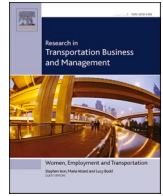




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Port governance and the implications of institutional fragmentation: Lessons from Colombia

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ABSTRACT

Thirty years ago, Colombia abolished the State monopoly of port governance. This reform was aligned with the widespread ‘first global wave’ of port reforms yet marked by several variations. The most striking ones are the absence of a classic Port Authority - i.e., a single entity managing, developing, and regulating one or more ports at either local, regional, or national level - and the consequent institutional fragmentation. A plurality of institutions has been responsible for specific aspects of port governance. This historical progression allows for a reflection on the present model and examining a broader issue in port governance: what are the implications of institutional fragmentation? This study compares the standing of public and private actors vis-a-vis port governance (their understanding of the rules of the game), their long-term strategic visions, and the potential intra-sectoral divisions. It also evaluates whether the low capacities of port managing entities have led to a structure-strategy mismatch that undermines improvements in the respective ports. The empirical research involved a two-stage online survey with the participation of relevant public and private actors, detailing perceptions of the current setting and future expectations of the distribution of port governance responsibilities. Three groups of port governance activities are under examination: (a) port policy formation, (b) management of concessions, and (c) market and price regulation. Social network analysis (SNA) was applied to contrast public and private sector perceptions. It reveals differences and commonalities in stakeholders’ perspectives on the current Colombian port governance model and its desired future structures. Integrating these insights with the ‘matching framework’ approach of port governance allows for conceptualising the consequences of port governance fragmentation.

1. Introduction

In the 1980s, Colombian ports were confronted with numerous challenges. Operated by the State entity *Colpuertos*, they were characterized by the low efficiency of services, technological backwardness, and the absence of the essential infrastructure and equipment for handling containers and general cargo. Excess personnel numbers, high costs, and operational losses accompanied this centralized governance structure. (e.g., the salaries of *Colpuertos* workers were four times higher than the average in the country’s industrial sector; given the low productivity and lack of efficiency, carriers regularly imposed surcharges (Kent & Fox, 2011).

The underperformance triggered a restructuring of port governance in 1991, involving the liquidation of *Colpuertos*. Law 1a/1991 sought to unify port policy design under the control of a single national authority. This institutional restructuring separated the regulatory and overseeing functions from operations. The original version of the law envisaged the creation of a “General Directorate of Ports” in the former Ministry of Public Works and Transport, but during the legislative process it was determined that, on account of the functions of that directorate, the appropriate thing to do was to create a Superintendence adjunct to the Ministry, due to national relevance of port activity from not only from the point of view of transport but also of foreign trade. Additionally, it was considered that regulation and inspection was a task better placed in

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a autonomous Superintendence.

In the end, the reform established the Ministry of Public Works and Transport – today, the Ministry of Transport - as the responsible authority for port policy development and the regulatory body.¹ This included the obligation to present a Port Expansion Plan to the National Council of Economic and Social Policy (CONPES) for approval every four years.² Since then, the State has outlined the general port development plan through documents issued by CONPES and implemented by national government decrees.

Regional Port Companies (Sociedades Portuarias Regionales- SPR) were set up and entrusted with operating the “public ports” in the five port locations, i.e., Barranquilla, Buenaventura, Cartagena, Santa Marta, and Tumaco. They are public limited companies, constituted with private, public, or mixed capital, whose corporate purpose is investment in the construction and maintenance of ports, and their administration. Port companies may also provide loading and unloading services, storage in ports, and other services directly related to port activity.

The same law distinguished between public and private ports, defining the former as those whose infrastructure belongs to a port company where a public entity owns more than 50% of the capital. The State also retained the authority to grant concessions for the construction and operation of ports. In 1994, private entities were first awarded port concessions in Colombia. By 1999, 69 port concessions had been granted: 28 in Cartagena, 17 in Barranquilla, and 5 in Santa Marta.

This reform aligned with the widespread ‘first global wave’ of port reforms (see Brooks & Cullinane, 2006) and was the first one in Latin America and the Caribbean. As new public management principles gained prominence, the reforms aimed at encouraging private sector involvement. The Colombian reform was, however, distinguished by specific characteristics. Most notable is the absence of a *classic* Port Authority (PA) - i.e., a singular entity responsible for managing, developing, and regulating one or more ports at either local, regional, or national levels - and the consequent institutional fragmentation. Multiple institutions have governed the country’s port system, each responsible for distinct aspects of port governance.

Thirty years later, the country is taking stock of the reforms’ accomplishments and reflecting on emerging challenges and opportunities. This evaluation is critical to update the port governance structure and strategy. The academic community has been invited to engage in discussions with the government and private sector about the current model’s adequacy and the need for adjustments, and to contribute to crafting a vision for the sector’s future. This dialogue started in 2021 and has included meetings, in-depth interviews with stakeholders, and public consultations.

This research has gained insights from the dialogues on the optimal ways to reorganize the Colombian port sector. Based on these insights, it aims to address a wider conceptual issue with significant practical implications for ports and maritime transportation systems worldwide: What are the implications of institutional fragmentation in port governance?

The empirical work examines the extent to which institutional fragmentation undermines the stance of public and private actors vis-à-vis port governance, i.e., their understanding of their responsibilities and roles, their long-term strategic vision for port governance, the potential intra-sectorial divisions, and whether the absence of capacities of the port managing entities has led to a lack of leadership in the respective ports. The research is guided by the matching framework conceptualisation of port governance (introduced by Baltazar & Brooks, 2001), which advocates for aligning the structure and strategy

¹ A General Directorate of Ports was formed within the Ministry of Transport in 2003, when Decree 2053/2003 modified the structure of the Ministry, creating a General Directorate of Transport and Transit and a Port Affairs Group.

² Until 2010 port development plans were presented biannually.

dimensions of port governance within a given economic context. Therefore, the focus is on the Colombian port governance’s structural dimensions, particularly the institutional configuration.

Methodologically, this research is based on a two-stage online survey among Colombian public and private actors involved in port governance, operations, and utilisation. The initial survey aims to identify the prevailing challenges of port governance and port sector development. The second survey explores the perspectives of key stakeholders regarding the institutional configuration and the allocation of responsibilities in port governance, focusing on three core activities: (i) port policy formation, (ii) market and price regulation, and (iii) management of concessions. Participants from both the public and private sectors provide insights into (a) their understanding of the current port governance in the country, specifically the distribution of responsibilities across the various institutions, and (b) their visions for an ideal future reassignment of these responsibilities among these institutions. The study contrasts public and private sector perceptions regarding the present and future governance structures using Social Network Analysis (SNA; cf. Schorch & Quintane, 2019).

The findings uncover differences and commonalities in stakeholders’ views on the existing Colombian port governance model. This facilitates the conceptualisation of the effects of port governance fragmentation and offers recommendations for potential institutional or governance model reforms.

2. Conceptual background

2.1. On port governance

Ports are inherently complex and multifaceted entities involving a mix of public and private actors across diverse configurations and geographic scales. Actors involved in port operations can vary widely, ranging from local to global levels; for example, APM Terminal is a global terminal operator, COMPAS is a regional terminal operator, and HHLA is a local terminal operator. Port governance is “the adoption and enforcement of rules governing conduct and exercising authority and institutional resources to develop and manage port activities to benefit society and the economy (Notteboom, Pallis, & Rodrigue, 2022a, p. 281).” It comprises a set of systems, structures, and processes that organize private and public actors around a common purpose. In addition to physical factors such as location, maritime accessibility, and hinterland infrastructure, port governance is a determinant of port performance (Brooks & Pallis, 2008; De Langen, 2004). The governance process involves distributing authority, allocating resources, as well as managing relationships, behaviours, and processes, all aimed at achieving the expected outcome (Monios, 2015).

Since the late 1980s, governments have transferred numerous responsibilities within the transport industries to the private sector. In the 1990s, port reforms gained momentum, with the philosophy of ‘new public management’ and increased private sector involvement in delivering public goods becoming prevalent worldwide. The devolution of responsibilities to autonomous Port Authorities was driven by multiple factors, including rapid advances in information technology, growing infrastructure deficits, an increasing public sector debt burden, and the need for improved management of interactions between the public and the private sectors (Brooks & Cullinane, 2006).

