td>
<td>-0.0880</td>
<td>-0.1927</td>
<td>0.6591*</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>restriction in institutional freedom (freed_inst)</td>
<td>-0.0556</td>
<td>0.049</td>
<td>-0.0454</td>
<td>-0.2435*</td>
<td>-0.2287</td>
<td>0.7996*</td>
<td>0.4260*</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

*Significant at the P<0.05 level

Corporatization and privatization show a negative correlation with restrictions in financial and strategic freedom, but the correlation weakens considerably for corporatization with restrictions in institutional freedom. This echoes the expectations from literature (de Langen and Heij, 2014) that corporatization results in more financial and strategic autonomy, but that PAs are still subject to a strong institutionalized environment. This latter finding—that PA’s strategic freedom is restricted by their institutional environment and possibly their corporatized structure—is thus a relevant input for their strategy-making process.

4.4.3 Strategic goals

Respondents were asked to indicate the importance of the 11 potential goals on a Likert scale: “not at all (1)”, “slightly (2)”, “moderately (3)”, “very (4)”, and “of highest (5)”. Figure 6 gives the 11 goals and the mean scores, ranking them from highest to lowest mean.

FIGURE 6: MEAN SCORES FOR THE STRATEGIC GOALS

Four conclusions can be drawn from Figure 6. First, the means of all strategic goals are above 2.5. This shows that all goals are of substantial importance to the majority of the respondents. Second, the two main strategic objectives across all PAs are: ‘to enable regional or national
economic development’ and ‘to generate sufficient revenue to cover costs and investments’\(^\text{11}\). This clearly illustrates PA’s duality in goals: contributing to regional economic growth is a goal that lies at the macro level, with a high level of public interest, while generating income is a goal that lies more at the organizational (micro) level. PAs thus resemble shared value organizations (Porter and Karmer, 2011), further grounded by the relatively high importance attributed to ‘enhancing sustainability’ and ‘providing for accessibility.’ Third, PAs are overall less focused on shareholder profitability, which is congruent with the fact that many PAs are still publicly organized (and do not have shareholders); only a limited number is privately owned organizations and also a limited number is organized in a corporatized way (and thus still publicly owned). Fourth, employment, which is frequently mentioned as a key economic benefit in port impact studies (Kinsey, 1981; Doldan-Garcia et al., 2011; Guerrero et al., 2008) is considered a relevant goal, but significantly less important than facilitating trade, creating added value and enabling economic development.

An explorative factor analysis was applied to the eleven different strategic goals with the aim of identifying groups of strategic goals. Because the data is ordinal, we first constructed a polychoric correlation table on which we applied factor analysis using principal components. Table 9 shows the results with three factors remaining.

### TABLE 9: RESULTS OF FACTOR ANALYSIS OF 11 STRATEGIC GOALS OF PAS

<table>
<thead>
<tr>
<th>Goal</th>
<th>Macro level goals</th>
<th>Cluster level goals</th>
<th>Firm level goals</th>
<th>Uniqueness</th>
</tr>
</thead>
<tbody>
<tr>
<td>To enable regional or national economic development</td>
<td>0.8963</td>
<td>-0.0103</td>
<td>0.0513</td>
<td>0.1939</td>
</tr>
<tr>
<td>To facilitate trade</td>
<td>0.7266</td>
<td>0.0445</td>
<td>0.2025</td>
<td>0.4291</td>
</tr>
<tr>
<td>To create employment</td>
<td>0.7019</td>
<td>0.0753</td>
<td>0.156</td>
<td>0.4774</td>
</tr>
<tr>
<td>To provide for accessibility for the hinterland</td>
<td>-0.1383</td>
<td>0.8704</td>
<td>-0.0543</td>
<td>0.2203</td>
</tr>
<tr>
<td>To enhance sustainability</td>
<td>0.4776</td>
<td>0.6215</td>
<td>0.1107</td>
<td>0.3734</td>
</tr>
<tr>
<td>To maximize revenue and profits for the companies in the port</td>
<td>0.2023</td>
<td>0.6464</td>
<td>0.3775</td>
<td>0.3988</td>
</tr>
<tr>
<td>To maximize added value for the port</td>
<td>0.1933</td>
<td>0.3548</td>
<td>0.5656</td>
<td>0.5168</td>
</tr>
<tr>
<td>To become a world leading port authority organization</td>
<td>0.1164</td>
<td>0.0142</td>
<td>0.7997</td>
<td>0.3467</td>
</tr>
<tr>
<td>To generate profit for shareholders</td>
<td>0.0388</td>
<td>-0.0995</td>
<td>0.6357</td>
<td>0.5928</td>
</tr>
<tr>
<td>To generate sufficient revenue to cover costs and invest</td>
<td>-0.1746</td>
<td>0.1004</td>
<td>0.6074</td>
<td>0.5904</td>
</tr>
<tr>
<td>To maximize throughput volume</td>
<td>0.3054</td>
<td>0.0993</td>
<td>0.7746</td>
<td>0.2969</td>
</tr>
</tbody>
</table>

