

Government policies and Portuguese port governance in the period from 2005 to 2015[☆]



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ABSTRACT

This research focuses on the effect of Portuguese government policies in port management, port strategy and port performance in the period from 2005 to 2015. With the structural equation modeling, we analyzed a sample of 172 observations. Government policies influence the port sector differently. The policies adopted during the period under study produced different effects, especially the national planning policies for investments as well as the central control policy, implemented to make operations and port labor more productive. The main contribution of this paper resides in understanding that it is essential to ensure sustainability conditions for the national port system in an increasingly globalized market where the trend is to be less dependent on the government policies.

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1. Introduction

Portuguese ports experienced significant developments in the period from 2005 to 2015. Some of these include: the increase of cargo and passengers,¹ better positioning of the port authorities focused on the client, greater autonomy and private participation in the port management model, greater interconnection between ports and logistics chains, greater intervention of the ports in the region and in the hinterland, further liberalization and deregulation of the sector, better coordination of decisions among the various stakeholders in the ports, and better port and logistics information systems. Nevertheless, the international financial crisis, the intervention of the troika (IMF, ECB, and EC) in

Portugal, and the development of shipping and port operations have been very influential contextual factors. The pressure on the different governments has led to changes in the national port sector with different objectives.

During these years, the State established management contracts with the port authorities (PAs), granting greater autonomy and accountability (“devolution”). Investment plans provide greater sustainability, and the State is responsible for more control and supervision. The cooperation between ports and PA increases, and each PA assumes its strategic plans, coordinated at the national level, with the support of the port community and municipalities. The Association of Ports of Portugal (APP) promotes greater cooperation between ports, focusing in particular on the port information system, port single window (PSW) and logistic single window (LSW), involving marketing activities, standardization of management procedures, extending the hinterland, the integration of logistics solutions, and the use of common services.

The organization of the Portuguese ports is based on the landlord port model, which develops the PAs (previously focused on the operation of terminals instead), converting them into entities with greater autonomy, responsibility, and ability of supervision and control. PAs hold responsibilities for port expansion, integration of logistics solutions, interconnection of information systems, and adoption of customer support mechanisms. As noted by Choi, Dooley, and Rungtusanatham (2000), ports are part of complex adaptive systems with solutions that are agile and integrated in logistics chains, which requires a strong

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¹ Between the years of 2005 and 2015, with the development of new cruise ports and the flourishing of tourism in Lisbon and Madeira, the load on Portuguese ports increased from 61.5 million tons to 86.5 million tons (41%), the movement of containers increased from 0.9 million TEU to 2.56 million TEU (175%) and, passenger traffic grew from 0.64 million passengers to 1.3 million (104%).

relationship between ports, ship-owners, and shippers. Consequently, the State becomes more rigorous, enforcing budget restraint mechanisms, the assumption of goals, and the definition of joint policies for the sector.

During the last few years, the government promoted the liberalization of the sector including the flexibilization in port labor's legislation, facilitating the entry of new competitors, and promoting public discussion of barriers to competition, as is reflected in the process of the reform of the ports (AdC, 2015). Policy coordination between ports and between them and the State, rail transport operators, and logistic nodes located in Portugal and Spain was intensified and covered also port investment conditions and expansion of the hinterland. The State relies on the port regulator. At the beginning of the period, the port regulator was the Institute for Ports and Maritime Transport (IPTM), subsequently integrated into the Institute for Mobility and Transport (IMT). At the end of the period, the Authority for Mobility and Transport (AMT) was created as an independent regulatory agency. The knowledge about the importance and effect of the Portuguese government's policies in the national port sector is scarce and there are no studies on this matter. Linking port governance and performance is not easy and, therefore, only a few studies of significant interest have been conducted (Brooks & Pallis, 2008). Brooks and Pallis (2012) identified a serious gap in the research devoted to managerial decision-making in ports, in general, and in PAs. This research discusses the role of governance options adopted by PAs in the management of ports and the need to better understand the conditions for the sustainability of results.

This research focuses on the policies of the Portuguese government for ports adopted between 2005 and 2015. The first objective is to analyze the effect of government policies in the management, strategy, and performance of the Portuguese ports. The second objective is to verify that the port management, port strategy, and port performance are influenced differently by the policies adopted by governments in the period from 2005 to 2010 and from 2011 to 2015. We used a sample of 172 valid observations collected in the national port community and the structural equation modeling (SEM) methodology.

The policies adopted by different governments distinctly influence port management, port strategy, and port performance. In the period between 2005 and 2010, national planning policies promoted by the government, its initiative to turn operations and port labor more productive and the lack of initiative regarding port concessions, produced important effects on port performance and port strategy. In the period between 2011 and 2015, the liberalization and concession policies were abandoned and the efforts are shifted towards to policies focused on PAs' autonomy based on management contracts. The main contribution of this study understands that, in an increasingly globalized and demanding market, reforming the national port system is essential making it less dependent on government policies. The increased competition requires the adoption of national planning in a consistent and sustainable manner.

Following the introduction, we present the theoretical foundations, constituted by the definitions and Portuguese port sector organization, contextual issues, government policy for ports, port reform in the periods of 2005 to 2010 and 2011 to 2015, and common trends in the period of 2005 to 2015. The third section refers to the methods, including the research model and hypotheses, the factors and variables, and the data and sample. The fourth section focuses on the analysis and the results. The fifth section deals with conceptualization and discussion. And, finally, we present the conclusions and contributions.

2. Theoretical foundations

Baltazar and Brooks (2006) developed a theoretical approach to the concepts of port governance and a conceptual model of governance, including the operational environment, the established strategy, and the structure. Studies by Brooks and Cullinane (2006) and Brooks and Pallis (2008) improved the model. We can also find the model by

Verhoeven (2010), in addition to the models of port management and ownership by the World Bank (2001). Nonetheless, these models do not address the relationship between governance and performance broadly enough and, therefore, have limited applicability. The lack of details about the typology of governance actions also leads to the limited applicability in port reform processes, even if the objective of port governance is to promote port performance through a specific governance model (Baltazar & Brooks, 2006; Brooks & Cullinane, 2006; Brooks & Pallis, 2008; De Langen & van der Lugt, 2007).

