

Chapter 7

Leadership Structure and Implications of Partial State Ownership in the Hospitality Sector



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Abstract Privatization frequently boosts efficiency and productivity in businesses as private companies are generally more motivated to reduce costs, innovate, and meet market needs than state-run counterparts. The privatization of the hospitality sector pertains to the acquisition or operational control of hospitality properties, such as hotels and resorts, including additional services, shifting from government provision to private companies. This shift can have mixed effects on environmental sustainability.

This paper delves into the interplay of environmental taxes, pollution control spending, and the privatization of a partially state-owned (PSO) hotel within a mixed duopoly framework. The market we analyze comprises a single partially state-owned (PSO) hotel competing against one for-profit (FP) hotel in a five-stage game: (i) the government decides how much of the PSO hotel will be privatized; (ii) a regulator, aiming to maximize social welfare, establishes the emission tax rate; (iii) the PSO hotel selects abatement pollution investments; (iv) the FP hotel then selects pollution abatement investments; and (v) subsequently, the two hotels concurrently and autonomously determine the quantity of rooms available for reservation. This game presents a model of a policy regime featuring commitment. In contrast, our analysis also considers a non-committed regime, distinguished by the fact that step (ii) occurs after decisions regarding abatement pollution investments.

This study's most significant finding is that, according to the social welfare perspective within the analyzed models, neither total privatization nor complete nationalization represents the optimal governmental strategy.

Keywords Partial privatization · Abatement pollution · Environmental policy

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A. L. Negrusa, M. M. Coroş (eds.), *Innovation, Sustainability, and Growth in a*

VUCA Environment, Springer Proceedings in Business and Economics,

https://doi.org/10.1007/978-3-032-11639-0_7

7.1 Introduction

Governments in many countries strategically employ privatization to boost economic efficiency, raise revenue, elevate service quality, and spur economic growth. These privatization efforts span diverse economic sectors where governments might own and manage enterprises, including areas like airports, banking, energy, telecommunications, hospitals, and the hospitality industry.

The Angolan government, under the authority of President João Lourenço, initiated a public tender at the start of 2024 for the privatization of 39 hotels from the IKA, IU, and BINA groups, which are distributed across the nation's 18 provinces (Further Africa, 2024). On April 11, 2025, the Angolan Government announced that it will privatize eight hotel units of the IU and Bina chains, through a limited tender by prior qualification, under the Privatization Program (ProPriv) 2023–2026 (Jornal de Negócios, 2025).

In late 2023, ICON, a subsidiary of Talaat Mostafa Holding Group, took over a majority stake in seven hotels. This was a key part of Egypt's ongoing privatization efforts (Egypt Today, 2023).

As highlighted in a 2015 report by UN Tourism (known as UNWTO until 2023), Public-Private Partnerships can lead to inclusive, sustainable, and resilient tourism development, offering a pathway to contribute to the new Sustainable Development Goals. Regarding the measurement of sustainable performance in the hospitality sector, Franzoni et al. (2021) emphasize environmental aspects, outlining indicators such as CO₂ emissions, energy use per guest night, renewable energy production, water use, plastic consumption, environmental certifications, and whether certified eco-friendly cleaning products are utilized. This paper also focuses on environmental sustainability, highlighting the crucial role of incorporating the “3Rs” (reduce, reuse, and recycle) into hospitality companies' environmental strategies. Chen and Peng (2016) and Ioannidis et al. (2021) are among the researchers who highlight how crucial these principles are for boosting overall performance and success.

Driven by worsening environmental degradation and increased public ecological awareness, governments are increasingly prioritizing environmental concerns. Research has explored the link between privatization and environmental outcomes. Xing et al. (2022) analyze the impact of partial privatization on environmental R&D for clean technology and its effects on the environment and social welfare in a polluting mixed duopoly. Studies by Haruna and Goel (2019), Ferreira and Ferreira (2013), and Wang and Wang (2009) examine the effects of complete privatization on endogenously determined environmental taxes, while Ouattara (2019), Xu et al. (2016), and Pal and Saha (2015) examine partial privatization's effects on similar topics. In contrast, Xing et al. (2020) examine exogenous environmental taxes when studying the impact of complete privatization on environmental R&D and the environment. Finally, Dong et al. (2019) studied the government's simultaneous decisions on public firm privatization and the choice between environmental taxes and emission standards.