The factor analysis resulted in three underlying factors representing the goals. Cronbach’s alphas were above 0.6 for all three factors and thus we kept the factors as latent variables. The first factor represents goals that clearly have a firm-level character: generate sufficient revenue to cover costs, generating profit for shareholders, maximizing throughput volume, maximizing added value for the port and becoming a world-leading PA. The second factor represents the goals: achieving regional economic growth, facilitating trade, and creating employment, all of which can be characterized as goals at the macro level, servicing a wider public. The goals forming the third factor can be characterized as cluster-level goals: namely, enhancing

\(^{11}\) Critical note here: there are still port authorities receiving subsidies, which diminishes their urgency to fully recover costs via way of user charges.
sustainability, maximize revenue and profit for the companies in the port, and providing accessibility for the hinterland.

4.4.4 Relation strategic goals with institutional structure

Table 10 shows the correlation between the variables from the factor analysis and the different variables for the institutional structure. A correlation test indicates a relationship between variables without determining a causal relation. Significance levels confirm that the correlation is reliable. We used Spearman’s correlation for two continuous variables and Somers-d for one dichotomous and one continuous variable (goals and corporatized, respectively).

**TABLE 10: PAIR WISE CORRELATIONS BETWEEN GOAL TYPES AND INSTITUTIONAL ASPECTS**

<table>
<thead>
<tr>
<th>Private ownership</th>
<th>0.276*</th>
<th>-0.241*</th>
<th>0.189</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government ownership</td>
<td>-0.209*</td>
<td>0.138</td>
<td>0.215*</td>
</tr>
<tr>
<td>Private BoC members</td>
<td>0.155</td>
<td>-0.219*</td>
<td>-0.034</td>
</tr>
<tr>
<td>Political BoC members</td>
<td>-0.206*</td>
<td>0.168</td>
<td>0.094</td>
</tr>
<tr>
<td>Institutional Autonomy</td>
<td>0.129</td>
<td>-0.205*</td>
<td>-0.093</td>
</tr>
<tr>
<td>Corporatized</td>
<td>0.296*</td>
<td>-0.048</td>
<td>0.069</td>
</tr>
<tr>
<td>Restriction in strategic freedom</td>
<td>-0.2621*</td>
<td>0.131*</td>
<td>-0.048</td>
</tr>
</tbody>
</table>

*significant at the $p<0.05$ level

Looking at the correlations, the signs and the level of significance highlight a modest relationship between the institutional characteristics and the types of goals that PAs pursue. Additionally, there is a positive correlation between private ownership and firm-level goals, but a negative correlation between private ownership and macro-level goals. There is also a significant positive correlation between corporatization and firm-level goals. Lastly, we find a significant negative correlation between restriction in freedom and firm-level goals, but a significant positive correlation between restriction in freedom and macro-level goals.

Based on these observations, we draw a couple of conclusions: First, PAs with higher levels of private ownership attach less importance to goals at the macro and meso/cluster levels. Second, PAs with higher levels of strategic and institutional freedom attach less importance to goals at macro and meso/cluster levels and more importance to firm-level goals compared to PAs that are more restricted in their strategic and institutional freedom. Third, corporatized PAs focus more on firm-level goals and less on macro- and cluster-level goals than PAs that more closely resemble a traditional government organization.

4.4.5 Analysis of strategic scope

The respondents indicated which of the 42 activities ‘beyond the landlord’ role they engage in. Analysing the descriptive statistics resulted in us removing a couple of items as well as generating additional variables by combining two of the existing items (for a new total of 38). Specifically, we integrated the items ‘on rail’ and ‘barge,’ and removed two items on cruise activities as those only apply to a few ports providing cruise facilities. We also left out “developing new business”, as this was scored by almost all respondents as “very much”. We applied an exploratory factor
analysis with the principal components in order to identify underlying factors representing more
general development dimensions beyond the landlord. The analysis provided nine such
underlying dimensions among the 38 items.