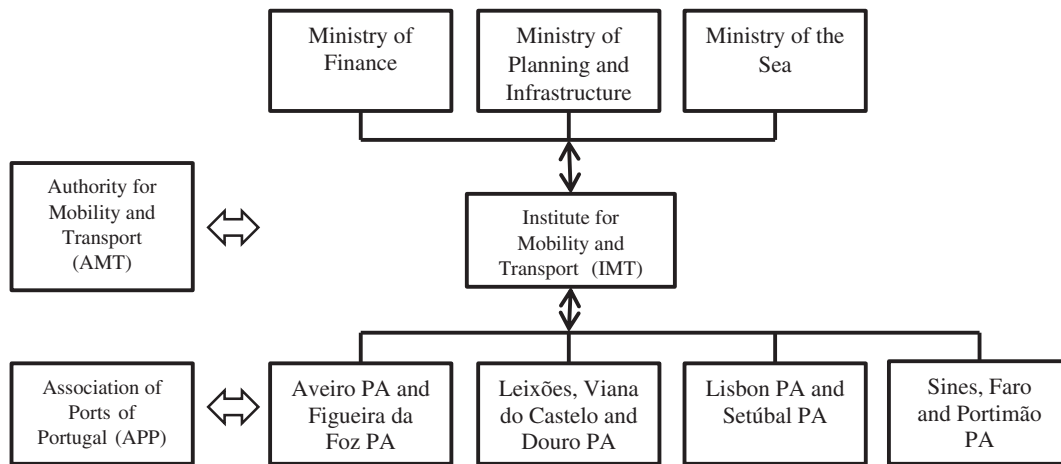
In theoretical terms, the reform of the Portuguese port sector was based on the transition from a centralized structure model oriented towards efficiency, based on a low complexity environment, to a more organic model oriented towards efficacy and customer satisfaction, focused on connecting to logistics chains, taking into account the increasing complexity of the logistics chains and the Portuguese market, observing one change which has yet to be completed (Baltazar & Brooks, 2006). The reform in the period under analysis is essentially based on the port management model, involving the review of the role of the port authorities, in accordance with the literature (Verhoeven, 2015; Van der Lugt, De Langen, & Hagdorn, 2015), with a clear impact on the factors of competitiveness and on port performance. In this paper we consider the importance of literature, in general, in regard to the evidence of the main performance objectives, namely: a) to ensure the conditions for economic development considering the impact of ports on the economy and employment (Cheon, 2007); b; Tongzon, 2002) to guarantee client and supply chain satisfaction (Brooks, Schellinck, & Pallis, 2011); and c) to promote the growth of maritime-based commercial and logistic activity, reflected in the port activity, i.e. the movement of cargo, passengers, and vessels (Trujillo & Tovar, 2007; Cheon, Dowall, & Song, 2010). The reform takes these performance perspectives into account, making it essential for the port to hold competitiveness factors that ensure efficiency, i.e. doing the same with fewer resources (Félicio, Caldeirinha, & Dionísio, 2015; Onut, Tuzkaya, & Torun, 2011), and ensuring effectiveness in satisfying customers with appropriate solutions for their needs in a customized way (Brooks et al., 2011).

2.1. Definitions and Portuguese port sector organization

The port administration is the port authority (PA) of each port, which has supervisory, management and allocation of private use and public service functions and others, such as, pilotage services, environmental protection, and port development functions. The PA also shares power with the maritime police or the captaincy regarding security issues, and coordinates itself with Customs and Immigration and Borders Service. In addition to the duties and functions, the PAs are important agents with political influence in the government, municipalities and State entities.

The Institute for Mobility and Transport (IMT) is a direct administration body of the State with autonomy, which provides support in the technical regulation, licensing, coordination, supervision, and planning of the transport sector and in the economic dimension of the port and maritime sector. The IMT replaced (2011) the Institute for Ports and Maritime Transport (IPTM) during this period, to include a more integrated view of transport (Roque, 2015). The Authority for Mobility and Transport (AMT), recently established, has regulatory responsibilities and is in charge of the promotion and defense of competition in transports as well as in the port and maritime sector, absorbing some of the functions previously assigned to the IMT. The Ministry of Finance carries out the supervision of the ports along with the Ministry of Planning and Infrastructure and the Ministry of the Sea, as a shareholder, and monitoring the financial function of the companies through the DGTF - General Directorate of Treasury and Finance (Fig. 1).

The PAs consist of the General Assembly, in which the State is the sole shareholder, the Board of Directors, and the Supervisory Board. The Board of Directors, appointed by the State, is comprised of 3 to 5



Source: Adapted Roque (2015)

Fig. 1. Portuguese port sector organization.

members, depending on the size of the port. In recent years, the State has implemented the practice of appointing a member of the municipalities. The State also appoints the members of the Supervisory Board, one of them being independent and an expert.

There is no Advisory Council. The connection with companies is carried out through the Port Communities where terminal and port services operators, shipping agents, carriers, shipping, road transport and rail transport companies are represented. In some cases, the Port Communities include local authorities, environmental authorities, municipalities, and tourism agencies. In each port, there are forums to simplify procedures, to jointly implement port information systems and better practices to facilitate the ship's procedures and loads. These forums include the captaincy, customs, health agencies, and immigration and borders service, among others.

2.2. Contextual issues

The international financial crisis (2008/09) has dominated the context in which Portuguese ports have progressed in the period under study. Imports were affected by the decrease of GDP, especially, the domestic demand. Exports began to increase in 2009 (Annex 1). Until 2007, the Portuguese ports did not make investments, but ensured their economic sustainability through the revision of legislation and regulations on port charges. The ports obtained contractual fees and additional revenues through the sale of equipment, derived from the terminal concession contracts, which transferred the market risk for the concessionaire.