Scholarly research reviewed the details of these reforms, with several *ex-post* assessments questioning their effectiveness (e.g., Cullinane & Song, 2002; Everett & Robinson, 1998; Hoffmann, 2001; Wilmsmeier & Sánchez, 2008) and scrutinizing the application of generic models proposed by intergovernmental organizations like the World Bank or UNCTAD (e.g., Beresford, Gardner, Pettit, Naniopoulos, & Wooldridge, 2004). The endorsed models intended to overcome the shortcomings of previous port management structures and to facilitate adjustment to a complex economic context. However, the variation in outcomes has led to the absence of consensus on appropriate governance models (Brooks

& Pallis, 2012; Verhoeven, 2010). Part of the criticism targets the legislation accompanying the reforms (Everett, 2007; Everett & Pettitt, 2006), emphasizing how problematic institutional configurations can disrupt the essential balance between the economic context, port governance structures, and ports' strategies. In the 2000s and the first half of the 2010s, governments worldwide began re-evaluating port governance models (see the analysis of 26 national cases in Brooks, Cullinane, & Pallis, 2017; the 22 national cases summary in Zhang, Geerlings, El Makhloufi, & Chen, 2018; for more recent developments Notteboom, Pallis, & Rodrigue, 2022b).

With and after the reform policy leaders created more or less fragmented institutional structures with different levels of decentralization of responsibility and power. Almost all tried to strike some balance between capturing the efficiencies of sector-wide government and giving local control. The fragmentation of governance resources is mainly reflected in two aspects. One is the fragmentation of governance power (jurisdictional fragmentation), which creates limited procedural power with multiple subjects, goals, and tasks. The other is the functional fragmentation of governance. A main advantage of functional fragmentation is that the agency is likely more technically efficient because it is specialized. In this case, institutions work a wide range of sectoral information in their respective areas, and a lot of repetitive information collection and processing work is present. This also evidences that the relevant information is not developed systematically.

Baltazar and Brooks (2001, 2007) developed a corporate governance framework, drawing on strategic management, organization theory, and configuration theory. The 'matching framework' advocates that the configuration of three inputs defines port governance: (a) the *structure*, which is implemented as a result of government decisions; (b) the *strategy*, encompassing objectives, decisions, and implementation plans of the responsible authorities; and (c) the operating *environment* of a port, which includes controllable and uncontrollable factors. The output (port *performance*) results from the consistency or alignment of the inputs when considered collectively. The predominant conclusion from the 14 national cases discussed in Brooks and Cullinane (2006) is that achieving a fit between inputs is crucial, and there is no universally superior configuration. If the inputs fail to align properly, the potential for achieving optimal performance in accordance with the port's objectives is compromised.

2.2. Case study: Colombia

Port operations in Colombia are divided into three main sub-systems: (a) the Caribbean coast with the port zones of Cartagena, Ciénaga, Golfo de Morrosquillo, Guajira, Santa Marta, Barranquilla, Turbo, and San Andrés; (b) the Pacific coast with Buenaventura and Tumaco; and (c) the Magdalena River inland waterways, including Río Magdalena and Barrancabermeja.

In the last three decades, port traffic has grown from 48.5 million tonnes (1994) to 167.9 million tonnes (2022). In 2022, Cartagena (24.8%) and Ciénaga (18.4%) were the busiest port zones, responsible for 43.2% of the country's total port traffic (in tonnes), followed by Morrosquillo (16.2%), Guajira (11.3%), and Buenaventura (11.7%). The remaining seven port areas represent less than 7% of cargo volumes (ibid.). The port system is composed of 87 terminals, of which 25 are river, 57 are maritime, and five are mixed terminals. Non-containerized cargoes move predominately via multipurpose (48.3% of the country's throughput), liquid bulk (30.3%), and dry bulk (20.2%) terminals (Sanchez & Barleta, 2020). Natural resources (coal, petroleum, and crude/uncrude oil) account for 93% of Colombia's seaborne export volumes, with coal being the main export product, at approximately 60% of the country's port traffic. Imports are more diversified. In 2022, petroleum and oil derivatives (17.7%), corn (12.8%), and household goods (9.0%) were the largest groups of import cargo in terms of volume (Supertransporte.gov.co, 2023).

Container traffic increased from 963.000 TEUs in 2008 to 4.6 million

TEUs in 2022 (Supertransporte.gov.co, 2023). The share of Colombian ports among container traffic in LAC increased from 4% to 9% of the total throughput, improving its ranking from the ninth position to the fourth in terms of container movements (Fig. 1). The share increase is mainly driven by Cartagena's success in capturing the country's greatest share of import and export cargo and positioning as one of the main transshipment ports in the region (Liner Shipping Connectivity Index; UNCTAD, 2022). Cartagena serves 70% of the TEU handled by Colombia's ports annually, Buenaventura handles a further 23%, while Barranquilla (4%) and Santa Marta (0.9%) managing the remainder (Sanchez & Barleta, 2020).

Port reforms in Latin America and the Caribbean (LAC) started in the 1990s (see: Carrillo & Santander, 2005; Sepúlveda, 2000). The intention was to solve problems, such as an excessive workforce and over-regulation, inefficient port operations, deficits in the provision and maintenance of port infrastructure, insufficient superstructure investments, and security challenges that were prevailing under public sector governance by devolving decision-making to the private sector (cf. Economics Commission for Latin America and the Caribbean (ECLAC), 1992; Sánchez & Wilmsmeier, 2006). However, since then, port operations, particularly those involving containers, have faced significant economic, social, and environmental disruptions. This required frequent adjustments by both public and private actors (Wilmsmeier, Monios, & Perez-Salas, 2014). As a result, there were significant changes in strategies and structures within the Colombian and the wider South American port sectors (cf. Monios & Wilmsmeier, 2015).

The reforms in LAC transferred the responsibility for managing port operations and infrastructure and superstructure development to the private sector. Nearly all countries endorsed these reforms, hoping to generate growth trajectories and dynamics within the port sector amidst evolving economic circumstances. Today, the landlord model (with some variations) is the most commonly implemented approach, yet it resulted in unequal performance outcomes across the region (Gracia, González-Ramírez, Ascencio, & Ortiz, 2022). On the one hand, the quayside productivity of the main container terminals in the region saw a notable improvement, spurred by superstructure investments. This also led to terminals eventually achieving productivity levels comparable with ports in other world regions (Wilmsmeier, Tovar, & Sanchez, 2013; Serebrisky et al., 2016; Suárez-Alemán, Sarrera, Serebrisky, & Trujillo, 2016). Additionally, the positive and sustained positive trade development facilitated efficiency and productivity gains in ports, as the continuously rising demand consistently outstripped supply (Wilmsmeier et al., 2014).³ On the other hand, by the mid-2000s, it became apparent that the gap in infrastructure development, a key factor that had initially spurred the port devolution processes, was widening rather than narrowing (Perrotti & Sanchez, 2011; Sánchez & Perrotti, 2012).

Moreover, beyond its initial goals, port reform facilitated the corporatization of the port system, as well as horizontal and vertical integration within the port and maritime sectors (Monios & Wilmsmeier, 2023; Sánchez & Wilmsmeier, 2006). The former is evidenced by the influx of international and global terminal operators, which, as of 2019, controlled more than 80% of South America's container port throughput (Drewry, 2020). The latter trend is exemplified by the recent takeover of Chile-based SM SAAM – whose terminal operations comprise ten terminals across six countries in North, Central, and South America with a total container throughput of approximately 3.5 million TEU in 2021 – by Hapag-Lloyd. Global operators have transformed ports from isolated and locally focused entities into integral components of global business strategies. Bulk and container terminals have become integrated elements of global network strategies, extending beyond the control of local

³ Disruptions to maritime supply chains around the globe, caused by the outbreak of the COVID-19 pandemic hindered these developments (Notteboom et al. 2021). However, recent dynamism has returned to the ports of the region.

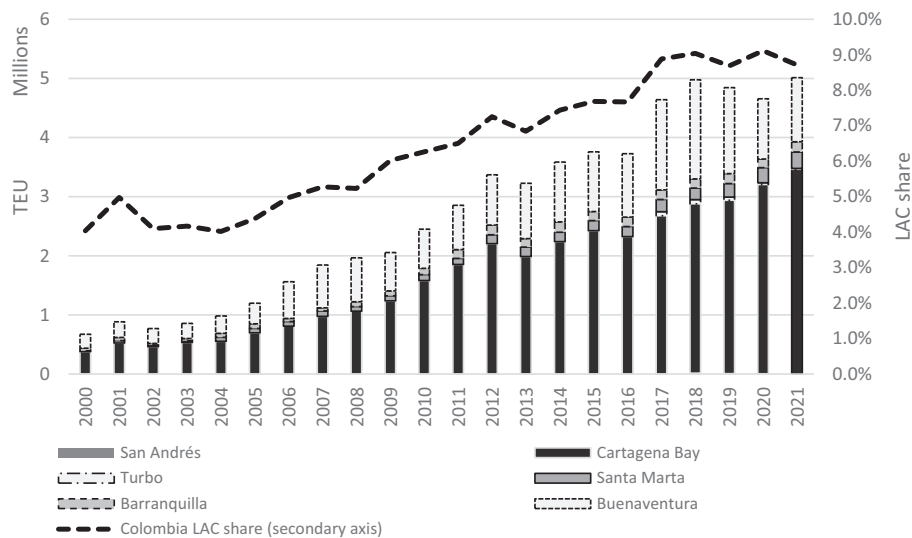


Fig. 1. – Colombian container throughput national and regional shares, 2000–2021. Source Authors' elaboration based on ECLAC data.

and national public governing bodies. Consequently, similar to trends observed in other regions, the outcomes of port reform are uneven, and the impact of national port governance on the strategic development of the port sector is significantly diminished (Gong, Cullinane, & Firth, 2012).

