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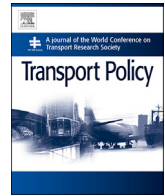
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Who governs and what is governed in port governance: A review study

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ABSTRACT

Based on an intensive literature review, this paper investigates and presents generalized answers to the two basic questions of port governance, namely who governs and what is governed. There are totally 77 studies selected as the core literature sample according to a five-step approach. The results from literature review show evidences in favor of the important roles played by governmental organizations and port organizations as the main governing bodies of port governance. Furthermore, our analysis shows first, that multilevel governance has become a notable feature of port governance. Second, there are increasing involvements by national or regional levels of government in some countries such as the USA, Brazil, China. Third, port authorities at local level are generally holding the centre-stage position with further autonomy in managing port operations. Fourth, not-for-profit organizations related to port activities play the role of coordinators in port governance. Finally, different governance regimes with different specific governing actors for different port classifications can be identified for many nations. This study shows that fundamentally institutional arrangements and specific port activities are the two basic categories of what is governed. The institutional arrangements determine the port governance configuration and allocation of responsibilities of port activities. There are 12 groups of specific port activities within five categories identified in port governance.

1. Introduction

Since the 1990s, with the increasing popularity of the concept of governance, port governance has grown to an important analytical lens in the port academia. More and more port reforms in the international arena are analyzed under the light of port governance. Meanwhile, some theoretical or base studies are emerging with focuses on the basic issues associated with port governance, such as the port governance model (Brooks and Cullinane, 2006), the relationship between port governance model and port performance (Brooks and Pallis, 2008), the interactions between institutions, port governance reforms and port authority routines (Notteboom et al., 2013) and the common characteristics of the port governance reform processes (Brooks et al., 2017). Despite extensive analysis of port governance, port governance studies remain incipient and it is hard to answer the four basic questions surrounding the port governance namely who governs, what is governed, how is it governed, and for what purpose (Vieira et al., 2014). Having a good understanding of these basic questions can allow us to get closer to the nature of port governance, which is very important in helping policy and decision makers to effectively address practical port governance issues they are facing.

In fact, port governance scholars have recognized the importance of answering these basic core questions, and they also have made great contributions to it by providing valuable insights from relevant perspectives to a certain extent. For instance, Verhoeven (2010) articulates that although port governance reforms increase the power of private players and gradually reduce the roles of port authority, reform processes often do not succeed in restoring the centre-stage position of port authority in port governance configuration. Notteboom and Rodrigue (2005) explore the governance issues in the port regionalization phase and argue that port-bound activities (i.e. the ship as focal point) will be expanded to port-related logistics activities (i.e. adding value to the cargo as focal point) in port governance. Ferrari et al. (2015) present the main port governance models in Europe to show how ports are governed there and further discuss how concession agreement works more effectively as a strategical tool in the landlord governance model. Brooks (2006a) points out one of the premises of port governance reform like port devolution is that productivity gains will result from the new port governance structure, although its “success” is difficult to measure.

Those previous studies function as a stepping stone towards the opening of “black box” of port governance. However, they do not provide

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the “key” to that box directly. Our paper devotes itself to gaining the “key”. Logically speaking, answering the first two questions (i.e. who governs? what is governed?) is the prerequisite for answering the other two questions (i.e. how is it governed? and for what is it governed?). More specifically, the question of who governs concerns the main governing actors who conduct governance in the port domain, while the question of what is governed concentrates on the governed objects in port governance. Each governing actor has its own roles, functions and goals, and each governed object has its own scopes or boundaries. It can be reasonably deduced that once the answers to “who governs” and “what is governed” are clear and definite, the answers to “how is it governed” and “for what is it governed” are largely determined by the former ones. This is why we focus on giving answers to the first two questions through an intensive review of existing literature on port governance in this paper.

Although the majority of port governance studies predominantly use case studies within specific contexts (Vieira et al., 2014), we take into consideration the homogeneity of port governance around the world in order to give clear answers that can be generalized to the majority of ports worldwide. This is exactly the originality of our research. By exploring the generalized answers to who governs and what is governed in port governance through a review study, we can better understand the nature of port governance. In doing so, the paper can also generate several policy implications for the policy and decision makers worldwide. The contributions of this research are mainly in these two respects.

This paper is organized as follows. In Section 2, the applied methodological procedures are presented to show how the reviewed studies are selected according to specific criteria (defined as inclusion and exclusion criteria). In Section 3, we provide the analysis of the review and give answers to the questions of who governs and what is governed. Section 4 concludes.

2. Methodological procedures for the literature review

Since the 1990s, the focus in port governance studies has been shifted from the concept of port reform to the concept of port governance (Debie et al., 2013). Although the concept of port governance is widely accepted among researchers interested in port economics and/or port governance domain, it has been used along or in close relation to similar concepts like port devolution, port privatization. Therefore, these similar concepts encompass implicitly some kind of port governance and are used in the literature as equivalent to the concept of port governance. This may result in the increase of ambiguity concerning the distinction between these concepts, the exact meaning of port governance, and its application in empirical studies. Keeping this in mind, and in order to develop the answers to our research questions, we apply a five-step approach to select literature sample in this review study.

Regarding the five-step approach, the main idea behind it is that the port studies using port governance as the analytic lens and focusing on governance issues can be screened and searched. Therefore, we choose to narrow the search scope gradually, and finally identify the port governance studies in the scope of port governance with the concept of port governance. To make sure of the reliability of our final literature sample, the selected studies are checked for representativeness by different means.

