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Central versus Peripheral High-Speed Rail Stations: Opportunities For Companies to Relocate? The cases of Reims Central Station and Champagne-Ardenne Station

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Abstract

High-speed rail (HSR) can serve cities in two main ways: first and foremost via city-centre stations, but increasingly also via peripheral stations. By analysing the case of Reims, this article aims to identify the reasons that lead firms to locate around each type of station. Two surveys conducted in 2014 and 2015 enable us to show that HSR not only structures urban space but also segments it by function. While office availability is a very important consideration in the choice of location for both types of areas, other location factors including HSR are type-specific. Moreover, the types of companies in each kind of area are not the same. While local companies are present in both cases, the central station in Reims plays host to more external creations whereas the peripheral station is favoured for more external relocations. The companies present also differ in terms of their activities. Around the central station, there is a predominance of financial and insurance activities, while in Bezannes – the location of Champagne-Ardenne TGV station, on the southern outskirts of the city – there is a strong specialization in offices for industry-related activities.

Keywords: High-Speed rail, central and peripheral rail station, location choice

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1. Introduction

A number of authors have explained that the effects of high-speed rail (HSR) services on local economic development are heterogeneous (Sands, 1993, Delaplace, 2012, Loukaitou-Sideris *et al.*, 2013, Vickerman, 2015) and the reasons for this numerous. This is particularly the case for the establishment of businesses around stations (Mannone, 1995, Fachinetti-Mannone, 2009, Bazin *et al.*, 2009, and Beckerich *et al.*, 2016, Willigers and van Wee, 2011). The aim of this paper is to investigate one reason for this heterogeneity, namely station location, which varies not just by country (Givoni, 2006; Urena *et al.*, 2009) but also by city. Sometimes, HSTs arrive at central rail stations (historic stations in most cases, although some are more recent). In other cases, new stations are specially built for HSR service, outside the city, directly on the high-speed line (HSL). These are known as peripheral, or city-edge, railway stations[1].

In the first case, urban-renewal operations can be implemented in order to transform the station district into a central business district, sometimes also incorporating residential real estate. Peripheral stations, on the other hand, tend to give rise to new business parks, as well as residential real estate in some cases. In France, however, business parks around peripheral stations do not always fulfil their objectives (FacchinettiMannone 2009): “while intermediate stations have been provided on most routes, there has been little identifiable local economic development associated with many of these stations” (Vickerman, 2015, p. 157). In Spain, as in France, projects around central stations have tended to be more successful (Bellet *et al.*, 2012, Mohino *et al.*, 2014, Bazin *et al.*, 2009, Beckerich *et al.*, 2016). However, analyses conducted to date have been carried out either at central stations or at peripheral stations – but not both simultaneously – and in different contexts. In addition, few studies have analysed the location choice of companies in station districts. Lastly, the respective advantages associated with a location close to a central station or a location in proximity to a peripheral station served by high-speed rail in the same urban area have not yet been jointly analysed. The aim of this paper is to analyse the case of Reims, a city located 150 km to the east of Paris, which since 2007 has been served by the East European High-Speed Line, which calls at both the central station in Reims and Champagne-Ardenne TGV station, an interchange station directly connected to the rest of the high-speed network. In both cases, real-estate operations have taken place, but on different timescales. In order to analyse companies’ location choices, two surveys were conducted, the first around the central station and the second around Champagne-Ardenne station. This analysis allows us to eliminate the existing bias linked to comparisons between different cities.

The paper is organized as follows: Section 2 presents the literature concerning HSR services and firms’ location choices around central and peripheral stations, as well as the literature concerning HSR services and business real estate. Accessibility improvements in Reims and local policies surrounding both of the city’s high-speed rail stations will be analysed in Section 3. Section 4, devoted to the presentation of both surveys, shows that high-speed rail not only structures the urban space but also segments it by function; and Section 5 contains some concluding remarks.

2. Location choice near a central or a peripheral high-speed rail station

The literature identifies a number of effects of HSR on firms’ location choices and behaviour (Table 1). But while the logic that governs technical choices of station location (Auphan 2002) and the territorialization of different types of stations have been analysed (Fachinetti-Mannone, 2016, Fachinetti-Mannone and Richer 2011), the respective benefits of centrality or peripherality have not been investigated simultaneously, only separately. Moreover, the location choices of

1 Mannone (2016) identifies six types of HSR stations in France and Spain: central stations (old or new); pericentral stations, in urban spaces but not in the city centre; urban-fringe stations, located at the limits of the city; periurban stations, located on the periphery of the city in a rural environment; and bi-urban stations, located far away from a city but serving several urban centres; see also Bellet et al., 2012.

companies in both types of areas, and the trade-off between centrality and peripherality in a given city, have not been analysed to date.