As the life cycle of concessions matures, the Colombian government and all involved parties are reflecting upon the outcomes and future developments. This reflection encompasses inquiries into whether the mere presence of private port operators equates to guaranteed success, serves as a universal solution for port development challenges, and facilitates the introduction of new technologies in port and terminal development (Wilmsmeier & Monios, 2016). As documented across a broader context (Jacobs, 2007; Ng & Pallis, 2010; Notteboom, 2007; Notteboom, De Langen, & Jacobs, 2013), the port sector tends to adopt governance structures tailored to unique local conditions, including port culture and objectives. This approach resulted in varied relationships among stakeholders. Moreover, the rising levels of intra- and inter-port competition introduced new complexities to port sector governance in Latin America (Wilmsmeier, Monios, & Ballén, 2021; Wilmsmeier & Sánchez, 2017), necessitating institutional adaptations. Laxe, Sánchez, and García-Alonso (2016) highlight that despite a changing external environment and shipping and port industry, Latin Americaport governance still adheres to the frameworks established by UNCTAD in 1992. Consequently, critical aspects like workforce relations, decision-making mechanisms for investment and capacity expansion, and the nature of port authorities require new foci and developments.

2.3. This research

In this context, a pressing question arises: does a fragmented governance model effectively foster the desired corporate governance standards and ensure adequate coordination between public and private sector actors? In a broader context, governance has transcended government boundaries, acknowledging the critical roles of private actors and civil society in policy formulation (e.g., Hooghe & Marks, 2001; Imrie & Raco, 1999). Importantly, viewing governance as an analytical concept allows for examining both hierarchical and collaborative arrangements – be they multi-level or network-based – and recognizes the intricate complexity of contemporary policy issues.

Frameworks governing the economic, political, and administrative authority over ports are enacted through national legislation, encompassing elements such as open tendering procedures, control and monitoring mechanisms, performance targets, and various restrictions.

Port competitiveness is marked by the ability to integrate resources, competencies, and capabilities, fostering an environment where competition and collaboration occur simultaneously (Parola, Ferrari, Tei, Satta, & Musso, 2017; Song, 2003). The governance model should facilitate coordination among all stakeholders to optimize collective performance (systemic view), establish rules and frameworks for managing strategies (public sector), and guide decision-making (private sector). Conversely, devolution processes result in a qualitative restructuring (Brenner, 2004), characterized by uneven “hollowing out” processes (Rhodes, 1994) and subsequent “filling in” (Goodwin, Jones, & Jones, 2005; Jones, Goodwin, Jones, & Simpson, 2004). This leads to an asymmetrical ability to act both within the public sector and in the dynamics of public-private sector relationships.

This research uses Colombia's port sector as a case study to explore the wider implications of institutional fragmentation in port governance and aims to evaluate the following hypotheses:

H1. Institutional fragmentation in port governance leads to a misalignment between public and private actors' understanding of the institutional roles and responsibilities.

H2. Institutional fragmentation compromises coherence in constructing a long-term strategic vision of the port sector and leads to diverging views regarding future adjustments.

Exploring the implications of fragmentation adds new perspectives to the existing body of knowledge. While the relationship between port governance and performance is well-established (Brooks & Pallis, 2008; Vieira, José Kliemann Neto, & Amaral, 2014; in a LAC context: Gracia et al., 2022), and the spectrum of centralization, decentralization, and devolution has been extensively examined (Lee & Lam, 2017; Monié & Vidal S.M.doS.C., 2006; Verhetsel & Sel, 2009), the specific discussion of the division of responsibilities and its implications remains largely unaddressed.

3. Methodology

The data for this study was mainly collected through two online surveys that captured the perspectives and perceptions about governance tasks of public and private actors involved in ports in Colombia. Qualitative analysis complemented this research: The authors assessed existing laws, decrees, and regulations in Colombia to derive the “official” responsibilities for the governance tasks under investigation. This supplementary approach is referred to as normative analysis. Together,

the data sources permit the derivation of a multi-dimensional understanding of port governance in Colombia.

The first online survey included five open-ended questions that focused on the current challenges within Colombian port governance and institutional structures:

- i. What are the critical problems in Colombia’s port(s) related to the port governance system?
- ii. Does the current governance model enable Colombian authorities to manage their port assets effectively, support economic development, and meet their regulatory obligations?
- iii. What governance models or approaches could be implemented to ensure Colombian institutions are more attuned to the perspectives of port users?
- iv. Have the Colombian institutions the tools (technical and strategic) and partnerships (collaborations) they need to respond to the evolving maritime sector?
- v. What do the Colombian institutions involved in the port sector need to convert current and future challenges into opportunities?

Based on lists assembled by the Colombian Ministry of Transport, 131 senior members of public and private organizations involved in the Colombian port sector were invited to answer the survey. Over 14 days, 52 responses were collected.

The second online survey was designed to capture respondents’ perceptions of these stakeholders on (a) the current institutional configuration (i.e., which organizations are currently responsible for relevant governance tasks) and (b) stakeholders’ perceptions about the ideal future institutional configuration (i.e., which organizations should be responsible for relevant governance tasks in the future). To this end, participants were presented with the list of governance tasks (Table 1) and asked to assign them to the eight critical actors in Colombia’s port governance. Tasks could be assigned to multiple actors.

This research deliberately adopted the governance classifications and tasks as delineated in Notteboom et al. (2022a), as it includes a broad spectrum of governance dimensions that adequately reflect the multifaceted nature of port organizations. Governance tasks are often interlinked and may fall under the responsibility of more than one public or private entity operating at the port or another level. The three groups of tasks under investigation were port policy formation, market and price regulation, and the management of concession agreements:

Invitations were sent to the same 131 senior members from public and private organizations in the Colombian port sector. In total, we received 38 complete answers. The 11 public sector respondents were representatives of public institutions, such as the Ministry of Transport and the National Planning Agency (among others). The 27 responses from the private sector were representatives of port operators, chambers of commerce, mining companies, and industry associations (among others). A list of respondents’ entities is presented in Table 2.

Information from the two surveys was used to compare the “normative” distribution of governance responsibilities between different public sector agencies - how the law describes the intended distribution of responsibilities - with public and private sector perceptions about how these responsibilities are enacted today, and how they should be distributed in future. This was done using a mapping technique based on Social Network Analysis (SNA) for all three areas of governance considered in this paper, namely port policy development, market & price regulation, and concession management.

Responsibility attributions made by the survey respondents were summed in 2-mode network matrices that linked organizations to specific tasks in port governance (Table 1). Two matrices were produced for each governance area: one based on survey responses from the public sector and another based on survey responses from the private sector. For example, if four respondents saw the Ministry of Transport as responsible for establishing a port authority, the connection between the Ministry of Transport and this specific task was assigned the value 4.

Table 1
Port Governance areas and tasks examined.