The financial crisis context has affected the PAs, due to the mandatory reduction of expenses imposed by the aid program for Portugal (Troika, 2011–2015), the reduction of port charges and rents, as an incentive for the export of traditional industrial products, and the legislative initiatives for flexibility and liberalization of the port sector, particularly port labor. PAs were forced to ensure more efficient ports.

The increase in international trade with China, the larger size of vessels, and the strong growth of the western Mediterranean hub ports, led to the development of Sines' container transshipment hub. The strong increase in cargo handled and the opportunity to serve the Spanish hinterland from Sines, created pressure on the State to improve rail connections to Madrid by the Atlantic corridor. Portugal is part of the trans-European transport network (TEN-T), integrated into the Atlantic corridor, which connects the Portuguese ports to France and Germany by

land. Portuguese ports increasingly collaborate with the Spanish ports, and Puertos del Estado for the promotion of port and logistics information systems, creating a truly integrated Iberian logistics network of ports.

EU funding, policies to incentive the use of liquid natural gas (LNG), port information systems and short sea shipping have influenced the management and cooperation between ports, which has resulted in joint projects involving the reconfiguration of vessels, port services, and the availability of infrastructures of LNG supply to ships. The logistic single window (LSW) and Directive 65 on the national single windows have been other important issues for the development of joint projects of Portuguese ports.

The concentration of the container market in large international ship owners influenced the choice of the port of Sines by MSC to operate transshipment traffic, reinforced by the alliance with Maersk, as Sines is located at the intersection of the Asia route and the Atlantic routes.

Verhoeven (2015) refers to the ports as autonomous local units with global impact. In this context, the reform of the Portuguese ports increased their sustainability. Until 2006, there was no thought in Portugal about the model of good governance of state-owned companies, which is the case of PAs, and thereafter the State intervened to exercise greater monitoring and management control. Verhoeven (2015) notes that the PAs should be sustainable in the short and long term, in order to alleviate the taxpayers. Also, Roque (2015) refers to the legislation published in 2006 on corporate governance to reinforce supervision. In 2007, the by-law of public manager (DL 71, of 27 March) was reformulated and expresses quantified performance measures, definition of best practice, and requirements regarding strategic orientations.

The ports are managed based on a global vision, empowerment and accountability, contracted objectives and autonomy regarding strategic, financial, patrimonial and human resources. Despite the difficulties posed by the Troika, the added control and the stiffness of expenses, to enable the management and development of the ports, the autonomy of port administrations has been reinforced in order to transform the PAs into port development companies, as noted by Van der Lugt and Langen (2007).

2.3. Government policy for ports

The 1980s registered significant growth of Portuguese ports, based on the importance attributed to the engineering projects and the State

obligation to construct and operate the port infrastructure, in the context of the tool-port model.

In the 1990s, Portuguese ports operated a transition from the “tool-port” model to the “landlord-port” model, accompanying global trends that influenced the regulatory framework (1993) of port concessions and licensing of port labor companies. These companies employ temporary workers and others not belonging to the permanent staff of licensed stevedoring companies or terminal operators (Torres, 2001). PAs were transformed into state institutes, afterwards in corporations of the ports of Leixões, Aveiro, Lisbon, Setúbal and Sines (1998), with full autonomy regarding finance, patrimony, and worker admission. Finally, PAs have become state-owned companies that manage ports. As port authorities, PAs also manage the lands on their jurisdictions area, that are state owned. In all practicality, PAs are port development companies.

Since 2005, the responsibilities of the PAs have been reinforced, based on the landlord-port model, with management objectives. The new Water Law, that covers the areas of port jurisdiction, entered into effect (Roque, 2015), involving the conservation of nature in the coast zones, which conflicts with a flexible management oriented to the economic development of the areas of port jurisdiction.

The years from 2005 to 2015 register the expansion of Portuguese ports, based on the landlord-port model, using private investment and participation of international operators. The new legislation allows for greater liberalization of access to port services and port labor, for a greater openness to integration in logistics chains and for a more intense relationship and knowledge based on customer needs. Similarly, the literature verifies greater integration of private terminal operators in supply chains and production, and the extension of the action of the port (Notteboom & Rodrigue, 2005; Rodrigue & Notteboom, 2010a). There is a focus on the hinterland for expansion of activity and to achieve economies of scale, and cooperation between ports in the establishment of logistics networks and the development of railway access to Spain. Verhoeven (2015) demonstrates the importance of governance of ports at the level of PA's management model and the port management model. The PA management model relates the powers of the port authority with the central and regional bodies to coordinate economically the port. The port management model, a more operational model, involves a concession of port terminals and port services. This model includes the models: landlord-port, tool-port and service-port (World Bank, 2007).

Portuguese ports' PAs operate simultaneously as authorities and port development companies, according to international standards (Van der Lugt, Langen, & Hagdoorn, 2013; Van der Lugt et al., 2015). The concession landlord model is not developed entirely due to lack of size to ensure intra-port competition. The legislation does not provide for the concession of dedicated terminals to shipping lines and terminals without public service obligations, nor mechanisms to control the profitability of public service terminals, sharing of risks and evaluation of service quality. The literature refers to the importance of the governance model to allow competition and the attraction of new players to become investors in new terminals, relieving contributors and ensuring economies of scale, with the minimum efficient scale (MES) in each segment and competitive situation (De Langen & Pallis, 2006). The governance model of the Portuguese ports has followed the trend pursued by Spain, with some delay and not deepening as much the control mechanisms, the harmonization, and the rigidity of the management rules, but advancing earlier with the creation of corporate port authorities.

Until 2011, the autonomy of ports was intensified according to international standards. In 2013, the ports adopted specific models of concession based on the proposals of the Portuguese Competition Authority, without reference to international models and success cases. The Association of Ports of Portugal (APP) and others influenced the adoption of the best practices, according to the international procedure and the trade-off between competition and scale, and price and

quality. PAs integrate small regional ports and the integration of major ports in the same region, such as in the case of the ports of Lisbon and Setúbal and ports of Leixões and Aveiro, was debated.

