

Local Governance Arrangements and Waste Collection Services in Portuguese Municipalities

PhD in Administrative Sciences – University of Minho

Advisor: Prof. Marco Antonio Catussi Paschoalotto

Student: Hamsa Ali



Research Background



- ▶ Waste management is a critical public governance challenge requiring effective institutional arrangements and stakeholder coordination (UNEP, 2018; Rodic & Wilson, 2017).
- ▶ Portuguese municipalities use diverse governance arrangements.
- ▶ Public and private delivery models show different strengths and weaknesses.
- ▶ Need to balance efficiency, sustainability, and accountability.

Research Problem

- ▶ Economic and political factors shape governance decisions.
- ▶ How these governance arrangements affect service performance. Municipalities use different governance arrangements for waste collection (Tavares & Camões, 2010).
- ▶ Limited empirical studies examine Portuguese municipal waste governance.
- ▶ Need to evaluate performance implications of governance models.



Municipalities face increasing pressure to deliver high-quality waste collection services under financial constraints.



However, there is limited empirical evidence on how economic and political factors shape governance choices and performance.



Research Questions

Main Question:

- ▶ Evidence regarding performance differences remains inconclusive (Bel & Warner, 2008)
- ▶ How do governance arrangements influence waste collection performance?

Sub- Research Question:

- ▶ Q1: What political and economic factors influence the selection of governance arrangements in Portuguese municipalities?
- ▶ Q2: To what extent do transaction and agency costs mediate the governance–performance relationship?



Theoretical Framework



- ▶ Governance structures are selected to minimize transaction costs associated with service delivery (Williamson, 1985; Riordan & Williamson, 1985).
- ▶ Information asymmetry between principals and agents can affect service performance and monitoring effectiveness (Jensen & Meckling, 1976; Eisenhardt, 1989).
- ▶ Political Transaction Costs highlight electoral and political incentives.
- ▶ Governance structures affect monitoring, coordination, and accountability.



Hypothesis

- ▶ H 1: Local governments exhibit a stronger commitment to governance arrangements when they have a sustained history of positive performance outputs. (Williamson, 1985; Bel & Warner, 2008).
- ▶ H2: In local governments, the political influence strongly affects the likelihood of engaging in governance arrangements. (Boyne, 1998; Tavares & Camões, 2010).
- ▶ H3: Political influence moderates the governance–performance relationship by enhancing accountability and transparency. (Jensen & Meckling, 1976; Eisenhardt, 1989).