Port policy formulation (12 tasks)	Market and price regulation (20 tasks)	Management of concession agreements (10 tasks)
<p>A.1 Define, develop, and implement national ports policy.</p> <p>A.2 Coordinate all public sector agencies exercising port-related competencies.</p> <p>A.3 International representation (e.g., IMO).</p> <p>A.4 Adopt national strategy / master plan.</p> <p>A.5 Approve master plans (submitted by operators).</p> <p>A.6 Approve development plans (submitted by operators).</p> <p>A.7 Coordinate local and hinterland transport policies.</p> <p>A.8 Coordinate the structure and budget of the port authority.</p> <p>A.9 Adopt environmental legislation.</p> <p>A.10 Organize and facilitate consultations on port policy.</p> <p>A.11 Maintain port statistics.</p> <p>A.12 Carry out strategic studies.</p>	<p>B.1 Issue licenses & authorizations</p> <p>B.2 Monitor licenses & authorizations</p> <p>B.3 Issue guidance/ Approve structure of tariffs for infrastructure charges</p> <p>B.4 Alternative: approve tariffs for infrastructure costs (submitted by the operators).</p> <p>B.5 Publication of guidelines on the establishment of tariffs for services.</p> <p>B.6 Alternative: approve the fee structure for certain service charges (submitted by operators).</p> <p>B.7 Adopt the full rate of certain services.</p> <p>B.8 Alternative: approve the service charge rate (submitted by the operators).</p> <p>B.9 Regulate (e.g. limitation) fees for sub-concessions, sub-leases, etc. granted by the port operator to third parties</p> <p>B.10 Monitor the economic functioning of the port market, competitiveness, and price levels</p> <p>B.11 Ensure the validity of port operators reports on the quality of service</p> <p>B.12 Audit of port operators in the context of the respective concession and sub-concession agreements.</p> <p>B.13 Audit of the Port Authority (if any).</p> <p>B.14 Ensure the validity of external organizations’ reports on customer satisfaction.</p> <p>B.15 Receive, investigate and decide on complaints by operators and/or users</p> <p>B.16 Issue bans and impose fines for infringements of competition law (or sector-specific rules on market functioning, if any)</p> <p>B.17 Receive and investigate complaints by operators and/or users and transmit them to the Competition Commission</p> <p>B.18 Opening ex officio investigations.</p> <p>B.19 Manage arbitration cases between operators and users.</p> <p>B.20 Give instructions to other public sector entities</p>	<p>C.1 Monitor general compliance with and manage concession agreements.</p> <p>C.2 Monitor compliance with Service Level Agreements.</p> <p>C.3 Monitor compliance with public service obligations.</p> <p>C.4 Monitor the implementation of the business plan of the concessionaire.</p> <p>C.5 Manage financial aspects of concession agreements (performance guarantees, concession fee, auditing, etc.).</p> <p>C.6 Evaluate the functioning of concession agreements.</p> <p>C.7 Receive and respond to requests for amendments / re-negotiations.</p> <p>C.8 Enforce concession agreements in case of breaches (incl. Imposition of fines, suspension, termination, etc.).</p> <p>C.9 Receive/investigate complaints and breaches of Concession Agreements.</p> <p>C.10 Organize and/or facilitate consultations on port operations (Users’ Committee or similar).</p>

Source: Authors based on Notteboom et al. (2022a).

Table 2

Entities that participated in both surveys.

1. Acevedo Abogados S.A.S.	14. Regional Autónomos Corporation of Rio Grande de la Magdalena (CORMAGDALENA)	28. VOPAK
2. AFLUMARPORT	15. National Tax and Customs Authority (DIAN)	29. Zona Franca Argos SAS Ministerio de Transporte (Mintransporte)
3. Agencia Nacional de Infraestructura (ANI)	16. Colombian Maritime Authority (DIMAR)	30. Oleoducto Central S.A.
4. National Association of International Commerce of Colombia (Analdex)	17. National Planning Agency (DNP)	31. National Police
5. National Business Association Colombia (ANDI)	18. Duarte & Morales Consultores SAS	32. Portmagdalena
6. Asociación de Puertos del Atlántico (Asoportuaria)	19. Estudios Palacios Lleras SAS	33. Asociación Colombiana de Derecho Marítimo (ACOLDEMAR)
7. Australian Bunker Supplier's	20. G&L	34. Puerto de Santa Marta
8. Cámara de Comercio de Cartagena	21. Impala	35. SENA náutico pesquero Buenaventura
9. Cerrejon	22. Intramar	36. Sociedad Portuaria de Capulco S.A.
10. Compañía de Azúcares y Mieles (CIAMSA)	23. Instituto Nacional de Vigilancia de Medicamentos y Alimentos (INVIMA)	37. Sociedad Portuaria Bocas de Ceniza S.A.
11. Compañía de Puertos Asociados S.A.	24. MGD Consultores EU	38. Sociedad Portuaria Central Cartagena S.A.
12. COREMAR	25. Ministry for Trade, Industry and Tourism (Mincit)	
13. Grupo Portuario / Ventura Group	26. Sociedad Portuaria Monomeros	
	27. Superintendencia for Transportation (SUPERTRANSPORTE)	

Networks of co-responsibility between institutions were derived from these 2-mode networks. This was accomplished by summing the minimum overlap for all pairs of organizations mentioned as assuming responsibility for the same tasks in each governance area. For instance, if three respondents identified the Ministry of Transport as responsible for the task of establishing a port authority, and two identified the Infrastructure Agency as responsible for the same task, the connection between the Ministry of Transport and the Infrastructure Agency was increased by 2 (representing the minimum overlap). This process was repeated for every item and every pair within the respective governance area.

A limitation of the research conducted is worth noting: while both online surveys achieved good response rates (especially considering the targeted population of senior members of organizations), it is essential to remind that the survey responses may not necessarily represent the common opinion within the respective organizations, nor were they officially sanctioned as public statements by those organizations. Other respondents from the same organizations might have provided different answers. Additionally, a potential bias in respondents' perspectives regarding preferred future arrangements may stem from their personal or corporate interests.

4. Research findings

4.1. The institutional framework in place

Law 1/1991 outlines the institutional responsibilities within the Colombian port sector, distributing aspects of port governance across several institutions and promoting fragmentation since its early implementation. Three decades later, this initial framework has seen various adjustments leading to further fragmentation (see Table 3.). This fragmentation of responsibilities within the port governance is evidenced by the involvement of additional institutions in planning, regulating, executing, and monitoring. These duties are spread across at least ten

Table 3

Summary of the evolution of institutions and competencies.

Competency	1991 to 1999	After 2000
Port policy development	Ministry of Transport	
Port expansion planning	Ministry of Transport in coordination with National Planning Department (DNP), Infrastructure Planning Unit (UPIT) and CONPES	
Public Works in ports	Ministry of Transport	National Roads Institute (INVIAS)
Technical regulation	SUPERTRANSPORTE	Ministry of Transport
Inspection and surveillance		SUPERTRANSPORTE
Authorization new port Development		National Infrastructure Agency (ANI)
Granting of concessions		
Concession compliance control (including tariffs)		
Operational control		SUPERTRANSPORTE
Supervision and monitoring		
Maritime surveillance & security	Ministry of Transport in coordination with Colombian Maritime Authority (DIMAR)	
Environmental licenses	Ministry of Environment and Sustainable Development	
Taxes and customs	National Tax and Customs Office (DIAN)	

Source: Authors.

institutions. The Ministry of Transport is the authority responsible for port policy development and acts as the regulatory body. A total of five institutions are affiliated with this Ministry and involved in port governance. These include the National Infrastructure Agency (Agencia Nacional de Infraestructura – ANI), the entity responsible for the protection and management of the Magdalena River (Corporación Autónoma Regional del Río Grande de la Magdalena – CORMAGDALENA), the National Roads Institute (Instituto Nacional de Vías – INVIAS), the Superintendencia for Ports and Transportation (Superintendencia de Puertos y Transporte – SUPERTRANSPORTE), and the Transport Infrastructure Planning Unit (Unidad de Planeación de Infraestructura de Transporte – UPIT).⁴

SUPERTRANSPORTE oversees the inspection, surveillance, and control of port activity. Until 1999, this institution was also responsible for granting and managing concession contracts, a role that was transferred to the National Infrastructure Agency (ANI) upon its creation. INVIAS is tasked with constructing and maintaining the public roads and canals leading to the ports. The Dirección General Marítima (DIMAR), part of the Colombian Navy, has several duties, including authorising, coordinating, and controlling maritime operations, related to the arrival, berthing, manoeuvring, anchoring, towing, and launching of ships and vessels. Lastly, CORMAGDALENA, manages port matters in the final 27 km of the Magdalena River.

The changes in the governance structure between the 1990s and after 2000, emerged as responses to government preferences and reshuffles at the cabinet level and were passed as ministerial decrees, responding always to current ministerial preferences. The most notable change in 2000, was that SUPERTRANSPORTE was given a wider responsibility not only for port activity, as its exclusive mission, but also was delegated the functions of surveillance, inspection and control of the public transport service. This implied new supervisory functions in matters of transit and transport and concessions and infrastructure, and a change in its name to the Superintendencia of Ports and Transport. In addition, the functions other than those of inspection, surveillance and control in matters of port concessions were transferred to the ANI. Later changes like the renaming to Superintendencia of Transport that took place 2018 did not affect the responsibilities for ports.

⁴ UPIT was created by Decree 946 in 2014 but was only implemented in October 2021. This institution during the course of the research was still in its build up. Currently, it is working to clearly define its role within the institutional setting.

The following three figures illustrate our normative analysis of the institutional framework as defined by Law for the three specific governance areas under examination, i.e., port policy development (Fig. 2), market pricing and regulations (Fig. 3), and concessions management (Fig. 4), respectively. This analysis provides the background to understand how the perceived governance framework (cf., Section 4.3) reflects the designed one. Meanwhile, comparing the three areas of governance tasks provides evidence of the institutional fragmentation of governance tasks accompanying this atypical situation of a port system in which the classical port authority as an institution is absent.