The resulting factors represent the following dimensions for activities that extend beyond the
landlord:

1) **In-port operations** comprises the items: container operations, dry bulk operations, liquid
bulk operations, rail barge terminal operations, rail barge services and warehouse operation;
2) **Enforcing port companies** represents: enforcing innovation, enforcing sustainability,
   enforcing use of PCS, enforcing multimodal transport, guiding congestion;
3) **Facilitating port companies in education and Port Community System**;
4) **Facilitating port companies in marketing, sustainability and innovation**;
5) **Investment in transport services** includes road/rail/barge facilities in the port and the
   hinterland;
6) **Congestion reduction** comprises investment in and stimulation of congestion avoidance;
7) **Inland investments** encompass investments in inland infrastructure and terminal facilities
   as well as inland operations;
8) **Inland network encouraging** includes stimulating and enforcing the development of
   inland networks;
9) **Entrepreneurial** comprises investments in innovation, real estate and internationalization.

The results underwrite the approach developed by Verhoeven (2010), as they show that activities
cluster around the different combinations of geographical and functional domains in which PAs
can act. The geographical domains comprise local (i.e., activities within the port area), regional
(i.e., activities in the hinterland), and global (i.e., internationalization activities). In the functional
domain, we also see that the port’s context wields some influence, namely in that congestion
reduction is a separate category. This can be explained by the fact that only some ports face
congestion, so naturally only affected ports will develop activities related to congestion, not
necessarily fitting in a typology of a PA with a strong focus at cluster-related and facilitating
activities.

The PAs were also asked to express their view on their role, both within the port and outside the
port, and to indicate whether they expect this role to change in the nearby future (up to 2015).
Figure 7 gives the overview of the mean scores for the roles that ports had in 2011 and are
expected to have in 2015.
Meanwhile, Table 11 shows to what extent the differences are statistically significant (based on a paired t-test that compares the means).

**TABLE 11: COMPARISON OF MEANS OF PAS ROLES BETWEEN 2011 AND 2015 WITH T-TEST**

<table>
<thead>
<tr>
<th>Roles</th>
<th>Mean 2011</th>
<th>Mean 2015</th>
<th>Difference (2015-/2011)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct operations in port</td>
<td>3.478</td>
<td>3.108</td>
<td>-0.3695*</td>
</tr>
<tr>
<td>Indirect operations in port</td>
<td>3.815</td>
<td>3.739</td>
<td>-0.0760</td>
</tr>
<tr>
<td>Facilitating port companies</td>
<td>3.434</td>
<td>3.597</td>
<td>0.1630*</td>
</tr>
<tr>
<td>Direct investors’ role in inland networks</td>
<td>3.206</td>
<td>3.347</td>
<td>0.1413</td>
</tr>
<tr>
<td>Indirect role in inland networks</td>
<td>3.532</td>
<td>3.706</td>
<td>0.1739*</td>
</tr>
<tr>
<td>Role only in home port</td>
<td>3.228</td>
<td>3.054</td>
<td>-0.1739</td>
</tr>
<tr>
<td>Internationalization</td>
<td>2.510</td>
<td>2.847</td>
<td>0.3369**</td>
</tr>
<tr>
<td>Development of new business</td>
<td>3.271</td>
<td>3.478</td>
<td>0.2065*</td>
</tr>
</tbody>
</table>

* significant at the p<0.05 level
** significant at the p<0.01 level

The results in table 11 leads to the following conclusions: First, the direct role that PAs have in the port operations and services is expected to (further) diminish. Second, both the international role and the role in new activities (both entrepreneurial roles) are expected to increase. Third, the indirect role in the hinterland network is expected to overshadow the direct role, as indicated by a significant and positive difference of means between 2015 and 2011; the direct role in the hinterland network is expected to increase, but only slightly. Fourth, the facilitating function is expected to become more important in 2015.
4.4.6 Relation of strategic scope with institutional structure

No significant correlations were identified in our correlation test of the latent variables from the factor analysis with the institutional variables (we applied Pearson’s correlation, as well as partial SEM (STATA 12). This may be partially explained by the small sample size being too small for SEM-type analysis. We therefore backtracked and did a simple correlation test over the individual items representing the strategic activities and the variables for the institutional structure. Table 11 shows the results.