Leal et al. (2018) investigated how the strategic selection of abatement technology interacts with the government's environmental policy commitment timing in a market with both consumer-oriented and profit-driven firms, considering both committed and non-committed scenarios. Expanding on this, Ferreira et al. (2022) analyzed sequential decisions in pollution abatement investments under both policy regimes. Their research showed that when consumer-friendliness is high, a government's committed environmental tax is lower than if it doesn't commit. Interestingly, they also found that while a non-committed policy might result in less environmental damage, social welfare is consistently improved when the government makes a firm commitment to its environmental policy.

This paper unfolds as follows: We begin by developing the model in the following section. Subsequently, we investigate committed and non-committed policy regimes, report on what we find, and compare them. The paper concludes with a discussion of our findings.

7.2 Research Purpose and the Methodological Approach

The present study advances the existing literature by developing a model that aligns with the work of Leal et al. (2018), while incorporating the novel aspects of partial state ownership and sequential decision-making, tailored to the dynamics of the hospitality sector. We observe that the hospitality sector, particularly hotels and resorts, is a major contributor to national and global economies. It generates significant revenue, creates numerous jobs, and plays a crucial role in tourism, which often drives other related industries. Studying competition within such a vital sector provides insights into its efficiency, growth, and stability. Employing a mixed duopoly model, our analysis examines the interplay among environmental taxation, pollution abatement investments, and the privatization of a hotel with partial state equity. In contrast to Ferreira and Ferreira (2025), who modeled a similar problem with simultaneous decisions regarding pollution abatement investments, our work examines a sequential decision-making process.

To investigate our research question, we will leverage a game-theoretical model to analyze the decision-making process. Game theory, a mathematical framework, allows us to study interdependent choices made by multiple players. This approach helps us anticipate the strategies these players might employ to optimize their outcomes, anticipating others' moves. Frequently employed in industrial organization studies, game theory provides valuable insights into competitive and cooperative behaviors within contexts like market competition.

To manage the intricate nature of the research, the study focuses solely on two hotels. Distinguishing the two is their ownership structure: one is a partially state-owned (PSO) hotel, while the other prioritizes profit maximization (PM).

The representative consumer's maximization problem is given by

$$U(q_1, q_2) - p_1 q_1 - p_2 q_2$$

with $U(q_1, q_2) = q_1 + q_2 - \frac{1}{2}(q_1 + q_2)^2$ and where q_i denotes the quantity of hotel H_i rooms offered for rent to guests, p_i signifies the associated room rate, with $i = 1, 2$. Therefore, direct demand can be defined by

$$p_i = 1 - q_i - q_j,$$

where $i, j = 1, 2$ with $i \neq j$. Both hotels share the same cost function, which is given by $C_i = q_i^2 / 2$. Hotel operations cause environmental pollution $e_i > 0$. Each hotel, though, has the capacity to diminish this pollution down to a level $e_i = q_i - a_i$ by allocating an investment of $a_i^2 / 2$ toward pollution abatement initiatives. The aggregate environmental damage is quantified as $ED = \frac{(e_1 + e_2)^2}{2}$, while the marginal environmental damage is represented by $MED = e_1 + e_2$. To address pollution, the government fixes a tax of t on every unit of emissions, resulting in a total tax revenue of $T = t(e_1 + e_2)$. Therefore, the profit function π_i for hotel H_i is given by

$$\pi_i = p_i q_i - \frac{1}{2} q_i^2 - t e_i - \frac{1}{2} a_i^2. \quad (7.1)$$

Social welfare W is determined by the relationship

$$W = CS + \pi_1 + \pi_2 + T - ED, \quad (7.2)$$

with $CS = \frac{1}{2}(q_1 + q_2)^2$ being the consumer surplus. Ownership of the PSO hotel is partially held by the government, with a share of $(1 - \alpha) \in [0, 1]$. The PSO hotel H_1 aims to maximize a weighted average of social welfare and its own profit, with its objective function given by

