

STATE-OWNED ENTERPRISES' CORPORATE GOVERNANCE: EVIDENCE FROM A PORTUGUESE COMPANY

Joana Andrade Vicente *

* Lisbon School of Economics and Management, University of Lisbon, Lisbon, Portugal
Contact details: Lisbon School of Economics and Management, University of Lisbon, Rua Miguel Lupi, 20 (Gab. 403), 1249-078 Lisbon, Portugal



Abstract

How to cite this paper: Vicente, J. A. (2020). State-owned enterprises' corporate governance: Evidence from a Portuguese company. *Corporate Ownership & Control*, 18(1), 127-137.
<http://doi.org/10.22495/cocv18i1art10>

Copyright © 2020 The Author

This work is licensed under a Creative Commons Attribution 4.0 International License (CC BY 4.0).
<https://creativecommons.org/licenses/by/4.0/>

ISSN Online: 1810-3057
ISSN Print: 1727-9232

Received: 20.06.2020
Accepted: 28.09.2020

JEL Classification: G34, L32, L33
DOI: 10.22495/cocv18i1art10

This paper analyses state-owned enterprises' (SOEs) corporate governance, addressing whether there are differences between these and private enterprises that make it necessary to formulate a specific corporate governance theory for the former. This will be achieved through a case study based on Carris company, mitigating the lack of empirical knowledge in this field and taking a step forward by clearly proving what it is suggested by the literature: SOEs' governance particularities actually influence their day-to-day business and financial viability. That helps to highlight the urgency to apply adequate corporate governance techniques to SOEs, more aligned with their characteristics. SOEs have a different legal status, more volatile operating goals, soft budget constraints, lack of public service contracts (and consequent mismatch of the corresponding compensatory allowances due for the public service provided), and different criteria for professional appointment and selection. More importantly, they suffer from multiple principals' phenomenon: multiple principals, multiple problems. It is, therefore, recommended some changes regarding their corporate governance, such as the incorporation of the comply-or-explain principle; introduction of a code of best practices in the public managers' appointment process; and contractual arrangements regarding the public service provided, with the multiannual allocation of the corresponding compensatory allowances.

Keywords: Corporate Governance, State-Owned Enterprises, Multiple Principals, Compensatory Allowances, Public Managers Recruiting Process, Carris Company

Authors' individual contribution: The Author is responsible for all the contributions to the paper according to CRediT (Contributor Roles Taxonomy) standards.

Declaration of conflicting interests: The Author declares that there is no conflict of interest.

Acknowledgments: I want to thank Prof. Paulo Trigo Pereira and Prof. Pedro Verga Matos (ISEG, University of Lisbon) for all the comments and suggestions that allowed me to greatly improve the quality of this paper. Also, a thank you note to all participants of the International Online Conference (May 7-9, 2020) "Corporate Governance: Examining key challenges and perspectives" that have made useful constructive comments to the present paper.

1. INTRODUCTION

Bearing in mind the need to contain public expenditure and avoid tax burn increases, there is

a great urge to adopt corporate governance practices to state-owned enterprises (SOEs). It is necessary to concretely comprehend this concept and its most varied dimensions, trying to understand that

this is a fundamental element to reinforce SOEs performance and competitiveness in the long run (Shleifer & Vishny, 1997). The goal is to ensure better management and efficiency of SOEs and to reduce potential distortions in the market (OECD, 2015).

This paper intends to address a simple key question: are there any significant differences in public and private companies' governance that require different corporate governance techniques depending on the type of companies? To answer that, it will be performed an analysis of the governance of companies belonging to the Portuguese public business sector, which encompasses the state, local, and regional business sectors. Through a practical example of an SOE governance, it is intended to observe some of the most relevant topics addressed in the literature.

The case study will lie on a Portuguese road transport SOE, Companhia Carris de Ferro de Lisboa S.A ("Carris"). The analysis will focus on the period until 2017 when Carris was still part of the state business sector. Afterwards, it was transferred to the local business sector (within Lisbon City Council jurisdiction). Although some changes may apply with this transfer, they are not relevant to the analysis performed in this paper – since both state and local business sectors belong to the public business sector and are under the same legal framework (Decree-Law No. 133/2013 of 3 October).

The paper is structured in three main sections. The first one defines SOEs, address the reasons for their existence, importance in the economy and particularities associated with them, and expose the description and evolution of the corporate governance concept. Here the multiple principals' problem will be addressed with greater relevance. The second section will focus on Carris case study, tackling topics related to its governance. After considering the result of the analysis, recommendations on what should be implemented in the governance of non-financial SOEs are going to be proposed in the final section, where the main conclusions and further research are also discussed.

2. LITERATURE REVIEW: CORPORATE GOVERNANCE OF STATE-OWNED ENTERPRISES

2.1. What makes SOEs so special?

According to OECD (2015), SOEs refer to companies over which the state has significant control, either through a total or majority shareholder control or by significant minority shareholdings. According to the Portuguese Ministry of Finance, SOEs are business organizations subject to commercial law, where the state can exercise dominant influence, directly or indirectly. This influence is achieved when holding the majority of the capital, majority of the voting rights, or the right to appoint/dismiss the majority of the management or supervisory bodies' members (Decree-Law No. 133/2013 of 3 October).

SOEs can be divided into non-market institutional units, where its main purpose is the redistribution of national income and wealth and/or the satisfaction of public service (so it must be within the public administration sector's limits); market institutional unit, when it finances its

operational activity by sales of goods and services at economically significant prices (so it must be within business sectors' limits); and the public institutional financial unit, engaged in financial intermediation (EU, 2019).

The significance that SOEs represent for the economy and society is reflected in their provision of public service, their presence in international trade, infrastructure industries, and industries with important spillovers, and their weight in GDP and employment – all relevant factors that can positively contribute to economic efficiency and national competitiveness (Christiansen, 2011; OECD, 2012; Kowalski, Büge, Sztajerowska, & Egeland, 2013). These companies can have a very expressive impact on public finances, whether through the compensatory allowances they receive, capital endowments, loans granted, or debts assumed, which translates into a significant financial effort by the state – hence, good management and efficiency of SOEs are essential, to not compromise public finances and budgetary consolidation intentions.

Their existence is sometimes the result of social, economic, and strategic interests, aiming to achieve better industrial development, the discovery of innovations, or greater diversification of the economy. Another argument is that they ensure investments in socially important assets whilst the state does not provide an adequate regulatory and fiscal environment that promotes that same investment by private companies (Filho & Picolin, 2008). SOEs also have the purpose of fighting market failures, such as natural monopolies (which makes it more efficient to have only one company operating) and mixed goods (which, for being to some extent not rivals in consumption and since its exclusion is impossible or very expensive, means that there are free-riders and that the private provision of the good is below the optimum, despite the positive externalities associated with some of these goods, such as merit goods) (Capobianco & Christiansen, 2011; Kowalski et al., 2013).