Portuguese Waste Sector Governance

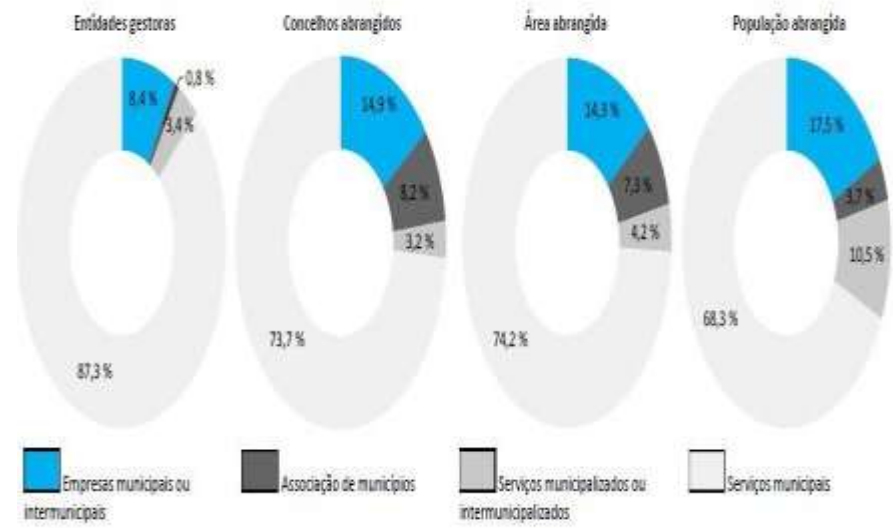
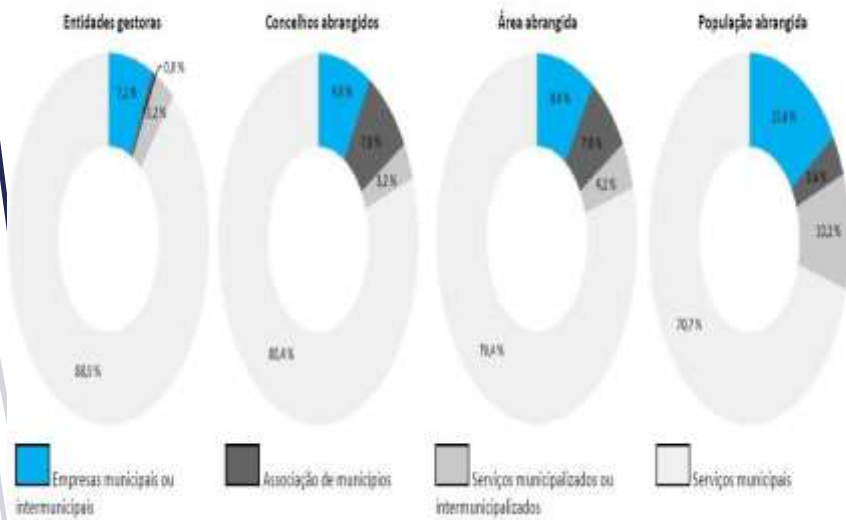
- ▶ 83% municipalities served by direct municipal management.
- ▶ Sector divided into retail collection and wholesale treatment.
- ▶ Regulated under centralized oversight.
- ▶ Governance models include direct, delegated, and concession management.