$$V = \alpha \pi_1 + (1 - \alpha) W \quad (7.3)$$

(Matsumura, 1998; Han & Ogawa, 2015). When $\alpha = 1$, the hotel operates as a fully private entity, with the manager focused on maximizing profits. Conversely, if $\alpha = 0$, the hotel is fully nationalized, and the manager's objective shifts to maximizing social welfare. Hotel H_2 operates with the objective of maximizing its profit

$$\pi_2 = p_2 q_2 - \frac{1}{2} q_2^2 - t e_2 - \frac{1}{2} a_2^2. \quad (7.4)$$

We analyze two policy approaches: (i) committed and (ii) non-committed. In both scenarios, the model unfolds as a five-stage game.

In the committed policy approach, the game unfolds in these steps:

- In the first stage, the government sets the level of privatization of the partially state-owned hotel.
- In the second stage, the welfare-maximizing regulator fixes the environmental tax.
- In the third stage, PSO hotel chooses abatement pollution investments.
- In the fourth stage, PM hotel sets abatement pollution investments.
- In the fifth stage, both hotels simultaneously and independently decide on the number of rooms they will offer for rent to guests.

In the non-committed policy approach, the game unfolds in these steps:

- In the first stage, the government sets the level of privatization of the partially state-owned hotel.
- In the second stage, PSO hotel chooses abatement pollution investments.
- In the third stage, PM hotel sets abatement pollution investments.
- In the fourth stage, the welfare-maximizing regulator fixes the environmental tax.
- In the fifth stage, both hotels simultaneously and independently decide on the number of rooms they will offer for rent to guests.

To find the subgame perfect Nash equilibrium, we will solve the game using backward induction. This method involves determining the equilibrium values sequentially, starting from the final stage and working backward to the first.

This study contributes to the field by exploring a market situation not yet addressed in the literature.

7.3 Results I: The Committed Policy Regime

In the fifth stage, the PSO hotel H_1 determines the output q_1 to maximize V , and the PM hotel H_2 determines the output q_2 to maximize π_2 . Solving the system

$$\begin{cases} \frac{\partial V}{\partial q_1} = 0 \\ \frac{\partial \pi_2}{\partial q_2} = 0 \end{cases},$$

yields the equilibrium

$$q_1 = \frac{1 + \alpha + 3(1 - \alpha)(p_1 + p_2) + 2(1 - 2\alpha)t}{7 + \alpha}, \quad q_2 = \frac{2 - (1 - \alpha)(p_1 + p_2) - (3 - \alpha)t}{7 + \alpha} \quad (7.5)$$

Now, at fourth stage, we use eqs. (7.5) into (7.3), and solve $\frac{\partial \pi_2}{\partial a_2} = 0$, which gives

$$a_2 = \frac{2\left(3(1-\alpha) - (29 + \alpha + 2\alpha^2)t\right) - 3a_1(1-\alpha)^2}{2(\alpha^2 - 10\alpha - 23)}. \quad (7.6)$$

At third stage, using eqs. (7.5) and (7.6) into V , we compute $\frac{\partial V}{\partial a_1} = 0$, that yields

$$a_1 = \frac{2\left((1-\alpha)(632 + 398\alpha + 75\alpha^2 - 16\alpha^3 - \alpha^4) - f_1(\alpha)t\right)}{4036 + 1557\alpha - 908\alpha^2 - 578\alpha^3 - 11\alpha^5}, \quad (7.7)$$

where $f_1(\alpha) = 1494 - 1437\alpha - 1555\alpha^2 - 549\alpha^3 + 9\alpha^4 - 10\alpha^5$.

Therefore,

$$a_2 = \frac{3(1-\alpha)(148 + 41\alpha - 47\alpha^2 - 13\alpha^3 - \alpha^4) - 2f_2(\alpha)t}{4036 + 1557\alpha - 908\alpha^2 - 578\alpha^3 - 11\alpha^5}, \quad (7.8)$$

where $f_2(\alpha) = 2447 + 294\alpha - 568\alpha^2 - 130\alpha^3 + 9\alpha^4 - 4\alpha^5$.