2.2. Corporate governance over the ages

The corporate governance topic has been increasingly debated and labelled as fundamental for the long-run survival of companies, being that growing concern came after the discovery of financial scandals and the consequent inevitable bankruptcy of large companies at the beginning of the 21st century, as Enron (Timmers, 2000).

The concept dates to 1992 when a report known as the Cadbury Report was drawn up, classifying corporate governance as the doctrine and mechanisms by which companies are run and controlled (Cadbury, 1992; Câmara, 2002). The literature agrees on the importance of corporate governance, but does not on its definition: there is a disagreement between a stricter concept, which considers it as the process by which shareholders ensure their interests, and a broader conceptualization, which considers all stakeholders and the relationships between them.

What we face is a battle between a classic perspective (Anglo-Saxon view) that defends an almost excessive focus on the shareholder and

capital, and a more recent and comprehensive perspective (European view) that does not give primacy to a specific set of stakeholders but rather to all of them (shareholders, managers, suppliers, employees, customers, creditors, the state, society, etc.), bearing in mind that it may arise a conflict of interest among them that will require trade-offs and control instruments (Shleifer & Vishny, 1997; Heath & Norman, 2004; Porto & Silva, 2009; Moldovan, 2011).

2.3. Should corporate governance account for SOEs differences?

Although several studies regarding private companies' corporate governance were done, there is still little research regarding its application to SOEs, especially a lack of empirical knowledge in this field (Grossi, Papenfuß, & Tremblay, 2015; Daiser, Ysa, & Schmitt, 2017). Why? In part, because there are indeed differences between state-owned and private companies' corporate governance. SOEs have specific characteristics that make them unique: they usually have more complex and sometimes contradictory operational purposes (as they have to satisfy the procedures laid down by the state as the owner, and the interests of society and private investors); they are exposed to softer regulatory restrictions; sometimes operate with little competition; and lack rigor in professional selection (Filho & Picolin, 2008; De Miranda & Amaral, 2011; OECD, 2015).

They also have privileged access to information and financing resources, have multiple control legislators, are constantly subject to political interference (that trigger conflicts of interest), and are often protected against acquisitions and insolvency proceedings, due to their specific legal status (Forfás, 2010).

One must still consider the soft budget constraint phenomenon. Managers know *ex-ante* that they will receive *ex-post* financial assistance from the state, if needed, meaning that they do not have the right incentives regarding management, not worrying much about making efficient decisions, because they know that the future is somehow assured (Vahabi, 2012). The state acts as an insurance company: if there are unfavourable external circumstances, the company, instead of improving the quality of products and processes or cutting costs, will ask for external financial assistance, preventing it to be more productive. Although the biggest problem is the *ex-post* state intervention, its *ex-ante* intervention through subsidies, guarantees, tax benefits, and other financing resources also exacerbate these situations, discouraging efficient management practices (Kornai, 1986; Kornai, Maskin, & Roland, 2003).

All these particularities, that highly influences day-to-day management, have to be taken into account when deciding the best corporate governance techniques to apply to SOEs.

2.4. Multiple principals, multiple problems

As far as differences are concerned, it is still necessary to consider the agency theory with its relationship between the agent (who manages

the risk) and the principal (who bears it). The former, who can retain information and hide his actions (creating problems of adverse selection and moral hazard), does not always act in the best interest of the principal. Since managers/agents are seen as opportunists that want to maximize their utility, it is important to control their actions, so that the company is not negatively affected. Principals, who want to ensure that their financial investments are not misused, represent the individuals or institutions that actually have the power and rights over the company, so they may want to create incentives that bring the interests of both parties closer together to mitigate the potentially conflicting relationship (Shleifer & Vishny, 1997; Silva, Vitorino, Alves, Cunha, & Monteiro, 2006; Pereira, 2008).

SOEs have an increasing problem since there is a set of principals distributed among the four elements of corporate governance: management, control, supervision, and accountability (Timmers, 2000). Each principal can supervise the work being done by the bureaucratic agent, to reduce information asymmetries and offer incentives. However, there is a mitigation of control due to problems of collective action created by the dissemination of control and supervision authorities, which enhances free-rider actions (Forsberg, 2006; Pereira, 2008; Gailmard, 2009). In addition, principals have different goals and perspectives over the agent, which means that one cannot treat this as a simple bilateral problem between principal-agent (Dixit, Grossman, & Helpman, 1997).

We are facing a non-cooperative situation, where would be better if principals acted collectively offering an incentive scheme that would satisfy the common interest (and then share the profits among themselves), than if they conceive incentive schemes individually. In the end, principals face the risk of imposing different incentive schemes that contradict each other and that are consequently weaker, with leads to agents' payoffs being increasingly insensitive to the results obtained by the company (Sinclair-Desgagné, 2001; Dixit, 2002; Forsberg, 2006).

If principals coordinate and centralize the monitoring task, with the possibility for each one to supervise others' efforts, there will be excessive monitoring compared to the cases in which they cooperate. On the other hand, if the coordination problems are high enough, principals will choose their monitoring efforts independently and we will have free riders (and therefore deficient monitoring). Agents will have even more openness to act according to their interests, reinforcing the idea that the institutional structure ends up affecting the accountability of SOEs' managers (Khalil, Martimort, & Parigi, 2007).

3. GOVERNANCE OF THE STATE BUSINESS SECTOR: CARRIS COMPANY CASE STUDY

Until 2017, the period on which we will focus, Carris was part of the state business sector, 100% owned by the Portuguese state. Afterwards, it was transferred to the local business sector (within Lisbon City Council jurisdiction), also belonging to the public business sector and under the same legal

framework (Decree-Law No. 133/2013 of 3 October). Carris is subject to private law, except in cases strictly mentioned in the public business sector legal framework, and subject to competition law, to guarantee competitive neutrality (Articles 14 and 15 of Decree-Law No. 133/2013 of 3 October). It has been in the market for a long time, provides public service, has public and private competitors, is constantly subject to public debate and scrutiny, and is part of the transport sector - which represents the second most relevant sector of the state's equity portfolio (*according to the state's global equity portfolio as of December 31, 2018, available at www.dgtf.pt*). According to Carris' Statutes, its main task is to explore land transport concessions carried out by the state or local authorities, promoting social well-being and sustainable mobility and contributing to the development and modernization of the Lisbon metropolitan area.