In continental Portugal, PAs adopted similar port governance models, different from those adopted by the ports of the archipelagos of Madeira and Azores, with autonomy and with their own regimes. In all cases where there is a minimum efficient scale, the Portuguese ports adopted the concession for industrial private use or public service, with control of maximum prices. Public tenders and concession contracts are mandatory, with a maximum term of 30 years. Portuguese ports jointly develop strategies to extend the hinterland and are supported by the Spanish regions. The process of regionalization of the Portuguese ports groups the northern ports of Aveiro and Leixões and southern ports of Lisbon, Setúbal, and Sines, resembling the concept of Notteboom and Rodrigue (2005). These authors consider the rail link from ports to distribution centers and logistics platforms to be very important. The enlargement of the hinterlands and the creation of logistics centers within Spain take advantage of port information systems and customs status to reduce logistics costs and create an Atlantic network for the Spanish carriers. These dry ports located in Spain are linked to the Portuguese ports through the Atlantic corridor (Roso, 2008). The port regions to the north and south of Portugal, each based on multiport gateways with different hinterlands in Spain, are directly connected to the Atlantic corridor, and integrate a regionalization process according to Rodrigue and Notteboom (2010a).

The Portuguese ports are recognized to have good European practices in terms of administrative simplification, supported by the port single window (PSW) connected to the Portuguese customs, which is an unusual case in Europe, that has been developed in the last decade jointly with the APP. In addition to the physical infrastructures, the electronic solution includes the management of information in the transport chain, intermodality, and knowledge of the hinterland with simplified procedures for clients. The evolution of PSW to the broader concept of logistic single window (LSW), throughout the national territory, with connections to Spain, the Atlantic corridor and northern Europe and the Mediterranean, through the short sea shipping, advances under the APP that gathers about thirty national and international partners. The APP concentrates actions to standardize procedures and legislative proposals, for example, in monitoring concessions, tariff regulation, and modernization of the concession legislation. Portuguese ports have no tradition of joint participation in international fairs, but they come together sometimes, under the APP, for their joint disclosure.

Since the 1990s, there is a discussion focused on the creation of a port holding company called Ports of Portugal, or a national port company for shared services. Ports perform centralized work regarding investment planning and joint purchase programs. They also work on common solutions for the provision of statistics and internationally developed pilot projects for the use of LNG fuel.

2.4. Port reforms in the period from 2005 to 2010 and the period from 2011 to 2015

In the period from 2005 to 2015, there were changes in the Portuguese government policy, with consequences on port reform (Table 1). The period of 2005 to 2010, corresponding to the government of the Socialist Party, differs from the 2011–2015 period governed by the Social Democratic Party and the Christian Democratic Party.

In the period of 2005 to 2010, policies towards the modernization of Portuguese ports are adopted, based on a centralized view of investment planning. On the one hand, the government focuses on central planning of public investment and the definition of a medium-term national strategic plan. On the other hand, quantified management contracts with performance bonuses for port managers were established, to institutionalize the relationship between the State and the PAs. This led to higher revenues and better economic indicators for ports and allowed management to focus on attracting customers and satisfying

Table 1
Main port policies.

2005 to 2010	2011 to 2015
PAs' goals defined in contracts with the State	Central control of expenses
State investment and policies plan for ports (OESMP)	Transports investment plan built with enterprises (PETI)
Direct relationships between ports and Government	APP represents ports in the relationships with the Government
Disseminated lowest tariffs	Cargo harbor dues eliminated
Focus on port public investment	Focus on port costs reduction
Focus on port labor dialogue and new port labor law	Port labor liberalization
New concessions of PA terminals	Increase in new terminal entries and port liberalization
Reinforcement of IPTM (ports and maritime view)	Creation of IMT and AMT (global transport view)
New terminals in Sines and Leixões	New terminals in Lisbon and Leixões
Increase in PAs revenues and sustainability	Renegotiation of terminal concession rents
Port cooperation (same board of directors)	Merge of ports
Central planning of investments	Creation of a holding for ports
More autonomy for PAs	More autonomy for PAs
Focus on cooperation and planning	Focus on the competition increase intra- and inter-ports
Logistic platforms plan	Private set logistic platforms (no plan)
Port national plan	Transports national strategy to reduce costs

Source: Adapt. OESMP and PETI

their needs. The investment plan considers a national vision for the future, following the strategic orientations for the port and maritime sector (OESMP), focusing on efficiency and effectiveness of the ports, in the competitiveness of services and the extension of the hinterland and foreland. Since there is a more intense relationship with the State, the State requires greater cooperation/cooperation between the PAs and the coordination of the management of some ports, while maintaining their autonomy, such as the ports of Figueira da Foz and Aveiro and the ports of Leixões and Viana do Castelo. The contention of the tariffs of ports and greater public investment (using EU funds and ports' funds) are ensured. The State acts with greater openness and care in the social dialogue with the dockworkers to avoid prolonged strikes by removing the new Ports Law proposal that defended the sector's liberalization. Terminals managed by the PAs, pursuing good international practices, are concessioned. The power of the IPTM is reinforced through changes in laws and attribution of greater powers of authority and regulation, more active intervention in the national port plan, and more conditions to develop container terminals as well as the creation of new terminals.

In the period from 2011 to 2015, the Portuguese government pursues policies of modernization and liberalization of the port sector, supported in the recommendations of the troika. The control of expenditure is centralized, abandoning the quantified objectives of management, reducing the flexibility of management, and the autonomy of the PAs. The different transport modes are integrated in a global plan, and an investment and action plan for the sector (strategic plan for transport and infrastructure - PETI) is defined according to strategic objectives and of the participation of associations and private companies. This plan involves private investment and EU funds, assigning priority to the export activity to markets outside the European Union.

The importance attributed to APP weakens the relationship between the PAs and the State. The collaboration implemented between ports aims to reduce costs, standardize procedures and develop information systems. Greater competition between ports is encouraged, and a tendency remains to merge the port management at regional level, for example, the port of Sines with the Algarve ports and the Leixões port with the ports of Douro and Viana do Castelo. The government focuses on reducing port costs (Plan 5 + 1) and the port invoice, for example,

encouraging the reduction of the PA rents based on the widening of the concession period which has a direct impact on clients.

