

Impact of High-Speed Rail on Tourists' Decisions: Evidence from a Survey Conducted in Paris and in Madrid

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ABSTRACT

The analysis of how tourists select their holiday destinations along with the factors that determine their choices is very important for promoting tourism. In particular, transportation is supposed to have influence on tourists' decisions. The objective of this paper is to investigate more specifically the role of High Speed Rail (HSR) in this choice. Two key tourist destinations in Europe, Paris and Madrid, have been chosen to understand the factors influencing this choice. On the basis of a survey conducted to tourists, we found out that some aspects such as the presence of architectural sites, the quality of promotion of the destination itself, and cultural and social events, have an impact on their choice. However the presence of the HSR system affects the choice of Paris and Madrid as a touristic destination in a different way. For Paris, TGV is considered a real transport mode alternative among tourists who use it quite often. On the other hand, Madrid is chosen by tourists irrespective of the presence of an efficient HSR network. Data collected from the two surveys have been used for a further quantitative analysis. Regression models have been specified and parameters have been calibrated to identify the factors influencing holidaymakers to revisit Paris and Madrid and visit other touristic spots accesible from HSR from these cities.

1. INTRODUCTION

Major investments on High Speed Rail (HSR) systems have been recently carried out all around the world. Asia is currently the leader in HSR systems in terms of km of lines with 13 732 km compared to 7 378 km in Europe (UIC, 2013). In USA, HSR is being considered as an option. In 2010, the administration of President Obama budgeted \$10 billion for investment in HSR systems to connect major urban centres. However, most of the projects have been postponed for political reasons.

HSR systems seem however to represent the future of transport investments. The European Commission foresees that, by 2050, medium distance transport of passengers will take place by train including HSR (EC, 2011) and many are the expected impacts.

The objective of this research is to analyse how tourism destination choice may be affected by HSR Services (HSRS). Although there is large literature on HSRS and tourism (Bazin et al., 2011b), this analysis seems to have been investigated to a lesser extent. However it is interesting to know how holidaymakers select and revisit their holiday destinations and to investigate which factors are determining their choices. Moreover, an increase in tourism demand brings an increase in employment and, in turn, a significant contribution to the GDP of a country. Moreover, we analyse the probability to return to the city where the survey was conducted.

This paper is organized as follows. Section 2 provides an overview of the literature on the interactions between HSR and tourism highlighting the factors influencing this choice and the role of HSR systems on it. Section 3 reports the two case studies of Madrid and Paris, specifically the results of the surveys are analysed in details. In section 4, on the basis of the results from the survey, two models are calibrated: first, the probability of revisiting Madrid and Paris and the impact of HSR on this choice; and second, the probability of visiting cities close to Madrid and Paris by HSR. Finally in section 5 conclusions and further perspectives are reported.

2. AN OVERVIEW OF PREVIOUS STUDIES ON THE LINK BETWEEN HSR AND TOURISM

The analysis on how urban tourism destination choice may be affected by HSRS needs to identify the elements affecting the choice of destination and the role played by transport and more specifically by HSRS.

2.1 The determinants of destination choice

As quoted by Delaplace et al. (forthcoming), in Rugg writings “*little theoretical or empirical research has been generated on the determinants of the demand for foreign travel*” (Rugg, 1973). Since then, there have been a lot of studies concerning destination choice. From a microeconomic point of view, a review of the existing tourism demand literature is dominated by econometric models, which follow a single-equation time-series approach (Lim, 1997), and from few advanced studies of demand systems (O’Hagan and Harrison, 1984). Because the existing demand models do not consider measures of traveller’s attitudes including perceptions of service attributes and personal feelings toward different destinations and/or services, they are not sensitive to the wide range of strategies that can be designed to motivate/influence or change consumer travel behaviour (Koppelman, 1980). In addition to the most popular time series models, Song and Li (2008) reported an overview of the modelling and forecasting methods that can be applied to tourism. Logistic regression models have been extensively used also at the tourist demand analysis (Witt and Witt, 1995; Song and Wong, 2003) especially to explain the decision to do or not to do a holiday. Very interesting are some contributions which analyze the relationship between past experience and the perceived image of a tourist destination (Beerli and Martin, 2004; Decrop and Snelders, 2004); individual characteristics and the type of accommodation used (Pina and Delfa, 2005); duration of the

holiday, socio-demographic motivations and destination characteristics (Filippini, 2005).