While the table shows a correlation between the PA’s strategic scope and the items related to institutional structure, the significance is limited. Our analysis first concentrated on those correlations that are significant, followed by an interpretative comparative analysis of the correlation coefficients and their signs.

From the observed correlations, we derive the following conclusions: First, corporatized PAs show the greatest involvement in activities beyond the landlord, with operations, investment in inland facilities and fighting congestion showing the highest correlation. Second, the PAs with the larger share of private ownership show less involvement in stimulating and facilitating activities, especially with regard to accessibility, congestion reduction, and education and marketing. Third, PAs with more government ownership and politically-grounded board members restrict their activities to stimulating and enforcing activities instead of active involvement and investments. Such PAs pay the most attention to sustainability.
TABLE 12: PAIR WISE CORRELATIONS BETWEEN STRATEGIC ACTIVITIES AND VARIABLES FOR INSTITUTIONAL STRUCTURE

<table>
<thead>
<tr>
<th>Strategic activity</th>
<th>Private ownership</th>
<th>Governm. ownership</th>
<th>Corp.</th>
<th>Political Board Members</th>
<th>Commercial Board Members</th>
<th>Restriction in Strategic Freedom</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct involvement container operations</td>
<td>0.2945*</td>
<td>-0.2506*</td>
<td>0.2455*</td>
<td>-0.1408</td>
<td>0.1619</td>
<td>-0.0783</td>
</tr>
<tr>
<td>Direct involvement dry bulk operations</td>
<td>0.3308*</td>
<td>-0.1855</td>
<td>0.2388*</td>
<td>-0.2827*</td>
<td>0.2337*</td>
<td>-0.1568</td>
</tr>
<tr>
<td>Direct involvement in liquid bulk operations</td>
<td>0.185</td>
<td>-0.0681</td>
<td>0.3083*</td>
<td>-0.1393</td>
<td>0.1098</td>
<td>-0.0468</td>
</tr>
<tr>
<td>Direct involvement rail or barge terminal operations</td>
<td>0.1965</td>
<td>-0.1156</td>
<td>0.2217*</td>
<td>-0.2333*</td>
<td>0.2092*</td>
<td>-0.1999</td>
</tr>
<tr>
<td>Direct involvement rail or barge services</td>
<td>0.1422</td>
<td>-0.0311</td>
<td>0.0467</td>
<td>-0.0867</td>
<td>0.1257</td>
<td>-0.1808</td>
</tr>
<tr>
<td>Direct involvement road transport services</td>
<td>0.2379*</td>
<td>-0.1821</td>
<td>0.0476</td>
<td>-0.0481</td>
<td>0.1082</td>
<td>-0.0964</td>
</tr>
<tr>
<td>Investments in facilities for rail or barge transport</td>
<td>0.0116</td>
<td>0.0456</td>
<td>0.0687</td>
<td>0.0576</td>
<td>-0.0715</td>
<td>-0.0908</td>
</tr>
<tr>
<td>Investments in real estate</td>
<td>0.2236*</td>
<td>-0.1649</td>
<td>0.1289</td>
<td>-0.1568</td>
<td>0.1796</td>
<td>0.0206</td>
</tr>
<tr>
<td>Direct involvement in warehouse operations</td>
<td>0.4312*</td>
<td>-0.3516*</td>
<td>0.1713</td>
<td>-0.1763</td>
<td>0.2133*</td>
<td>0.0146</td>
</tr>
<tr>
<td>Investments in innovation for the port</td>
<td>0.2623*</td>
<td>-0.1923</td>
<td>0.2916*</td>
<td>0.0024</td>
<td>0.1130</td>
<td>-0.0028</td>
</tr>
<tr>
<td>Stimulation of innovation in the port</td>
<td>0.0461</td>
<td>-0.0174</td>
<td>0.0464</td>
<td>0.1320</td>
<td>-0.2132*</td>
<td>-0.0303</td>
</tr>
<tr>
<td>Enforcement of innovation in the port</td>
<td>-0.0603</td>
<td>0.0129</td>
<td>0.0067</td>
<td>0.0265</td>
<td>-0.0853</td>
<td>0.1820</td>
</tr>
<tr>
<td>Investment in port marketing</td>
<td>0.1536</td>
<td>-0.1426</td>
<td>0.1036</td>
<td>-0.0042</td>
<td>0.0562</td>
<td>-0.0303</td>
</tr>
<tr>
<td>Stimulation of joint port marketing</td>
<td>-0.0978</td>
<td>0.1717</td>
<td>-0.1838</td>
<td>0.1894</td>
<td>-0.1921</td>
<td>0.1396</td>
</tr>
<tr>
<td>Investment in sustainability projects</td>
<td>-0.0328</td>