Step 1. eligibility criteria. Studies are selected on five criteria that are based on the following characteristics of the studies:

- (i) Field of studies: the study should deal with seaport management;
- (ii) Topic of “port governance”: the study should contain characters “port(s)” and “governance” in the title and/or abstract and/or keywords;
- (iii) Language of study: only studies published in English are taken into account;

- (iv) Publication status: only articles published in academic journals and chapters in books are reviewed, other relevant papers are excluded, such as conference papers, dissertations, unpublished working papers;
- (v) Year of publication: studies published before 31st March 2017 (the last day of searching literature).

Step 2. preliminary selection. The selected studies in our basic literature database are gathered by scanning and searching all studies in the Web of Science, Scopus and Science Direct, which are all the world's leading bibliographic sources. The term “port governance” is searched in title and/or abstract and/or keywords. The search results found in these three databases are respectively 262, 394 and 162 records. After excluding duplicated studies in two or three search databases, there are in total 533 records left.

Step 3. further selection. A check of each record is made by scanning title, abstract and keywords to see whether it satisfies the eligibility criteria described in Step 1. To be specific, one of our four authors acts as the coordinator in the selection process, the other three conducting the selection practically. At the beginning of the process, the coordinator organizes a telephone meeting for all to set the basic principles of selection. Nine categories (i.e. nonsense record, non-English record, conference paper, airport governance, marine/maritime governance, inland water and/or dry port governance, port-city interaction governance, seaport governance, other non-related issues) are identified to categorize the original 533 records. Then the three authors work independently to form their own lists of each category, especially the list of literature on seaport governance, afterwards, the lists are sent to the coordinator, who compares the three lists of selected studies on seaport governance and figures out the differences among them. Then another telephone meeting is held for authors to discuss those divergences and form the list agreed by all. Note that a full reading of the recorded studies has been made by the authors when it is necessary, especially during the process of checking the topic category of a study. As a result, 375 records were deleted from the original list containing 533 records. The further list of studies selected containing 158 records is formed.

Step 4. semi-final selection. As the two targeted research questions are closely related to the concept of port governance, we use the term “port governance” as a fixed search item to conduct further search in the list of 158 studies. By doing so, we can reduce the potential vagueness of our research and make sure our final literature samples are exactly under the umbrella of the concept of port governance. Finally, we are left with 77 studies, among which 40 studies are with “port governance” in titles of the studies, and 37 studies use the term “port governance” in abstracts and/or keywords.

Step 5. representativeness and final selection. The selected studies are checked for representativeness. First, we have checked for bias in publication period (i.e. year of publication) and the temporal distribution (Fig. 1), type of journals/books (Table 1) and the unit of geographical analysis (Table 2). The results show that the distribution of the sample studies is in line with the view of expert judgements of our four authors on existing literature in the field of port governance. Second, the comparison between our sample studies and the samples of selected studies listed in recent review studies on port governance (see Brooks et al., 2017; Vieira et al., 2014) provides evidences that our sample comprises the main studies that were published in the field of port governance. In the end, we choose the 77 studies as the core literature sample to be analyzed in this paper. Without doubt, we also refer to other port and/or non-port related literature beyond our sample to help effectively organize and enrich our research, such as Baird (2000) on port privatization and Scott (2013) on institutions and organizations.



Fig. 1. The distribution of number of studies by year.

Table 1

The major journals of the selected studies.

Journal	No. of studies	%
Research in Transportation Business and Management	23	29.8
Research in Transportation Economics	17	22.1
Maritime Policy and Management	9	11.7
Journal of Transport Geography	5	6.5
Transport Reviews	4	5.2
Transport Policy	2	2.6
International Journal of Transport Economics	2	2.6
International Journal of Shipping and Transport Logistics	2	2.6
Other journals (one article each)	8	10.4
Book chapter (chapters in different books)	5	6.5
Total	77	100

Table 2

The geographical analysis unit of the selected studies.

Unit of analysis	No. of studies	%
Global (samples across continents or theoretical work without samples)	18	23.4
International region (samples across countries within a continent)	9	11.7
European Continent	7	
American Continent	1	
African Continent	1	
National (including samples within domestic regions)	45	58.4
European country	20	
Asian country	13	
American country	8	
Oceania country	3	
African country	1	
Specific port	5	6.5
European port (i.e. Port of Rotterdam, Antwerp and Hamburg)	3	
Asian port (i.e. Port of Hong Kong)	1	
American port (i.e. Port of New York-New Jersey)	1	
Total	77	100

3. The review of existing literature on port governance

3.1. Selected studies: descriptive analysis

The analysis of the full sample of selected studies in Fig. 1 below shows significant increase in publications on port governance in the year 2006 and 2017. This increase can be explained by the publication of

special issues on the topic of port governance titled “Devolution, Port Governance and Port Performance” in *Research in Transportation Economics* and the special issue of “Revisiting Port Governance and Port Reform” in *Research in Transportation Business & Management*. Studies that have been published in these two issues provide great insights into the topic of port governance and recent advances in theoretical and analytical research with regard to this research topic, including trends in recent development around the world. Note that the studies of the sample are published from the year 2004 onwards, which does not mean the port governance issues do not exist or there are not any related studies before then. The reason behind this distribution is that “port governance” has been used as an emerging terminology since 2004 roughly. For the selected studies of our sample, especially these studies in the early years, they embed themselves in previous related port studies, which to a certain extent ensures the necessary academic connection between this review study and the old related port literature before 2004.