At second stage, using eqs. (7.7) and (7.8) into W , we compute $\frac{\partial W}{\partial t} = 0$, that yields¹

$$t^C = \frac{f_3(\alpha)}{f_4(\alpha)},$$

where

$$f_3(\alpha) = 8346448 - 414696\alpha - 1490239\alpha^2 + 5633114\alpha^3 + 5146694\alpha^4 \\ + 1479474\alpha^5 + 232808\alpha^6 - 58098\alpha^7 + 874\alpha^8 - 1970\alpha^9 - 41\alpha^{10}$$

$$f_4(\alpha) = 44525152 + 2213520\alpha + 9064223\alpha^2 + 43280564\alpha^3 + 33034088\alpha^4 \\ + 10441764\alpha^5 + 1995134\alpha^6 + 88284\alpha^7 + 62128\alpha^8 - 1988\alpha^9 + 619\alpha^{10}$$

As a result, the other equilibrium values now stand at

$$q_1^C = \frac{f_5(\alpha)}{f_4(\alpha)},$$

¹Throughout the paper we use the notation superscript C to refer to the committed policy regime.

where

$$f_5(\alpha) = 6(2385276 - 914481\alpha + 539754\alpha^2 + 1982778\alpha^3 + 1177010\alpha^4 + 108336\alpha^5 - 24162\alpha^6 - 16490\alpha^7 + 5370\alpha^8 - 591\alpha^9 + 80\alpha^{10}),$$

$$q_2^C = \frac{f_6(\alpha)}{f_4(\alpha)},$$

where

$$f_6(\alpha) = 6(7 + \alpha)(173548 + 39613\alpha + 52404\alpha^2 + 196885\alpha^3 + 137154\alpha^4 + 46377\alpha^5 + 8512\alpha^6 + 731\alpha^7 + 126\alpha^8 + 10\alpha^9),$$

$$a_1^C = \frac{f_7(\alpha)}{f_4(\alpha)},$$

where

$$f_7(\alpha) = 2(3882632 - 607482\alpha + 2455279\alpha^2 + 2902684\alpha^3 + 850570\alpha^4 + 32124\alpha^5 - 93236\alpha^6 + 10716\alpha^7 + 2822\alpha^8 + 1094\alpha^9 - 19\alpha^{10}),$$

$$a_2^C = \frac{f_8(\alpha)}{f_4(\alpha)},$$

where

$$f_8(\alpha) = 5222584 + 1996134\alpha - 1720477\alpha^2 + 3032456\alpha^3 + 6221852\alpha^4 + 3113460\alpha^5 + 914378\alpha^6 + 81960\alpha^7 + 11764\alpha^8 + 118\alpha^9 + 139\alpha^{10}.$$

At the initial stage, the government determines the extent of privatization for the partly state-owned hotel. Solving $\frac{\partial W}{\partial \alpha} = 0$, it results that there exists $\alpha_0^C \in (0.34, 0.35)$, such that

$$\frac{\partial W^C}{\partial \alpha} \begin{cases} > 0, \alpha \in (0, \alpha_0^C) \\ < 0, \alpha \in (\alpha_0^C, 1) \end{cases} \quad (7.9)$$

Based on (Eq. 7.9), we derive one of the key findings of this paper.

Proposition 1. From a social welfare standpoint, the committed policy regime implies that the government should not fully privatize or fully nationalize.

Thus, considering what's best for society, and given the existing, relatively fixed rules and practices the government is operating under, the analysis suggests that the optimal level of government involvement in the (presumably partially state-owned hotel) is somewhere in between complete private ownership and complete state ownership. Neither extreme is predicted to yield the best social welfare outcomes under these specific conditions. The “committed policy regime” likely creates a context where a mix of public and private involvement, or a specific degree of partial privatization, strikes a better balance for social welfare than extreme. This could be due to factors within the regime that influence market dynamics, the distribution of benefits, or the government's ability to regulate effectively under different ownership structures.