2.2 HSR and tourism

Concerning the second point, despite the fact that the literature acknowledges that transport is very important for the development of tourism, the analysis of this role in general has often been overlooked: “little serious research has been undertaken into the significance of transport as a factor in destination development” (Prideaux, 2000). But “the health of the nation’s tourism industry is inextricably tied to the efficiency of its transport system” (Prideaux, 1993). Indeed, transport is intrinsically linked to tourist’ behaviour. Moreover, “*the ability of the transport industry to service the needs of the tourist industry is largely driven by the key consumer demands for speed, convenience, safety, comfort and affordability*” (Prideaux, 1993). According to gravitation models (Crampon, 1966) the number of visitors that can be attracted to a destination depends on the magnitude of the population in a market area and on the distance between this destination and this market area. The number of tourists decreases with growing distance.

In this respect, a transport innovation as a HSRS (Delaplace, 2012) modifies the link between tourists and distance because a decrease of travelling time in the end means a decrease of distance. Because time is money, HSRS can decrease generalized transport costs.

Masson and Petiot (2009) stated that the introduction of HSR can improve the tourists’ utility and reinforce the attractiveness of the territory for them, but also the competition between destinations: the market area and the market competition can be enlarged. Some cities can be reinforced while others could be disadvantaged (see also Wang, Huang, Zou and Yan, 2012).

Significant contributions in the literature (Bazin et al. 2011a; 2013a, b, c, Levinson, 2012; Albalade and Bel, 2010; DB International GmbH, 2011; SEEDA, 2008; Okabe, 1979, quoted by Rietveld et al. 2001) show that the effects are first ambivalent and second depending on the cities. In some served cities, the number of tourists is growing, sometimes for a short time, but in other places the number of nights can decrease (Bazin et al, 2011, for a review).

In a research concerning Spain, some authors show that the effects of HSR on same-day tourism are linked to the improvement of the accessibility and to the touristic offer (Coronado et al., forthcoming).

Chen and Haynes showed that for China provinces, served by HSRS “*are likely to have approximate 20 percent additional numbers of foreign arrivals and 25 percent greater tourism revenues than provinces without such systems*” (Chen and Haynes, 2012). For these authors, HSR will have an effect on the strengthening of the competitiveness in tourism.

In their qualitative analysis of the impact of HSR on urban and business tourism on French cities close to Paris in France, Bazin et al. (2011a) showed that this kind of tourism may be fostered by HSR for at least four reasons: first, urban tourism is short-stay tourism (two or three days), especially during weekends. Consequently, using HSRS avoids the

fatigue of driving, congestion and parking difficulties in city centres. Second, in some countries and during given times of the year, especially with some promotional offers, it can be cheaper than the road trips when travelling alone or in couple. Third, compared to the airplane, it can allow saving time particularly when the station is located in the centre of the city. Finally, it offers advantages due to the growing concern for sustainable development. HSRS are environmentally friendly (EC, 2009).

Lastly, HSRS can improve the tourism market in a destination because it affects tourist's perception of this destination: local stakeholders used it to improve the city image (Bazin et al. 2011a, for a review on this point, Carrouet, 2013, Mignerey, 2013, Setec Organisation, 2005, SEEDA, 2008).