Table 1 below shows the distribution of studies on port governance by number and type of journals where these studies are published. Of the total 77 studies on port governance, more than half are published in only two journals, respectively, i.e. nearly 30% (23 studies) in *Research in Transportation Business & Management*, and 22% in *Research in Transportation Economics* (17 studies). The eight journals listed in Table 1 dominate the research field of port studies, where the majority of the mainstream of port governance studies are published.

With regard to the geographical analysis unit of the sample studies (Table 2), it appears that the majority of studies on port governance are taken at the national or country level (58.4%). This is because port governance is closely related to the existing institutional and governance structures that are specific to the country of study. The institutional embeddedness of governance structures varies greatly between countries (e.g. European countries) and regions (e.g. Europe, Far East). However, more recently there is an increasing number of studies that apply conceptual frameworks based on evidence-based multi-case studies in order to capture the homogeneity of port governance reforms (see Lee and Lam, 2017; Debie et al., 2013; Notteboom et al., 2013; Ng and Pallis, 2010). A significant number of studies are conducted at global (23.4%) and international geographical level (11.7%), while a small number of studies take specific ports as geographical scale (6.5%) in studying port governance.

From the above descriptive analysis, it is not hard to find that port governance research is entering a more mature phase with an increasing number of relevant studies, a concentration of published papers in journals, and more focus on the homogeneity of port governance reforms worldwide.

3.2. Who governs in port governance

According to [Stoker \(1998\)](#), the governance is about autonomous self-governing networks of institutions and actors that are drawn from but also beyond government. The existence of diverse and large number of actors within and across public and private sectors is a typical character of governance in general and port governance in particular. [Wang et al. \(2004\)](#) propose a three-dimensional model of port governance based on stakeholder community composed of various actors (port stakeholders). [Verhoeven \(2010\)](#) identifies three categories of port stakeholders affecting the decision-making process of port authorities: (1) The market players, such as carriers, terminal operators and logistics operators, (2) Government, and (3) Societal interest groups. In their discussion of the role and importance of regional port governance, [Lam et al. \(2013\)](#) enlarge the scope of port stakeholders to include policy-makers at different geographical levels, the market players and community groups in port region.

More generally, stakeholder management approach to port governance has gained increasing attention in port studies by its focus on balancing stakeholders' diversified interests. However, the term stakeholder has a wide conceptual breadth. The managerial prescriptions and implications of stakeholder theory are nearly limitless, especially when the theory is used unreflectively ([Phillips et al., 2003](#)). Therefore, the application of stakeholder theory risks to lose clarity of the main governing actors operating at the centre-stage level in the port governance configuration.

In order to identify centrally positioned governing actors, we follow the twofold character of port governance proposed by [Brooks \(2016\)](#). According to [Brooks \(2016: p.129\)](#), “each port is subject not only to the governance imposed by government, but also to whatever governance systems, structures and processes it chooses when it establishes managerial practices and policies”. This means that the legislation and regulations imposed by government on a port define port governance, and port governance itself can be considered as port's corporate governance in which the port organization has a fiduciary responsibility to serve the ultimate goals of the corporation and serves the interests of shareholders.

The argument of [Brooks \(2016\)](#) reveals the existence of two basic categories of main governing actors in port governance: (1) the governmental organization who can impose relevant legislation and regulations on ports, and (2) the port organization structured around the main port functions such as port operations, infrastructure planning, strategy and innovations, etc. Note that port organizations can take different legal forms: public entity, private or mixed entity ([Brooks and Cullinane, 2006](#)).

In order to strengthen and extend Brooks' argument, we conduct an extensive review of existing studies on port governance to identify the main governing actors in different port governance configurations worldwide. As the port's governing actors may change over time ([Brooks, 2016](#)), in [Table 3](#) below, we present the latest main actors and development trend by country that can be retrieved from our literature sample. More specifically, we adopt an “identification-judgement-confirmation” approach to derive the main specific governing actors in port governance of each country from the analyzed papers. We identify the actors mentioned in the literature firstly, and then determine the actors playing the governing roles in port governance or not, according to their functions and/or activities described in the papers. In order to keep the statements rigorous and complete, the authors recheck them again to make confirmation.

[Table 3](#) shows the main governing actors in 10 European countries, 8 countries in North and South America, 2 countries, respectively in Asia and Oceania, and 1 country in Africa. It is clear that the main governing bodies in port governance around the world are the governmental organizations, and port organizations of different natures (e.g. public, private, third-party) with different functions (e.g. terminal operation, port investment, port labor rights protection). Based on the observations of the present main actors and the recent development trends, we can further clarify the question of who governs in port governance by taking

Table 3

The main governing actors and development trend identified in port governance configurations by country.

Country	Main governing actors	Recent trend	Reference
Argentina	National Congress; State port authority (AGP); Local port authorities; Private port operators, etc.	Proactive governance is needed to encourage to port deconcentration. The coordination of common port policies and strategies is also needed.	Wilmsmeier and Monios (2016) ; Sánchez and Wilmsmeier (2006)
Australia	Federal government (e.g. implement the policy ‘Asset Recycling Initiative’ to boost the privatization of ports); State governments (e.g. State governments control the ports through government-owned companies or statutory state-owned companies); Individual port authorities; the amalgamation of several port authorities; Private port operators, etc.	Federal government encourages state governments to transfer existing publicly owned port infrastructure to the private sector.	Chen et al. (2017)
Belgium (Flanders)	Supra-national level: European Commission (e.g. the financial framework of Flemish Port Decree is subject to the EU guidelines on State aid) Inner-national level: Flemish Parliament (e.g. the adoption and amendment of Port Decree); Flemish government; Flemish Port Commission; Municipal governments (the Port Decree requires port authorities to be owned by their municipalities); Port authorities (PAs); Private port operators, etc.	Independent management of port authority with autonomy is considered the most viable governance direction.	Van de Voorde and Verhoeven (2017) ; Meersman et al. (2006)
Brazil	Federal level: Congress Port Law Special Committee; Ports Secretariat (SEP); Brazilian Waterways Regulatory Agency (ANTAQ), etc. Local level: Port authorities (PAs); Labour management body in port operation (OGMO); Private port operators, etc. Others: Brazilian Association of Ports and Terminals; National Federation of Port Workers, etc.	The centralization of Federal Government with strong diminishment of regional port authorities' functions on port managing.	Galvão et al. (2017) ; Wilmsmeier and Monios (2016)
Canada	Federal level: Ministry of Transport; Canada Port Authorities (CPAs), etc. Local level: Local Port	Nationally important ports remain firmly under the control of the Minister of	Brooks (2017) ; Brooks (2006b)