Based on the derived equilibrium values of the decision variables, it follows that

$$\frac{\partial t^c}{\partial \alpha} < 0, \frac{\partial q_1^c}{\partial \alpha} < 0, \frac{\partial q_2^c}{\partial \alpha} < 0,$$

$$\frac{\partial ED^c}{\partial \alpha} \begin{cases} < 0, \alpha \in [0, \alpha_1) \cup (\alpha_2, 1] \\ > 0, \alpha \in (\alpha_1, \alpha_2) \end{cases}, \alpha_1 \in (0.49, 0.50), \alpha_2 \in (0.96, 0.97).$$

Hence, we present the following result.

Proposition 2. Under the committed policy regime, the privatization level of the PSO hotel exhibits the following relationships: it negatively correlates with the environmental tax rate and the number of rooms offered by the PSO hotel, while positively correlating with the number of rooms offered by the PM hotel. Additionally, the impact of PSO hotel privatization on total environmental damage is ambiguous, potentially leading to either an increase or a decrease.

The previous finding can be interpreted as follows: a higher degree of PSO hotel privatization likely results in a lower environmental tax burden, possibly due to the operational advantages of private management or successful lobbying efforts. Simultaneously, privatizing the PSO hotel appears to cause a decrease in its available rooms, perhaps driven by profit-maximizing strategies. On the other hand, the growth in PSO hotel privatization seems to incentivize PM hotels to increase their room capacity, suggesting a competitive dynamic at play.

7.4 Results II: The Non-committed Policy Regime

In the non-committed policy regime, the fifth stage is identical to the one described above. The fourth stage involves the government's decision on the environmental tax rate. The goal is to choose the rate that maximizes social welfare W . To find this optimal rate, we substitute the previously derived results from (Eq. 7.5) into the

social welfare function (Eq. 7.2), and then solve the first-order condition for maximization, $\frac{\partial W}{\partial t} = 0$. This calculation yields the optimal environmental tax rate

$$t = \frac{1 - 4(a_1 + a_2)}{5}. \quad (7.10)$$

We see that hotels possess a strategic lever over their environmental tax burden: by proactively investing in emission reduction technologies, they can expect a reduction in their environmental tax obligations.

In the third stage, PM hotel chooses its abatement efforts. Substituting (Eqs. 7.5 and 7.10) into the profit function π_2 , the first-order condition $\frac{\partial \pi_2}{\partial a_2} = 0$ leads to the abatement level

$$a_2 = \frac{8 - 17a_1}{62}. \quad (7.11)$$

Now, in the second stage, PSO hotel chooses its abatement efforts. Substituting (Eqs. 7.5, 7.10, and 7.11) into the objective function V , the first-order condition $\frac{\partial V}{\partial a_1} = 0$ leads to the abatement level²

$$a_1^{NC} = \frac{2(518 - 143\alpha)}{5348 + 2717\alpha}.$$

Thus,

$$a_2^{NC} = \frac{406 + 429\alpha}{5348 + 2717\alpha}.$$

As a result, the other equilibrium values now stand at

$$t^{NC} = \frac{3(143\alpha - 28)}{5348 + 2717\alpha}, q_1^{NC} = q_2^{NC} = \frac{2(679 + 286\alpha)}{5348 + 2717\alpha}.$$

At the initial stage, the government determines how much of the partially state-owned hotel will be privatized. Solving $\frac{\partial W}{\partial \alpha} = 0$, we get $\alpha = 0$. So, we state the following result.

Proposition 3. From a social welfare standpoint, the non-committed policy regime implies that the government should fully nationalize.

²Throughout the paper we use the notation superscript NC to refer to the non-committed policy regime.

The preceding result suggests that if governments cannot credibly commit to future policies (taxes, regulations, subsidies), private firms may distrust them and act inefficiently. To avoid this welfare loss, full nationalization of key sectors, with the government handling ownership and investment, might be the best solution.

