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High-speed train territorial impact in French and Spanish medium cities with stations located in the outskirts

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Abstract

This paper aims to carry out a comparative review of the high-speed train in Spain and France regarding the socioeconomic impact in medium cities with stations located outside of the urban weave. By now, many projects in Spain are still to be implemented and therefore they are looking for examples and counter-examples in other European countries. The strategies to take advantage of the high-speed services in these cities and their impact are the core of the presentation: successful and mistaken projects and activities such as residential, commercial, sort of companies (R&D, technological, financial, logistics), etc. Which have been the factors to develop economic activities surrounding the high-speed stations? What is necessary to stimulate the attraction of companies or other activities? In this sense, are there different patterns between French and Spanish cities? The main perspectives of the high-speed rail services in Spain and France will be questioned: sector liberalization, reduction of fares and other kind of offer for groups.

Keywords: High-speed train; peripheral stations; medium cities; France; Spain.

Résumé

Cet article a pour objectif de mener à bien une comparaison franco-espagnole des impacts socio-économiques de la grande vitesse dans les villes moyennes disposant de gares situées hors du tissu urbain. Pour l'heure, de nombreux projets attendent encore leur mise en œuvre en Espagne ; c'est pourquoi le pays recherche chez ses voisins européens des exemples et contre-exemples en la matière. Les stratégies mises en œuvre pour tirer profit de la grande vitesse dans ces villes, ainsi que leur impact seront le cœur de la présentation, qui examinera les réussites et les échecs en matière de logements, de commerces, d'entreprises (recherche et développement, technologie, finance, logistique…). Quels ont été les facteurs de développement des activités économiques autour des gares à grande vitesse ? Quels sont les enjeux pour attirer des entreprises et autres activités ? Les modèles sont-ils différents en France et en Espagne ? Enfin, les principales perspectives de la grande vitesse dans les deux pays seront interrogées : libéralisation, réduction des tarifs, autres types d'offres de groupe…

Mots-clé: Train à grande vitesse; gares périphériques; villes moyennes; France; Espagne.

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Nomenclature

ADIF	Administrador de Infraestructuras Ferroviarias (Spanish infrastructure manager)
HSR	High-speed Rail
SNCF	Société Nationale des Chemins de Fer (French railway operator)
TER	Train Express Régional (Conventional regional service in France)
TGV	Train à grande vitesse (French High-speed train)

1. Introduction

Since 1981 in France and 1992 in Spain, the implementation of the national high-speed rail networks had an increasing interest in connecting not only the main metropolitan areas but also a number of medium cities in between in order to spread the possibilities of economic development in the whole country and avoid the well-known "tunnel effect" of these kind of services. The decision of settling a high-speed station in a medium city is in both countries the result of complex negotiations between the government which decides the infrastructure and the local authorities which aim to benefit from the new modern network and to avoid relegation.

The French-Spanish comparison seems interesting for different reasons. Both countries have a political tradition of centralisation as far as great transport infrastructure is concerned, so that the networks were built in rather similar conditions. France appeared in a way as a model for Spanish high-speed rail network implementation till Spain reached the first European rank by its network length. Furthermore, France has got the oldest HSR network in Europe, inaugurated more than 10 years before the Spanish one and offers therefore an interesting feedback. This experience is very valuable in the framework of the actual Trans-European Networks of Transport which lead to the development of new lines in France (Paris-Germany HSR) and mainly in Spain (Mediterranean Corridor). It is also noticeable that Spain is a pioneer as far as the medium cities connection with HSR services thanks to the "Avant", a service connecting medium cities to a national or regional capital by high-speed at a conventional cost.

It seems relevant to consider in both countries some case studies taken from different date experiments and to compare the level of economic development reached around the stations. The aim of this paper is to identify through 7 examples (2 stations of the first high-speed line and 2 stations of the last one in France, plus 1 station of a relatively old line and 2 of the very last connections in Spain), all set together with a project of economic development around the HSR station in the outskirts of a medium city, the elements of success or failure and the evolution of the planning policies in the last three decades. This should lead to a series of recommendations for the implementation and planning of the new HSR peripheral stations.