2.1 High-speed rail service, location choices and the behaviour of companies

HSR is expected to attract firms, especially in domains related to metropolitan activities such as business consultancy and research and development (R&D) (Agences d'urbanisme du Grand Est, 2005, ISIS, 2004, TE & MS, 2007, Kamel and Matthewman, 2008, Kantor, 2008, Lee, 2007, Sands, 1993, Urena *et al.*, 2009, Vickerman, 1991). It will induce the relocation of certainly activities (typically office-based) in cities that are served by HSR, particularly in major cities (RFF, 2010, Garmendia *et al.*, 2008, Rietveld *et al.*, 2001, Sands, 1993) or in large intermediate cities (Urena *et al.*, 2009); however, there is no global *ex-post* evidence for this (Lee, 2007, Bazin *et al.*, 2013, Beckerich *et al.*, 2016) (see Table 1).

The effects depend on different characteristics, including the types of firms, stations, and HST services concerned, as well as connections to the rest of the railway network.

Some authors consider that HSR plays a role in the attractiveness of locations due to improved accessibility and an "image effect" (Willigers, 2008, Willigers and van Wee, 2011) – but the accessibility effect depends on the type of HST service (Willigers, 2008, Willigers and van Wee, 2011).

Table 1. Different effects of HSR on firms' behaviour, competitiveness and location

Types of effects	Authors
Increase in business real-estate prices	Kamel and Matthewman 2008; Kantor, 2008,; SEEDA, 2008
Development of office real estate	Bazin et al. 2009; Kamel and Matthewman 2008; Sands, 1993; SEEDA, 2008
Development of commercial real estate	Haynes, 1997; SEEDA, 2008
Increase in the attractiveness of territories	Lee, 2007; Mannone 1995; Vickerman and Ulied 2006; Agences d'urbanisme du Grand Est, 2005; ISIS, 2004
Increase in the attractiveness of large intermediate cities	Urena et al., 2009
Little impact on attractiveness for firms	RFF, 2010; Mannone, 1995; Bazin et al. 2009; Haynes, 1997
Attractiveness depending on the type of HSR service and the type of firm	Willigers, 2008; Willigers and van Wee, 2011
Attractiveness depending on the type of station	Mannone, 2009, 2013; Willigers, 2008; Vickerman,2015
Location of business consultancy activities and more broadly metropolitan activities	Agences d'urbanisme du Grand Est, 2005; ISIS, 2004; TE & MS, 2007; Kamel and Matthewman, 2008; Kantor, 2008; Lee, 2007; Sands, 1993; Urena et al., 2009; Vickerman, 1991; Willigers, 2011
Development of business parks	Preston, 2009 ; Agences d'urbanisme du Grand Est, 2005
Relocation of local firms	Willigers, 2008; Bazin et al., 2009; Beckerich et al., 2016
Relocation of some activities (offices, financial, etc.) to cities served by HSR, particularly larger cities	Rietveld et al., 2001, Garmendia et al., 2008; Sands, 1993; Preston, 2009; GLA, 2008; Bertolini and Spit, 1998; Murakami and Cervero, 2012
Failure of some business parks	Facchinetti-Mannone, 2009, 2010; Sands, 1993; Troin, 2008
Development of urban projects and additional investments	Kamel and Matthewman 2008
Increase in the office occupancy rate	Kamel and Matthewman 2008
Increase in productivity and competitiveness	Vickerman and Ulied 2006; Preston, 2009; INSEE, 2017; Martin, 1997
Widening of the market area	Preston, 2009; Ollivro, 1997
Enlarging the labour market, especially for highly qualified employees	Preston, 2009; Cheng, 2009; Kamel and Matthewman, 2008; Haynes 1997

Source: authors' own work.

There is an attractiveness effect at the intraregional level for firms already located in the same city or region before the arrival of HSR, but this effect doesn't exist at the interregional level (Willigers, 2008). For other authors, HSR brings no major changes in terms of attractiveness for businesses (RFF, 2010, Mannone, 1995, Bazin et al., 2009), while for others still HSR is rarely, in itself, a location factor (Mannone, 1997; Sands, 1993; Kamel and Matthewman, 2008; Haynes, 1997): "The majority of offices that choose a high-speed train station site, would also have chosen this location in a situation without high-speed trains" (Willigers, 2008, 262).

Others consider that the effect of HSR depends on the type of station, with comparisons made between peripheral and central stations (Mannone, 2009) or between central and intermediate stations (Vickerman, 2015), for example. With regard to intermediate stations, "there has been little identifiable local economic development associated with many of these stations" (Vickerman, 2015, p. 157).

Moreover, among peripheral stations, there is a heterogeneity due to valorization policies (Mannone, 2010, 2013; Bellet, 2016).

