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Cross effects between high speed rail lines and tourism: looking for empirical evidence using the Spanish case study

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Abstract

Tourism supply is a complex phenomenon in terms of both the nature of the product and the process of delivery but, despite its complexity, tourism is a relevant economic activity in many countries of the world. Some of these countries have a High Speed Rail (HSR) network in operation, under construction or are planning a new one, and due to the exorbitant cost of new High-Speed Rail (HSR), there is a big concern on the assessment of the cross effects between tourism and HSR.

There is practically no literature, even in Europe, on empirical methodologies to assess neither the effects of tourism on HSR demand nor the impacts of HSR on tourism demand. The aim of this paper is to assess empirically the main cross effects between HSR and tourism, using a validated multi-criteria corridor selection methodology (tourism effects on HSR demand) and a multivariate regression model for panel data (HSR effects on tourism demand). Spain has been used as a case study, where tourism is one of the main contributions to national GDP (over 10%), with a HSR network length of 2500 km and long operation experience. Results show clearly the positive effects of tourism destinations on HSR demand; however, the effects on tourism demand caused by HSR are controversial and not clear empirical evidence can be derived, due mainly to the drawbacks of the available database. Both types of conclusions will ultimately provide authorities and policymakers with useful tools when planning the construction of a new HSR line.

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1. Introduction

In the literature, transport is recognized to be very important for tourism development. The existence of quality infrastructures of transport is reported to be an *ex-ante* condition for the development of the tourism sector, as they can make a country attractive as a touristic destination (Chew, 1987) or influence the type of tourist received (Prideaux, 2000). Despite this, the increasing use of HSR for tourism and leisure “is a new issue of interest whose logics and the associated regional processes that generates are still understudied” (Delaplace et al, 2014). While the impact of tourism on HSR demand is usually related to the difficulties of estimating HSR induced demand in the generation modelling stage (Guirao and Campa, 2015) and can affect the planning process of a new HSR network, the assessment of the inverse impacts (HSR on tourism) is much more complex. Apart from the economic geography models (Masson and Petriot, 2009; Wang et al., 2012) and the choice destination approach, the econometric models have rarely been applied, until now (Chen and Haynes, 2012), to analyse the impact of HSR on tourism. The first approach to study the effects of HSR on tourist destination choice was developed by Delaplace et al. (2014) in Paris and Rome. On the basis of a survey of tourists in Paris and Rome, data collected from the two surveys were used for a quantitative analysis using regression models and results demonstrated that HSR influences destination choice in different ways in the two cities, being in Paris the tourism more dependent on HSR. This interesting contribution was completed by Pagliara et al. (2015) using Madrid case study, where a revealed preference survey was also conducted. Although these results are quite clarifying, the notion that destination choice may be influenced by HSR is no proof that the construction of a new line will automatically reinforce a tourist destination, increasing tourist-sector revenues in this city (accommodation, restaurants, museums and so on).

Econometric models, when used to assess tourism demand, tend to follow a single-equation time-series approach (Lim, 1997; Song and Li, 2008), along with a few advanced studies of demand systems (O’Hagan and Harrison, 1984). This type of model is fairly dependent on the existence of a sound database. As mentioned before, the only approach of this type applied to HSR corridors was developed by Chen and Haynes (2012). Through a multivariate panel analysis, they investigated the impact of Chinese high-speed rail systems on the tourism industry, selecting only the numbers of incoming foreign tourists and tourism revenue as the dependent variables (as data on domestic tourism demand was not publicly available in China). The results of this research confirmed that during the period between 1999 and 2010, the emerging high-speed rail services had significantly boosted tourism in China and provinces with high-speed rail services were likely to have approximately 20 percent more foreign arrivals and 25 percent higher tourism revenues than provinces without these systems. This model structure could be applied to European countries with HSR networks, but introducing some changes in the variables and reducing expectations. Firstly, in China domestic tourists were not considered, and this percentage is quite high in Europe. Moreover, the HSR impacts on tourism in a country like China, where the interurban transport network is less developed than in Europe, are probably of a higher magnitude and easier to detect by an econometric demand model. Spain offers a good case study to test an econometric model of this type and this will be one of the main aims of this paper.

In relation to the assessment of the influence of tourism on HSR demand, there are some research works with interesting results worth mentioning in the literature. These studies describe specific HSR experiences (study cases) but do not lead to a general conclusion. The use of HSR by tourists depends on a number of factors related to the trip as well as to the travelers, mainly distance to destinations, typology of destination or location of the HSR station. In relation to the distance to destination, for distances below 300 km, only 19.2 % of travelers use HSR for leisure tourism purposes, increasing this percentage up to 54.8 % for trips of more than 600 km length. In contrast, business tourism varies only from 28.4% for distances below 300 km, to 36.0 % for distances greater than 600 km (La Rocca, 2008). Nevertheless, this influence of the distance, it is considered differently by other authors who argue that HSR lines can be very useful for trips shorter than one hour where nor the timetable neither the prices make them adequate for commuters (Coronado al, 2013). Guirao and Soler (2008) examined the impacts of Toledo tourism on the new HSR link Madrid-Toledo (30 min. trip time). Through a survey approach, they found that tourism accounts for over thirty percent of weekday HSR ridership, and that this type of user finds it hard to obtain tickets due to the massive presence of commuters. For journeys more than 800 km long, there is a consensus that other means of transport like airplane

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