The paper will first explain the methodology used to compare the seven case studies and to analyse the economic development around the selected HSR stations. It will then give an overview of the situation in France, comparing the results in the first high-speed stations on the old Paris-Lyon railway line with the new projects belonging to Rhin-Rhône high-speed line. Then, it will consider the case of Spain, were an 8 years old station and the most recent ones are analysed detailing the projects, the results nowadays and the expectations according to the past experience in France. Finally, the main findings from the comparison will be synthetically described.

2. Methodology: a qualitative approach of HSR stations located in the outskirts of medium cities

The choice of a transnational comparison was set in order to take advantage of the French feedback and experiments for the Spanish case. The relatively close transport and planning policy at a national level in both countries makes the comparison possible. Especially in the field of great transport infrastructures the constitution of the networks has quite similar patterns.

It is also interesting to adopt a diachronic point of view. It allows to highlight the changes in the planning policy related to the new peripheral HSR stations in the medium cities. Thanks to this approach, it is possible to see how the feedback of the first experiments was taken into account or not at the moment of the implementation of new stations. It asks the question of the transfer of experiences from one country to another.

In order to collect information about the different case studies, three sources were used. A first step consisted in collecting and analysing the planning documents related to each station and its environment. The information was then completed by interviews with institutional actors managing the stations infrastructure: SNCF in France and ADIF in Spain. The stakeholders in charge of the development of economic activities located next to the stations were also interviewed when it was possible. Finally, an important field work was made in France and in Spain, visiting the stations and the activity zones surrounding them. These visits are the main source of the analysis.

3. Learning from the French case studies: old line feedback and brand new experiments in a planning perspective

France has developed the first HSR network in Europe, and thus appears as a model or an example for the other European countries. In France, the high-speed lines are exclusively dedicated to the TGV service and are not used for other purposes than high-speed passenger traffic. To avoid sinuosity and speed loss, the new tracks often don't come into the cities, except at the end of the trip. Therefore some peripheral stations were created in the outskirts of the cities, at a few kilometres of the centre. These stations were often implemented together with an activity zone development plan, but they are more or less successful according to their location, accessibility and relationship to the nearest urban area.

Fig. 1. France's HSR network and studied stations.

2.1. Mâcon and Le Creusot: two case studies on the older French high-speed line

In France, the very first high-speed line, from Paris to Lyon, was inaugurated in 1981. Historically, it is one of the greatest transport axis in the country, dedicated to passengers, and it allowed to dramatically reduce the travel time between the two cities. Between Paris and Lyon, two intermediate stations (Beaucire & Emangard, 1985) were created in the outskirts of medium cities: Le Creusot-Montceau-les-Mines-Montchanin-TGV and Mâcon-Loché-TGV (fig. 1).

Le Creusot-TGV was located in the outskirts of a declining industrial city (at 8 km) and next to two other less important cities, so as to make a compromise with different stakeholders (Facchinetti-Mannone & Bavoux,

2010) in an urban area of more or less 90,000 inhabitants. The travel time to Paris is 1h20 and to Lyon 45 minutes. When it was decided to implement this station, it was planned for 1 million passengers a year but today the traffic does not exceed 250,000 travelers. Next to the station, an industrial cluster was planned in order to try to attract some activity in this economically declining region, but it never took off. A hypothesis for this failure is that it is located in the middle of three different cities whose first objective as to avoid the total decline of their own industrial settlements. Furthermore, the station is physically located in Écuisses, a municipality of less than 2,000 inhabitants. This might have been another factor of the very few interest from the three main cities for the new station, up to the SNCF responsibles. Another hypothesis is the lack of connections of the high-speed station to the conventional railway network and even to the highway. Till now, more than 30 years later, there are only interurban bus services and the passengers mainly come to the station with their own car, creating a problem of capacity of the parking.