On the right side, the visualizations detail the involvement of institutions (yellow nodes) in the specific tasks associated with the governance areas (blue nodes); the visualizations on the left side summarize the overlap in tasks between institutions in the respective governance areas. Fig. 2 shows that the Ministry of Transport is the most important actor in this governance area, being related to the largest number of the 12 tasks in this governance area (illustrated by its node size). The Ministry of Transport is also most central, sharing responsibilities for specific tasks with four other institutions (illustrated by the ties between institutions). Finally, the figure shows that there are particularly high degrees of overlap in responsibilities between the pairs Ministry/DNP and ANI/CORMAGDALENA (illustrated by the width of the ties between them). SUPERTRANSPORTE has no overlapping task responsibilities, albeit being responsible for one task. INVIAS has no task responsibilities in this governance area at all. It is important to recognize that the responsibilities of CORMAGDALENA are confined to the watershed of the Magdalena River and thus must always be understood within the geographical limitations of its activities. Nevertheless, CORMAGDALENA is responsible for inter-institutional coordination and the protection and comprehensive management of the Magdalena River as a public good.

Fig. 3 shows that most of the 20 tasks in governance area of market and price regulation are performed and led by SUPERTRANSPORTE (as indicated by the node size). ANI and CORMAGDALENA are the institutions with the second highest number of responsibilities assigned by law, with the latter overseeing the same tasks as the former over the last 27 km of the Magdalena River. Therefore, ANI and CORMAGDALENA have a high degree of overlap in responsibilities (as indicated by tie

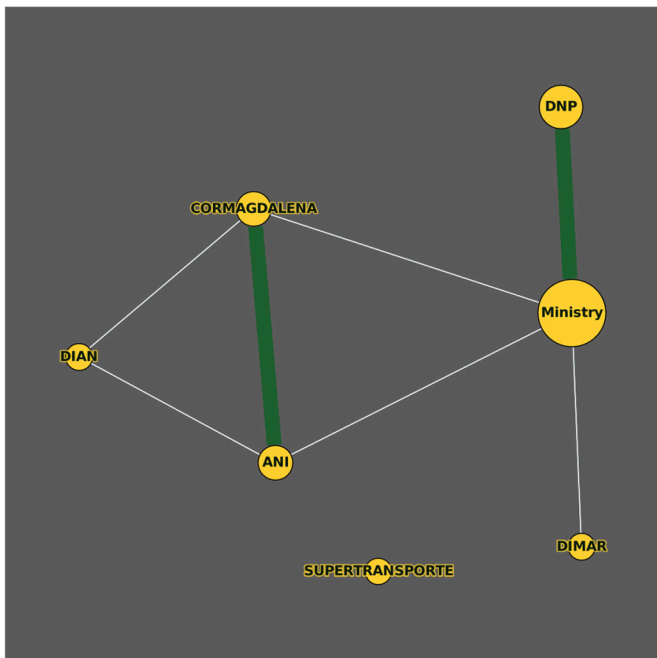


Fig. 2. Port policy development responsibilities by Law. Source: Authors.

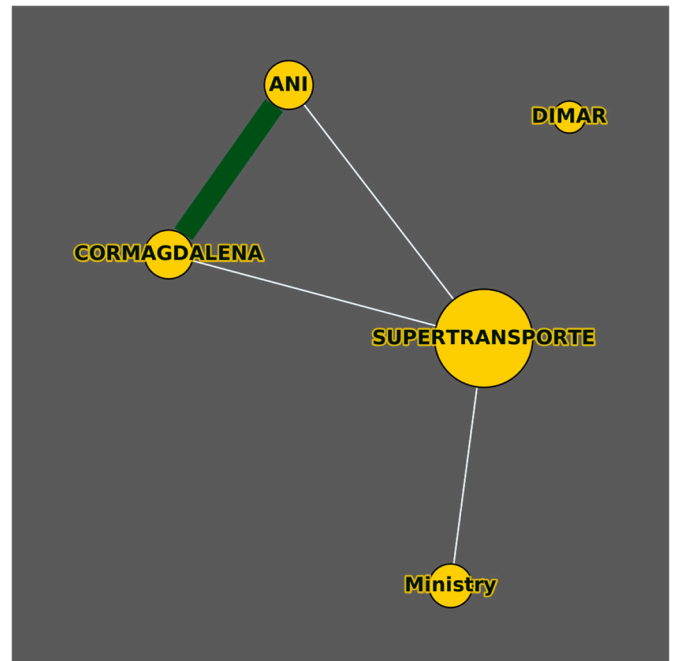


Fig. 3. Market and price regulation responsibilities by Law. Source: Authors.

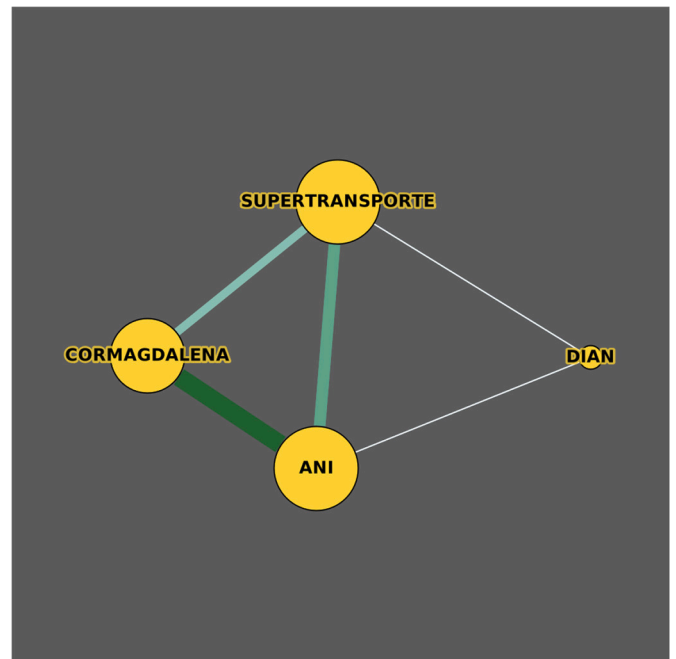


Fig. 4. Concession management responsibilities by Law. Source: Authors.

width). While DIMAR is responsible for one task in this governance area, it does not have any overlapping responsibilities with other actors. DNP, DIAN, and INVIAS have no task responsibilities in this governance area.

Regarding concession management (Fig. 4), most responsibilities lie with ANI, CORMAGDALENA and SUPERTRANSPORTE (node size) and these institutions share high degrees of overlapping responsibilities (tie width). The Ministry, INVIAS, DNP, and DIMAR have no involvement in this governance area.

4.2. Perceptions of the current and the desired institutional configuration

With the three previous figures detailing the current legislative configuration of the institutional responsibilities, this section (a) maps the perceived institutional responsibilities in these three port governance areas by public actors and representatives from the private sector. The perceptions presented are about responsibilities for specific governance tasks and do not constitute an explicit performance assessment. This section also includes (b) the perspectives of public and private actors in the port sector regarding the desired future configuration of governance responsibilities in each respective governance area.

In all three governance areas, comparing the received public and private replies regarding the identified governance tasks produces two conclusions. First, both public and private actors understand that, as of today, the relevant governance tasks are performed with much more institutional fragmentation than legally foreseen. Second, public institutions understand the current configuration differently than private actors. The differences in perceptions between public and private actors extend to their visions of the optimal institutional framework in the future. Divergent perceptions of the current reality appear to produce divergent wishes institutional adjustments.

4.2.1. Governance of port policy development

Fig. 5 illustrates the perceptions about tasks related to port policy development. From a public sector viewpoint (Fig. 5, top), the Ministry of Transport is perceived to be central in developing port policy, with

SUPERTRANSPORTE also understood to have significant responsibilities. This is particularly noteworthy because within the current legislative framework, SUPERTRANSPORTE actually has only one task within this governance area: maintaining and updating port statistics. In the desired future configuration, public actors would prefer to limit SUPERTRANSPORTE to a role similar to what the present legislative framework foresees: responsibility for maintaining and updating statistics. Further, the public sector would prefer DIAN to shift from a relatively peripheral institution to a slightly more active role in port policy development. The desired future configuration also calls for a relatively more central role of the Ministry of Transport. This suggests a desire for greater coordination of port governance via a single entity, perhaps eliminating the confusion produced by current fragmentation.

