

# BENCHMARKING LOCAL PUBLIC TRANSPORT AND APPLICATION TO ITALY

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**CRIS**



# Agenda

1. Main features of the Italian LPT
2. The economics of the Italian LPT
3. Findings about “economies of scale” and scope
4. Efficiency-Benchmarking by standard costs?
5. Benchmarking and undesirable outputs
6. Key takeaways

# 1. Main features of the Italian LPT

At present, in Italy the main features of LPT<sup>1</sup> by bus are:

- **a large number of firms in the urban sector:** 850 were active in 2016 (1,230 in 2000); 25% of them provides only urban services, more than 50% provides only extra urban services, the remaining part offer both urban and extraurban services;
- **a strong prevalence of publicly-owned firms**, especially in the urban sector; private companies provide less than 20% of LTS<sup>2</sup>, in small towns or for non-urban services;
- **only 10,5% of the above mentions LPTs have more than 100 employees**, while only 20 more than 1000; fragmentation is especially high in Southern Italy;
- **few foreign companies**, mainly in the North;
- **Concentration of losses and subsidies:** despite very high subsidies, more than 20% of the operators carry out losses (Atac and Cotral accounting for 70% of annual deficits.)

## 2. The economics of the Italian LPT

- **Public subsidies for the public services** (operating costs) in Italy amounts to 2.4 euro/km, whereas in France it is 2.2 euro/km, in Spain 1.7 euro and in Germany only 0.9 euro.
- **Unit production cost** in the larger Italian urban areas is above 5.5 €/bus-km (Sweden 3.4 and in the British metropolitan areas (London excluded) 2.5. All cost components are higher in Italy, but the **unit labor cost** in Italy is almost double of that of Sweden and the UK.
- **Services supply exceeds demand** (0.6 passengers/km versus 2.8 places/km; France 0.8 versus 1.9 and in Spain 1.2 v. 2.7 ). The load factor is 22% ( 28% in the UK, 42% in France and 45% in Germany).

The importance of benchmarking is clear, hence what is the minimum efficient size? What is an acceptable operational cost?

# 3. Economies of scale (ES) and scope

The topic has been investigated in the below publications:

- *fraquelli, piacenza, abrate* (2004): distinguishes between specialized operators (in urban or intercity service) and integrated companies (multi services), and evidences lower costs for the latter.
- *cambini, piacenza, vannoni* (2007): given a set of medium and large Italian municipalities, find evidence of ES in most cases, suggesting operations without fragmentation of the service. Mergers between operators of neighboring cities or between suppliers of urban and intercity transit services would be desirable in order to reduce operating costs.
- *di giacomo and ottoz* (2010): for multi-service LPT companies highlights very mild scope economies (around 2%) between urban and intercity services. In 2012, analyzing LPT in Piedmont, they show the presence of SE<sup>1</sup> for the median firm ranging between 16% and 30%. Lower SE for large sizes.
- *abrate, erbetta, fraquelli, vannoni* (2016): includes in the analysis also hired coach and find that the average firm exhibits constant returns to S and absence of SE. Small multi-service firms, however, may benefit from cost reductions. As the size increases, the cost savings survive only for the intercity bus service.

## 4. Efficiency-Benchmark by standard costs?

.....further investigations are required (1 of 2)

- The government<sup>1</sup> supports a standard cost approach obtained as the sum of the cost of the different activities and materials that contribute to generate the output: the cost of driving, depots and movement personnel, the cost of fuel, maintenance, depreciations, administrative costs and the cost of capital<sup>2</sup>
- Summarizing the results:
  - **the commercial speed is indicated as the most important driver of the unit cost and the relationship assumes an L-shape.**
  - **Important positive correlation between the unit cost *per bus-Kilometre* and the investments in bus fleet and provision of the service.**

## 4. Efficiency-Benchmark by standard costs?

.....further investigations are required (2 of 2)

- I agree about the cost drivers but I have concern about the way the costs are measured and about the methodological approach:
  1. **Link questionnaire balance sheet:** We need a relationship between the questionnaire and the balance sheet of the firms.
  2. **Econometric methods:** The unit cost per bus kilometre is a partial productivity measure and the standard economic approach, to verify if the firms operate in an efficient manner, is to estimate a cost function using econometric methods, or a non -parametric methods.

## 5. Benchmarking and undesirable outputs

- Traditional Efficiency measure: positive output (e.g. vehicles KM, passengers km) / inputs (material, labour, energies..)
- Distortion in benchmarking:
  - Bad outputs are not considered
  - Both good and bad outputs are generated, for example: The increase of the vehicle-KM represents a desirable output, but implies more maintenance<sup>1</sup>.
  - Reduce such issues it is expensive. The phenomenon can be regulated by various constraints but it is challenging to produce complete contracts able to completely avoid any opportunistic behaviour.

Bad output must be considered and the right methodological approach need to make use of “directional output distance function”<sup>2</sup>

## 6. Key takeaways

1. Make use in practice of quantitative benchmarking as tool to assist the policymaker, moving from theory to the practice
2. Improve the quality and reliability of the data
3. Start to consider the role played by the negative outputs in the benchmarking exercise