The station of Mâcon-Loché-TGV was planned exactly at the same time and with the same model together with an industrial park. But this particular case was much more successful. Located at 7 km of the city of Mâcon in an urban area of almost 100,000 inhabitants, it was planned for 300,000 passengers a year and today it receives more than half a million of travelers. The tertiary park planned next to the station didn't grow very easily at the beginning. But it now reached a satisfying level with more than 40 logistic and tertiary businesses on the "Ellipse" site, up to the manager's website. Another tertiary park, 4 km ago, is also developing. This double success is due to the improvement of the connection of the site and the station to the highway in 1995 which improved dramatically accessibility for freight, according to the SNCF manager of the station. After that, it was necessary to review the institutional status of the park. It was given to a public-private manager which organised it and promoted it. This means that the HSR station is not enough to attract activity. But when the economic sector finds good opportunities (increase of accessibility by road in this case), it becomes a user if HSR and the station becomes an additional argument for attractiveness.

These two high-speed stations were not planned for intermodal connexions, and especially for a connection with the conventional railway network (Zembri, 1993; Beaucire & Emangard, 1985), and consequently they are suffering from this status which can be improved by developing the other forms of accessibility. Generally speaking, one of the main conclusions of these two case studies is that road is a fundamental element for economic development around high-speed stations in the outskirts of medium cities. HSR is not self-sufficient to develop attractiveness. Planning an activity area related to the station in a centralist logic is neither sufficient. To be developed, the area needs the conjunction of a strong public will and the implication of private actors from the whole urban area.

2.2. Besançon-Franche-Comté-TGV and Belfort-Montbéliard-TGV: learning lessons of the past 30 years?

It was very soon demonstrated, after the examples of Mâcon and Le Creusot, that further peripheral stations should be implemented with a connection to the conventional railway network (Troin, 1997). Nonetheless, these lessons were not always taken into account. But the new peripheral high-speed stations planned on the Rhin-Rhône high-speed line inaugurated in 2011 (fig. 1) were implemented after the learnings from the older case studies. Therefore, they were planned with intermodal connexions. At the same time, activity zones projects were implemented taking into account some learnings from the 1980's failures.

The HSR station of Besançon-Franche-Comté is located at 11 km of the city centre, in an urban area of 250,000 inhabitants. Despite the lessons of the case of Mâcon, Besançon-TGV lacks of a connection to the highway. Nevertheless, it is connected to the city central station thanks to a conventional regional service (TER) which timetable is scheduled up to the TGV timetables. This TER shuttle between the two stations is free for passengers who have a valid ticket for a high-speed trip. As a matter of fact, the accessibility from Besançon to other great metropolis increased: it is 2h far away from Paris and Lyon and 1h30 from Basel or Strasbourg (Richer et al., 2011). Since 2008, a great tertiary park project was developed by the municipal authorities –which is a major change in relation to the 1981 central planning disconnected from local views- on the vast free lands besides the station. This project is supported by a public-private concession but was not yet implemented (fig. 2). According to the lessons of the parks of Mâcon and Le Creusot, it was decided that the park would be built step by step according to the demand and that it should not be set with huge public investment if its future was uncertain.

Fig. 2. Synthesis image of the project of Besançon-Franche-Comté tertiary park (www.grandbesancon.fr)

In Belfort, the location of the station is similar to Le Creusot one: it is located between two urban poles, Belfort (at 12 km) and Montbéliard (at 18 km), which are two industrial cities. The whole urban area has 250,000 inhabitants. The high-speed station is well connected to two highways and should be connected to the conventional railway network into two years. The main difference with its twin sister of Besançon is that the innovation park "La Jonxion" which was planned besides the station is already operating. The works began in 2008 at the same time as the construction of the station. If this park is successful, another one on the other side of the tracks, "Pluton", will be implemented, according to the principle that non useful public investment should be avoided.

Both stations, two years after their opening, are successful from a traffic point of view. But it is too early to know whether the tertiary parks will be attractive or not and to analyse if the high-speed connexion will be positive for the region (Richer & Bérion, 2010). Therefore an "observatory" of the effect of the new high-speed line on the territories was set in Théma Research institute (Richer et al., 2009). Because they were planned as a new centre for intermodal mobility, these stations seem to respond better to what Valérie Facchinetti-Mannone (2005) calls the "nodality of the peripheral HSR stations".

