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How good are retailers in predicting transport providers' preferences for urban freight policies?... and vice versa?

Edoardo Marcucci, Valerio Gatta*

University of Roma Tre, Via G. Chiabrera, 199, Rome, 00145, Italy

Abstract

The success or failure of urban freight transport measures crucially depends on local policy makers' knowledge and awareness of stakeholders' preferences. The behavioral approach calls for stakeholder-specific data acquisition and model estimation. Considering the cost and time to perform an appropriate data acquisition process and the ever present aim of compressing research costs, it is important to investigate innovative data acquisition procedures that can satisfy the above mentioned constraints while not sacrificing data quality. The paper tests the capability of an alternative, less expensive and faster to administer procedure of acquiring stakeholder-specific data capable of reproducing policy evaluation results (i.e. willingness to pay measures) derivable from a standard data acquisition process. In more detail, the paper investigates the respective capabilities retailers and transport providers have in predicting each other responses to a stated ranking exercise aimed at measuring agents' preferences for alternative urban freight policies for the limited traffic zone in the city center of Rome. Results show that retailers are capable of predicting with a good level of accuracy transport providers' preferences for a given policy while the opposite is not true. This represents an important step forward in willingness to pay estimation for policy changes when the substitution rates between the various attributes considered are the main research objective of a strategic level analysis. Were this possible one could, in fact, interview retailers alone to understand also which would be transport providers' preferences for the policies evaluated.

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Keywords: Urban freight transport; policy evaluation; willingness to pay; stated preference; data acquisition; stakeholders' forecasts.

* Corresponding author. Tel.: +39 06 57335289; fax: +39 06 5733527.
E-mail address: edoardo.marcucci@uniroma3.it

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1. Introduction

Cities are structural net importer of goods. Urban freight transport (UFT) is essential to guarantee high standards of livings but it also produces, as a side effect, relevant undesirable social costs. Ensuring an efficient UFT is both a fundamental and daunting task local policy makers have to tackle. They implement policies altering the extant UFT regulatory framework with the intent of improving the functioning of the freight distribution system. Policy changes usually aim, among other objectives, at compressing the amount of pollutants emitted, minimizing the interference between passenger and freight during peak hours, reducing the number of circulating vehicles and/or kilometers driven while satisfying city dwellers' needs[2]. The success of UFT innovative measures crucially depends on local policy makers' knowledge and awareness of stakeholders' preferences (Lindholm and Blinge, 2014; Lindholm and Browne, 2013). Limited knowledge often results in coarse and undifferentiated policies that can backfire when reliable forecasts of policy effects for the various stakeholders impacted are not available (Givoni, 2014).

The need *for* and potential benefits deriving *from* a stakeholder-specific approach have been studied by the Authors in a series of papers that are succinctly summarized below: 1) Marcucci et al. (2012) report on the survey instrument development process to study freight agents' behavior, describe the stated preference experiment used to acquire the data employed in this paper and discuss the multi-stage efficient experimental design implemented incorporating stakeholder-specific priors so to guarantee a high quality data acquisition process; 2) Gatta and Marcucci (2013a) point out the importance and implications of adopting a stakeholder-specific efficient design strategy to elicit stakeholders' preferences when evaluating alternative UFT policies, and show that the biases in willingness to pay (WTP) estimates are substantial when inappropriate stakeholder-generic data acquisition approach is adopted. In fact, ex-post stakeholder-specific model estimation cannot compensate for a stakeholder-generic data acquisition procedure. Once committed, the original sin cannot be redeemed; 3) Marcucci and Gatta (2013) study own-account operators to investigate the impact time windows restrictions have on their behavior and clarifying the relevance of this regulatory feature; 4) Marcucci and Gatta (2014) focus on retailers concentrating on the role of the status quo and test for non-linear attribute effects in order to capture their specific characteristics; 5) Gatta and Marcucci (2014) illustrate, from a policy-maker's perspective, a method, accounting for the heterogeneity among own-account operators, retailers and transport providers, to define an acceptable and improving policy change equally impacting the stakeholders involved.

The results obtained so far underline the relevance a stakeholder-specific approach plays both when acquiring data as well as when estimating choice models with the intent of calculating WTP measures for the policies considered. In particular, one has to note that stated preference data are costly to acquire when using face-to-face interviews. Unfortunately this is exactly the case often occurring when analyzing policy effects in this sector. In fact, mostly due to confidentiality issues, it is hard to get stakeholders replying to the lengthy questionnaires researchers need to administer. In fact, many are the elements possibly impacting the evaluation of a given policy; among this one can, for instance, recall: sector of activity, frequency of delivery, closeness of a loading bay, location and dimension of warehousing facilities. All these considerations specifically apply and are reinforced when one has to account also for the peculiarities characterizing different stakeholders. More in detail, the studies previously cited suggest that heterogeneity among stakeholders can be extremely important in influencing effective policy impacts. While the considerations expressed concerning the cost and difficulties of acquiring stakeholder-specific data generally apply, their pertinence is not homogeneous. Additionally, based on our research experience in the city of Rome, it is much more difficult, costly and time consuming to get high-quality and reliable information from transport providers with respect to retailers. This is mostly due to the time pressure characterizing transport providers' work schedules and the location of their headquarters that are usually outside city boundaries and far apart one from the other. Given these characteristics one has to make specific appointments and dedicated trips thus increasing the cost and time needed to perform each interview.

Given the need of acquiring stakeholder-specific data, considering the cost and time to perform data acquisition

[2] It is important to note that policy interventions can be also linked to the private perspective where the focus is primarily on enhancing the efficiency of business operations (Marcucci, D'Agostino, 2003).