Chapter 9

High Speed Rail and Regional Competitiveness

Lara Brunello
Queensland University of Technology, Australia

Jonathan Bunker
Queensland University of Technology, Australia

Sandro Fabbro
Università degli Studi di Udine, Italy

Franco Migliorini
Istituto Nazionale di Urbanistica, Italy

Renzo Ferrara
Rete Ferroviaria Italiana, Italy

ABSTRACT

The presence of High Speed Rail (HSR) systems influences market shares of road and air transport, and the development of cities and regions they serve. Changes in accessibility have led researchers to investigate the effects on the economic and spatial derived variables. Contention exists when managing the trade off between efficiency and access points, which are usually in the range of hundreds of kilometres apart. In short, it is argued that intermediate cities, bypassed by HSR services, suffer a decline in their accessibility and developmental opportunities. This chapter will analyse possible impacts of HSR infrastructure by considering small and medium agglomerations in the vicinity of HSR corridors which are not always served by HSR stations. The benefits of accessibility and distribution will be quantified and investigated in a model that accounts for locations where an HSR station cannot be positioned and different rail transit services offered, including (i) cadenced, (ii) express, (iii) frequent or (iv) non-stopping services. This theoretical approach linking infrastructure, accessibility, distributive patterns, services, and competitiveness is applied to a case study in the North-Eastern Italian regions. Results indicate that benefits derive from well informed decisions on HSR station positioning and the appropriate blend of complementary services in the whole region to interface an HSR infrastructure. The results have sig-

DOI: 10.4018/978-1-61350-174-0.ch009
1. INTRODUCTION

High Speed Rail (HSR) systems have the ability to significantly impact the market shares of road and air transport. However to obtain competitive speeds and travel times, HSR systems need to trade off station spacing and therefore accessibility. As a consequence, decisions need to be made regarding whether to serve intermediate cities, and which of those would be capable of generating substantial patronage. For this reason, bypass strategies have often impacted on the accessibility of many small or medium agglomerations in the vicinity of HSR corridors. Limiting access to these destinations thereby reduces their ability to participate in development opportunities facilitated by HSR infrastructure.

Effects on spatial distribution and the economic development of cities and regions after the deployment of HSR infrastructure have been investigated from the viewpoint of accessibility. In fact, it seems appropriate to consider the quality of accessibility to the HSR service as one of the main factors to win competition from other modes. Methods to measure accessibility have been expanded in the attempt to explain the land use and transport interaction by either classifying stations or ranking cities served by HSR.

A review of the literature shows that direct integration between HSR and complementary transit systems is long overdue and is vital to understanding which level of service quality would best serve this outcome. Evidence from the literature shows that the mere presence of a HSR station is not sufficient to entice development (Troin, 1995), while the spatially derived benefits of HSR tend to be concentrated around access nodes, and are co-dependent on ancillary investments by way of uplifting of station areas (Brons, Givoni, & Rietveld, 2009; Bertolini, 2008). The need for greater integration with local networks is also highlighted as a means to distribute benefits. However, there is a lack of tools available for cities and regions to analyse the best means of integrating HSR infrastructure into their transport networks with the aim of spatially optimising benefit distribution and increasing competitive advantages. Thus, there is need for careful planning of local land use and transport links to develop strategies to work as an interface with HSR infrastructure, not just as a feeder, but as a complementary high quality peer of HSR to improve accessibility of cities and regions, and to allow them to thrive.

In this chapter, the gaps above mentioned will be tackled and a new tool will be offered to understand which accessibility strategy might improve HSR benefit distribution at a regional level. The methodology adopted is useful to evaluate alternative rail transit services in relation to HSR infrastructure. Four railway systems with a regional scope have been selected for this study. Through comparative analysis of their efficiencies and accessibility, the methodology aims to demonstrate which enhancements would best suit the area under study, and which would produce network effects capable of influencing benefit distribution across hierarchical networks. Thus, technology improvements could be evaluated in light of their ease in exchanging benefits. Furthermore, measuring the spillover between networks would provide an understanding of the gains derived from the HSR investment, through the interface strategy chosen for the city and its region.

Often many small and medium sized cities and their regions lose out or are prevented from participating in the benefits produced despite