2.3 The intention to revisit a specific destination

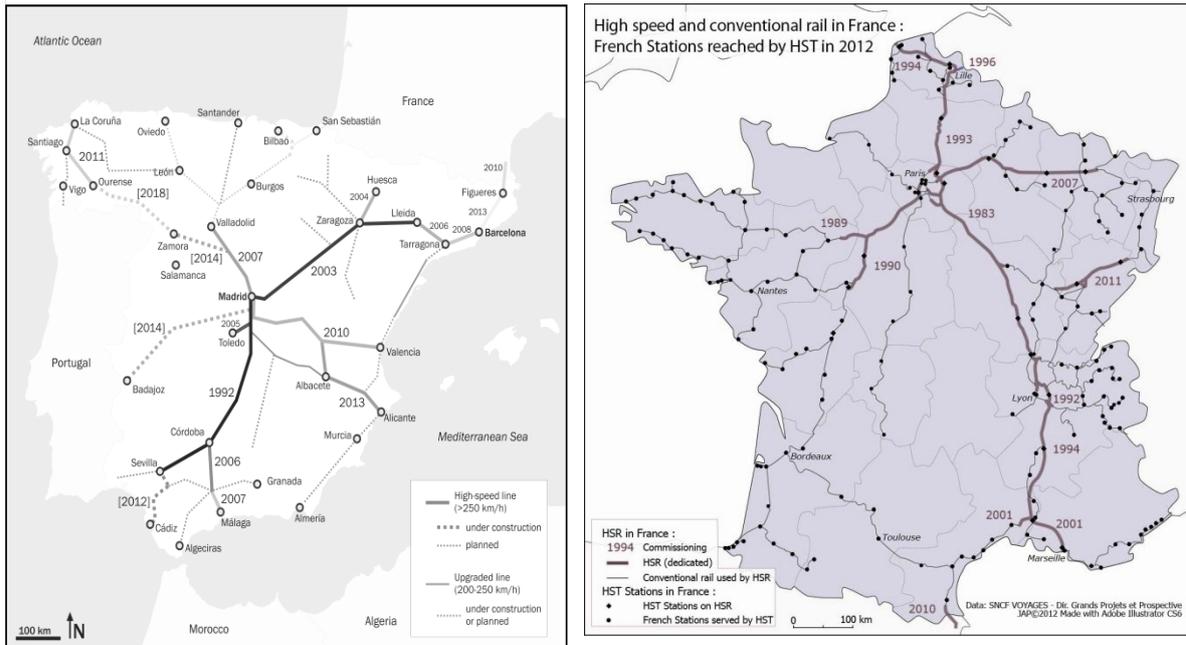
Another interesting aspect for tourism is to identify the reasons explaining tourist's intention to revisit a specific destination. In this respect, we may think that HSR might be one of the reasons for tourist to revisit a destination where this means of transport is available. Very few contributions in this respect are present in the literature. One paper analyses the probability of revisiting Cyprus with respect to socio-demographic and destination characteristics (Seddighi and Theocharous, 2002). In this paper a micro-econometric approach, based on observations of holidaymakers, is proposed. This approach allows the examination of the characteristics that influence individual travel behaviour and provides a conceptual/methodological framework for the understanding of the nature, form and character of the holiday-decision-making processes of individuals. Another research work analyzes the variables influencing the probability of revisiting Lisbon by using a mixed logit model and a mixed logit with bounded parameters. The probability of revisiting Lisbon “*increases significantly with accommodation range, events, food quality, expected weather, beach, overall quality, nightlife, reputation, and safety*” (Barros and Assaf, 2012). The authors also showed that the overall quality and reputation variables, which are not statistically significant in the logit model, become statistically significant in the mixed logit model.

However, currently and to our knowledge, there is no previous survey that tries to evaluate the link between HSRS and 1) tourism destination choice and 2) tourism return intention to an urban destination, apart from the case study of Roma (Valeri et al., 2012), and the case of Paris (Delaplace et al., forthcoming). As mentioned above, from the literature it emerges a lack of contributions that analyze the relationship between tourism and transport, and HSR in particular. Furthermore, few studies used a quantitative approach for the analysis.

3. PARIS AND MADRID CASE STUDIES

The first HSR link in France, the South East HSR between Paris and Lyon, was opened in 1981 while in Spain the section Madrid-Cordoba-Seville 470 km long inaugurated in 1992

was the first one. The two HSR networks, as they are today, are reported in Fig. 1.



Source : Delaplace and al. forthcoming

Fig. 1 – The High Speed Rail systems in Spain (on the left) and in France (on the right)

The sample has been chosen randomly among tourists visiting these two cities. In Paris, the survey was conducted from the 26th of October till the 2nd of November 2012 (from 7:45 a.m. till 7:00 p.m.) in three locations: the Eiffel Tower, Notre Dame Cathedral, and Paris Lyon Central Train Station.