<td>0.1801</td>
<td>0.0789</td>
<td>0.1500</td>
<td>-0.1032</td>
<td>0.0278</td>
</tr>
<tr>
<td>Stimulation of sustainability</td>
<td>-0.111</td>
<td>0.1436</td>
<td>0.0589</td>
<td>0.1614</td>
<td>-0.1234</td>
<td>0.0781</td>
</tr>
<tr>
<td>Enforcement of sustainability</td>
<td>-0.0319</td>
<td>0.1563</td>
<td>-0.0637</td>
<td>0.1451</td>
<td>-0.1605</td>
<td>0.1718</td>
</tr>
<tr>
<td>Stimulation of multimodal transport</td>
<td>-0.1186</td>
<td>0.1257</td>
<td>0.0605</td>
<td>0.0605</td>
<td>-0.1188</td>
<td>-0.0108</td>
</tr>
<tr>
<td>Enforcement of multimodal transport</td>
<td>-0.0844</td>
<td>0.1590</td>
<td>-0.0047</td>
<td>-0.0047</td>
<td>0.0746</td>
<td>0.0660</td>
</tr>
<tr>
<td>Investment in congestion reduction</td>
<td>-0.0554</td>
<td>0.0914</td>
<td>0.1456</td>
<td>0.1456</td>
<td>0.0603</td>
<td>0.173</td>
</tr>
<tr>
<td>Stimulation of congestion reduction</td>
<td>0.0039</td>
<td>0.0576</td>
<td>0.1660</td>
<td>-0.1209</td>
<td>0.1762</td>
<td>-0.1045</td>
</tr>
<tr>
<td>Enforcement of congestion reduction</td>
<td>-0.0345</td>
<td>0.1227</td>
<td>0.1838</td>
<td>-0.0101</td>
<td>0.0633</td>
<td>0.0835</td>
</tr>
<tr>
<td>Investment in education for the port cluster</td>
<td>0.0927</td>
<td>0.0619</td>
<td>0.1374</td>
<td>-0.0631</td>
<td>0.0577</td>
<td>0.0164</td>
</tr>
<tr>
<td>Stimulation of joint education development</td>
<td>-0.0251</td>
<td>0.1090</td>
<td>-0.0209</td>
<td>0.0884</td>
<td>-0.1256</td>
<td>0.2521*</td>
</tr>
<tr>
<td>Investment in PCS</td>
<td>-0.0816</td>
<td>0.1093</td>
<td>0.0587</td>
<td>0.0071</td>
<td>-0.0818</td>
<td>0.1638</td>
</tr>
<tr>
<td>Stimulation of development and use of PCS</td>
<td>-0.0504</td>
<td>0.1368</td>
<td>0.0491</td>
<td>0.1207</td>
<td>-0.1499</td>
<td>0.1349</td>
</tr>
<tr>
<td>Enforcement of development and use of PCS</td>
<td>-0.0949</td>
<td>0.1543</td>
<td>0.0791</td>
<td>0.1930</td>
<td>-0.1210</td>
<td>0.1059</td>
</tr>
<tr>
<td>Investment in inland terminals</td>
<td>0.1094</td>
<td>-0.1112</td>
<td>0.2059*</td>
<td>-0.2114</td>
<td>0.1219</td>
<td>-0.0725</td>
</tr>
<tr>
<td>Involvement in inland terminal operations</td>
<td>0.2949*</td>
<td>-0.2273*</td>
<td>0.1827</td>
<td>-0.2275*</td>
<td>0.2036*</td>
<td>0.0226</td>
</tr>
<tr>
<td>Investment in inland rail and barge infrastructure</td>
<td>0.0247</td>
<td>-0.0642</td>
<td>0.2694*</td>
<td>0.0200</td>
<td>0.0299</td>
<td>0.0543</td>
</tr>
<tr>
<td>Investment in inland rail and barge operations</td>
<td>0.0628</td>
<td>-0.0304</td>
<td>0.0554</td>
<td>-0.1087</td>
<td>0.1757</td>
<td>-0.0511</td>
</tr>
<tr>
<td>Investment in inland road infrastructure</td>
<td>-0.0718</td>
<td>-0.0941</td>
<td>-0.0359</td>
<td>-0.0293</td>
<td>0.0421</td>
<td>0.0764</td>
</tr>
<tr>
<td>Stimulation of development of inland networks</td>
<td>-0.0571</td>
<td>0.0769</td>
<td>0.0090</td>
<td>0.1606</td>
<td>-0.2373*</td>
<td>0.1820</td>
</tr>
<tr>
<td>Enforcement of development of inland network</td>
<td>0.0250</td>
<td>0.0048</td>
<td>-0.0260</td>
<td>0.0599</td>
<td>0.0154</td>
<td>0.1960</td>
</tr>
<tr>
<td>Investment in leisure facilities</td>
<td>-0.2853*</td>
<td>0.3805**</td>
<td>0.0040</td>
<td>0.0285</td>
<td>0.0451</td>
<td>0.0619</td>
</tr>
<tr>
<td>Investment in public transport in the port</td>
<td>-0.1995</td>
<td>0.2332*</td>
<td>-0.1292</td>
<td>0.1575</td>
<td>-0.1681</td>
<td>0.0085</td>
</tr>
<tr>
<td>Development of new business</td>
<td>0.1216</td>
<td>-0.1042</td>
<td>0.2017</td>
<td>-0.0821</td>
<td>0.1993</td>
<td>-0.0967</td>
</tr>
<tr>
<td>Development of international port management</td>
<td>0.1424</td>
<td>-0.0134</td>
<td>0.0727</td>
<td>-0.0015</td>
<td>0.0727</td>
<td>0.0575</td>
</tr>
</tbody>
</table>
4.5 Conclusions