The reform envisages the creation of new terminals, the increase in competition, the revision of the port labor legislation, liberalizing access to new workers for the provision of port services, and the concession of precarious licenses to several companies in the same terminal as an alternative to terminals' concession. The debate on the alteration of the deadline of the public service concession from 30 years to 50 years aims to encourage "greenfield" investment, as in Spain. The debate about the adoption of a new legal framework for concessions without public service obligations, allowing the concession of terminals dedicated to shipping lines without restrictions, intends to encourage free competition.

The institute that regulates the port and maritime sector (IPTM) ceases its activity and the coordinating institute of transport (IMT) and the regulator of transport (AMT) are established. The intervention of the Troika in Portugal adopted a political agenda of strong liberalization of the Portuguese ports to increase competitiveness and competition, promote economies of scale, and promote exports and to encourage foreign investment, but excluding privatization of port authorities (Table 2).

2.5. Common trends in the period from 2005 to 2015

Although adopting different policies during the periods of 2005 to 2010 and 2011 to 2015, there is a common line of evolution of the Portuguese ports (Table 3). The Portuguese ports are open to international competition with the greater integration in national and international networks. There is an increase in the power of intervention of the PAs and in their management autonomy (devolution), the expansion of the ports grows continuously (with effects on the economy), the liberalization of port activity is gradually protected, and good international practices are implemented.

Ports promote external openness, extend their hinterland, intensify the relationship with enterprises and intensify their cooperation with logistics platforms and supply chains. In terms of their integration with the municipalities, ports improve the relationship with the cities, minimizing the environmental impact of port activities and participating with municipalities in the recovery and rehabilitation of urban areas. Port communities are endowed with power to define the ports' strategy and sustainable development. The trends are: greater integration of ports into logistics networks; greater connection to the nearby ports in cooperation; greater focus on improving road and rail access to the port within the harbor and from there to the Iberian hinterland; and to the adoption of the single logistics window, together with the attraction of international operators and investors.

In both periods, the trend is to promote growth conditions in the ports, investment, efficiency and economies of scale, as well as the expansion of existing terminals, the creation of new terminals and deepening the access canals to the port to receive larger ships. Moreover, the sector gradually opens to the free market, through the liberalization of port labor and allowing the gradual entry of new companies which provide port services and promote investment in new port terminals, accordingly to the landlord port model.

Table 2
Troika policy for Portuguese ports.

Port strategy definition
Integrate ports with logistics and transports
Creation of a regulation authority
Port governance model redefinition
Logistic single window
Port labor liberalization

Source: Troika

Table 3
Common trends in Portuguese port policy (2005–2015).

Opening	Regionalization Privatization	Relation port-city Port communities	Environmental concerns Focus on sea economy
Integration	Hinterland expansion International operators	Expansion to Spain Road and rail access	Railway to Spain Logistic single window
Empowerment	Transshipment and scale PA financial sustainability	PA fusion and cooperation Contracted goals with PAs	Supply chains More autonomy (devolution)
Growth	Central financial control Capacity and expansion	PAs are reinforced as companies Deep port access	Regulation and control through AMT and IMT Investment
Market	Liberalization of services Customer orientation	Liberalization of port labor Free market access	Quality and price focus Landlord and intra-port competition

3. Methods

3.1. Research model and hypotheses

The research model relates governmental policies, constituted by national planning (National Planning), central control and action (Central Control), liberalization of port labor and operations (Liberalization), concession of port terminals (Concession), autonomy and ports merger (Autonomy & Fusion) and port cooperation in the Ports Association of Portugal (Cooperation), with the port management (Port Management), port strategy (Port Strategy), and port performance (Port Performance) (Fig. 2). The periods under analysis are from 2005 to 2010 and from 2011 to 2015.

The research hypotheses are:

- H1.** - Government policies influence port management;
- H2.** - Government policies influence port strategy;
- H3.** - Government policies influence port performance;
- H4.** - Government policies influence port management, port strategy and port performance, differently in the 2005–2010 period and the 2011–2015 period.

3.2. Factors and variables

National Planning is explained by three variables: National investment planning (InvestPlan), rationality and profitability of investment (InvRentabil), and national strategic planning (EstrategPlan) (Slack, 1993).

Central Control is explained by four variables: Commitment of local communities to the investments at the central level (Associativ), national policy to reduce costs (LessCostPolicy), port national policy to reduce costs (GovLessCost), and national port plan (GovPortPlan) (De Monie, 2004).

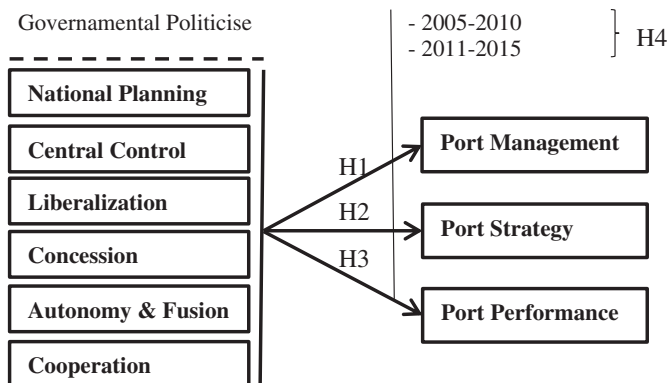


Fig. 2. Research model.

Liberalization is explained by two variables: Liberalization of port services (GovServiceLiberal), and liberalization of port labor (GovWorkLiberal).

Concession integrates the devolution and commercialization policies (Brooks & Pallis, 2008) and is explained by three variables: Policy of concession of new terminals (GovNewConcess), policy for construction of new terminals (GovNewTerm), and focus of the PAs in the concession of new terminals (PAConcession).