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Table 3 (continued)

Country	Main governing actors	Recent trend	Reference
	Corporations (LPAs); Private port operators, etc.	Transport. No appetite for a substantial change to the existing CPA governance model.	
Chile	National level: Ministry of Transport and Telecommunications (MTT); National ports company, etc. Local level: Autonomous local port companies; Private port operators, etc.	The regulatory power of governmental agencies needs to be enhanced by the formation of a national port and logistics policy.	Wilmsmeier and Sanchez (2017); Wilmsmeier and Monios (2016)
China	Central level: National People's Congress; Ministry of Transport (MOT), etc. Local level: Provincial/municipal Port Administration Bureaus or Provincial/municipal Transportation Administration Departments; State-owned port companies; Private port operators, etc.	Greater layering in the port administrative bureaucracy.	Notteboom and Yang (2017); Yang et al. (2014); Cullinane and Wang (2006)
Cyprus	Supra-national level: IMF (International Monetary Fund), ECB (European Central Bank), and EC (European Commission). Inner-national level: Ministry of Communications and Works; Cyprus Ports Authority (CPA); Private port operators, etc.	Towards the landlord model with the separation of regulatory and commercial roles in the port system.	Panayides et al. (2017)
France	Central level: Ministry of Transport, etc. Local level: Local and regional port authorities; Boards of inter-port coordination; Private port operators, etc.	The role of central government continues to be important in the port governance structure.	Debie et al. (2017)
Greece	Supra-national level: IMF, ECB and EC. Inner-national level: Greek Parliament; Ministry of Shipping and Island Policy-General Secretariat for Ports, Port Policy and Shipping Investments (GSP&PP&SI); Regulatory Authority for Ports (RAL in Greek); Public Authority for Ports (PAP); Hellenic Republic Asset Development Fund (HRADF); (Municipal) Port Funds; Local port authorities/entities; Private port operators, etc.	A more complex and more bureaucratic port governance with the presence of several new institutions. For the major ports, "master concession" privatization leads to more private involvements.	Pallis and Vaggelas (2017); Pallis and Syriopoulos (2007); Pallis (2006)
Italy	Central level: Ministry of Transport; National port coordinating	The latest port reform (Law n. 169/2016)	Parola et al. (2017); Ferrari and

Table 3 (continued)

Country	Main governing actors	Recent trend	Reference
	committee, etc. Local level: Port System Authorities (PSAs); Local port authorities (PAs); Port Directorates (PDs); Private port operators, etc.	encapsulates the PAs within public administrative system, forbidding to undertake any business activities.	Musso (2011); Valleri et al.(2006)
Korea	Central level: Ministry of Oceans and Fisheries (MOF); Ministry of Strategy and Finance (MOSF), etc. Local level: Regional/municipal governments; Local port authorities (PAs); Private port operators, etc.	The central government is still to some extent involved in ports daily business issues, but its interference goes less and less.	Song and Lee (2006, 2017)
Libya	Secretary of Transport; Libyan Maritime Transport and Ports Authority (LMTPA); Socialist Port Company (SPC) (under the General People Committee for transport and communication); Public Property Department (PPD); Economic and Social Development Fund Company (ESDFC), etc.	The change of existing port governance is needed via implementation of a devolution policy.	Ghshat and Cullinane (2013)
Mexico	Federal government (remains the highest level port authority); Integrated port administrations (APIs); Private port operators, etc.	The significant influx of global terminal operators.	Wilmsmeier and Monios (2016)
Netherlands	Municipal governments; Local port authorities/port development companies (PAs/PDCs); Private port operators, etc.	The transition from port authorities to port companies with increased commercial focuses.	De Langen and Van der Lugt (2017); De Langen and Heij (2014)
New Zealand	New Zealand Port Authority; Regional or district councils; Private port operators, etc.	Towards port concentration and further privatization.	Memon et al. (2004)
Panama	Panama Canal Authority (PCA); Autoridad Marítima de Panamá (AMP); Logistics Office under Ministry of Commerce and Industry; Logistic Cabinet; Private port operators, etc.	Towards a global and regional logistic platform with more involvements of logistic actors.	Rodrigue (2017)
Portugal	Supra-national level: IMF, ECB and EC. Inner-national level: Institute for Mobility and Transport (IMT); Authority for Mobility and Transport (AMT); Ministry of Finance; Ministry of Planning and Infrastructure; Ministry of the Sea;	Increased autonomy of PAs, strong liberalization in port sector and more regional merge of ports.	Caldeirinha et al.(2017)

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Table 3 (continued)