This research empirically analyses changes in the strategic scope of worldwide PAs and further explores the relationship between PA’s institutional structure and their strategic scope. Based on the analysis of data obtained from a global survey, we can draw a set of conclusions. First, PAs substantially engage in a variety of activities that go beyond a landlord role, and this behavior will increase in the future along functional, geographical and organizational dimensions. Second, the ranking of strategic goals according to their level of importance—with the two highest scoring goals being one at macro level and one at firm level—shows the shared value character of PAs (Porter and Kramer, 2011). Third, the different institutional settings of PAs impact both the strategic goals and strategic actions of PAs. Our analysis indicates that PAs with more autonomy and a more businesslike institutional setting put more emphasis on firm-level goals, whereas PAs with more government involvement and less autonomy give more weight to macro- and cluster-level goals. Fourth, although we could not comprehensively test the relationship between a PA’s institutional structure and its strategic scope, some tentative conclusions can be deduced. Corporatized PAs (i.e., governmentally owned, but with the organization and behavior of a corporation) seem to show the greatest involvement in activities beyond the landlord, especially in operations, investment in inland facilities and congestion reduction. They also seem to show more involvement in stimulating and facilitating activities in the port cluster than PAs with a larger share of private ownership (purely or partly private PAs), but less so than PAs with a more governmental character, the latter of which perform the most stimulating and facilitating activities in the port cluster and pay the relatively highest attention to sustainability.

By combining the results and conclusions, we arrive at the observation that more autonomy and a more business-like structure in PAs widens their strategic scope and brings in more business-like goals. However, this might also imply two possible shifts: one where the focus moves away from goals at the macro level to goals at the firm level; and one where the role gravitates more away from facilitating activities and closer toward investing and entrepreneurial activities. These developments can certainly have a positive impact on the performance of PAs and the ports they serve, but at the same time ask for a well and continuous consideration of the thoughts about the key functions and responsibilities of the PA, both within the port itself and in relation to its primary stakeholders and governing bodies.

Limitations of the study and recommendations for further research

The aim of the research activity was to empirically analyse the strategic scope of PAs worldwide and to explore the relationships between scope and institutional structure. The broad analysis and wide range of scope dimensions enabled relevant findings about the variables that influence PA’s scope, but the analysis was restricted in terms of robustness and rigor. The number of variables compared with the number of observations was relatively high, limiting the applicability of more sophisticated regressions analysis or a structural equation modeling approach. Further research focused on the individual scope dimensions (e.g., investment in inland network or stimulating inland network development), preferably with more observations, could incorporate
more contextual variables. Such research would enhance the understanding of the logic behind particular strategic scope developments of PAs. Additionally, the empirical analysis focused mainly on developed countries. Future research should include more ports from developing countries, which are expected to be in a different stage of development and thus have different strategic contexts. Such research could enable research oriented at transition paths, potentially resulting in a stage model of PA role and function development.

Acknowledgements

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REFERENCES