The analysis of the preceding result reveals that

$$\frac{\partial t^{NC}}{\partial \alpha} > 0, \frac{\partial q_i^{NC}}{\partial \alpha} < 0 (i = 1, 2), \frac{\partial ED^C}{\partial \alpha} > 0.$$

Hence, we present the following result.

Proposition 4. In the non-committed policy regime, greater privatization of the PSO hotel leads to a higher environmental tax rate and fewer rooms offered by both PSO and PM hotels. Moreover, as the PSO hotel becomes more privatized, total environmental damage rises.

The implication of the previous result is that privatized hotels may increase their environmental impact through their activities or expansion, potentially prompting the government to respond with higher taxes. This contrasts sharply with the committed policy regime and highlights the risk that a focus on financial performance under privatization could lead to increased environmental degradation.

7.5 Results: Comparisons

Now, we compare the outcomes we found for the committed and non-committed policy regimes.

Through straightforward calculation, we find that

$$t^C - t^{NC} > 0, ED^C - ED^{NC} < 0, W^C - W^{NC} \begin{cases} < 0, \alpha \in [0, \alpha_1) \\ > 0, \alpha \in (\alpha_1, 1] \end{cases}, \text{ where } \alpha_1 \in (0.31, 0.32),$$

thereby producing the following results:

Proposition 5. Although the committed policy regime levies a steeper environmental tax than the non-committed one, it leads to less overall environmental harm. Interestingly, the difference in social welfare between the two regimes is not consistent; it can be positive or negative depending on the degree of PSO hotel privatization.

The previous result can be interpreted as follows. The committed regime effectively reduces environmental damage by imposing higher taxes. However, its impact on social welfare is complex and inconsistent, as it depends on external factors like the level of PSO hotel privatization. This highlights the intricate balance between

environmental objectives, economic impacts, and societal well-being in policy design.

The fact that the difference in social welfare between committed and non-committed regimes varies with the degree of PSO hotel privatization is a critical insight. This suggests there's no "one-size-fits-all" answer. Policymakers can't simply assume that a committed environmental policy will always lead to greater social welfare during privatization. Instead, they must carefully consider:

- The specific level of privatization being pursued: Different levels of state ownership retention might interact differently with environmental policy commitment and affect social welfare.
- The broader economic and social context: Factors beyond environmental harm and hotel profit will influence overall social welfare.

In essence, policymakers navigating privatization in high-stakes sectors like tourism face a delicate balancing act. While a firm commitment to environmental taxation appears beneficial for the environment, they need to conduct detailed analyses specific to the degree of privatization planned to understand the full impact on social welfare. This calls for a tailored approach rather than a blanket policy, ensuring that privatization efforts genuinely serve both environmental protection and broader societal well-being.

7.6 Conclusions

This paper delved into the interconnectedness of environmental taxation, investments in pollution reduction, and the privatization of a partly government-owned hotel. Our analysis highlights the nuanced ways these elements influence both environmental quality and societal welfare. Specifically, our model posits that each hotel has the capacity to invest in lowering its pollution output, and we examined the crucial role of the government's commitment timeline for environmental tax policy on these investment decisions.

The study indicates that without firm policy commitments, increased privatization tends to lead to greater environmental damage, potentially because private entities focus on profitability at the expense of sustainability. However, the outcome under committed policies is less clear. This analysis emphasizes that policymakers must carefully consider the interplay between privatization and environmental regulation. They need to develop tax policies that not only discourage environmentally damaging behavior but also take into account the economic ramifications for businesses and society.

Balancing the advantages of privatization with the essential need for robust environmental regulations is a key challenge for policymakers. They must develop tax structures that simultaneously disincentivize environmentally damaging behavior and acknowledge the resulting economic impacts on both businesses and the community.

Acknowledgements This work was supported by national funds through FCT/MCTES (PIDDAC): UID/04752, Applied Management Research Unit (UNIAG).