In Madrid, the survey was employed from the 24th of June till the 28th of June 2013 (10.00 a.m.–2.00 p.m./4.00 p.m.–7.00 p.m.). The locations chosen were four famous tourist places: the Royal Palace, Mayor square, Prado Museum, and Reina Sofia museums.

The two questionnaires submitted are very similar in their content, but the total number collected in Madrid was 501, while in Paris only 226. Five differences between the two surveys are worth to be mentioned. First, in Madrid the percentage of men is higher than in Paris. Second, the sample in Paris is more partnered than the one in Madrid. Third, the percentage of foreigners is greater in Madrid than in Paris. Fourth, in Madrid there are more employees and fewer managers than in Paris. And five, the income per capita is lower in Madrid than in Paris, which may be a consequence of the previous difference (see Table 1).

NUMBER OF COMPLETE INTERVIEWS		PARIS	MADRID
		226	501
GENDER	FEMALE	58%	45,3%
	MALE	42%	54,7%
NATIONALITY	FRENCH/SPANISH	42%	27,7%
	FOREIGNER	58%	72,3%
AGE	FROM ... TO	18 - 73	18-79
	MEAN	38	39,5
	MOST REPRESENTED CATEGORY	25 to 44 (43%)	25 to 44 (38%)
FAMILY STATUS	SINGLE	32%	46%
	PARTNERED	68%	54%
TRAVEL	IN GROUP	76%	84%
	WITH FAMILY	58%	Partner (30,5%)
	WITH FRIENDS	19%	Relatives (27%)
DEGREE	UNIVERSITY	74%	71%
	HIGH-SCHOOL	19%	27%
	JUNIOR HIGH-SCHOOL	7%	2%
OCCUPATION	EMPLOYEE	33%	45,5%
	MANAGER OR EXECUTIVES	23%	6%
	STUDENT	19%	18%
INCOME PER MONTH	BETWEEN 2 500€ AND 4 500€	55%	32%
	MORE THAN 4 500€	22%	10%
	LOWER THAN 500€	10%	29%

Table 1 - Socioeconomic characteristics of the two samples

Concerning the transport modes used to arrive in Madrid (see Tab.2), the most used ones are the airplane (59.1%), HSR (12.8%), and car (11.0%). A lower percentage chose the coach, partial HSR (on the same section the train can be HS as well), and intercity rail (respectively 9%, 4% and 4%). For obvious reasons, the airplane is used mostly by foreigners. Only 8.6% of the Spanish tourists chose the plane to get to Madrid, 28% arrived in Madrid by HSR, 28% by car, and 18% by coach. Foreign tourists arrived mostly by plane (78.5%) due to their constraints to choose another mode of transport. Only 6.9% of them reached the city by HSR.

The length of the trip (including departure from home, arrival in Madrid, travel to other cities, overnight and return home) was on average 14 days. Moreover, 5 days is the average duration of the stay in Madrid. The average budget estimated was 2 150€ (see Table 3).

The average length of the trip in the French case study is 7 days, and the average duration of stay in Paris is 5 days as it is in Madrid. About the budget estimated for that stay in Paris, it was an average of 1 050€, from less than 50€ to 12 000€ (based on 178 respondents). The budget spent was lower, with an average of 772€ (based on 108 respondents), mostly because almost all tourists interviewed in Paris Lyon Central Station were arriving and had not yet the opportunity to spend money.

TRANSPORT MODES	ALL SAMPLE		FOREIGN TOURISTS	
	MADRID	PARIS	MADRID	PARIS
HSR	12,80%	49,00%	6,90%	38,00%
PLANE	59,10%	34,00%	78,50%	52,00%
CAR	11,00%	15,00%	4,40%	10,00%
TRAIN	8,00%	2,00%	4,40%	0,00%
COACH	9,00%	0,00%	5,80%	1,00%

Table 2 - Transport modes to reach Madrid and Paris

TRAVEL INFORMATION	MADRID	PARIS
TOTAL TRAVEL DAYS	14	7
DAYS IN THE CAPITAL	5	5
AVERAGE BUDGET (€)	2150	1050

Table 3 - Length of the stay

In the case of Paris, HSR was the third main motivation after cultural offers (83%) and historical and architectural landmarks (81%) (table 4). Gastronomy (47%), presence of relatives in the Parisian area (46%) or personal events (42%) were also important motivations for visiting Paris, but they were not as important as the presence of HSR. The French tourists were more sensitive to HSR services in the choice of that destination (60%). Also, 75% of the respondents influenced by TGV services actually used HSR to get to Paris. The cost of the ticket supports that choice (36%), and the duration of the travel (34%) were almost equally important. The French tourists were more sensitive to the price. The convenience (23%), due to the level of services, and the existence of the service (a possible HSR offer) (19%) had a strong influence for not choosing HSR.