As a conclusion of these two recent case studies it is important to note that the planning model used for the surroundings of the peripheral stations has changed. The principle of multimodal connexions seems to be definitely adopted as a crucial factor of attractiveness. At the same time, the centralised planning of the activity zones surrounding the stations was replaced by a more discussed implementation managed by the institutional group of municipalities in charge of the cooperation at a local scale. The zones are most often granted to a public-private partnership.

4. HSR stations in the outskirts of Spanish medium cities: potential developments and the query of experiences

The object of this section is to describe the characteristics of intermediate stations in three medium size Spanish cities (fig. 3) located in the outskirts of the cities as a consequence, to a large extent, of the operator criterion, given their weaker negotiating position (Garmendia et al, 2012). For this purpose, we expose relevant and official data related to opening date, proximity to settled areas, intermodal passenger transport, rail services and new urbanisation processes around the stations.

Fig. 3. Spain's HSR network and studied stations.

3.1. Antequera-Santa Ana station: hesitating between two potential developments

Since 2006, Antequera, with 41.287 inhabitants, has a peripheral railway station for HSR that is 20 km far away from the city centre. This station belongs to the line that connects Madrid and Malaga and which is an extension of the first HSR line in Spain from Madrid to Seville (1992).

The bus services that first connected the station with the city centre were eliminated at the beginning of 2013. Nowadays, taxi and private car are the only transport modes to reach the station. Connectivity with private transport is assured thanks to a good connection by road, that is 12 km from the highway, and with 295 charged parking spaces.

Moreover, Antequera, through HSR, is 2 hours and 21 minutes far from Madrid and 24 minutes far from Malaga with 8 services per day (each way). In terms of passengers, the station is used by 350 passengers per day, which is a total of around 130.000 (ADIF).

Fig. 4. Antequera-Santa Ana station.

On a spatial plan, Antequera-Santa Ana was thought to be located in a low density territory and low town polarity in order to increase the catchment area as much as possible. This could be reached through the high road accessibility. At present time a dry port that will be a logistic node on the Mediterranean Corridor is projected in the surroundings of the station. At the same time, a test loop for R&D of new rolling stock technology is projected. Anyway, none of these projects are directly related to the HSR station but with the high accessibility by road. Finally, in the coming years, Antequera will have another HSR station. This new station will belong to the Granada-Seville HSR and will be located at the location of the old station, next to the city. This last project is by now in standby because of the lack of funding.

Thus Antequera-Santa Ana is a two scenario station. The economic development surrounding it was planned after the station and in a context of crisis. Moreover, there are two feasible projects which strongly depend on the possibilities of fundings.

3.2. Requena-Utiel station: developing a low density urban area?

Requena-Utiel HSR station belongs to the line Madrid-Valencia and was inaugurated at the end of 2010. This HSR station is located in the periphery of two populated areas: 6 km away from Requena and 11 km away from Utiel, with a population of 21,554 and 12,429 inhabitants respectively. Moreover, the functional urban area Requena-Utiel is composed by 25 municipalities with a total population of more than 60,000 inhabitants.

With regards to intermodality, it was not possible to link the HSR line with conventional train services. A bus line was available to connect the station with Requena and Utiel, nevertheless the service was closed two years after because of a lack of passengers. On the other hand, it is a station with easy car access and an important car park: 290 charged parking spaces.

The most relevant contribution of HSR is the increased accessibility and the Requena-Utiel station is less than 1 hour and 30 minutes travel time to the Spanish capital, Madrid, and less than 25 minutes travel to the regional capital, Valencia. This factor may reinforce the relationship to the regional and national capitals, with a total number of services of 16 high-speed trains each day (one way).

The municipality of Requena stimulated an opportunity to transform the land around the HSR station by developing new urban (or suburban) projects and attracting high-quality services. The purpose of the local government was to change the General Plan for Urban Planning in order to make the establishment of tertiary sector and industrial uses easier and to attract investors, production activities and professional services. In addition, HSR station motivates Requena to step up its marketing efforts so as to promote activities associated to rural tourism – such as the commercialization of agro-industrial products (wine or sausage) or the promotion of its historical and cultural heritage – aiming to attract visitors.

