



# Fairness, efficiency and the simultaneity of pricing and infrastructure capacity choice

Andreas Kopp <sup>1\*</sup>

<sup>1</sup> *OECD/ECMT Transport Research Centre  
2, rue André Pascal  
75016 Paris  
FRANCE*

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## Abstract

The primary objective of infrastructure pricing in normative economics and policy discussions is economic efficiency. This focus has led to the proposal that charges for infrastructure use should be based on all internal and external marginal costs associated with the use of infrastructure services. Distributional considerations, of the “fairness” of infrastructure pricing often played a supplementary role to help the acceptance of infrastructure charging.

This paper sets out a simple framework for a quasi-market for infrastructure services with the perspective of simultaneously determining efficient prices and levels of infrastructure investment. It is shown that, depending on the intensity of infrastructure use, revenues generated by efficient prices do not in all cases cover the full costs of the services. Efficient cost recovery requires an additional fixed charge. Such a combination of a fixed charge and an efficient price per unit of service implies a distributional conflict if users differ substantially in their demand for infrastructure services. It is shown that methods to allocate fixed costs resolve this conflict applying standard norms of distributional justice and being compatible with a bargaining equilibrium among heterogeneous infrastructure users.

*Keywords:* Infrastructure pricing; Infrastructure investment; Cost recovery; Fairness.

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## 1. Introduction

This paper discusses the conflict between allocative efficiency and “fairness” that arises from an optimal decentralized provision of infrastructure services. Pricing of infrastructure services and the notion of “fairness” is narrower than in current policy discussions (Commission of the European Communities, 1998). The paper starts out by focussing on the problem of efficiently providing infrastructure services for high levels of congestion and a homogeneous population of prospective users (Starrett, 1988, for

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\* Corresponding author: Andreas Kopp (Andreas.Kopp@oecd.org.)