MOTIVATIONS FOR CHOOSING MADRID AS TOURIST DESTINATION	
RELATIVES / FRIENDS	26,30%
HISTORICAL AND ARCHITECTURAL LANDMARKS/MUSEUMS	40,10%
NATIONAL CULTURE/GASTRONOMY	15,80%
LESS COSTLY THEN OTHER DESTINATIONS	1,40%
GOOD QUALITY OF TOURISM PROMOTION	3,20%
SHOPPING AND GENERAL EVENTS (SPORT, MUSIC, ETC.)	12,40%
HSR	0,80%

MOTIVATIONS FOR CHOOSING PARIS AS TOURIST DESTINATION	
RELATIVES / FRIENDS	60,00%
HISTORICAL AND ARCHITECTURAL LANDMARKS/MUSEUMS	81,00%
NATIONAL CULTURE/GASTRONOMY	47,00%
CULTURAL OFFERS	42,00%
SHOPPING AND GENERAL EVENTS (SPORT, MUSIC, ETC.)	83,00%
HSR	60,00%

Table 4- Motivations for choosing Madrid and Paris as destinations

41% of respondents in Madrid were positively influenced by the presence of HSR in their destination choice, especially because of the HSR speed (66%), the possibility to visit other cities linked by HSR (13%), and the accessibility of the departure/arrival station (7%). 49% of respondents in Paris were positively influenced by the presence of HSR in

the destination choice, especially because of the speed of the travel (94%), and also for the good accessibility of both departure (75%) and destination stations (72%). Frequency of the service (56%) and the decreasing of the travel time in case of new services (51%) were also important motivations (see Table 5).

INFLUENCE OF HSR	MADRID	PARIS
YES	41,10%	49,00%
NO	58,90%	51,00%
MOTIVATIONS	MADRID	PARIS*
LESS TRAVEL TIME	65,80%	94,00%
ACCESSIBILITY OF THE DEPARTURE/ARRIVAL STATION	7,00%	75,00%
FREQUENCY OF SERVICE	0,50%	56,00%
LESS COSTLY	3,50%	-
VISITING OTHER CITIES LINKED BY HSR	12,10%	-
SAFETY	0,50%	-
ENVIRONMENTALLY FRIENDLY	1,50%	-
COMFORT	8,50%	-
OTHER	0,50%	-

* In the case of Paris tourists could choose more than one alternative so the total is not equal to 100

Table 5 - Influence of HSR on the choice of the destination

78% of the respondents were willing to revisit Madrid for another holiday (see Table 6). They were mainly foreigners (53%) using plane (77% of foreigners). Those who intended to return to Madrid were driven by the richness of the historical, artistic, monumental heritage and cultural events (48%) (see Table 6). On the other hand, tourists that have already visited all the attractions in Madrid (43%), and tourists whose home country is far away (37.3%) are not willing to return. Concerning the case study of Paris, 98% of the respondents wished to revisit this destination. Their motivations were mostly linked to their wish to discover more (40%), and the attractiveness of the destination (36%). The presence of relatives was a strong motivation (27%), more important than tourist offers (20%). Both French (99%) and foreign tourists (97%) wished to come back. This percentage was high, irrespective of the transport mode used to reach Paris. 98% of the tourists who came by HSR wished to come back.