Autonomy & Fusion is explained by four variables: Board merger of nearby PAs (Same Board), regional merger of ports (GovPortfusion), financial goals (PAFinancObj), and objectives for the PAs activity (PAActivObj).

Cooperation is explained by two variables: PAs' association (APPComProj) (Notteboom & Rodrigue, 2005), and relations of the Ports Association of Portugal with the government (APPrelGov).

Management relates to the structure (Brooks & Pallis, 2008) of internal management processes and control of PAs, and is explained by four variables: Activity control systems (PASystem), cost control system (PAcostcontrol), control system of debt (PAdebtControl), and worker admission control system (PAHRControl).

Strategy relates to product-market scope and is explained by three variables: Measures to develop intermodality and relationships with logistics chains (PAIntermodal) (Notteboom & Winkelmanns, 2002), regionalization of ports with their openness to the hinterland and their relationship with the regions and the logistics platforms (GovRegionaliz) (Notteboom & Rodrigue, 2005), and attitudes of cooperation and competition between ports (PACoopet) (Verhoeven, 2015).

Performance is explained by three variables: Customer satisfaction (CustomSatisf), port efficiency (PortOrganiz), and port effectiveness (PortEfetivness). These variables are increasingly important in the governance of modern ports (Brooks & Pallis, 2008).

3.3. Data and sample

To test the hypotheses, a survey was sent in April 2016 to users of the Portuguese ports. The questionnaire contained questions on the perception on each political action and consequence in the two periods (2005–2010 and 2011–2015).

The questionnaire was sent to 2300 senior managers of companies operating in the Portuguese ports. We received 172 valid responses (7.5%), 74% of these from private companies.

The reliability of each measurement is satisfactory (DeVellis, 1991) according to the analysis using the Cronbach alpha coefficient: National Planning = 0.80, National Control = 0.82, Liberalization = 0.79, Concession = 0.73, Autonomy & Fusion = 0.78, Cooperation = 0.63, Management = 0.91, Strategy = 0.66 and Performance = 0.93. All items use a 7-point Likert scale (1 = totally disagree; 7 = totally agree).

4. Analysis and results

4.1. Portuguese economics data

In the period from 2005 to 2010, the overall movement in Portuguese ports has a tendency to stagnate due to the impact of the

international financial crisis. The movement of containers in the ports of Lisbon and Leixões registers reduction or stagnation while the movement in the port of Sines grows (Annex 2).

In the period from 2011 to 2015, the total cargo movement in Portuguese ports registers strong growth, driven by the movement of containers in the port of Sines (Annex 3). The Port of Lisbon registers a decrease in activity. The movement of freight trains, originating or terminating in national ports, reaches about 16 thousand units in 2014 (CP Carga), out of which the port of Sines stands out with about 43% of that movement, Setúbal with 34%, and Aveiro with 14%. The total movement of cargo, including containers, had a strong impulse, given by exports, towards the West-African coast, North Africa, and Brazil. At the end of the period, there was a larger growth for the countries of northern Europe, in contrast to the reduction of movement to Africa and Brazil due to the oil price crisis, which had meanwhile started affecting these countries.

4.2. Confirmatory analysis

Using structural equation modeling to perform confirmatory analysis of the research model and hypotheses, we obtain significant coefficients concerning relations between latent and observed variables (>0.4). The model's convergent validity was confirmed, implying the model is suitable for inputting data (Garver & Mentzer, 1999). Results confirmed the validity of the latent variables, distinct and robust ($\alpha > 0.6$) (Annex 4). Results also confirmed unidimensionality and robustness of the structural equation model (Hair, Anderson, Tatham, & Black, 1998). The goodness-of-fit indicators for the period of 2005 to 2015, demonstrate the adequacy of the measurement model: $\chi^2 = 770.371$, $\chi^2/df = 2.334$, IFI = 0.826, CFI = 0.823, RMSEA = 0.088.

The research model is applied in two periods. In the period of 2005 to 2010, the goodness-of-fit indicators were elevated as follows: $\chi^2 = 797.683$, $\chi^2/df = 2.417$, IFI = 0.816, CFI = 0.813, RMSEA = 0.091. The results reveal the importance of government policies and their distinct influence on management, strategy, and port performance (Fig. 3).

National Planning and Autonomy & Fusion relate strongly to the port strategy ($\beta = 0.62$; $\beta = 0.75$). The influence of the liberalization of port labor and operations (Liberalization) in the strategy ($\beta = 0.27$) and port performance ($\beta = 0.17$) is observed, as well as the weak relationship of the terminal concession (Concession) in the port performance ($\beta = -0.16$). Government policies strongly explain the port strategy ($R^2 = 0.77$). National Control ($\beta = 0.34$), Liberalization ($\beta =$

0.17), Concession ($\beta = -0.16$), and Autonomy & Fusion ($\beta = 0.55$) contribute to the port performance ($R^2 = 0.33$),

We also analyzed the model in the period of 2011 to 2015, and obtained the following goodness-of-fit indicators: $\chi^2 = 741.846$, $\chi^2/df = 2.248$, IFI = 0.821, CFI = 0.817, RMSEA = 0.085. The results indicate that Liberalization and Concession were policies that had no effect during this period (Fig. 4). National Planning ($\beta = -0.15$) shows a weak relationship with Strategy. The results show that Autonomy & Fusion had the greatest effect in Management ($\beta = 0.51$), Strategy ($\beta = 0.68$), and Performance ($\beta = 0.36$) during this period. The results also indicate that port strategy was the most relevant action taken in the framework of government policies ($R^2 = 0.65$). These government policies present very different results in the port sector when comparing the two periods.

5. Conceptualization and discussion

5.1. Conceptualization

The port reform involves the liberalization of port labor and the reduction of total port costs, estimated at 20% by the government. This reform, however, has not been concluded, given that there is still work to be done, for example, in the following areas: the network of logistics platforms to support ports, the direct railway to Madrid, the renegotiation of port concessions to provide more investment and lower rents and costs, the construction of the new terminals of Barreiro and Leixões, the expansion of the terminal of Sines and the deepening of the Setúbal access channel. Nevertheless, the foundations are in place for the future completion of these reforms. The change of the port governance model is more challenging for port authorities, which is reinforced by greater participation of private companies in the management of port terminals, which is a consequence of the concessions. Such change had a positive impact on competitiveness, productivity, dwell time of ships and cargoes in the port, and also in the development of port information systems linked to logistics networks (PSW and LSW).