References

- Chen, X., & Peng, Q. (2016). A content analysis of corporate social responsibility: Perspectives from China's top 30 hotel-management companies. *Hospitality & Society*, 6(2), 153–181.
- Dong, Q., Bárcena-Ruiz, J. C., & Garzón, M. B. (2019). Privatization and environmental policy in a mixed oligopoly. *Estudios de Economía*, 46(2), 173–190.
- Egypt Today. (2023). <https://www.egypttoday.com/Article/3/129289/ICON-acquires-majority-stake-in-7-hotels-as-part-of>. Accessed 3 Mar 2025.
- Ferreira, F. A., & Ferreira, F. (2013). Privatization in a mixed duopoly with environmental taxes. *AIP Conference Proceedings*, 1558, 1558–1561.
- Ferreira, F., & Ferreira, F. A. (2025). Partial state ownership in the hospitality industry. In V. Katsoni & C. Costa (Eds.), *Innovation and creativity in tourism, business and social sciences* (pp. 365–376). Springer Proceedings in Business and Economics.
- Ferreira, F., Ferreira, F. A., & Fernandes, P. O. (2022). Committed and non-committed policy regimes in a sequential mixed hotel duopoly. In V. Katsoni & A. C. Şerban (Eds.), *Transcending borders in tourism through innovation and cultural heritage* (pp. 91–103). Springer.
- Franzoni, S., Sarwar, H., & Ishaq, M. (2021). The mediating role of HRM in the relationship between CSR and performance in the hospitality industry. *Sustainability*, 13(24), 13699.
- Further Africa. (2024). <https://furtherafrica.com/2024/01/17/angola-authorizes-privatization-of-39-hotels/>. Accessed 3 Mar 2025.
- Han, L. H. & Ogawa, H., 2015. The relationship between privatization and regulation on foreign investment policies. *Theoretical Economics Letters*, 5, 97–102.
- Haruna, S., & Goel, R. K. (2019). Optimal pollution control in a mixed oligopoly with research spillovers. *Australian Economic Papers*, 58(1), 21–40.
- Ioannidis, A., Chalvatzis, K., Leonidou, L., & Feng, Z. (2021). Applying the reduce, reuse, and recycle principle in the hospitality sector: Its antecedents and performance implications. *Business Strategy and the Environment*, 30(7), 3394–3410.
- Jornal de Negócios. (2025). <https://www.jornaldenegocios.pt/empresas/detalhe/governo-angolano-anuncia-privatizacao-de-hoteis-das-redes-iu-e-bina>. (in Portuguese). Accessed 11 Apr 2025.
- Leal, M., Garcia, A., & Lee, S.-H. (2018). The timing of environmental tax policy with a consumer-friendly firm. *Hitotsubashi Journal of Economics*, 59(1), 25–43.
- Matsumura, T. (1998). Partial privatization in mixed duopoly. *Journal of Public Economics*, 70, 473–483.
- Ouattara, K. S. (2019). Pollution abatement and partial privatization. *Economics Bulletin*, 39(3), 1887–1897.
- Pal, R., & Saha, B. (2015). Pollution tax, partial privatization and environment. *Resource and Energy Economics*, 40, 19–35.
- Wang, L. F. S., & Wang, J. (2009). Environmental taxes in a differentiated mixed duopoly. *Economic Systems*, 33(4), 389–396.
- World Tourism Organization. (2015). *Affiliate members global reports, Volume eleven – Public-Private Partnerships: Tourism Development*. UNWTO. https://catedratim.wordpress.com/wp-content/uploads/2017/01/omt-2015-global_report_public_private_partnerships_tourism_development.pdf
- Xing, M. Q., Tan, T. T., Xia, W., & Liu, L. L. (2020). Environmental R&D and privatization in a mixed duopoly market. *Managerial and Decision Economics*, 41(1), 93–105.

Xing, M., Yang, L., Tan, T., Wang, X., Li, Q., & Wang, B. (2022). Environmental taxes and the effects of partial privatization on environmental R&D, environment and welfare. *Economic Research-Ekonomska Istraživanja*, 35(1), 5164–5183.

Xu, L., Cho, S., & Lee, S.-H. (2016). Emission tax and optimal privatization in Cournot-Bertrand comparison. *Economic Modelling*, 55, 73–82.

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