MOTIVATION TO REVISIT MADRID	%
RELATIVES / FRIENDS	28,4%
HISTORICAL AND ARCHITECTURAL LANDMARKS/MUSEUM	47,8%
NATIONAL CULTURE/GASTRONOMY	12,5%
LESS COSTLY THE OTHER DESTINATION	1,5%
GOOD QUALITY OF TOURISM PROMOTION	2,3%
SHOPPING AND GENERAL EVENTS (SPORT, MUSIC, ETC.)	6,1%
HSR	0,0%
OTHER	1,3%

MOTIVATION TO REVISIT PARIS	%
RELATIVES / FRIENDS	27,00%
ATTRACTIVENESS OF DESTINATION	36,00%
TO DISCOVER MORE	40,00%
TOURIST SUPPLY	20,00%

Table 6 - Motivations for revisiting Madrid and Paris

3.1 Impact of HSR on tourists visiting other cities connected through this service

The results of the survey conducted in Madrid show at first sight that the presence of the HSR system does not have a clear influence on the tourists choices of visiting other cities near Madrid. However there were a lot of respondents (62.1%) who actually visited another places, and 56% of them used the HSR. 90% of respondents visiting other destinations were foreigners, and 52% of them used the HSR to reach these destinations. The tourists whos used the HSR to visit other locations in the country did it because of the travel time savings (73,6%). On the other hand the main motivation for not using HSR to visit other cities near Madrid is high cost of the ticket (34%), and the lack of link between Madrid and the chosen destination (51%) (see Table 7).

In the case of Paris, 20% of the respondents were visiting another place during their trip. 43% of them were influenced by the TGV services for choosing to visit others places, and 53% were actually using it. In several cases, they were not able to reach it by TGV (too far, no offers etc.). For those respondents visiting other destinations, 61% were foreign tourists but they were less sensitive than French tourists to TGV services.

TOURISTS VISITING OTHER CITIES NEARBY	MADRID	PARIS
YES	62,10%	20,00%
NO	37,90%	80,00%
NATIONAL	10,00%	49,00%
FOREIGNER	90,00%	61,00%
TOURIST USING HSR TO VISIT OTHER CITIES	MADRID	PARIS
YES	56,00%	53,00%
NO	44,00%	47,00%

Table 7 - Visiting cities other than Madrid and Paris

4. MODELLING THE PROPABILITY OF REVISITING PARIS AND MADRID AND OF VISITING CITIES CLOSE TO PARIS AND MADRID BY HSR

4.1 The probability to revisit Paris and Madrid: very different results

A further quantitative analysis has been carried out. Regression models have been specified and calibrated to identify the factors influencing holidaymakers to revisit Madrid and Paris.

The literature on logistic regression is large and has been growing since 1970, especially in social sciences and educational research. These models have been extensively applied also for the analysis of tourist demand (Witt and Witt, 1995), especially to explain the decision to do/not to do a holiday. In both case studies, the probability of revisiting the city has been specified according to a very simple linear regression model. We are aware that the approach is fairly straightforward, since user choices are mostly affected by non-linearity and uncertainty which have not been considered in this paper. In spite of that, it seems interesting to provide a preliminary quantitative insight on the basis of the data from the two surveys conducted.

The variable we chose to calibrate the model are the following and the variables are in the following specified:

AGE_18-24	dummy variable equal to 1 if the tourist's age is between 18-24; 0 otherwise.
MARRIED	dummy variable equal to 1 if the tourist is married; 0 otherwise.
FREELANCE	dummy variable equal to 1 if the tourist is a freelance; 0 otherwise.
NATION	dummy variable equal to 1 if the tourist is French/Spanish; 0 otherwise.
UNIV	dummy variable equal to 1 if the tourist attended the university; 0 otherwise.
FIRST_TIME_MADRID	dummy variable equal to 1 if the tourist has never been before in Madrid; 0 otherwise.
STAY_RELAT_HOME	dummy variable equal to 1 if the tourist stays at his/her relatives' home; 0 otherwise.
TRAV_FRIENDS	dummy variable equal to 1 if the tourist travel with friends; 0 otherwise.
HSR	dummy variable equal to 1 if the tourist was influenced by the presence of HSR; 0 otherwise.
TRANSP_COST>700€	dummy variable equal to 1 if the tourist has spent more than 700€ for transport; 0 otherwise.
VISIT_RELAT	dummy variable equal to 1 if the tourist visit relatives at destination; 0 otherwise.

ARCHITECT	dummy variable equal to 1 if the tourist is attracted by the architectural sites at destination; 0 otherwise.
MULTI_DEST	dummy variable equal to 1 if the tourist can visit also from the chosen destination another city; 0 otherwise.
EVENT	dummy variable equal to 1 if the tourist is attracted by events at destination; 0 otherwise.