Portuguese ports evolve, according to Bird (1963) and Notteboom and Rodrigue (2005), towards leaving the center of cities and moving towards adjacent sites as, for example, the port of Lisbon that transferred functions and activities to the south edge of the Tagus River estuary and to the ports of Setubal and Sines. In the case of Leixões, the port expanded its activities to Spain and to the port of Aveiro.

The port reform follows the trend of the global economy and the requirements posed by the Troika regarding the liberalization of the

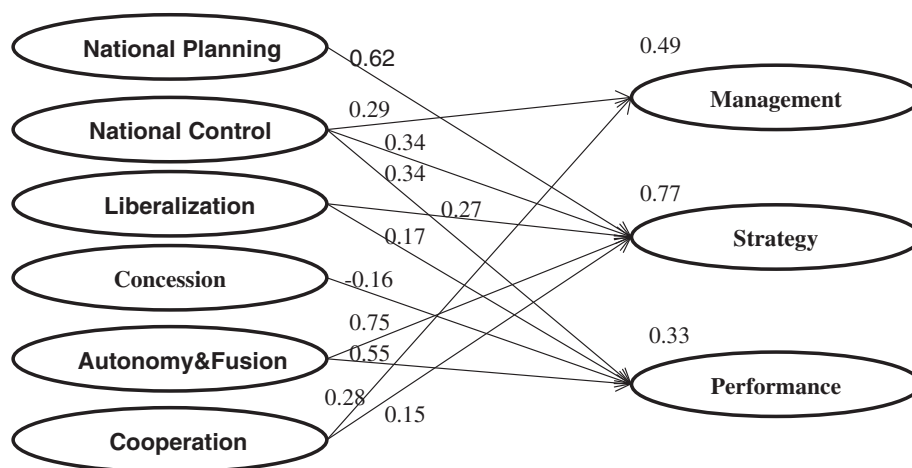


Fig. 3. Results from the 2005–2010 period.

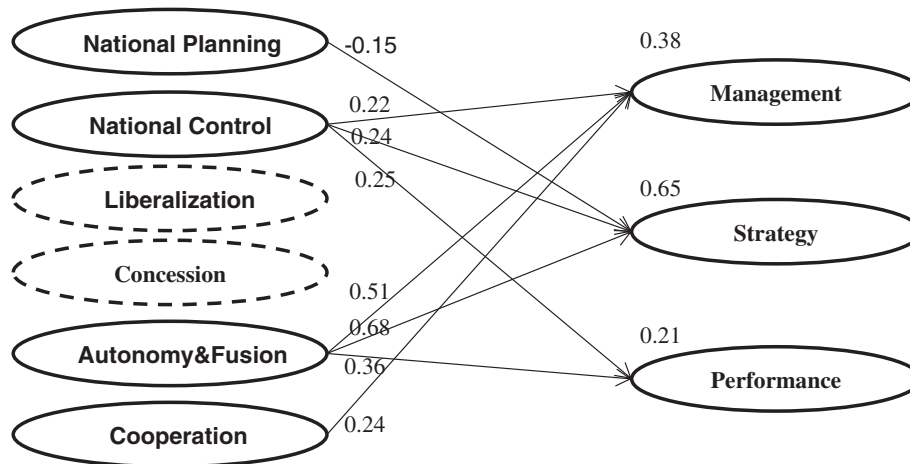


Fig. 4. Results from the 2011–2015 period.

Portuguese economy. The port governance structure is influenced by the local characteristics, the tradition of centralization and the local management autonomy given to the ports. In the following stage, according to Notteboom and Rodrigue (2005) and Rodrigue and Notteboom (2010b), gradual concentration of nearby port management is expected to occur in order to improve the economy of scale, obeying to a port regionalization policy.

World Bank and UNCTAD, in the 90s, highlight the real impact of the reforms on the governance model, which is detailed in the Port Reform Toolkit of 2007. In particular, the impact due to the division of the port in several terminals, the concession of specialized terminals by public tender, the separation between the operation and regulation, the greater competition and liberalization of port labor, the importance of social dialogue, the need to create a clear legal basis, and the pursuit of efficiency and effectiveness objectives, stand out.

5.2. Discussion

In the period from 2005 to 2010 (period 1), government policies influence Management, Strategy, and Performance differently, with greater evidence for port strategy. Port strategy is influenced by National Planning, Autonomy & Fusion, and National Control. Whereas, for port performance, only Autonomy & Fusion and National Control are contributing factors, as expressed by the theory towards a greater devolution and focus on efficacy, instead of just efficiency, and the need to integrate supply chains instead of having only the port product (Brooks & Cullinane, 2006). In the period from 2011 to 2015 (period 2), government policies identified by the National Planning, National Control, Autonomy & Fusion, and Cooperation, influence Management, Strategy, and Performance, though very differently from each other. Despite of the government decisions on port labor and operations liberalization (Liberalization) and the concession of port terminals (Concession), those decisions did not produce effects in this period. The results confirm hypotheses H1, H2, and H3.

There are notable differences between periods 1 and 2. In the period 1, all government policy measures identified in the research model influenced Management, Strategy, and Performance. This period is characterized by the strong influence of the National Planning in port Strategy and by the influence of Autonomy & Fusion in Strategy and Performance. In the period 2, Liberalization and Concession produce no significant effect. However, Autonomy & Fusion strongly influences Strategy and Management but only has a moderate influence on Performance. The various governmental policies produce different effects in period 1 and in period 2. In period 2, the autonomy of the PAs is

associated with the regional merger of the ports and with the management objectives agreed by the PAs. The government heavily used these policies, unlike what occurred during period 1. In the Portuguese context, these government policies prove to be decisive for the national port sector. This confirms hypothesis H4.