Despite these expectations, according to ADIF sources, the number of travellers passing by the station is approximately 1,500 each month only. Hence, by now, the territorial impact of the HSR in Requena-Utiel is insignificant and even negative if we take into account the elimination of several conventional train services associated to the arrival of the high-speed services, more expensive for travelers.

Fig. 5. Requena-Utiel station.

Three main reasons can be argued to explain this failure: the most important, the catchment area – about 60,000 people – which encompasses rural and small villages whose profile of resident it is not in keeping with high-speed kind of services. Second, there are no "Avant" services, therefore the fare for travelling by HSR is much more expensive than travelling by car. The third reason is the aforementioned lack of intermodality with the conventional railway services. The last one is the recent expansion from two carriages to three ones by way put in service along the highway to Valencia reducing the congestion and, consequently, increasing the road competitiveness to the detriment of railway.

Nowadays, the establishment of a productive activity next to the isolated HSR is not expected, despite the municipal government efforts in order to foster new types of economic action. Thus, the economic development around the station of Requena-Utiel is for now absent although the opportunities offered by the HSR station and a good road connexion.

3.3. Villena station: a brand new experiment of peripheral station in an industrial region

Villena has one of the newest peripheral HSR station. It is 6 km from the city centre and it was inaugurated in 2013. The city has 34,894 inhabitants and it station is the only one located in the outskirts on the Madrid-Alicante HSR line.

On the one hand, connections with the city by public transport are covered by taxi and regular bus services. It has a location near a highway (3 km), like the other similar Spanish stations but, for the time being, it is not connected with the highway thereby the accessibility of the station (by rural roads) is too low.

On the other hand, Alicante could be reached in 24 minutes and Madrid in 2 hours and 14 minutes with HSR services. There are 10 services each way daily; turning it into passengers, the forecast for the station rounds 275,000 travellers per year, being able to reach 350,000 (Ortuño & Rosa, 2012).

Dealing with projects around the station, there are few proposals because of the current economic situation, the delay of the arrival of HSR to Villena and the lack of coordination between administrations. Nevertheless, the city is struggling to improve services around the station to become a reference node in the surrounding territory. In that way, Villena, urgently, demands the direct connection with de highway, which could save up to 20 minutes to reach the station. According to the improvement of connectivity, is considered that the station could be established like a reference station to other major cities in the coast like Benidorm or Torrevieja.

Fig. 6. Villena station.

The mentioned experience in Macôn or Antequera-Santa Ana suggests that the economic development around Villena HSR station will not be feasible till the connection with the highway were finished. The findings from

the oldest case studies also suggest that there is a need of coordination between public and private actors at all scales in order to make a technological park possible.

5. Conclusions

Along this paper, the role of the HSR station to attract economic activity has been analysed. In general terms, the case studies show that the railway services are not the determinant factor to stimulate the companies or other businesses to locate in the surroundings of the stations.

The main findings from these 7 case studies show that the implementation of activity zones next to the medium cities HSR stations has to be planned taking into account several parameters. The HSR connexion seems to be a factor of attractiveness, but it appears that it is not self-sufficient. The accessibility by other modes and the cooperation between different stakeholders are two conditions of development. The intermodality and, in particular, the high accessibility by road seems to be most important, such as in Mâcon or Antequera, especially for freight transport towards the companies. At the same time, governance is a fundamental issue. In the case of Le Creusot, the fact of the HSR station does not belong to a relevant municipality implies a lack of interest for its development and, consequently, there is no public policy to stimulate the activity around the HSR station.

Other important learnings extracted from the experience are related to the size of the spatial plans around the stations, are shown in Besançon and Belfort, where the intermodal in general is taken into account and the projects are planned step by step depending on the success of the previous phase. At the same time, these recent projects highlight a change in the planning policies giving the local scale a major importance.

It finally appears that Spanish stations have less developed surroundings than French ones, particularly because the activity zones are generally not planned at the same time. French case studies can be useful to highlight some learning in order to improve the planning experience around the stations located in the outskirts of medium cities.

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