The type of tourists that most likely will revisit Madrid and Paris will be analyzed, given their socio-economic, tourist and transport related attributes. The dependent variable is the willingness to revisit Madrid or Paris (Yes: 1, No: 0), the independent variables are the attributes above listed. Estimation results are reported in Table 8. In the case of Madrid, the model presents a high explanatory power indicating that the model fits the sample data pretty well. All the parameters are highly significant (except TRANSP_COST > 700€ and the HSR variable, which are not significant) even though they have the expected sign. Indeed, the satisfaction of past experience (FIRST_TIME_MADRID) has a positive impact on the probability to revisit Madrid. In fact those people who already visited Madrid have a higher chance of returning. With reference to the socio-economic characteristics, the Spaniards have a higher probability to revisit Madrid for tourism purposes.

Transport characteristics seem not to have a big impact on the destination choice. Indeed, although the transportation cost has the correct sign, it is not significant, which means that it is not an attribute relevant to determine destination choice. Nevertheless, the quality of promotion of heritage resources is important. The main outcome from the Madrid case study is that tourists will revisit the city irrespective on the presence of the HSR.

In the case of Paris, all the attributes are significant and have the expected sign. Tourists that are willing to revisit Paris are younger than the average. They are French, aged between 18 and 24, and were at the university when they were surveyed. They travel with friends, and they would like to go back to Paris because of its architectural sites, the opportunity of visiting other places from there, and the possibility of visiting relatives. Paris is also a city full of events, and this is a factor influencing the choice to come back, particularly for the youth. The HSR variable is very significant and positive, meaning that for the young people the presence of HSR influences their choice. The variable itself embeds all the characteristics connected with HSRS, i.e. high speed, reduction of travel times, high frequency, reliability, easy access to the station, and so on. Moreover young people know that reduced fares are available so they can benefit from this fact to come back.

Variable	Madrid	Paris
	Coefficient (t-test)	Coefficient (t-test)
AGE 18-24	-	0.105 (1.979)
MARRIED	-0,063 (-2,315)	-
FREELANCE	0,104 (2,2040)	-
NATION	0,121 (3,633)	0.192 (3.904)
UNIV	-	0.238 (5.111)
FIRST TIME MADRID	-0,083 (-2,809)	-
STAY RELAT HOME	0,111 (2,131)	-
TRAV FRIENDS	-	0.167 (3.063)
HSR	-0,015 (-0,552)*	0.177 (4.167)
TRANSP COST>700€	-0,028 (-0,954)*	-
VISIT RELAT	-	0.160 (3.416)
ARCHITECT	-0,559 (20,409)	0.434 (9.712)
MULTI DEST	-	0.172 (3.677)
EVENT	-	0.0902 (2.036)
Rho2	0,493	0.650
Rho ² adj	0,485	0.595

* Not significant

Table 8 – Variables influencing the probability of revisiting Madrid and Paris

4.2 Modelling the probability of visiting cities close to Paris and Madrid by HSR

The second model intends to identify which variables have an impact on the use of HSR to travel from Madrid or Paris towards nearest cities served by HSR. The variables are described below, and the estimation results are reported in Table 9.

INCOME_0-2500Euro	dummy variable equal to 1 if the tourist's income is between is less than 2500 Euro per month; 0 otherwise.
TOT_HOLID_7days	dummy variable equal to 1 if the tourist's total holiday is less than 7 days; 0 otherwise.
STAY_CITY_5days	dummy variable equal to 1 if th tourist's stay in Paris is less than 5 days; 0 otherwise.
TOT_HOLID_COST	dummy variable equal to 1 if the tourist's total holiday cost is less than 1000 Euros; 0 otherwise.
EASY_2NEARCITIES	dummy variable equal to 1 if for the tourist the easy access to two near cities to Madrid has influenced the choice of HSR; 0 otherwise.
SAFETY	dummy varaible equal to 1 if for the tourist, safety has influenced the choice of HSR; 0 otherwise.
SERV_FREQ	dummy variable equal to 1 equal to 1 if for the tourist, service frequency has influenced the choice of HSR; 0 otherwise.
TICKET_COST	dummy variable equal to 1 if for the tourist, ticket cost has influenced the choice of HSR; 0 otherwise.
COMFORT	dummy variable equal to 1 if for the tourist, comfort has influenced the choice of HSR; 0 otherwise.
STATION_ACCESS	dummy variable equal to 1 if for the tourist, comfort has

influenced the choice of HSR; 0 otherwise.