6. Conclusions and contributions

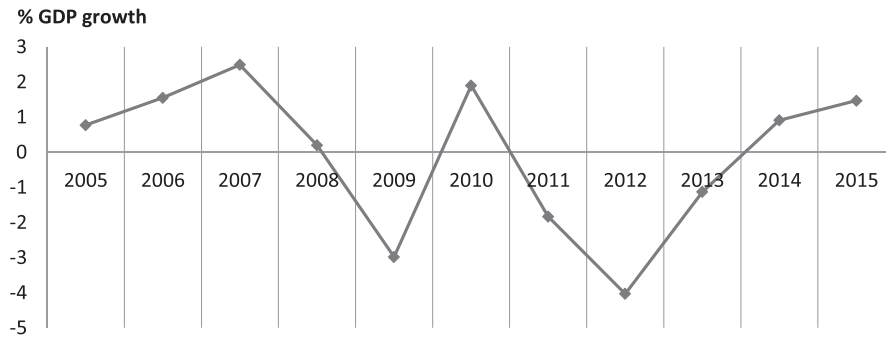
The main conclusion of the research model is that government policies influence port management, port strategy, and port performance differently. Another important conclusion is that the different government policies adopted in the first period and the second period produce different effects on the national port sector. In the first period, the government policies essentially include the strategic planning and return on investment policies driven by the government, together with the greater autonomy granted to the PAs, which was based on management objectives, that lead to the development of intermodality, the regionalization of ports, and the cooperation and coemption between PAs, as well as enabling client satisfaction and conditions of efficiency and effectiveness of the Portuguese ports.

In the second period, the government policies that envisage increased autonomy for PAs and management contracts influenced the activity control systems, costs, as well as the admission of labor. Those policies also influenced the regionalization strategies for ports, cooperation and coemption between PAs, and the performance of ports from the perspective of client satisfaction, or ports' efficiency and efficacy. In this period, the services and port labor's liberalization policies were approved by the Government, but not implemented, and neither was the policies regarding the concession of port terminals. Another conclusion is that the national port system is still very dependent on government policies, which represents a major barrier in the development of the ports amidst a progressively more globalized sector that is very demanding in terms of market and competitive conditions and requires greater involvement and responsibility of private organizations.

This paper makes important contributions to literature. We can now better understand the role of government policies and their different influence on port management, port strategy and port performance. The existence of a national planning structure is relevant to ensure consistency and sustainability to the port sector.

For future work, it is important to continue to develop this research considering other measures in the context of government policies, as well as to expand research and compare different contexts.

Annex 1 – Portuguese GDP growth



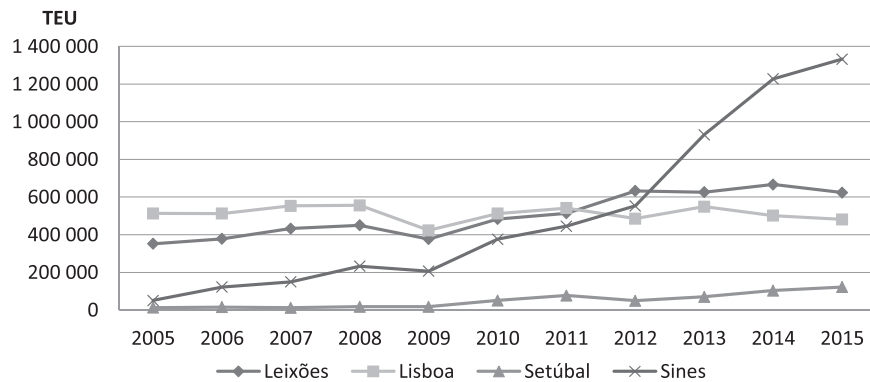
Source: Banco de Portugal, INE

Annex 2 – Portuguese import/export container flows



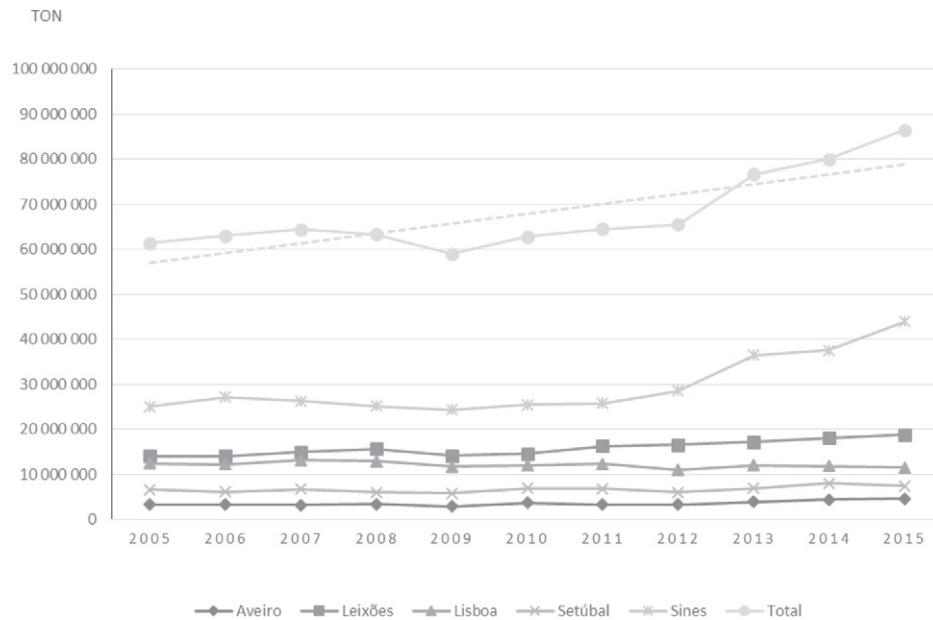
Source: IMT, PA

Annex 3 – Portuguese ports' container flows



Source: IMT, PA

Annex 4 - Portuguese ports' through-put



Source: IMT, PA

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