HAS THE EUROPEAN TRUCK TOLLING POLICY LED TO A MORE EFFICIENT USE OF ROAD INFRASTRUCTURE? A PANEL DATA ANALYSIS

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ABSTRACT

With the aim to promote a more efficient use of road infrastructure through charging mechanisms, the European authorities passed the so-called Eurovignette Directive in 1999 (European Parliament, 1999). Following the “user pays” and “polluter pays” principles with a special focus on road freight, the Directive promoted the internalisation of external costs through the implementation of a harmonized approach of distance-based tolls on heavy goods vehicles (or heavy-vehicle fees, HVF). This approach belongs to a wider transport policy strategy intended to achieve not only a more efficient use of roads, but also a more sustainable transport system by promoting cleaner vehicles and a more stable mechanism for funding roads.

Following the timing first envisioned by the European Union (EU), few years after the approval of the Directive, several nations (Austria and Germany, among others) established distance-based tolls on heavy vehicles, mainly in the whole trunk highway network or specific sections of it. More recently, other European nations (e.g., Hungary and Belgium) have also adopted the system in their non-privatized high-capacity network. This policy has evidenced to be a powerful tool to raise stable and non-budgetary dependent resources to fund roads.

Some previous research have conducted country-specific analysis on particular impacts observed after the implementation of the European truck tolling policy. For instance, for the case of Switzerland Suter et al. (2001) analysed the amount of external costs covered though the tolling policy, while for Germany Broaddus et al. (2008) concluded that road traffic reduction and modal shift to rail was achieved only to a minor extent. Also for Germany, Kallstrom (2007) analysed traffic diversion to non-tolled roads due to the implementation of tolls for trucks.

Nevertheless, there is a need for a more global approach to quantify the overall effect of the Eurovignette system across countries. At this point, this paper seeks to determine whether the European truck tolling policy has evidenced to be an effective tool to achieve a more efficient use of road infrastructure and promote alternative transport modes. Particularly, the research is aimed at analyzing the impact of the Eurovignette framework on road freight volume and modal share of freight transport at a macro level.

To that end, we develop a dynamic panel data methodology to analyze the evolution over time of road freight demand for those European countries currently implementing a nationwide per-km truck tolling policy, according to the so-called Eurovignette Directive: Switzerland, Austria, Czech Republic, Germany, Slovakia, Poland, etc. In order to include some heterogeneity, the sample is completed with other neighboring
countries not having implemented the charging policy for heavy goods vehicles. The panel data analysis in the research covers a span of 20 years (1995-2015), which can be considered long enough for the macro analysis to be conducted.

Data needed for the research are collected from different sources, mainly official databases from international institutions: OECD, Eurostat, ASECAP, etc. The analysis would be potentially complemented with micro data from the European road freight transport survey (ERFT), including highly useful information and currently available for the authors.

The dynamic panel model initially proposed (to be reviewed and potentially extended in further versions of the research) includes the annual road freight volume as the dependent variable in the demand equation, considering both national and international road freight traffic. Additionally, different explanatory variables have been included: socioeconomic macro variables (GDP), generalized cost parameters (Toll, Fuel, length of the high capacity network), and a variable controlling for the implementation of the truck tolling policy.

Preliminary results, to be reviewed in the following months, show that overall the implementation of the Eurovignette system has contributed to reduce road freight volume, but only to a quite limited extent. However, it seems that this positive effect has been counteracted by the evolution of other explanatory factors such as GDP and the extension of the high capacity network, thus not being noticeable in practice. This preliminary results will be revised to determine whether the implementation of the Eurovignette system has contributed to reduce road freight volume or divert the movement of goods to more sustainable alternative transport modes, thus promoting the achievement of sustainability objectives within the European freight transport sector.

REFERENCES