Portuguese state supports Carris' continuity due to the public service that provides (which allows fighting market failures such as externalities - pollution, for example) and because the private provision of public goods and services would be below the optimum if market prices were imposed (due to the existence of free riders) (Hindriks & Myles, 2006; Varian, 2009). It is also worth mentioning its economic activity due to the jobs it provides and its positive social and environmental impact, since it reduces, when compared to individual transport, environmental and energy consequences, traffic, land use, accidents, and the need for investment in road infrastructures, presenting itself as a transport with lower unit costs that contributes to the democratization of mobility (Duarte, 2012; Tribunal de Contas, 2013).

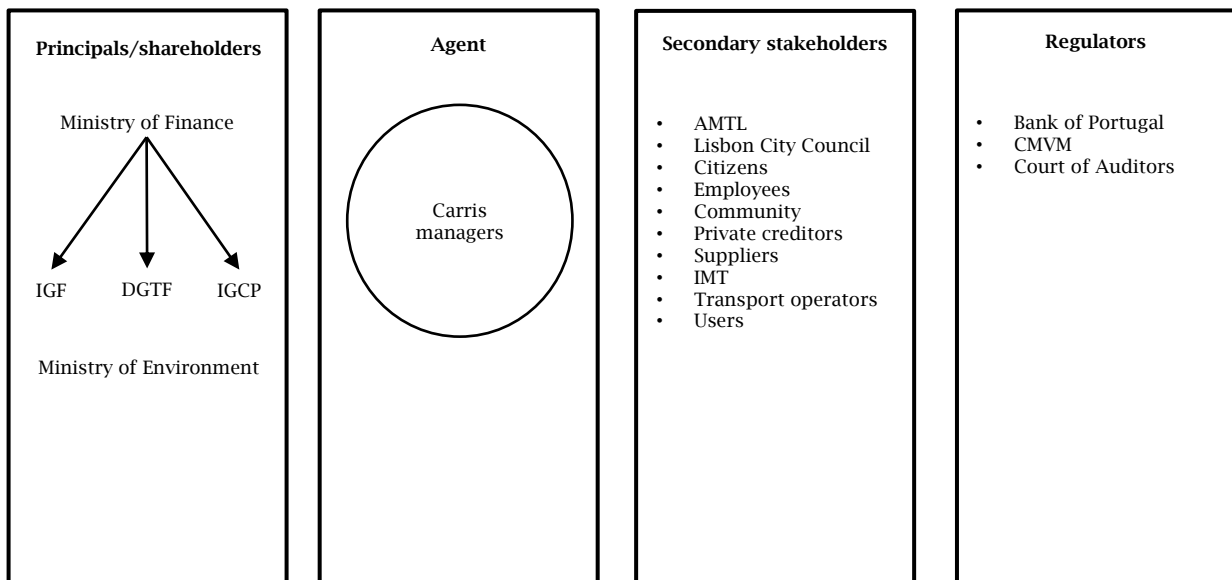
Being an SOE, does Carris also face some of the problems previously mentioned? Does it have multiple principals that mitigate efficient control? Does it have agreed to contractual terms with the state regarding the public service that provides to ensure an adequate level of compensatory allowances? And does it have a fair public managers' appointment process or there is a relationship between those appointments and the political cycle? These are the questions that the following subsections try to answer.

3.1. Carris' multiplicity of principals

Regarding its corporate governance model, until 2017 Carris exhibited a classic one, consisting of a General Assembly, Fiscal Council, Statutory Auditor, and Board of Directors, with a president and four or six members (Carris, 2017). As for the main stakeholders, Carris identifies suppliers, employees, customers, and the community.

Regarding its external governance structure, the main bodies were the following: Directorate-General for Treasury and Finance (DGTf), as the shareholder; Ministry of Finance, as the financial authority; Ministry of Environment as the relevant sectoral authority (since the end of 2015); and the Institute for Mobility and Transport (IMT) as a regulatory body. Some of these acts as principals and stakeholders, and others only as secondary stakeholders (Figure 1). It should be noted that citizens, typified as users, are the true shareholders and owners of SOEs since it is their money as taxpayers that is invested (Pinto et al., 2013).

Figure 1. Carris' principals, stakeholders, and external regulators



Note: Portuguese Inspectorate-General for Finance (IGF), Portuguese Treasury, and Debt Management Agency (IGCP), Lisbon Metropolitan Transport Authority (AMTL), Portuguese Securities Market Commission (CMVM).

Source: The author's elaboration.

This multiplicity of principals creates problems and is partly due to the lack of relationship and communication between them, which leads to

conflicting and disconnected goals imposed on the SOE (Dixit, 1998) and ineffective control.

The swap¹ contracts case is a good example. Here, it is worth mentioning the work developed by the Parliamentary Inquiry Commission (2014) assigned for the case. This Commission was created to analyse the execution of financial risk management contracts by some Portuguese SOEs in the 2003-2013 period. Regarding Carris, four contracts were inspected: one with the Investment Espírito Santo Bank, one with the Portuguese Business Bank, and two with Santander Bank.

To ease the burden of financial charges, Carris contracted some financial risk management instruments - swaps in this case. At the time interest rates were steadily rising and the expectation was that they would continue to do so. The solution found by Carris' managers was to carry out swap contracts, starting from 2005 and set the interest rate to curb their appreciation. However, as we all know, these expectations were not met, and interest rates started to fall sharply from 2008. The consequence? Carris started paying a lot more interest in having its fixed-rate (Tribunal de Contas, 2013). Has anyone regulated the contract of these instruments?

According to Decree-Law No. 133/2013 of 3 October (legal framework for the Portuguese public business sector), all financing operations associated with interest or exchange rates carried out by companies within this jurisdiction, whose term is longer than one year and related to financial derivatives, must be reported and approved by IGCP. And for companies to finance themselves through credit institutions when they have negative equity, prior approval by DGTF is required.

Notwithstanding, from these swaps contracts case it was possible to observe that some of the principals' functions were poorly defined, which instigated inefficient supervision and control. No one took full responsibility and most of the regulators tried to pass the blame on to the power of other entities, not acting in accordance with the public interest. The work developed by the Parliamentary Inquiry Commission (2014) showed the following chain of disclaimers:

- The Court of Auditors stated that it had warned Carris that careful management was necessary, disclosing that the lack of a *visa* regarding these contracts constituted a violation.
- CMVM stated that the authorization and registration of these contracts and instruments assumed authorization by the Bank of Portugal and the supervision of trading by CMVM.
- In turn, the Bank of Portugal argued that the regulation and supervision of swap contracts are excluded from its behavioural supervision powers.
- IGF, responsible for the audit and financial control of public business sector companies, admitted that after audits carried out in 2008 it had issued alerts on the use that Carris and other SOEs were making of these management instruments, and projected the respective recommendations. Notwithstanding, those recommendations did not include a prior control and authorization

mechanism, because according to IGF this was DGTF's responsibility.