In reference to the case of Amsterdam, Willigers (2008) points out that a central location tends to be favoured by companies whose employees frequently require access to international destinations because central stations offer better international connexions.

Peripheral locations are favoured by service-sector firms oriented towards the national market because accessibility is better. Finally, Willigers and van Wee point out that, in the case of Netherlands, it depends on the kind of HSR services: while "international HST services can have a considerable impact on the attractiveness of an office location […], domestic HST services are less important for location choices, because of the small domestic distances" (Willigers and van Wee, 2011, p. 9).

2.2 Developments around central and peripheral HSR stations: a review

From an empirical point of view, the location of firms around central stations sometimes takes time, and the firms present are not always those that one might expect (firms in highly qualified sectors). Ultimately, though, firms do move in to occupy the business real-estate programmes induced by the arrival of HSR.

In Spain, Bellet et al. (2012) show that HSR services favour urban renewal around central stations. In London, the Eurostar service at St Pancras has been considered a key factor in encouraging the location of financial companies in the King's Cross–St Pancras district (GLA, 2008, Bertolini and Spit, 1998, Murakami and Cervero, 2012). Similarly, in France, HSR has induced urban renewal and associated dynamics around central stations, and their districts seem to be successful, even if in some cases location decisions have been postponed by economic crisis. This was the case for the Novaxis business district in Le Mans in 1993, for example, but not in Reims, where available offices have been sold very quickly following their construction (Bazin *et al.,* 2009; Beckerich *et al.,* 2016). Around peripheral stations, the literature shows that business parks developed to coincide with the arrival of HSR were not successful, even when local stakeholders had keenly anticipated the arrival, as shown by Fachinetti-Mannone (1997, 2010). In Vendôme, in the middle of the 1980s, a ZAD2 of 140 hectares was designed to play host to a technological park, with serviced development plots made available according to demand. The aim was to create 1,000 jobs (Bellanger, 1991). In 2004, nearly 15 years after the inauguration of the Atlantic HSL ("LGV Atlantique" in French), only 16 companies had located on this site near Vendôme TGV station (occupying just a little more than 8 hectares). In 2010, this number had risen to 22, covering a mere 6.6% of the total surface area of the business park (Fachinetti-Mannone, 2010).

2 ZAD: a zone d'aménagement différé, or deferred-development area, i.e. a planned development area where the public authorities have compulsory-purchase powers.

Similarly, in Mâcon, the 55-hectare business park developed[3] to attract company head offices and government offices (Ellenberg, 2011), was still not fully occupied over 20 years after the arrival of HSR. In 1997, there were just two companies (Mannone, 1997). In 2010 – nearly 30 years later – 45 firms were located there; the business units are nearly all full but the office buildings created in the mid-1990s are not. In Montchanin–Le Creusot, the Coriolis business park was not a success. Only four companies, corresponding to 147 jobs, were located there 10 years after the area was developed (Mannone, 1997). In 2010, there were 24 companies and 252 jobs (Fachinetti-Mannone, 2010). In Valence, six years after the first companies moved in, the occupancy rate in the area is only 10%. The tertiary park works well, but there are only five companies on the 45e Parallel business park (Fachinetti-Mannone, 2010).

Comparing ex-metropolitan stations, that is to say stations located in the periphery of London, Paris and Madrid, Mohino *et al.* (2014) show that a moderate distance from the metropolitan core (20– 35 km) combined with efficient transport connections to central areas increases the potential for creating new centralities in the metropolitan area when they are linked to major infrastructure. This is the case for stations at Marne-la-Vallée Chessy and Charles de Gaulle airport in Paris, and for Stratford International station (near the Olympic Park site) in London. By contrast, office relocation is more difficult when stations are much more than 50 km from the city centre.

Central stations thus seem to be characterized by greater dynamism than peripheral stations; the question now is to identify the reasons why the districts around these stations attract companies with relative ease while those around peripheral stations are less attractive.

2.3 High-speed rail service and location choice around central or peripheral stations: theoretical background

Several theoretical arguments can be put forward to explain the location of companies around central or peripheral stations.

