

Managing road infrastructures through pricing policies

Álvaro Costa, Sandra Melo, Vera Palma

CITTA, Departamento de Engenharia Civil

Faculdade de Engenharia da Universidade do Porto, smmelo@fe.up.pt

Phone/fax numbers: 00 351 938249535 - 00 351 225081486

Abstract

This paper is focused on SCUT's, which are highways were built based on the principle that road infrastructures which crossed poor regions shouldn't have costs to users. Portuguese government fully paid the construction, maintenance, operation and financing of SCUT's and then delivered the exploration to a private consortium supporting it with a fee per each vehicle that circulated on the infrastructure. In 2010, the Portuguese government changed the funding system of the road plan and implemented toll roads along SCUT's. Thus, taxpayer helps government to construct, maintain, operate and finance the highway through the payment of a fee.

Such change generates an uprising reaction on society and puts into question some of the governance principles.

Transport pricing policies are one of the market-based traffic control measures able to influence travel behaviour in order to alleviate congestion in highways. On this context, pricing policies should have the effect of balancing the network usage in order to improve mobility of the overall system. Under the principles of governance, the systems should be managed in a sustainable way and privileging the principle of the polluter-payer. Instead, pricing policies are being implemented to increase the government financing income and the revenues are not being used respecting the basic principles of governance.

The purpose of this paper is evaluating the effects of pricing policies in Portuguese SCUT's. Moreover, the paper estimates the effects of such policies if they would be applied privileging a balance between demand and capacity based on a sustainable management of the infrastructures. Such results are then compared with the current outputs based on the user-payer principle, disregarding the mobility patterns and the sociodemographic background of the area.

This work was supported by the Portuguese National Transports Model (PoNTraM), which represents the supply and demand of medium and long distance travel within Portugal. The model represents the three modes relevant to long distance travel: car, coach and rail. In addition to these main modes, taxi, metro and suburban rail services are included to represent the access modes for bus and rail. The demand side of the national transport model consists of the choices that long distance travellers make in travelling from their origin to a specific destination. These choices include a destination choice, a mode choice, a route choice and a time of day choice. The model follows the conventional sequential four-step model that includes a mode choice model based on a multinomial logit model. By doing so, travellers base their choices on the representative travel times taking into account congestion levels. SCUT's scenario was implemented by changing the auto utility function considered at mode choice model.

The evaluation of this scenario brought to interesting and unexpected results, mostly explained by behavioural analysis. On this paper, results will be shown to the specific Portuguese case and some guidelines about how these policies can benefit the road and transport planning will be discussed.

Keywords: Pricing Policies, Demand Models