- Regarding DGTF, the Parliamentary Inquiry Commission concluded that one of its powers was effectively monitoring these contracts. But, until 2009 SOEs did not need to reveal the true value of these instruments, so it would be difficult to quantify their true financial impact.

- As for IGCP, only after 2012 (after the approval of Decree-Law No. 200/2012 of 27 August, which renewed IGCP's Statutes) did it become responsible for the management of the derivatives portfolio of companies within the public business sector.

The final result was the dismissal of public managers involved in the negotiation of these contracts, including the chairman of Carris' Board of Directors at the time, José Manuel Silva Rodrigues, for alleged engage in speculative and unbalanced swap contracts that jeopardized public money. The problem was not that swap contracts were made, but the way they were made: two of them were considered structurally problematic and complex, outside public managers' capabilities, who did not limit themselves to covering the risk associated with interest rates' fluctuations and formulated them in a way too speculative, not serving the public interest (Parliamentary Inquiry Commission, 2014). However, it should be noted that according to Carris' ex-chairman, at the time of the Parliamentary Inquiry Commission hearing, all the information regarding the swaps was made available to the public² and to the state (the shareholder), who never asked any question or hindered their contracting.

3.2. Providing a public service without its contractual binding

SOEs that are in charge of providing services of general economic interest (i.e. services that ensure the provision of essential and fundamental goods and services for society) have to present a plan with proposals for its contracting (Article 48 of Decree-Law No. 133/2013 of 3 October). It is then is the responsibility of the sectoral Ministry to define the level of public service to be provided, so the corresponding compensatory allowances can be transferred. These allowances reimburse companies that jeopardize their economic and financial viability by providing public service, applying tariffs below market prices to extend goods and services to a greater part of the population. The problem is that the absence of a real contracting of this public service results in compensation levels substantially lower than desired.

According to the European Commission (EC, 2011), the compensatory allowances that are awarded in exchange for the provision of public service do not constitute state aid, and therefore do not distort competition, if and only if four conditions are met: 1) the company's obligations are clearly defined; 2) the parameters used in the calculation of the compensation must be

¹ A swap is a contract under which two entities agree to exchange, for a given amount and dates, certain financial flows based on predefined calculation formulas, presenting a reciprocal binding and allowing the transformation of a variable interest rate referring to a bank loan into a fixed rate (Tribunal de Contas, 2013).

² The information can be corroborated, since the conditions agreed in each swap contract are reported in the annual report and accounts of 2013 (Carris, n.d.).

previously established; 3) compensation must correspond at most to the total costs arising from the fulfillment of the public service obligations, and 4) when the beneficiary company is not chosen by public tender, the compensation must be determined based on the costs that an average company would have. After proving that the financial subsidies take the form of compensatory allowances, it is necessary to conclude a contract with the State, through the sectoral and Finance Ministries.

Carris provides a public service by making available urban public transports, contributing directly to mobility and accessibility to people and goods, and indirectly to greater social cohesion (Tribunal de Contas, 2013). Notwithstanding, despite that provision, Carris has consistently suffered reductions in the compensation allowances received for that service, and the tickets, it makes available at lower prices than the price market, to extend the service to more citizens. After 2014, it completely stopped receiving any compensation³ (Table 1).

According to the Court of Auditors (Tribunal de Contas, 2009), and after comparing the compensatory allowances and Carris' operating results, even before 2011 (before the economic and financial assistance program), there was a mismatch between the financing needs arising from the provision of the public service carried out by Carris and the compensatory payments received, which never reached the amount proportional to the losses resulting from tariff impositions. This discrepancy directly aggravated the public service exploitation deficit and Carris dependence on indebtedness. If we combine: 1) the imposition of practicing sub-tariffs corresponding to the social tariffs, with 2) the public underfunding intensified by the decrease in compensatory allowances, and 3) the lack of a truly efficient integrated tariff system in the Lisbon region, then we understand the difficulty that Carris has been facing to balance its operating results and EBITDA, which forced it to depend on more external indebtedness (Tribunal de Contas, 2009; Ministry of Economy and Employment, 2011).

The lack of a contractual proposal regarding the public service violates national and community law, jeopardizing the company's future viability (Tribunal de Contas, 2013). According to Decree-Law No. 167/2008 of 26 August and Regulation (EC) No. 1370/2007, the state is obliged to make this contract. Without it the State has greater flexibility, being able to define the compensatory allowances amount based on its most favorable situation. Additionally, there is a greater free will by the public managers, to whom are not imposed levels of quality and efficiency, because there is no such contract.

What we see is an annual negotiation between Carris and the financial and sectoral authorities, to outline the amount to be assigned as compensatory allowances, which grants Carris constant uncertainty, unable to prepare a long-term

financial plan. Additionally, these payments are only paid in December, which implies a public service compensation deficit throughout the respective year.

3.3. Finding the right person for the job or the most convenient?

Public managers must be individuals with skills, professional merit, proficiency, experience, and a sense of public interest (Article 21 of Decree-Law No. 133/2013 of 3 October), having to comply with the Public Manager Statute (Decree-Law No. 8/2012 of 18 January), which stipulates that: the candidate must have at least a bachelor academic degree; the term of office is three years, with possible renewal for three times; and the degree of performance of their duties must be subject to periodic evaluation by the members of the Government responsible for.

In order to make the selection process more transparent, and with the task of monitoring the evaluation and choice of candidates for SOEs' management positions, it was created the Recruitment and Selection Committee for Public Administration (CRESAP), through Law No. 64/2011 of 22 December.⁴ The member of the Government responsible for the sector must request a prior assessment by CRESAP of the curriculum and suitability competences of the proposed candidates, regardless of whether they were elected or nominated. Notwithstanding, CRESAP only issues non-binding opinions, and if the candidates do not accept disclosure of that opinion, it is not publicly available. When selecting candidates as public managers, it is necessary to consider whether the selection considers qualification, competence, and adequacy standards, and not political ones.⁵

Regarding Carris, the first thing to notice is that after 2012 (the year Carris' administration merged with *Metropolitano de Lisboa*), it went from a Board with five members to four. That way, Carris was not complying with its Statutes, which had not yet been revised until 2017 and that presupposed the presence of 4 or 6 members and a president in the Board.

⁴ CRESAP is an independent entity that performs its duties alongside with the Government member responsible for the Public Administration sector. It is composed by a President, three to five permanent members, one non-permanent member for each Ministry and their respective substitutes, in number of two. A pool of experts, composed by 20 to 50 members, works with CRESAP. These members are appointed among employees in public functions with recognized professional merit, credibility, and personal integrity, who support specific technical matters and participate in juries of tender procedures for senior management positions in the public administration. As of December 31, 2019, CRESAP was composed of a female president, 3 permanent members (two women and a man), 16 non-permanent members and 25 substitute non-permanent members, with a pool of experts consisting of 42 members (CRESAP, 2020).