Country	Main governing actors	Recent trend	Reference
Spain	Port authorities (PAs); Private port operators; Association of Ports of Portugal (APP), etc. National level: State-owned Enterprise of National Ports (SENP), etc. Local level: Local port authorities (PAs); Private port operators, etc.	The new 2010 port legislation (Law 33/2010) creates stability, transparency and permanent legal framework.	Castillo-Manzano et al.(2016)
Turkey	Central level: Ministry of Transport; Maritime Affairs and Communications; Ministry of Energy and Natural Resources, etc. Local level: Turkish Maritime Facilities (TDI); Turkish State Railways (TCDD); Private port operators, etc.	Considering the centralization prospects of the current ruling party, further relaxation of port industry is not expected in the near future.	Esmer and Duru (2017); Oral et al. (2006)
United Kingdom	National level: Department for Transport; Marine Management Organization (MMO), etc. Local level: Local port authorities (PAs); Trust ports (TP); Private port operators, etc.	All UK ports are self-governing, most of the major ports being either private or administered by trusts.	Monios (2017)
United States of America	Federal level: U.S. Congress (e.g. the reform of the Harbor Maintenance Tax by the Water Resource Development Act of 2014); Federal Maritime Commission (FMC); Department of Transportation (DOT), etc. Local level: Bi-state port authorities; State administrative departments or agencies; State or commonwealth port authorities; County port departments; County port authorities; Municipal agencies; Special purpose navigation districts; Private port operators, etc. Others: Pacific Maritime Association (PMA); International Longshore and Warehouse Union (ILWU); West Coast Port Collaborative Group; American Association of Port Authorities (AAPA), etc.	Increasing involvement by state and federal government in port matters.	Knatz (2017); Fawcett (2006)
Uruguay	National Port Administration (ANP); Private port operators (e.g. Katoen group), etc.	The port privatization helps to add significant port capabilities by the competitive market conditions.	Sánchez and Wilmsmeier (2006)

them into consideration from the perspective of dynamic comparison.

First, in the traditional port governance configuration, governmental organizations impose legislation and regulations to ports, through national legislative and administrative agencies. The role and importance of supra-national organizations in shaping international regulations of ports and maritime sector has gained less attention from academic researchers. However, with the increasing globalization of the economies, especially after the economic crisis of 2008, supra-national organizations have gained more power concerning the international regulation of ports in particular and the maritime sector as whole in general. For example, during the latest reforms of port governance in Portugal, Greece and Cyprus, the intervention of troika (IMF, ECB and EC) has resulted into the liberalization and privatization process in port sector (see Caldeirinha et al., 2017; Pallis and Vaggelas, 2017; Panayides et al., 2017). In addition, the increasing awareness of environmental protection of seas and safety issues surrounding the maritime and port activities worldwide have resulted in the expansion of regulation power of the International Maritime Organization (IMO). In this sense, port governance is becoming more and more multilevel and more complex than before.

Second, although port devolution is the most important aspect of port reforms during the last two decades, which involves the transfer of responsibilities from the upper government to lower tiers of public administration (Debie et al., 2007), there are various examples of countries that have reversed this trend in favor of increasing involvement by upper levels of government in port governance matters. The reason is that governments put much attention to the improvement of collaboration between ports in order to enhance regional and national port competitiveness. For instance, a re-centralization process is observed in Italy (Parola et al., 2017), increased engagement of state and federal governments in the U.S. (Knatz, 2017), the centralization of federal government in Brazil (Galvão et al., 2017), and a greater port administrative bureaucracy layering in China (Notteboom and Yang, 2017).

Third, port authorities at local levels are holding key positions in port governance configurations through their power position and interactions they are holding with landlord, regulatory, and community manager functions (Verhoeven, 2010). There are some exceptions to this observation in the case, for example, of some counties where the governments begin to exert more influences, or in the extreme case of the UK where assets and regulatory functions have been devolved to the private sector. More generally, an increasing number of port authorities have gained further autonomy in managing port operations (Brooks et al., 2017). Note that the role, importance and the power position of the port authorities depend greatly on the changing configuration of port governance, which in turn depends on changes in national and international regulations and institutional arrangements that govern ports and port activities.

Fourth, more recently, there is an increase in the involvement of not-for-profit organizations representing port industry or other related industries interests in port governance, through for example labor contract negotiation, promotion of inter-port cooperation, policy recommendation, etc. For instance, Pacific Maritime Association (PMA) and International Longshore and Warehouse Union (ILWU) in the U.S. (Knatz, 2017), Association of Ports of Portugal (APP) in Portugal (Caldeirinha et al., 2017), Flemish Ports Association in Belgium (Van de Voorde and Verhoeven, 2017). Those not-for-profit organizations function differently from governmental or commercial agencies, instead, they generally function as a coordinator in port governance.

Finally, for many nations, generally ports are categorized into different port classifications (e.g. national ports, regional ports) because of the “size effect (Brooks et al., 2017)”. Differential port governance regimes can be identified for each port classification, where the specific governing actors vary. However, the actors involved in different governance regimes still generally can be divided into two categories: governmental organizations and port organizations, the distinction between the port governance regimes in a specific nation (e.g. Korea, Canada, France, UK, Turkey, Portugal) is the degree of involvement of governmental organizations differs.

