

The Hong Kong Polytechnic University
Department of Logistics and Maritime Studies
Research Seminar

Congestion and Incentives in the Age of Driverless Cars

by

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The Hong Kong Polytechnic University

(Conducted in English)

Abstract:

Autonomous Vehicles (AVs) and GPS systems are bound to open the way to forms of traffic centralization. Fleets will gain prominence over private vehicles, with a dramatic impact on congestion externalities. We analyze the welfare effects of moving from a fully decentralized environment, in which all travelers are atomistic and do not internalize the congestion externality, to a centralized environment where all travelers are managed with a profit-maximizing firm managing the entire traffic. In our setting, heterogenous travelers, who differ in the disutility from congestion, are allocated into two routes, with potentially different levels of congestion, or to not traveling. Congestion costs then can be mitigated both by rationing travelers and by efficiently sorting them in routes with different levels of congestion. We show that, while under centralization the firm internalizes the congestion externality, this is not necessarily reflected into an increase in welfare. In particular, when the only issue is sorting travelers across the two routes (because welfare maximization does not require rationing), welfare decreases with centralization. When, instead, welfare maximization requires rationing, the welfare effects are subtler. We then analyze how to restore first best with road taxes. We find that, while congestion charges are optimal with decentralized travel, the structure of the taxes differs markedly when at least a portion of the market uses the fleet. Restoring first best, in this case, may require subsidizing the company -- something likely to be politically very unappealing.

Bio:

Alberto is Professor of Economics at the Department of Economics and Finance of the Università di Roma "Tor Vergata" and Professorial Research Associate in the Department of Financial and Management Studies of SOAS, University of London. His main research areas are industrial economics, public economics and economics of regulation.

Alberto has published articles in the *Journal of Public Economics*, *American Economic Journal: Micro*, *Journal of Urban Economics*, *BE Journal of Economic Analysis & Policy*, *Journal of Economics & Management Strategy*, *Journal of Regulatory Economics*, *Journal of Economics*, *Journal of Public Economic Theory*, *Bulletin of Economic Research*, and *Annals of Regional Sciences*.

He has advised several governmental bodies, including the Italian Energy Regulatory Authority, the Italian Ministries of the Economy and the Infrastructures, as well as private firms such as Ferrovie dello Stato, Telecom Italia, Infostrada and Autostrade per l'Italia.

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All are welcome!