⁵ "Some of the classic effects of politicized nominations are: 1) the changing of the board with a change in political powers; 2) excessive turnover of board members; 3) or, alternatively, insufficient turnover, and lack of fresh blood and innovation on the board; 4) friend appointments and patronage; 5) changing members without good reason; and 6) the inability to get desired profiles. (...) When politicization occurs, it does not yield the needed board member" (Frederick, 2011, p. 18).

³ It was only in 2018 that Carris received again compensatory allowances, namely EUR 18 million from Lisbon City Council (the shareholder since February 2017) for public services obligations performed during 2017 and 2018 (Carris, n.d.). Notwithstanding, there is still no information regarding payments been made in 2019 – the ones occurred in 2018 could have been a one-time thing.

Table 1. Compensatory allowances transferred to Carris (in EUR thousands)

Year	2009	2010	2011	2012	2013	2014	2015	2016	2017
Amount ⁽¹⁾	53,803	50,872	53,000	19,511	18,568	4,717	0	0	0

Note: ⁽¹⁾ The amounts do not include the compensatory allowances regarding the social travel cards “Passe 4_18”, “Passe Sub23” and “Passe Social+”, which are transferred separately and have a low expressive amount. These compensations/subsidies are intended to offset some of the reduced tariffs applied, not the obligation to provide public service.

Source: Carris (n.d.).

Other than that, there is little relevant information regarding the appointment and selection process of candidates for the company's Board of Directors. CRESAP only entered into force in 2012, so it only evaluated the appointments for the two consecutive mandates - regarding the period under analysis in this paper. However, of what is public knowledge, it should be noted that this entity issued positive evaluations (although sometimes “with limitations”) regarding all candidates chosen for those mandates, and their resumes are available online, so it's possible for any citizen to analyse

their academic and professional background and assess whether or not they have the proper skills and experience for the position they are filling.

Notwithstanding, by linking the composition of Carris' Board of Directors and the political party in power at the time, we can observe that it suggests some association between the nominations and the political cycle, meaning that when changing from a government to another, there are some significant changes in the composition of the Board (Table 2).

Table 2. Carris' Board of Directors and respective political cycle

Government	Mandate	President	Member	Member	Member	Member
Social Democratic Party/CDS (2002-2004 and 2004-2005)	2003-2005	José Rodrigues	Jaime Quaresma	Augusto Proença	António Silva	José Oliveira
Socialist Party (2005-2009 and 2009-2011)	2006-2008	José Rodrigues	Isabel Antunes	Maria Rocha	António Silva	Joaquim Zeferino
	2009-2011	José Rodrigues	Isabel Antunes	Maria Rocha	Fernando Silva	Joaquim Zeferino
Social Democratic Party/CDS (2011-2015)	2012-2014	José Rodrigues (until June '13)	Pedro Bogas	Luis Barroso	Maria Figueiredo	-
	2015 ⁽¹⁾	Rui Loureiro	Pedro Bogas	Tiago Santos	Maria Figueiredo	José Roque
Socialist Party (2015-2019)	2016 ⁽²⁾	Tiago Farias	José de Matos	Luis Barroso	Maria Campos	António Pires

Note: ⁽¹⁾ The development of new transport policy, based on the transition of the operational supervision of urban transport from the Ministry of Economy to the Ministry of Environment at the end of 2015, dictated the need to appoint a new team for the Board of Directors. ⁽²⁾ This composition of the Board was valid for the 2016-2018 mandate. Notwithstanding, given the municipalisation of Carris at the beginning of 2017 (period after which we will not analyse in this paper), new elections were held.

Source: Carris (n.d.).

Positively, it should be highlighted the absence of politicians or ministers as members in any of the mandates, as well as the consistency in the Chairman of the Board over a decade, from 2003 to 2013, and in different political cycles. However, as it can be perceived, the same consistency is no longer observed in the remaining members.

4. DISCUSSION

After going through Carris case study, it was possible to verify that there have been flaws in Portuguese SOEs' governance. Therefore, it is presented a set of recommendations for better adequacy of corporate governance to the Portuguese SOEs, to help Governments to define a standard of excellence in public management.

First, it should be applied the comply-or-explain principle to SOEs, which implies greater demand for accountability (Pinto et al., 2013). There is no point in setting high-efficiency standards and governance rules if they are not complied without any type of penalty. In addition, there is a need for more judicial action, applying penalties for cases of non-compliance by the SOEs or the state.

As a way of solving, in part, the multiplicity of principals' problem, the creation of a coordinating

or centralized entity is advocated (OECD, 2015). That should act as a practical tool for the management and oversight of SOEs, helping the state to manage its roles as a regulator, shareholder, and service provider.⁶ By the example of the swap contracts, it was possible to see that when there is a multiplicity of principals and external regulatory entities, the result turns out to be an insufficient oversight due to coordination and free-rider problems.

As the public interest is presented as one of the fundamental and guiding principles of the action of the SOEs, and according to what is specifically expressed in national and community regulations, it is essential a true contract between the state and the SOEs that provide services of general economic interest. These contracts are crucial to ensure the continuous provision of these services, which cannot be called into question because they are vital to society, and to ensure an adequate transfer

⁶ With that desired, in 2013 was created the technical unit for monitoring the public business sector (Article 68 of Decree-Law No. 133/2013 of 3 October), which aimed to achieve an effective management of public resources used in public business activity, and reinforce the role of administrative supervision and control. However, this entity is still very recent and still falls short of its potential – the level of public sharing of information on the work done and reports produced is still quite scarce and is not made available in a timely manner.

of compensatory allowances, to cover the costs of providing the public service.

It is true that compensatory allowances have an impact on public finances, but on the other hand, they also influence the financial viability of companies. It is then necessary to improve the adequacy of the formula for calculating these payments, so as not to pay inefficient management nor make the provision of the public service unfeasible. The payments should also be allocated on a multi-annual basis (to provide the possibility for preparing long-term financial planning) and paid in regular installments throughout the year, not only in December.

Budgetary restrictions should be imposed on these companies, to prevent excessive levels of debt and operational deficit. Currently, only the rate of additional annual indebtedness is limited, so there is a need to extend these limits to other variables that will make it possible to fight the soft budget constraints' phenomenon. Nothing, or very little, has been done regarding companies that recurrently show high costs, indebtedness, and losses in their account reports. SOE's liabilities increase considerably each year, and what ends up happening is the state taking responsibility for those debts.