3.3. What is governed in port governance

Like the two facets of one coin, the question of what is governed is consistent with who governs in port governance. As discussed in Section 3.2, the governmental organizations impose legislation and regulations on ports, while port organizations play specific roles in operating and managing port functions. These two groups of organizations constitute the main governing body of port governance. Therefore, the governed objects in port governance can logically and reasonably be divided into two categories (see Fig. 2): (1) fundamentally institutional arrangements structuring the legislation and regulations of ports, and (2) specific port regulatory, managerial, operating activities. Per analogy, the relationship between these two categories is almost the same as the relationship between superstructure and infrastructure. The former focuses on the regulations that set up rules, conditions and obligations with regard to governance and organizational structure of ports, while the latter is more related to the specific roles that ports play in the wide economic system. Note that besides the logic analysis, the induction of port governance practice retrieved from the analyzed papers including the literature listed in Table 3 is also the supporting base of the generation of Fig. 2. It is also worth mentioning that the relationship between governing actors (who governs) and governed objects (what is governed) is about the governance structure/model/tool (how is it governed).

For the question of how it is governed is not our focus in this paper, here we just present a short discussion on it. As the illustration of Fig. 2, in general, fundamentally regulative rules that affect the specific port regulatory, managerial, and operating activities are in the direct control of governmental organizations, particularly the legislative and administrative agencies who play the role as a provider of institutions. While in some cases, especially in those countries with powerful governments (e.g. China, Korea, France), governmental organizations sometimes play the functions of port activities directly. Unlike governmental organizations, port organizations generally are in charge of specific port regulatory, managerial, and operating activities by providing corresponding

services according to their organizational missions and goals. With regard to the relationship between governmental organizations and port organizations, governmental organizations influence the port organizations directly or indirectly, especially for those public or state-owned port organizations. In the rest of this section, we focus on the further detailed explanation of what is governed in port governance.

Many port governance studies take an integrated approach that combine the basic institutional arrangements of port governance with the allocation of responsibilities in conducting specific activities (see Wang et al., 2004; Brooks, 2004; Brooks and Cullinane, 2006; Brooks and Pallis, 2012). This approach can help to better understand existing port governance models in a specific context, but present major limit when we are concerned by developing a generalized answer to the questions of what is governed in port governance. Therefore, we take an approach that separates specific port activities from the institutional arrangements. We consider the institutional arrangement as a set of fundamental formal regulations and rules that are based on collective arrangements structuring port governance, including for example the decisions of decentralization/centralization, commercialization, corporatization, privatization, integration/merger, etc. The institutional arrangements serve as institutions that, to a great extent, determine the organization and allocation of responsibilities of port activities.

According to Scott (2013), more generally, regulative process as a pillar of institution involves the capacity to establish rules, inspect others' conformity to them, and manipulate sanctions. Scott (2013) further argues that legalization as the formalization of regulatory systems is a continuum whose values vary along the three following dimensions: obligation, precision, delegation. Legislation is a typical way of formalizing regulatory systems and gaining legalization. Governmental organizations play a key role in the process of legislation as political initiators, promoters, influencers and decision makers.

The analysis of port governance reforms across the world shows that most institutional arrangements underlying port governance structure are based on legislation. Legislation provides the legal/judicial and

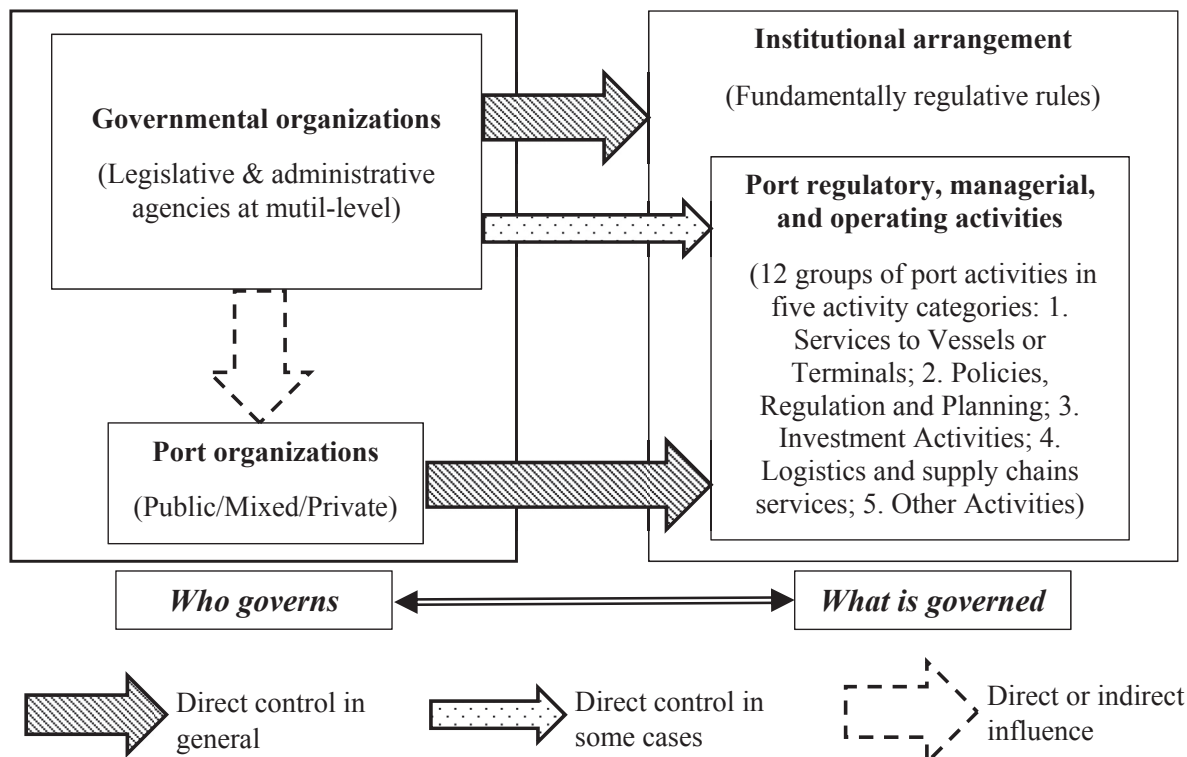


Fig. 2. The basic governing actors and governed objects in port governance. Source: Authors own elaboration inspired by Brooks (2016) and Brooks and Cullinane (2006).