The private sector (Fig. 5, bottom) attributes the current responsibilities in port policy development – in a somewhat different manner. In the current configuration, private actors perceive ANI as the most central institution and desire a less central role for this entity in the future. This represents a notable departure from the established normative allocation of institutional responsibilities (Fig. 2). An important distinction between public and private stakeholders lies in the expectations for DIAN’s future role. The private sector wishes DIAN to assume a much more central role and be active in more tasks than today, sharing substantially more responsibilities with the Ministry of Transport. Like their counterparts in the public sector, respondents from the private sector envision the Ministry of Transport to keep playing a significant role in port policymaking in the future, albeit to a slightly lesser

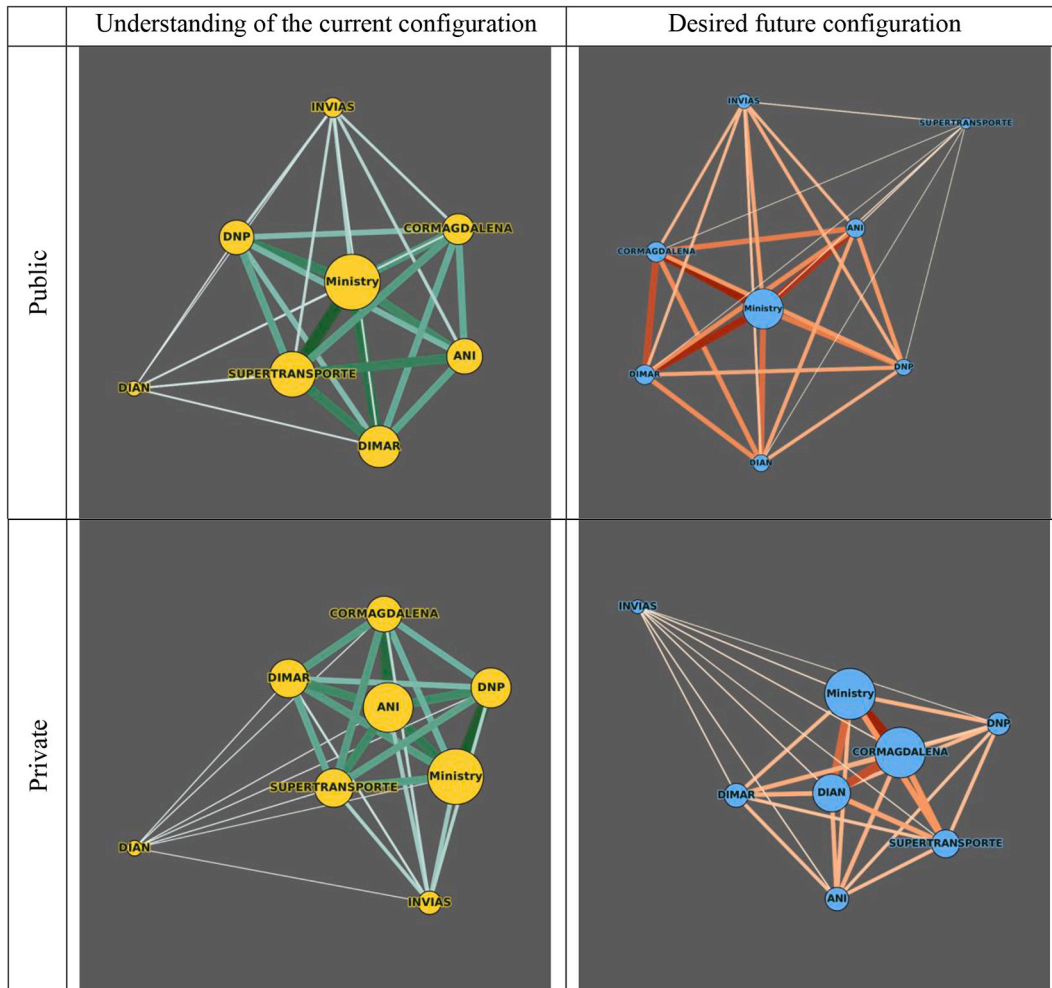


Fig. 5. Governance of port policy development: Public vs. private perspectives. (Source: Authors).

degree.

Notably, respondents from both sectors observe some peripheral involvement of INVIAS in the current configuration and suggest its continued marginal involvement in the future. However, according to the legislative framework, INVIAS does not have responsibilities in port policy development. Similarly, in the case of SUPERTRANSPORTE, the perception by both private and public sector respondents – whether accurate or not – differs from the legally defined one.

4.2.2. Governance of market and price regulation

The perceptions regarding the governance of the market and price regulation are depicted in Fig. 6. Both public and private sector respondents perceive a strong involvement of many more institutions than current legislative framework prescribes. DIMAR, the Ministry of Transport, INVIAS, and the DNP are not tasked with responsibilities in this specific governance area. Yet, respondents consider them to be involved in related tasks to varying degrees. From both public and private sector perspectives, SUPERTRANSPORTE is engaged in most of the specified tasks, an observation that aligns with the current normative framework. The deviation stems from differing perceptions of the roles of other institutions, notably the Ministry of Transport (as viewed from the public sector perspective, Fig. 6, top) and ANI (as seen from the private sector perspective, Fig. 6, bottom). This departure from the designated responsibilities in this governance area is considerable, suggesting a significant level of confusion regarding the current governance of the port system and the responsibilities that have been enacted.

Looking towards the desired future, it becomes clear that the current configuration is viewed as lacking cohesion. The desired configurations are marked by a lower number of institutions involved. Additionally, respondents from both sectors wish to strip SUPERTRANSPORTE of its current responsibilities in market and price regulation. There is a significant desire for the redistribution of institutional responsibilities, with private sector respondents advocating for a stronger involvement of DIAN and DIMAR and public sector respondents not envisioning a future without ANI in this area. Given the absence of a typical port managing entity, these findings hint towards a preference for a more centralized authority to establish greater leadership in these governance tasks. Meanwhile, CORMAGDALENA is acknowledged as an important institution with a specific role in the lower part of the Magdalena River basin.

4.2.3. Governance of concession agreements

Fig. 7 illustrates the perceptions of public and private sector respondents concerning the current and future responsibilities for managing concession agreements in Colombian ports. There is congruence between the perceptions and the actual assignment of the respective tasks within the current legislative framework, with SUPERTRANSPORTE, ANI, and CORMAGDALENA playing central roles. However, significant differences between respondents from the public and private sectors emerge when stakeholders describe the desired future responsibilities. On the one hand, public sector respondents favour shifting responsibilities from SUPERTRANSPORTE and ANI to

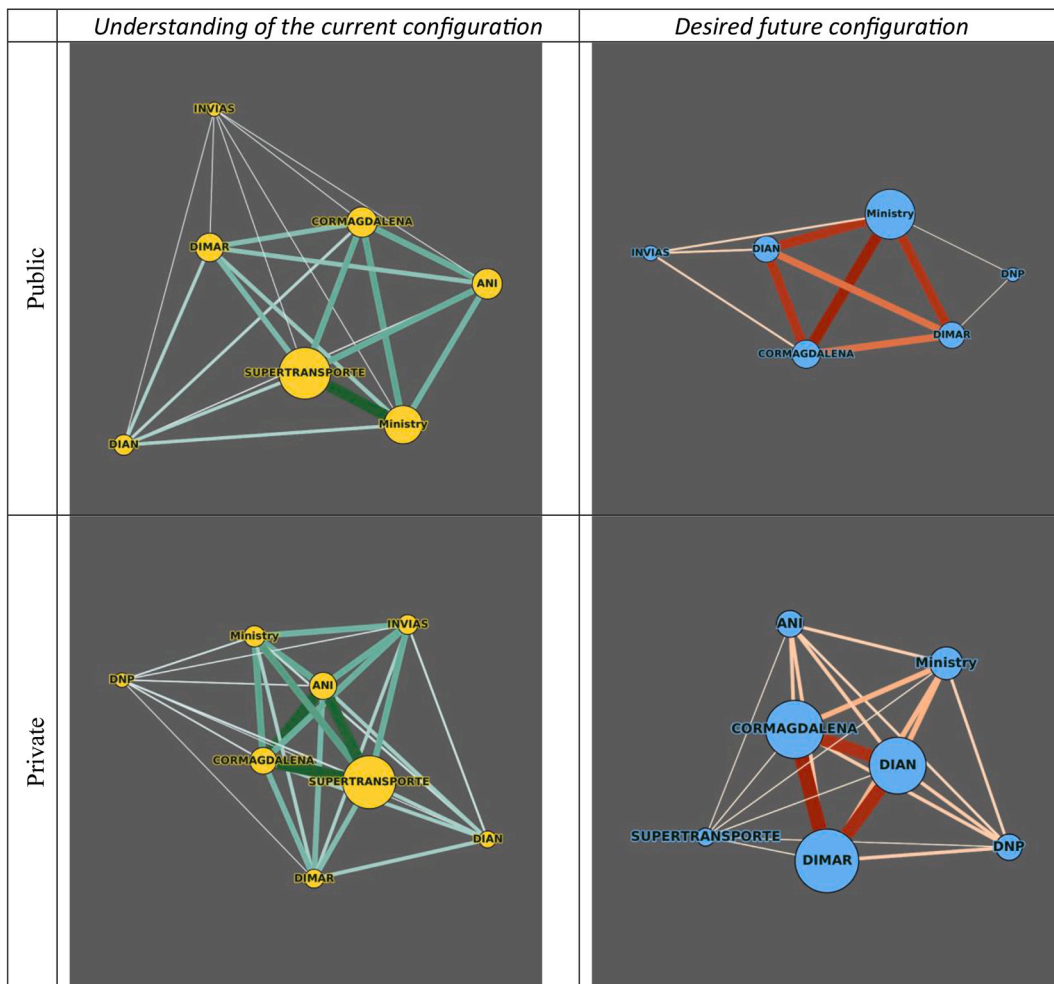


Fig. 6. Market and price regulations: Public vs. private perspectives. (Source: Authors).