Every SOE should also implement the rule of having non-executive members (i.e. members without management powers) on its Boards of Directors - to ensure the satisfaction of other stakeholders' interests and avoid conflict of interests - as well as independent members who contribute objectively to the deliberations of the Board (Silva et al., 2006; CMVM, 2013; OECD, 2015; IPCG, 2018). Thus, it will be easier not to decide at the expense of other stakeholders and protect their rights, making clear the importance that relations with these groups have to obtain sustainable and financially sound companies.

Finally, in order to reduce political favours and obtain a more objective and transparent selection process, it is necessary to develop and implement a Code of Good Practices in the public managers' appointing process, also creating an independent position to regulate and enforce compliance with that mandatory code. The choice of the most suitable candidate for the position is essential for good governance. Although CRESAP considers itself an independent entity, this idea it's not shared by all, since the appointment of its governing bodies depends exclusively on the Government, and their reports are non-binding (Decree-Law No. 8/2012 of 18 January) - which does not yield great power for public managers' appointments.

The creation of a more independent entity is advocated, not to get involved in the managers' appointment (that should remain in the sphere of the political power), but to supervise the entire nomination and selection process, in order to guarantee its rigor and transparency through the dissemination of public information⁷. The final

decision on which candidate to select must always be the responsibility of a Minister or set of Ministers so that there is someone clearly accountable to whom it is possible to assign the political responsibility for the nomination.

5. CONCLUSION

In Portugal, it is necessary to pay greater attention to the SOEs that are within the public business sector, as they represent a relevant part of the Portuguese economy, performing an important role whether due to their weight in the economy, the areas in which they intervene, or the satisfaction of well-being they provide (Ferreira, 2009).

We need to consider that SOEs impose costs on public funds, namely through compensatory allowances that directly affect the public administration budget, and the assumption of liabilities that affects public debt (Pereira, Afonso, Arcanjo, & Santos, 2009).

Sometimes SOEs must go beyond their commercial activities and fulfil social and public policy responsibilities. These obligations must be determined by laws and regulations. As these duties impose extra costs, companies must be properly compensated by the state budget. It is due to their economic, social, and political importance that a more adequate management of this type of company is necessary, to guarantee a balanced compensation of the costs they face and not jeopardize the provision of public service.

It was possible to conclude from Carris case study that it was the existence of social tariffs (which from a commercial point of view is not profitable) associated with 1) a lack of definition of the compensation criteria for the public service provided, 2) the persistence of negative net results, and 3) the absence of an adequate financing model, that made Carris unsustainable and detrimental to public finances.

The approach of some topics related with Carris' governance allowed to prove what we had already spotted in the literature review about SOEs' particularities: as these are subject to soft budgetary constraints, multiple principals, lack of rigor in the criteria for professional selection, imbalances in the state's shareholder and public responsibility functions, and more inconstant operational goals, it is necessary to apply a different corporate governance model, more specific to their characteristics.

We need to pay attention to these characteristics, which, if not properly considered, can cause governance problems harmful to the whole economy and society. For instance, the fact that Carris is accountable to multiple principals and external regulatory bodies led to an ineffective control by all of these entities regarding the swap contracts, highlighting the fact that the institutional structure to which different companies are subject affects managers' accountability. By combining this multiplicity of principals with soft budgetary constraints, the result was a considerable increase in Carris' already historic debt, which has repercussions for all stakeholders associated with it, and for the company itself in the long run at an economic and financial level. For that debt increase, it also contributed to

⁷ An example can be withdrawn from the United Kingdom, where there is a high commissioner (Commissioner for Public Appointments) who supervises the aforementioned processes, monitoring and supervising all government appointments to SOEs' Boards, in order to ensure their compliance with the Code of Practice for Ministerial Appointments to Public Bodies (IPCG, 2007). He is appointed directly by the Queen, therefore totally independent from the Government, and is not a public official (The Commissioner for Public Appointments, 2009).

the significant decrease in compensatory allowances over the years, partly due to the lack of a public service contract between Carris and the state.

With the list of recommendations present in the last subsection, it was intended to identify critical elements that needed change to improve SOEs' management and accountability. The goal was helping to develop a regulatory framework on SOEs' corporate governance. From the recommendations presented, the following ones should be highlighted:

- Implementation of the comply-or-explain principle (Pinto et al., 2013) to increase SOE's accountability.
- Development and deepening of the work performed so far by the technical unit for monitoring the Public Business Sector, to effectively become a solution able to mitigate the multiple principals' problem by requiring greater articulation between different entities, such as DGFT, IGCP, and IGF, so that there is neither a gap nor overlapping of functions.
- Imposition of stricter budget restrictions, which highlights the need to diversify sources of financing (besides tariffs and compensatory allowances), especially for those providing public service.
- Imposition of a contractual relation between the state and the SOEs that provide services of public interest, so that the latter can be adequately compensated.
- Creation of a Code of Good Practices for the appointment of public managers and a position that guarantees its compliance, alongside the work developed by CRESAP, so that all appointments and respective processes are subject to public scrutiny.

Regarding the comply-or-explain principle, sanctions should be established for the cases of non-compliance. The legal obligation for certain behaviours to be followed is most often established, both at the national and community level. The issue is the lack of economic punishments for SOEs that do not comply with the rules. This presents itself as a discouragement to good behaviour.

It is the state that has the power to oversee SOEs' behaviour and performance and to apply penalties when necessary, but there are certain situations when it is the State itself that fails with its functions. For instance, the lack of a public service contract between the state and Carris makes

the compensatory allowances paid to be considered state aid, and therefore distorting of competition. In those cases, where the State is in breach of national and community law, it should be the European Union, through some more qualified entity, to apply the appropriate sanctions and regulate the implementation and compliance with the regulations.

It is important to mention the difficulties faced throughout the present research, namely regarding the gathering of information about Portuguese SOEs. Despite the fact that there is already a specific legal framework for SOEs within the state business sector (aiming to require the availability of all relevant information), it is necessary to increase their accountability and transparency – not towards the state, but the citizens, as final owners. The biggest concerns lie in the lack of consistency in some information provided by different state entities, namely regarding numerical data, and the lack of consistency in the same type of information that is made available over the years. For example, sometimes the state budget analyses variables such as the financing needs of the transport sector, and in the next year, that same information is no longer available, hindering a coherent and complete temporal analysis. Additionally, the present research would benefit from an in-depth and complementary analysis of Carris public managers' scheme of remuneration, to understand if it is in line with the shareholders' preferences and if it provides an adequate long-term incentive.