economic basis of setting fundamental regulative rules for the port governance configuration and allocation of responsibilities between actors. Examples of legislation of ports are: Port Law of 2004 in China; Marine Act of 1998 in Canada; Law 8630/1993 and Law 12815/2013 in Brazil; Flemish Port Decree of 1999 in Belgium; Law of 13 August 2004 and Law of 4 July 2008 in France; Port Act of 1991 in the UK; Law 84/1994 and Law 169/2016 in Italy.

Concerning fundamental regulative rules setting, it is worth noting that port activities are generally embodied in port governance according to specific regulative rules. In this respect, UNCTAD (1992) divide port activities and services of (third generation) ports into four categories: (1) traditional port services (e.g. cargo handling and storing); (2) industrial/environmental services (e.g. ship repairing, ship's wastes disposal); (3) administrative/commercial services (e.g. port working schedule); (4) logistic/distribution services (e.g. warehouses, value-adding activities). In a study of port privatization, Baird (2000) proposes three main port functions: (1) port landowner functions related to the development of port superstructure and associated tasks; (2) port utility functions that are related to the physical transfer of goods and passengers, and (3) port regulatory functions involving statutory powers exercised by port's management authorities. The World Bank (2003) classifies port functions into infrastructure, suprastructure, port labour and other functions when discussing the allocation of responsibilities in four different port models (i.e. service, tool, landlord, and private port model).

The classification of port activities into regulator activities, landlord activities and operator activities is very important in understanding the type and nature of port functions when discussing differences between the types of devolution of port industry (Brooks, 2004). Brooks and Cullinane (2006) provide a more detailed categorization of port activities by group (see Table 4). The four categories of port activities are services to vessels or terminal, grouped into four groups of activities; policies, regulation and planning for the port which is grouped into two groups; the investment activities represented by only one group, and other activities grouped into two groups. However, as authors admit “the delineation of activities within each group has not emerged as entirely satisfactory” (Brooks and Cullinane, 2006: p420).

The extensive classification of categories of port activities by group presents wide range of port activities that are governed in port governance (i.e. what is governed). Note that the category “Policies, regulation and planning for the port” differs from the fundamentally regulative rules that related to institutional arrangements. Policies and regulations of port activities are mainly managerial and operational in nature, not institutional.

Logistics integration and network orientation have redefined the functional role of ports in value chains and have led ports developed into the phase of port regionalization (Notteboom and Rodrigue, 2005). The competitions between ports has gradually evolved into competitions between logistics, and supply chains (Wan et al., 2014), the coordination and optimization of logistics and supply chains has become a focus of port governance and spearhead of port reforms across the world (Brooks et al., 2017). Therefore, in addition to the categorization of port activities presented above, we adds a new category of “logistics and supply chains services” (see Table 5) to reflect that industrial tendency.

We make a distinction between three groups. Group 1 is composed by warehouses services and logistics values-added services activities. Value-added logistics play a vital role in the development of an effective and efficient logistics system and supply chains management, and hence of the whole logistic sector. The location and effectively use of warehousing services are important elements for growth of transport and logistics sectors. Group 2 concerns the quality and level of development of accessibility to hinterland of port activities. Ports that have high quality infrastructures enabling smooth accessibility to hinterland markets are well positioned to improve and strengthen their international competitive positions. Group 3 concerns trade related services such as financial support to maritime sector at local and regional levels, existence of important industry clusters and innovative activities/sectors such as e-

Table 4
The Brooks and Cullinane's categorization of port activities.

Category	Groups
Services to vessels or terminals	Group 1: Cargo-handling services; Chandlery, vessel re-supply; On-dock storage; Terminal equipment/repair; Container terminal operations; <i>Line handling for arriving/departing vessels;</i> Passenger handling; Anchorage; Port information (EDI). Group 2: Management of vessel traffic; Container maintenance; <i>Provision of fire protection services.</i> Group 3: Towage; <i>Terminal Security;</i> Waste disposal. Group 4: Emergency services; <i>Provision of pilotage services.</i>
Policies, regulation and planning for the port	Group 1: Approval of capital investment; Licensing, (establishing principles for licensing port employees, agents, etc.); Issuing permits for on-port activities; Issuing permits for port access to secure areas; Port development strategies and implementation planning; Port monitoring and enforcement (meeting legislative requirement from government); <i>Setting and controlling port tariffs.</i> Group 2: Determining applicable environmental policies; <i>Determining applicable port safety and security policies;</i> Protection of public interest on behalf of the community (observe laws and conventions regarding public safety and security).
Investment activities	Group 1: Berth or sea-lock capital investment; Financing of organizational restructuring and associated labour compensation; <i>Land acquisition, disposal;</i> Leasing, concessioning of terminal operations; Maintenance of port access roads; Waterside maintenance (e.g. dredging, channel maintenance).
Other activities	Group 1: Contracting with stevedoring labour; General marketing of the port; <i>Port security;</i> Provision of port information services (statistics to government agencies). Group 2: <i>Customs and immigration services.</i>

Note: Those activities in bold-italic are selected by Brooks and Cullinane as representative of the group.

Source: Brooks and Cullinane (2006).