Governance Models

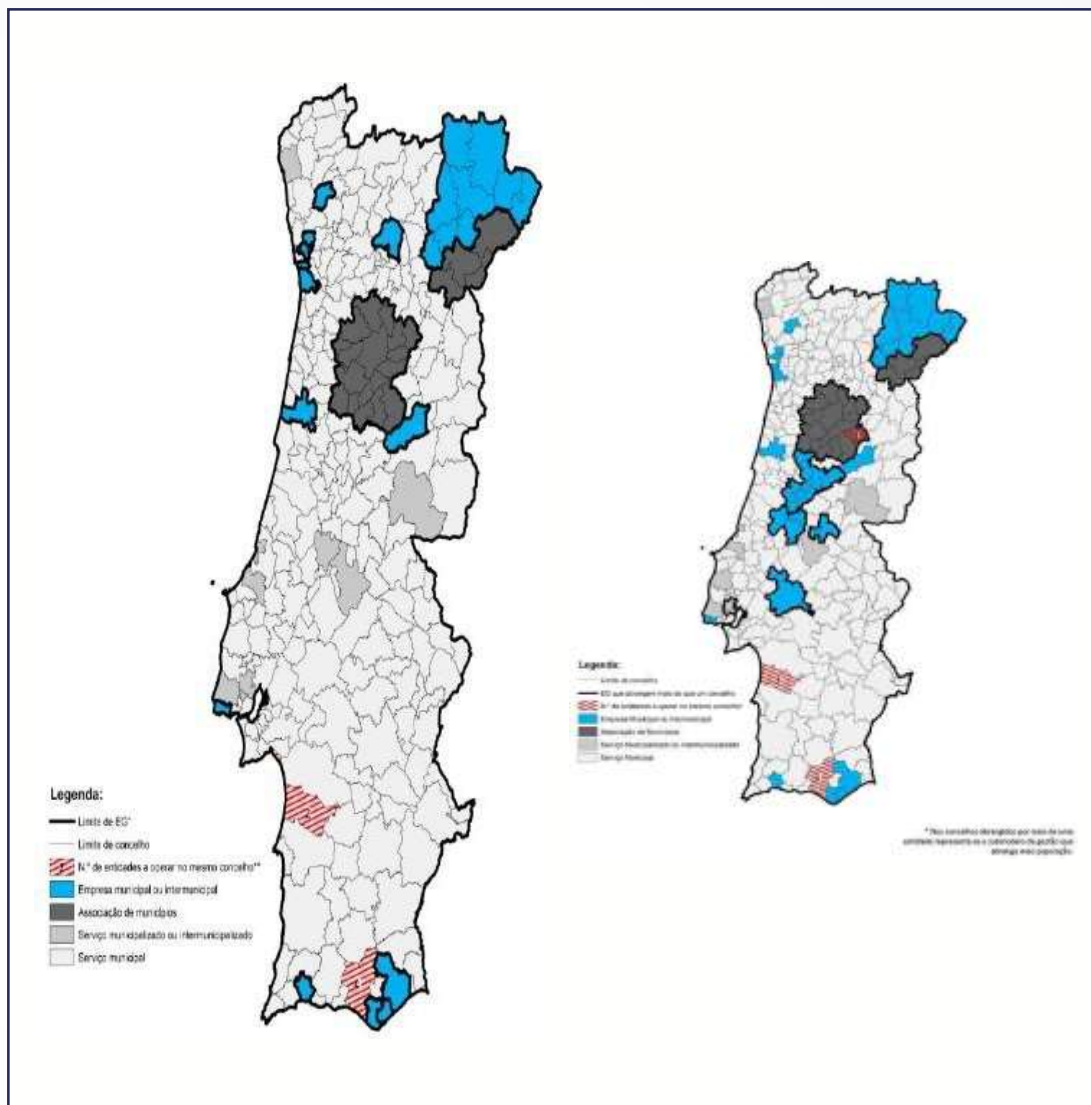


- ▶ **Direct Management:** Performed by municipal departments, characterized by administrative control and limited financial autonomy.
- ▶ **Delegated Management:** Services provided by public or mixed companies under contract, often involving performance targets.
- ▶ **Concession Model:** Long-term contracts granted to private companies, emphasizing efficiency and innovation but requiring strong regulatory monitoring.