Finally, as further research it would be of interest 1) to replicate the case study carried out in this paper to other companies, to see if the same problems persisted; 2) to conduct an in-depth analysis of the work that has been done by the technical unit for monitoring the public business sector, namely in terms of autonomy, ability to fulfil the functions assigned to it and ability to more effectively manage the multiple principals' problem; 3) to analyse the changes recorded in Carris' management and functioning model after it transitions to the municipal jurisdiction, namely for the competences of the Lisbon City Council, and analyse whether the same problems persist or have been, at least, mitigated.

REFERENCES

1. Cadbury, A. (1992). *Report of the Committee on the financial aspects of corporate governance*. Retrieved from <https://ecgi.global/sites/default/files//codes/documents/cadbury.pdf>
2. Câmara, P. (2002). Códigos de Governo das Sociedades. *Cadernos do Mercado de Valores Mobiliários*, 15, 65-90. Retrieved from <https://blook.pt/publications/publication/87c2a41cb691/>
3. Capobianco, A., & Christiansen, H. (2011). *Competitive neutrality and state-owned enterprises: Challenges and policy options* (OECD Corporate Governance Working Paper No. 1). <https://doi.org/10.1787/5kg9xfjgdhgg6-en>
4. Carris. (2017). *Corporate governance report 2016*. Retrieved from https://www.carris.pt/media/hjtbdahs/relatoriogs_2016.pdf
5. Carris. (n.d.). *Annual report and accounts 2008-2019*. Retrieved from Carris website: <https://www.carris.pt/a-carris/empresa/relatorios-e-legislacao/>
6. Christiansen, H. (2011). *The size and composition of the SOE sector in OECD countries* (OECD Corporate Governance Working Paper No. 5). <https://doi.org/10.1787/5kg54cwps0s3-en>
7. Comissão de Recrutamento e Seleção para a Administração Pública (CRESAP). (2020). *Relatório de Atividades 2019*. Retrieved from <https://www.cresap.pt/menu-geral-docman/relatorioatividades/1179-relatorio-de-atividades-de-2019/file>
8. Comissão do Mercado de Valores Mobiliários (CMVM). (2013). *Regulamento da CMVM No.º4/2013 Governo das Sociedades*. Retrieved from https://www.cmvm.pt/pt/Legislacao/Legislacaonacional/Regulamentos/Pages/Reg_2013_04.aspx

9. Daiser, P., Ysa, T., & Schmitt, D. (2017). *Corporate governance of state-owned enterprises: a systematic analysis of empirical literature*. *International Journal of Public Sector Management*, 30(5), 447-466. <https://doi.org/10.1108/IJPSM-10-2016-0163>
10. De Miranda, R. A., & Amaral, H. F. (2011). Governança corporativa e gestão socialmente responsável em empresas estatais (Corporate governance and social responsibility management in state-owned enterprises). *Revista de Administração Pública*, 45(4), 1069-1094. <https://doi.org/10.1590/S0034-76122011000400008>
11. Decree-Law No. 133/2013 of 3 October. Retrieved from <https://dre.pt/application/conteudo/500215>
12. Decree-Law No. 167/2008 of 26 August. Retrieved from <https://dre.pt/application/conteudo/453551>
13. Decree-Law No. 200/2012 of 27 August. Retrieved from <https://dre.pt/application/conteudo/174556>
14. Decree-Law No. 8/2012 of 18 January. Retrieved from <https://dre.pt/application/conteudo/544415>
15. Dixit, A. (2002). Incentives and organizations in the public sector: An interpretative review. *The Journal of Human Resources*, 37(4), 696-727. <https://doi.org/10.2307/3069614>
16. Dixit, A. K. (1998). *The making of economic policy: A transaction cost politics perspective* (1st ed.). Cambridge, MA: The MIT Press.
17. Dixit, A., Grossman, G. M., & Helpman, E. (1997). Common agency and coordination: General theory and application to government policy making. *Journal of Political Economy*, 105(4), 752-769. <https://doi.org/10.1086/262092>
18. Duarte, M. S. D. M. (2012). *Modelos de gestão e financiamento de transportes coletivos urbanos* (Master's dissertation, Faculdade de Engenharia da Universidade do Porto). Retrieved from <https://repositorio-aberto.up.pt/bitstream/10216/68370/1/000154906.pdf>
19. European Commission (EC). (2011). *Enquadramento da União Europeia aplicável aos auxílios estatais sob a forma de compensação de serviço público*. Retrieved from [https://eur-lex.europa.eu/legal-content/PT/TXT/PDF/?uri=CELEX:52012XC0111\(03\)&from=LT](https://eur-lex.europa.eu/legal-content/PT/TXT/PDF/?uri=CELEX:52012XC0111(03)&from=LT)
20. European Union (EU). (2019). *Manual on government deficit and debt: Implementation of ESA 2010* (Eurostat Manuals and Guidelines, 2019 ed.). Retrieved from <https://ec.europa.eu/eurostat/web/products-manuals-and-guidelines/-/KS-GQ-19-007>
21. Ferreira, J. M. (2009). *Os problemas do corporate governance nas empresas públicas* (Master's dissertation, Faculdade de Direito da Universidade Nova de Lisboa). Retrieved from https://run.unl.pt/bitstream/10362/6195/1/Ferreira_2009.pdf
22. Filho, J. R. F., & Picolin, L. M. (2008). Governança corporativa em empresas estatais: Avanços, propostas e limitações (Corporate governance of state-owned enterprises: advances, proposals and limitations). *Revista de Administração Pública*, 42(6), 1163-1188. <https://doi.org/10.1590/S0034-76122008000600007>
23. Forfás. (2010). *The role of state owned enterprises: Providing infrastructure and supporting economic recovery*. Dublin, Ireland: Forfás.
24. Forsberg, R. (2006). *Incentives in a common agency: An experiment* (Master's dissertation, Lund University - Regia Academia Carolina School of Economics and Management). Retrieved from <https://lup.lub.lu.se/luur/download?func=downloadFile&recordId=1336987&fileId=1646316>
25. Frederick, W. R. (2011). *Enhancing the role of the boards of directors of state-owned enterprises* (OECD Corporate Governance Working Paper No. 2). <https://doi.org/10.1787/5kg9xfg6n4wj-en>
26. Gailmard, S. (2009). Multiple principals and oversight of bureaucratic policy-making. *Journal of Theoretical Politics*, 21(2), 161-186. <https://doi.org/10.1177/0951629808100762>
27. Grossi, G., Papenfuß, U., & Tremblay, M.-S. (2015). Corporate governance and accountability of state-owned enterprises: Relevance for science and society and interdisciplinary research perspectives. *International Journal of Public Sector Management*, 28(4-5), 274-285. <https://doi.org/10.1108/IJPSM-09-2015-0166>
28. Heath, J., & Norman, W. (2004). Stakeholder theory, corporate governance and public management: What can the history of state-run enterprises teach us in the post-Enron era? *Journal of Business Ethics*, 53, 247-265. <https://doi.org/10.1023/B:BUSI.0000039418.75103.ed>
29. Hindriks, J., & Myles, G. D. (2006). *Intermediate public economics*. Cambridge, MA: The MIT Press.
30. Instituto Português de Corporate Governance (IPCG). (2007). *Conferência corporate governance e o sector empresarial do Estado: Critérios políticos na nomeação de gestores?* Retrieved from https://cgov.pt/images/ficheiros/2018/brochura_seminario_7nov2007.pdf
31. Instituto Português de Corporate Governance (IPCG). (2018). *Corporate governance code*. Retrieved from <https://cam.cgov.pt/en/the-ipcg-corporate-governance-code-2018>
32. Khalil, F., Martimort, D., & Parigi, B. (2007). Monitoring a common agent: Implications for financial contracting. *Journal of Economic Theory*, 135(1), 35-67. <https://doi.org/10.1016/j.jet.2005.08.010>
33. Kornai, J. (1986). The soft budget constraint. *Kyklos*, 39(1), 3-30. <https://doi.org/10.1111/j.1467-6435.1986.tb01252.x>
34. Kornai, J., Maskin, E., & Roland, G. (2003). Understanding the soft budget constraint. *Journal of Economic Literature*, 41(4), 1095-1136. <https://doi.org/10.1257/jel.41.4.1095>
35. Kowalski, P., Büge, M., Sztajerowska, M., & Egeland, M. (2013). *State-owned enterprises: Trade effects and policy implications*. (OECD Trade Policy Paper No. 147). Retrieved from [http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=TAD/TC/WP\(2012\)10/FINAL&docLanguage=En](http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=TAD/TC/WP(2012)10/FINAL&docLanguage=En)
36. Law No. 64/2011 of 22 December. Retrieved from <https://dre.pt/application/conteudo/145045>
37. Moldovan, I. (2011). Considerations on the management of state companies by corporate governance. *Studies in Business and Economics*, 81, 79-85. Retrieved from <http://eccsf.ulbsibiu.ro/articole/vol81/818moldovan.pdf>
38. OECD. (2012). *Competitive neutrality: Maintaining a level playing field between public and private business*. <https://doi.org/10.1787/9789264178953-en>
39. OECD. (2015). *OECD guidelines on corporate governance of state-owned enterprises, 2015 edition*. Retrieved from <https://www.oecd.org/publications/oecd-guidelines-on-corporate-governance-of-state-owned-enterprises-2015-9789264244160-en.htm>
40. Parliamentary Inquiry Commission. (2014). Relatório final da Comissão Parlamentar de inquérito à celebração de contratos de gestão de risco financeiro por empresas do sector público. *Diário da República*, 2(21). Retrieved from <http://debates.parlamento.pt/catalogo/r3/dar/s2b/12/03/021/2014-01-10/1?pgs=2-195&org=PLC&plcdf=true>