Table 5
The logistics and supply chains services of a port.

Category	Groups
Logistics and supply chains services	Group 1: Warehousing services; Value-adding activities (e.g. cargo consolidation and deconsolidation; labelling; weighing; repacking). Group 2: Hinterland access (i.e. water/land/air transport connection) Group 3: Trade-related services (e.g. financial supporting services; industry clustering; e-commerce platform)

Source: Authors own elaboration inspired by Wan et al. (2014).

commerce platforms, ICT companies, etc. Activities classified in group 3 have strong local and regional embeddedness and are very important to understand the nature and type of relationships between port, port activities and urban and regional economies.

In summary, there are five basic categories of port activities governed in port governance. These categories can be divided into 12 different groups. All these activities are primarily managerial and operational, and their wide range and various composition indicate the complexity of port governance. They also show that the governed port activities are stretched beyond the traditional spatial domain and study field.

4. Conclusions

This study reviews a wide number of studies in the field of port governance and tries to answer two basic questions of port governance

(i.e. who governs and what is governed). There are 77 studies identified as our core sample according to certain methodological procedures. Given the size of our sample of reviewed studies, we conducted a robustness check on the representativeness of the sample by basic descriptive analysis and the comparison with other related review studies.

Before reaching the final conclusions, we elaborate a further discussion on the relevance why it is necessary to conduct this study focusing on the basic questions of port governance. Although the previous port governance studies often use case studies within specific contexts (Vieira et al., 2014) and present the implementation asymmetries caused by the “locality” or “lock-in” when different nations seek generic port governance solutions (Ng and Pallis, 2010). What cannot be denied is the fact that international ports have encountered an increasing number of similarities/commonalities of problems and/or challenges and/or changes in port governance, Brooks et al. (2017) provide impressive evidences of those commonalities. Our study is an initial effort to manifest the basic components of port governance according to the overview of port governance in the international arena, therefore this study is academically as well as empirically relevant. We admit that it is very hard to put forward universally satisfying answers to these basic questions of port governance, while we believe that our effort, to a certain extent, can facilitate the move “towards identifying optimal or best practice governance models (Brooks et al., 2017)” in the future research agenda.

Regarding the question of *who governs*, our analysis confirms Brooks' argument that governmental organizations and port organizations are the main constituting elements of the governing body of port governance. One of the contributions of our paper to the existing literature is a further development of this argument from five different perspectives. Our findings show that multilevel governance has become an important feature of port governance, and that there is an increase in involvement by upper levels of government in port governance. In addition, the port authorities at local level are generally holding the centre-stage position, and not-for-profit port organizations usually function as a coordinator in port governance. Furthermore, the analysis shows that, for many countries, there exist different governance regimes with different specific governing actors corresponding to different port classifications. In light of the above findings, several policy implications can be further offered. First, as more actors like supra-national organizations, governments of upper levels, not-for-profit organizations are involved in port governance, the centrally positioned port authorities at local levels need to enhance their abilities to cooperate with those actors, and make full use of actors' strengths in different aspects. Second, the increasing involvement of government of upper levels is considered as a method to enhance regional or national port competitiveness in some countries nowadays. Therefore, it is very important for those governments to make sure that their involvement does not weaken local port authorities' abilities of response to local port demands. Third, in many cases, different governance regimes are constructed for different ports because of port scales and their roles in national economic system. In these cases, it is generally advisable to lay more importance to national and regional key ports.

Concerning the question of *what is governed*, this paper identifies two basic categories that determine what is governed in port governance, namely the fundamentally institutional arrangements and specific port activities. More generally, institutional arrangements, considered from the legislation point of view, function as underlying structure of port governance configuration, and determine the allocation of responsibilities between actors in organization and management of port activities. Our analysis also shows that specific port activities in port governance can be categorized into five categories and 12 different groups. The contribution of our paper in this aspect is to take a non-integrated approach to separate specific port activities from the institutional arrangements, moreover, the paper adds a new category “logistics and supply chains services” of specific port activities to Brooks and Cullinane's categorization, to reflect the new development trend of port practice. Those findings of what is governed imply that it is necessary to

set fundamentally regulative rules in port governance through the legislation to build the basic governance configuration and allocate the responsibilities between related actors. Besides, the wide range of specific port activities shows the complexity of port governance and requires those port organizations, especially port authorities, to keep improving their managerial and operational capacities to remain port business competitiveness.

In terms of the connection between who governs and what is governed, it is critical to recognize that different governing actors correspond to different governed objects. Specifically, governmental organizations are generally in charge of the institutional arrangements of port governance, while port organizations are more generally taking charge of specific port regulatory, managerial, and operational activities. Note that in some cases, governmental organizations also directly control some specific activities for some reasons, like governmental agencies have not devolved their enterprise functions. It should be stressed that the practical connection between who governs and what is governed is actually about the question of “how is it governed”. This is therefore a crucial research topic for a future research agenda.

The above conclusions can help to better understand the type and nature of port governance, and open the door for further investigations and analysis of other questions such as “how is it governed” and “for what is it governed”. With the increasing number of port governance studies in recent and coming years, it is necessary to expand the literature sample to conduct a more systematic review study. Those previous studies on port privatization, port administration, etc. are also worthy to be taken into account in the future research.

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Ethical approval

This article contains no study that was performed by any of the authors on human participants.

Conflicts of interest

Author Qiang Zhang declares that he has no conflict of interest. Author Harry Geerlings declares that he has no conflict of interest. Author Abdel El Makhlofi declares that he has no conflict of interest. Author Shun Chen declares that she has no conflict of interest.

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