Mainland

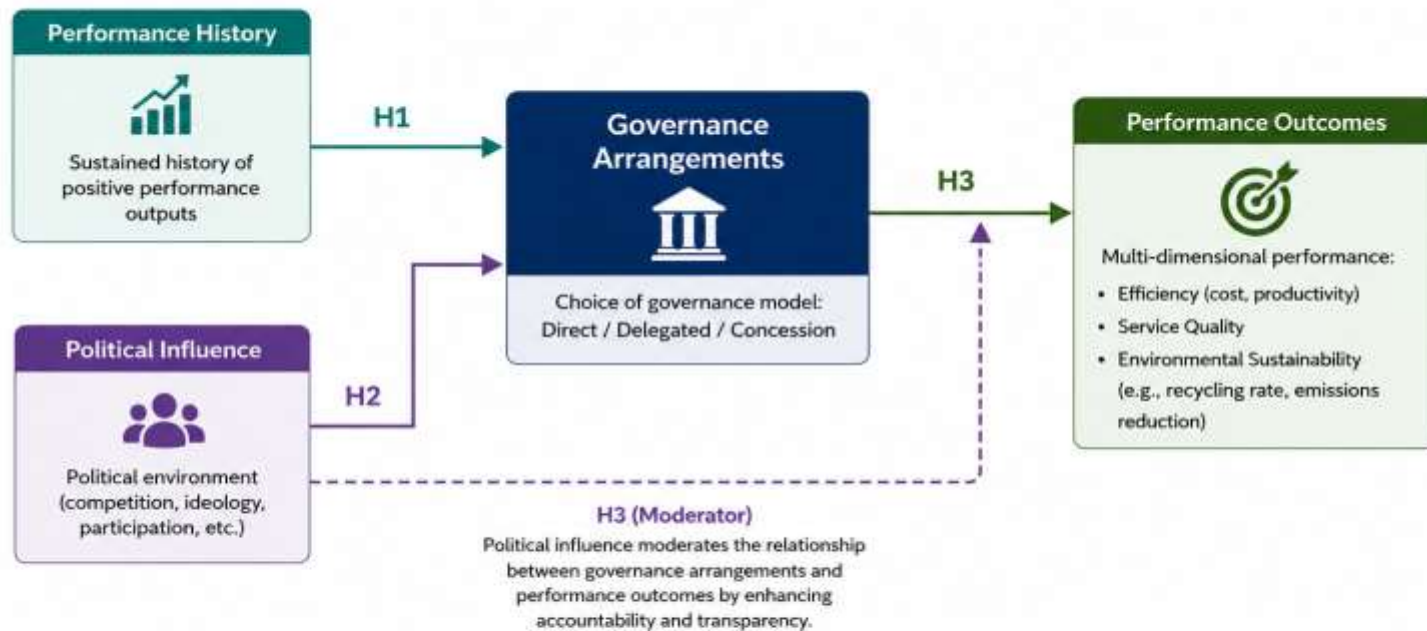
➔ 2024 - 2020



Conceptual Framework

Conceptual Framework and Hypotheses

Determinants and Consequences of Governance Arrangements in Municipal Waste Collection Services



Hypotheses

- H1:** Local governments exhibit a stronger commitment to governance arrangements when they have a sustained history of positive performance outputs.
- H2:** In local governments, the political influence strongly affects the likelihood of engaging in governance arrangements.
- H3:** Political influence moderates the governance–performance relationship by enhancing accountability and transparency.

Notes:

- Direct effect
- - - → Moderating effect

H1, H2, H3: Hypothesized relationships



Methodology



- ▶ Quantitative analysis using regression techniques.
- ▶ Software: Stata.
- ▶ Data collected from Portuguese municipalities (2018–2024).

Empirical Research Design

Model	Dependent variable	Independent variables
Model A: governance choice	Governance arrangement category in municipality-year.	Financial autonomy, political influence, political ideology, population, density, tourism, waste volume.
Model B: performance	Waste collection psub-indices: cost, quality, accessibility, environmental sustainability and performance indexes	Governance arrangement, financial variables, transparency, accountability, political competition, controls, year effects.

Empirical Research Design

► Governance Model:

$\beta_0 + \beta_1 \text{ financial autonomy} + \beta_2 \text{ political influence} + \beta_3 \text{ population} + \beta_4 \text{ density} + \beta_5 \text{ tourism} + \beta_6 \text{ waste volume} + \delta_d + \varepsilon_i$.

Performance Model:

► $\text{PerformanceIndex}_{it} = \beta_0 + \beta_1 \text{GovernanceArrangement}_{it} + \beta_2 \text{FinancialVariables}_{it} + \beta_3 \text{TransparencyAccountability}_{it} + \beta_4 \text{PoliticalCompetition}_{it} + \gamma \text{Controls}_{it} + \lambda_t + \varepsilon_{it}$



Performance Indicators



- ▶ Cost efficiency (Cobertura dos gastos): This indicator measures the extent to which operational costs are covered by revenues and reflects financial efficiency and sustainability.
- ▶ Service quality captures the reliability and responsiveness of waste collection services from the user's perspective.
- ▶ Environmental Sustainability: It captures the extent to which waste collection services contribute to environmental policy goals.

Preliminary Results: Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max
Circularity Index	26.33	15.80	0.00	72.00
Tariff Revenues (€ / year)	2,007,045	3,899,377	0	36,152,415
Other Revenues (€ / year)	230,700	456,603	0	3,366,199
Investment Subsidies (€ / year)	40,575	248,338	0	3,569,191
Total Expenses (€ / year)	3,243,398	6,527,602	229,155	72,531,400
Annual Tariff Charges (€ / year)	79.83	34.68	0	196.07
Average Household Disposable Income (€ / year)	37,449	7,575	22,374	75,146



Expected Contributions



- ▶ Provides integrated analysis of governance and performance.
- ▶ Explains causal links between governance and waste service outcomes.
- ▶ Supports policymakers in selecting efficient governance models.
- ▶ Contributes to public administration and local governance literature.



Conclusion



- Governance arrangements strongly influence waste service performance.
- Political and economic contexts shape municipal decision-making.
- Efficient governance requires balancing accountability and cost efficiency.
- Study offers guidance for future waste sector reforms in Portugal.