41. Pereira, P. T. (2008). *O prisioneiro, o amante e as sereias: Instituições económicas, políticas e democracia*. Coimbra, Portugal: Almedina.
42. Pereira, P. T., Afonso, A., Arcanjo, M., & Santos, J. C. G. (2009). *Economia e finanças públicas* (3rd ed.). Lisbon, Portugal: Escolar.
43. Pinto, J. C., Monteiro, M. A., Ribeiro, M. F., Bandeira, P., Mayer, R., Câmara, P., Vicente, P., Barreiros, F., Santana, M. J., Campos, N. P., Castro, I. B., & Sousa, P. R. (2013). *A emergência e o futuro do corporate governance em Portugal*. Coimbra, Portugal: Almedina.
44. Porto, M., & Silva, J. (2009). Corporate governance nas empresas públicas. *Systemas - Revista de Ciências Jurídicas e Económicas*, 1(2), 105-143.
45. Regulation (EC) No. 1370/2007 of the European Parliament and of the Council of 23 October 2007 on public passenger transport services by rail and by road and repealing Council Regulations (EEC) Nos 1191/69 and 1107/70. Retrieved <http://data.europa.eu/eli/reg/2007/1370/oj>
46. Resolution of the Council of Ministers No. 45/2011). Retrieved from <https://dre.pt/application/dir/pdf1sdip/2011/11/21600/0479604821.pdf>
47. Shleifer, A., & Vishny, R. (1997). A survey of corporate governance. *The Journal of Finance*, 52(2), 737-783. <https://doi.org/10.1111/j.1540-6261.1997.tb04820.x>
48. Silva, A. S., Vitorino, A., Alves, C. F., Cunha, J. A., & Monteiro, M. A. (2006). *Livro branco sobre corporate governance em Portugal*. Retrieved from https://ecgi.global/sites/default/files/codes/documents/libro_bianco_cgov_pt.pdf
49. Sinclair-Desgagné, B. (2001). *Incentives in common agency*. Retrieved from <https://cirano.qc.ca/files/publications/2001s-66.pdf>
50. The Commissioner for Public Appointments. (2009). *Code of practice for ministerial appointments to public bodies*. Retrieved from <https://publicappointmentscommissioner.independent.gov.uk/wp-content/uploads/2017/01/New-Code-of-Practice-for-Ministerial-Appointments-to-Public-Bodies-August-2009.pdf>
51. Timmers, H. (2000). *Government governance: Corporate governance in the public sector, why and how?* Retrieved from <https://ecgi.global/code/government-governance-corporate-governance-public-sector-why-and-how>
52. Tribunal de Contas. (2009). *Auditoria à Carris, SA: Transportes públicos urbanos na cidade de Lisboa* (Audit report No. 30/2009, 2nd section). Retrieved from <https://www.tcontas.pt/pt-pt/ProdutosTC/Relatorios/RelatoriosAuditoria/Documents/2009/rel030-2009-2s.pdf>
53. Tribunal de Contas. (2013). *Auditoria ao desempenho de empresas públicas: Carris* (Audit report No. 11/2013, 2nd section). Retrieved from <https://www.tcontas.pt/pt-pt/ProdutosTC/Relatorios/RelatoriosAuditoria/Documents/2013/rel011-2013-2s.pdf>
54. Vahabi, M. (2012). Soft budget constraints and predatory states. *Review of Radical Political Economics*, 44(4), 468-483. <https://doi.org/10.1177/0486613411434392>
55. Varian, H. R. (2009). *Intermediate microeconomics: A modern approach* (8th ed.). Retrieved from http://dl.booktolearn.com/ebooks2/science/economy/9780393934243_intermediate_microeconomics_by_varia_n_1e58.pdf