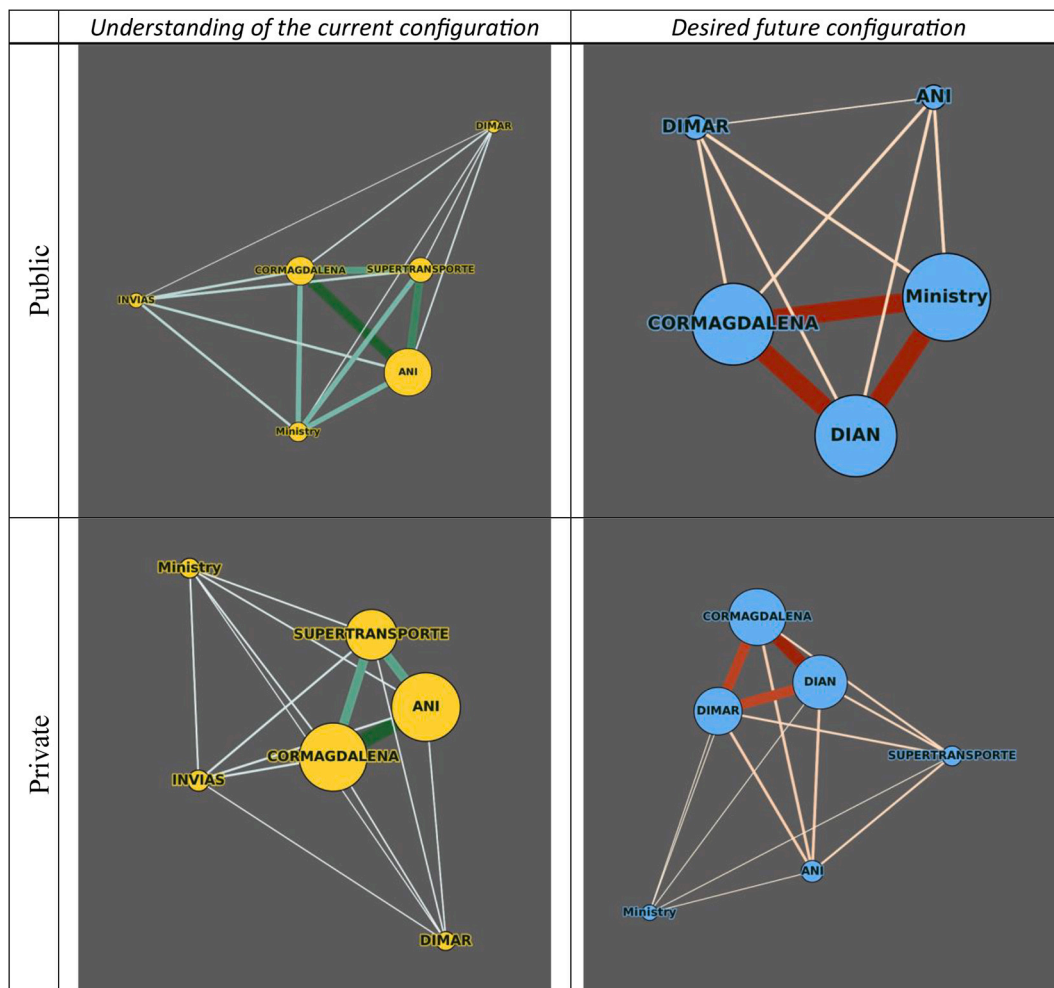


Fig. 7. Responsibilities in management of concession agreements: Public vs. private perspectives. (Source: Authors).

the Ministry of Transport, CORMAGDALENA and DIAN. While ANI is anticipated to maintain some responsibilities, SUPERTRANSPORTE is envisioned to be stripped of all its current responsibilities. On the other hand, private sector respondents prefer the responsibilities be handled by DIMAR instead of the Ministry of Transport, envisioning a peripheral role for the latter institution. Respondents from both sectors agree that DIAN should be involved in this area of port governance tasks.

4.3. Assessment (SWOT) of the current port governance configuration

The online survey featured multiple open-ended questions about port governance in Colombia (see Section 3). The responses have been summarized into a SWOT matrix in Fig. 8.

Overall, few strengths of the current governance system were identified. Yet, respondents suggested that a notable strength lies in the demonstrated capacity of national private stakeholders to enhance the positioning of the Colombian (container) port system within LAC. This strength aligns with the initial objectives of the port reform to encourage increased involvement from the private sector.

The respondents highlighted numerous weaknesses. They noted that responsibilities are spread across too many institutions, leading to various issues including duplication of responsibilities, insufficient institutional capacities, a lack of technical tools and knowledge, a narrow vision of port governance, difficulties in surveillance and rule compliance, an inability to enact and implement initiatives, a lack of coordination, and a deficit in local institutional presence, among others.

Respondents primarily see opportunities in the potential to reform the institutional setting by appropriately centralizing or decentralizing port governance responsibilities, depending on the needs of specific areas. They also highlight the potential for simplifying procedures, strengthening particular institutions, enhancing strategic planning capabilities, and boosting inter-institutional coordination.

Respondents identify that the current institutional framework poses several threats, including the risk of creating additional institutions, which could further increase fragmentation levels. They further highlighted the potential limitations on institutional capacities, such as those resulting from financial constraints. Moreover, adhering to a model lacking normativity heightens the risk informal personal relationships disproportionately influencing processes. The politicization of port governance and development agendas represents another significant threat, as does the insufficient trust among the institutions tasked with various port governance roles. Lastly, the “hollowing out” of institutions – where peripheral institutions are strengthened at the expense of central ones – emerges as a potential threat to the system’s integrity.

5. Discussing the findings

Among the countries that diverged from the global trend in port governance reforms, Colombia adopted a fragmented port governance model in 1993, distributing responsibilities across multiple institutions rather than centralizing them under a single port authority responsible for one or more ports. Thirty years later, this study explores the

STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> • The model is good (execution is the problem). • Current position of (containers) port within the LAC port system. 	<ul style="list-style-type: none"> • Multitude/duplication of State entities. • Lack of coordination between entities. • Multiple and duplicate reporting requirements. • Partial vision of the port system. • Difficulties in terms of surveillance and compliance with contractual obligations. • Lack of Institutional capacities and knowledge. • Elimination of shared competencies. • Lack of local institutional presence. • Failure of the responsible institution to implement studies. • Separation of maritime and port authorities. • Colombian institutions do not have the necessary technical and strategic tools to implement the assigned responsibilities
OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> • Centralization/ decentralization of responsibilities (depending on needs and preferences). • Simplify procedures (one entity). • Take advantage of the National Logistics Policy (CONPES 3982/2020) • Eliminate responsibilities of institutions (institutional streamlining). • Strengthen the role of the Ministry of Transport. <ul style="list-style-type: none"> • Inter-institutional coordination. • Build strategic planning capacity. • Redefine responsibilities. 	<ul style="list-style-type: none"> • Creation of more institutions and increase of fragmentation. • Financial limitations in building institutional capacity. • More "hollowing out" - strengthening the peripheral institutions but not the central ones. • Lack (absence) of normativity. • Politicization of port governance and development agendas. <ul style="list-style-type: none"> • Failing to leverage port expansion and transition from successful cases (e.g. Cartagena) • Lack of trust

Fig. 8. SWOT Analysis of the port governance structures in Colombia. (Source: Authors).

consequences of such a model. The findings highlight the fragmentation’s impact, as seen through public and private sector perceptions of the current state, the strain on institutional capacities under the existing port governance arrangement, and the varied aspirations for future restructuring.

The gathered data corroborates the first research hypotheses (H1): *Institutional fragmentation in port governance leads to a misalignment between public and private actors’ understanding of the institutional roles and responsibilities*. The findings suggest that such fragmentation engenders a significant degree of ‘institutional plasticity’ (Strambach, 2010; applied to ports by Notteboom et al., 2013). This concept describes a situation where actors, withing a fragmented institutional framework, can purposefully recombine, convert, or reinterpret institutions to align with their objectives or apply them in different contexts. This dynamic fosters divergent understandings of port governance realities, as additional actors are either actually involved or perceived to be involved in the governance structure. The resulting confusion over which institution is accountable for specific tasks is highlighted by the social network analysis. The confusion surrounding tasks associated with market and price regulation serves as a prime example and was also explicitly identified in the SWOT analysis, where fragmentation is pinpointed as a key underlying weakness in governance.

