Modeling integrated policies to reduce road congestion through the concept of "Share Responsibility"

Summary

The primary objective of this research is to contribute to the improvement of normative pricing policies to mitigate congestion, either through its better adaptation to the concept of ideal social choices or through the enlargement of the mechanisms (or margins) available to analyze the causes and effects of road congestion.

To fulfill this objective, an approach that aims to identify the most appropriate congestion control policies for each case is proposed. This approach is developed through two principal axes. The first one corresponds to the sharing of responsibilities in the definition of the most appropriate normative solution to identify the correct social choices. The second axle defines the most appropriate share of responsibilities through the mix of mechanisms and their stakeholders that, directly or indirectly, cause urban congestion.

This framework, named here as the *Shared Responsibility Approach*, aims to be an original contribution to the study and integrated analysis of congestion, its genesis and mitigation mechanisms. Its operationalization is based on the paradigm of the minimization of the error of social evaluation, also proposed in this work, which consists on the identification of the most appropriate solutions on the *Shared Responsibility* space, through the minimization of its error regarding the ideal social choices.

To carry out a first corroboration of the *Shared Responsibility* hypothesis a set of partial tests is presented, and the study of an abridged urban case is implemented. The case study is developed in the Lisbon Metropolitan Area, through several road access corridors to the city of Lisbon during the rush hour of a typical weekday and is based on actual traffic data.

Keywords

Congestion, externalities, pricing, social choices, Shared Responsibility.

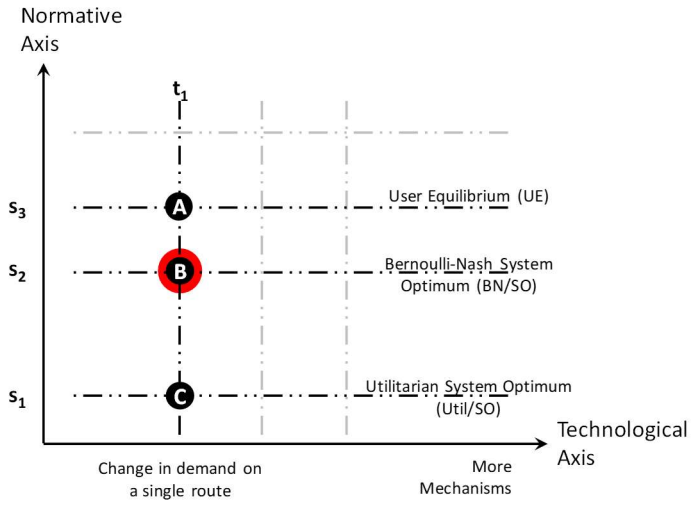
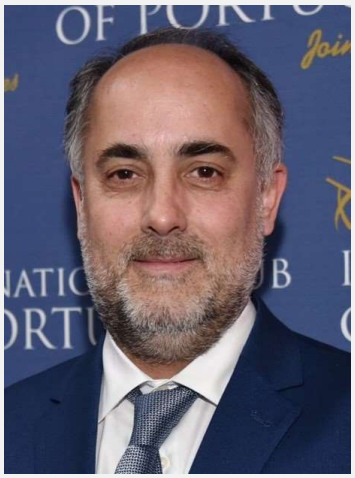


Diagram of Shared Responsibility for the variation of demand on one route and three normative principles - EU, OS / BN and OS / Util.



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