Variable	Madrid	Paris
	Coefficient (t-test)	Coefficient (t-test)
NATION	-0,140 (-2,249)	0,108 (2,417)
INCOME 0-2500Euro	-	0,084 (1,954)
TOT HOLID 7days	-	-0,425 (-7,443)
STAY PARIS 5days	-	0,238 (4,589)
TOT HOLID COST	-	-0,257 (-2,792)
EASY 2NEARCITIES	0,296 (5,101)	0,289 (5,822)
SAFETY	0,273 (4,547)	-
SERV_FREQ	0,328(4,317)	-
TICKET_COST	-0,359 (-6,921)	-
COMFORT	0,456 (10,658)	-
STATION_ACCESS	0,398 (7,419)	-
ρ^2	0.631	0.41
ρ^2 adj	0.594	0.392

Table 9 – Variables influencing the probability of visiting cities close to Madrid and Paris by AVE and TGV respectively

In the case of Madrid, all the attributes have the expected sign and are significant: the probability to reach nearby cities by AVE (EASY_2NEARCITIES), the accessibility of departure/arrival station (STATION_ACCESS), travel comfort (COMFORT), service frequency (SERV_FREQ), and safety (SAFETY) have a positive impact on the probability to use HSR service to visit cities located nearby. The cost of transportation (TICKET_COST) has a negative impact. Foreign tourists are using HSR more frequently than national ones to move to cities close to Madrid by HSR. This fact is confirmed by the negative sign of the variable NATION.

In the case of Paris, the average tourists that will likely visit cities close to Paris by HSR are French with income below €2 500 a month, and are going to stay in Paris less than 5 days out of a trip 7 days long. They will choose TGV because of the easy access to two nearby cities connected by it, and their total cost for the holiday is less than 1000 Euros. Consequently the role of HSR in the probability of visiting other cities is different in Madrid compared to Paris. In Madrid this is for foreigners while in Paris this is for French people.

5. CONCLUSIONS AND FURTHER PERSPECTIVES

The objective of this paper has been that of investigating the factors influencing destination choice for tourism purposes in order to identify the role of HSR systems in determining this choice. The literature review shows that if HSR can affect tourism for a lot of reasons (accessibility of the destination, growth of the competitiveness and so on), it can also have negative effects on a specific city. However, the literature concerning the link between HSR and destination choice has been investigated in a lesser extent. Ours research shows that even though several factors influence the choice of a tourist, like the presence of architectural sites, the quality of promotion of the destination itself, the presence of events,

etc., HSR system also plays a role in this choice, but in a different way in the two case studies. In France HSR is considered as a real alternative transport mode. Therefore as the results of the models show, French tourists choose it for moving around France for their holidays. However in the case study of Spain, tourists have a different perception of HSR because the models show that they are willing to revisit Madrid regardless of the presence of HSR. Despite this trend, the analysis suggests that foreigner tourists in Madrid choose HSR for visiting cities close to Madrid. The results for Madrid are similar to the case of Rome (Valeri et al., 2012).

Further investigation is necessary to understand the specific role of HSR system on tourism in other countries and, inside the same countries, in other cities and especially intermediate cities. But our findings provide useful information for analysts in their efforts to segment and target specific tourist segments and to identify the way by which HSR can impact tourism and for which reasons. A greater awareness of tourists' characteristics with respect to a specific destination represents an important input for improving packaging and promotion. The study shows that the price is very important. HSR operators, for instance, could develop specific HSR discount tickets when travelling for tourism purposes as in the case of China.

The results obtained, even if preliminary and based on a limited number of interviews, suggest the implementation of more sophisticated and wide ranging surveys taking into consideration other relevant and transport related dimensions at a regional, national and international level as well.

It seems to be important to evaluate *ex post* the impact of a HSR and to confirm or not the existence of a real effect in terms of local economic development.

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