A notable challenge arises from the differing perceptions between private and public actors about the responsibilities of various institutions, potentially leading to uncertainty in decision-making processes. Institutional fragmentation and divergent perceptions within the public sector have led different agencies or institutions to fill perceived gaps in responsibility, often straying from the established legislative framework. This situation further complicates the landscape, creating challenges for stakeholders in understanding who holds responsibility for certain actions, how governance is executed, and where

accountability for decisions resides. Responses to the open-ended survey questions underscored a common desire among study participants for improved coordination between the entities involved.

The findings from our surveys align the second hypothesis of this research (H2): *Institutional fragmentation compromises the coherence for in constructing a long-term strategic vision of the port sector and leads to diverging views regarding future adjustments*. The fragmentation appears to have resulted in institutions working with limited understanding of each other. This is reflected in the absence of common vision; lack of understanding of the roles of each other, despite numerous efforts to foster collaboration through roundtables and joint committees. Consequently, these entities frequently prioritize their individual goals and objectives, operating in a framework that impedes unified strategic direction. A common theme among study participants from both the private and public sectors is the recognition of an inadequate capacity to translate plans and ideas into concrete actions and measurable outcomes. Examining public and private perceptions of the current port governance configurations and alongside the aspirations for future setups illustrates the complexities introduced by institutional fragmentation. Institutions exhibit varying opinions on the optimal future configurations of the port governance system. The disparity appears particularly pronounced in the management of concession agreements yet is also present in other critical areas of port governance, such as port policy formulation and market and price regulation.

The normative framework, which distributes tasks across multiple institutions without clearly delineated responsibilities, engenders varied experiences. Consequently, this leads to a diverse basis for the adjustments deemed necessary. From an institutional perspective, fragmentation serves as a critical juncture (Gourevitch, 1986), enabling a departure from the normative institutional constraints and fostering a spectrum of perceptions regarding the preferred reconfigurations of port

governance and the actions envisioned.

The examination of Colombia's national port system, sets the stage for a pivotal discussion: the potential shift towards strengthening port governance. Notably, Colombian ports have developed robustly in terms of infrastructure capacity and service quality, with limited exceptions. This development, especially within the container sector, has been marked by high productivity and efficiency, enhancing Colombia's role in regional and global liner shipping networks. Individual private actors, within a generally favourable socioeconomic context, have adeptly responded to market demands, elevating the competitiveness of specific terminals and ports.

However, the evolving economic landscape presents substantial challenges that necessitate enhanced coordination and collaboration between public and private entities. The current governance structure, characterized by its institutional fragmentation, lacks a coherent, long-term policy for ports and related logistics. This deficiency becomes increasingly problematic as the external environment grows more volatile and the country's integration into the global market deepens. Critical issues such as ports' role in the energy transition, competition, infrastructural needs, and the advancement of data sharing and digitalization within the port community underscore the urgency for a unified strategic vision.

The fragmented institutional arrangement currently in place is ill-equipped to tackle these emerging challenges. The absence of clear institutional leadership jeopardizes long-term planning and, by extension, the future competitiveness and sustainable transformation of the port sector. This fragmentation has sown confusion and fostered opportunistic behaviours, allowing some institutions to extend their influence far beyond their legislative mandate and leading to planning decisions that neglect the needs for geographical balance and sustainability.

Amidst these challenges, the call for dedicated Port Authority/ies, endowed with substantial institutional capacities, grows louder. Such a body can be seen as crucial for overcoming the current governance inadequacies and for providing the leadership necessary to navigate the sector's complexities. *Participants in the study have voiced concerns that without a significant shift towards accumulating governance powers at some level, the tendency towards further institutional fragmentation will only weaken the governance framework, challenging the Ministry of Transport's role as the de facto port authority.*

As regards the appropriate level of institutional power accumulation, with options to be explored ranging from local to national level institutions, this is an issue worth being subject to further research. Notably, for instance, –whilst there is a desire for an increased role for the Ministry of Transport in some areas (principally market and price regulations and the management of concession), this view is primarily that of public sector institutions. Figs. 6 and 7 clearly reveal that private sector participants do not necessarily share. Among others, it is worth researching the advantages and disadvantages of setting up a local/regional or national port authority compared with centralizing more powers in the Ministry of Transport or setting up port managing entities operating at the port level.

The reluctance to evolve institutionally since the initial reforms has stifled the public sector's ability to adapt, reinforcing the status quo and preventing meaningful change. The current governance model diminishes the state's governance capacity, undermining its ability to solve problems and achieve objectives effectively. As articulated by Boyer (1990), and further supported by Fukuda-Parr, Lopes, and Malik (2002), governance is fundamentally about the state's interaction with non-governmental entities in the pursuit of effective management. This interaction is vital for the health of the port governance system but is currently hampered by the fragmented setup.

A re-evaluation of the roles that non-governmental actors play, alongside a reassessment of the state's ability to maintain control over its affairs, is essential. The experience of Colombia's port system underlines the need for a governance model that not only holds de jure sovereignty but also exercises de facto sovereignty, ensuring the

efficient and responsive management of port activities. Addressing the impact of political traditions on institutional fragmentation and their operational efficacy is crucial for advancing the discourse on port governance in Colombia. Strengthening of Port Authority alike institutions, vis-à-vis the Transport Ministry in the case of Colombia, capable of integrating the diverse political, institutional, and operational dynamics, emerges as a compelling solution for fostering a more coherent and strategic approach to port governance in Colombia. It may also make sense to discuss a centralized public entity as a 'ports regulator' rather than a port authority, as the 'traditional 'port authority' generally invests in infrastructure and generates revenues from port dues, whereas a port regulator does not, but has a clearer policy and systemic vision regarding hinterland infrastructure and options for port system expansion and transformation.

6. Concluding remarks

This research sheds light on the complexities of port governance fragmentation in Colombia, revealing how increased openness to foreign investment and private sector involvement in port operations, coupled with a fragmented and imperfectly defined governance structure, impacts the balance of power between the state and the market. The study underscores the need for an adaptive governance model capable of meeting contemporary market demands and addressing new challenges, such as energy transition and digital transformation.

The slow evolution of public entities responsible for port governance contrasts sharply with the rapid changes required for sustainable development and future growth. This discrepancy poses a significant risk to the attractiveness of future port infrastructure investments by the private sector and undermines the regulatory authority of government agencies. The lack of timely adjustments in regulatory and policy frameworks exposes the country to external risks and may result in ineffective governance strategies that defer costs to future administrations.

In summary, the findings advocate for a robust port authority alike institutions, equipped with the institutional capacity to lead, and synchronize efforts across the port sector. This may necessitate the consolidation of existing agencies, or the establishment of a new entity endowed with sufficient powers and resources, whether this entity is established at local, regional or national level should be subject to further research. However, beyond structural reforms, there is a critical need for skilled human capital to provide the leadership necessary for effective governance, challenging the trend of reducing traditional port governance related authorities to mere port development entities.

CRedit authorship contribution statement

Gordon Wilmsmeier: Visualization, Supervision, Methodology, Investigation, Funding acquisition, Formal analysis, Conceptualization, Writing – review & editing, Writing – original draft. **Athanasios A. Pallis:** Methodology, Investigation, Formal analysis, Writing – review & editing, Writing – original draft. **Sebastian Leon Schorch:** Visualization, Methodology, Investigation, Formal analysis, Data curation, Writing – review & editing, Writing – original draft. **Diana Lisseth Trujillo:** Project administration, Investigation.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Appendix 1: Task responsibilities according to Law

	Ministry	DNP	ANI	CORMAGDALENA	DIAN	DIMAR	INVIAS	SUPERTRANSPORTE
A01	x	x						
A02	x							
A03	x					x		
A04	x	x						
A05								
A06			x	x	x			
A07	x							
A08								
A09								
A10		x						
A11								
A12	x		x	x				
B1			x	x				
B2			x	x				
B3	x							x
B4								x
B5	x							
B6								x
B7								x
B8								x
B9	x							x
B10								
B11			x	x				x
B12						x		
B13								x
B14								x
B15								x
B16								x
B17								x
B18								x
B19			x	x				
B20								
C01			x	x				x
C02								x
C03								x
C04			x	x				
C05								x
C06			x	x				x
C07			x	x				
C08			x	x				
C09			x	x				x
C10			x		x			x

Source: Authors

Note: where responsibility exist marked with x. For a description of the responsibilities see Table 2.

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