First, economic base theory (Hoyt, 1954) points out that business services depend on an industrial base and that their location requires proximity with industrial users. Market proximity will be favoured by the improved accessibility brought by HSR. HSR allows firms to minimize distance-related obstacles and visit their clients located in connected cities. Indeed, in compliance with gravity models, distance is thought to have an effect on the intensity of exchanges: by reducing the time taken to cover the distance between the cities served, HSR services may enable service-sector companies to develop these exchanges and even broaden their market area (Ollivro, 1997, Preston, 2009, Willigers *et al.*, 2011). In other words, "everything is related to everything else, but near things are more related than distant things" (Tobler, 1970, p. 236). Consequently, HSR could benefit the service industries (Bonnafous, 1987; Preston, 2009, Albalate, Bel, 2012). Activities requiring plenty of travel could take advantage of HSR (Ollivro, 1997). Such is the case for firms with a national or even international market (Pol, 2003) (e.g. design and engineering consultancies, advertising agencies, marketing consultancies), but less so for those who have a mainly local or regional market (e.g. accountancy firms, legal firms, human-resources consultancies). HSTs could therefore play a more significant role for firms with a customer base outside their region (Bricout, 1996, Willigers, 2011) or, in the case of France, those that implement a strategy of expansion beyond the Parisian market (Buisson, 1986).

Second, since time is money, HSR services can reduce general transport costs. The increase in accessibility may result in an increase in productivity and competitiveness (Preston, 2009, Vickerman and Ulied, 2006, Martin, 1997, INSEE, 2017). Improved connectivity may be transformed into increased competitiveness for firms located in cities connected to the HSR

3 Initially, in 1982, the business park covered 5 hectares; it was expanded to 55 hectares in 1993.

network (Martin, 1997). Nevertheless, according to Crozet, the positive impacts of accessibility gains on productivity are conditional (Crozet, 2015). In such cases, the station with the better accessibility will be preferred. But, as quoted by Banister and Givoni (2011), journey time by high-speed train is not the only transport time to take into account. Access and egress times – the amount of time it takes to get to and from stations – could also reduce the time savings generated by HSR.

Third, establishing a firm in the district around an HSR station may facilitate access to larger pools of skilled labour insofar as HSR services make it possible to bring cities closer together in terms of the time taken to cover the distance between them. In cases like these, the labour force living in such cities would find it easier to come and work for firms located in the station districts of cities served by HSR. In this way, HSR would enlarge the labour market (Preston, 2009, Cheng, 2009, Kamel and Matthewman, 2008) and improve the mobilization of highly skilled labour (Haynes 1997). In this case, it is again the issue of access to different transport modes, including conventional rail transport (Willigers, 2011), that is crucial, whether the station is central or peripheral.

Fourth, while the function of the stations is to be rail hubs or more generally transport hubs, they are also increasingly public spaces (Bertolini and Spit, 1998). By generating urban renewal and refurbishment operations around stations (Terrin, 2011, Pol, 2008, Bazin *et al.*, 2009 & 2010, Yin *et al.*, 2014), high-speed rail services reinforce the role of the station as a public space (De Jong, 2009, Mannone, 1997), a veritable urban hub (Bourdin, 2011) characterized by different types of flows, in particular flows of people. Establishing a firm in a station district may ensure proximity for customers passing through the station. In this case, it is the proximity to end customers who use rail transport – though not necessarily HSR transport – that would explain the location of tertiary and commercial activities around central stations. But peripheral stations could also generate new urban centrality in dynamic ways, in particular when they are characterized by residential real-estate programmes. Lastly, the choice to locate in a peripheral area or a central area depends on the cost and the value of each location for a given firm. Within a given city, the cost of a location depends on business realestate prices; indeed, real estate is the second-largest expense after labour within most organizations (Ward, 2016). But as regards the price of residential real estate (Beckerich, 2001), and as shown by the hedonic pricing method (Lancaster, 1966; Rosen, 1974, Nappi-Choulet *et al.*, 2007), the value of an area first depends on the amenities it provides. And these amenities are linked in turn to accessibility and more generally to different public policies with respect to education, employment, and so forth. Amenities are more plentiful in the city centre (Crouzet, 2003) because centrality offers more externalities in terms of transport and information than peripherality (Crouzet, 2003). Consequently, the price of business real estate is higher in the city centre than in the periphery. A firm looking for a location thus has to arbitrate between land and real-estate costs and centrality.

In cases where sensitivity to land and real-estate prices is high and large plots of land or offices are required for the company's activity, a peripheral location may be favoured. However, from a dynamic perspective, such location choices could lead to tertiary companies also seeking to locate around peripheral stations, resulting ultimately in price increases (see also Willigers, 2011).

To conclude, location choice can be linked to the type and level of accessibility of each type of station, to the type of customer proximity sought (customers passing through the station or clients located in other cities served by HSR), to the need for access to a large pool of qualified labour, to the existence of local clients, to the existence of other companies, and to the cost of real estate.

3. The HSR service in both stations in Reims and changes to accessibility

The East-European High-Speed Line, which began operating in June 2007, modified the accessibility of the cities it served. The urban area of Reims is served by two stations: the historic station, located in the Clairmarais district in the centre of Reims, and the new Champagne-Ardenne TGV station in Bezannes, a village located 7 km to the south-west, beyond the urbanized fringes of Reims (figure 1).

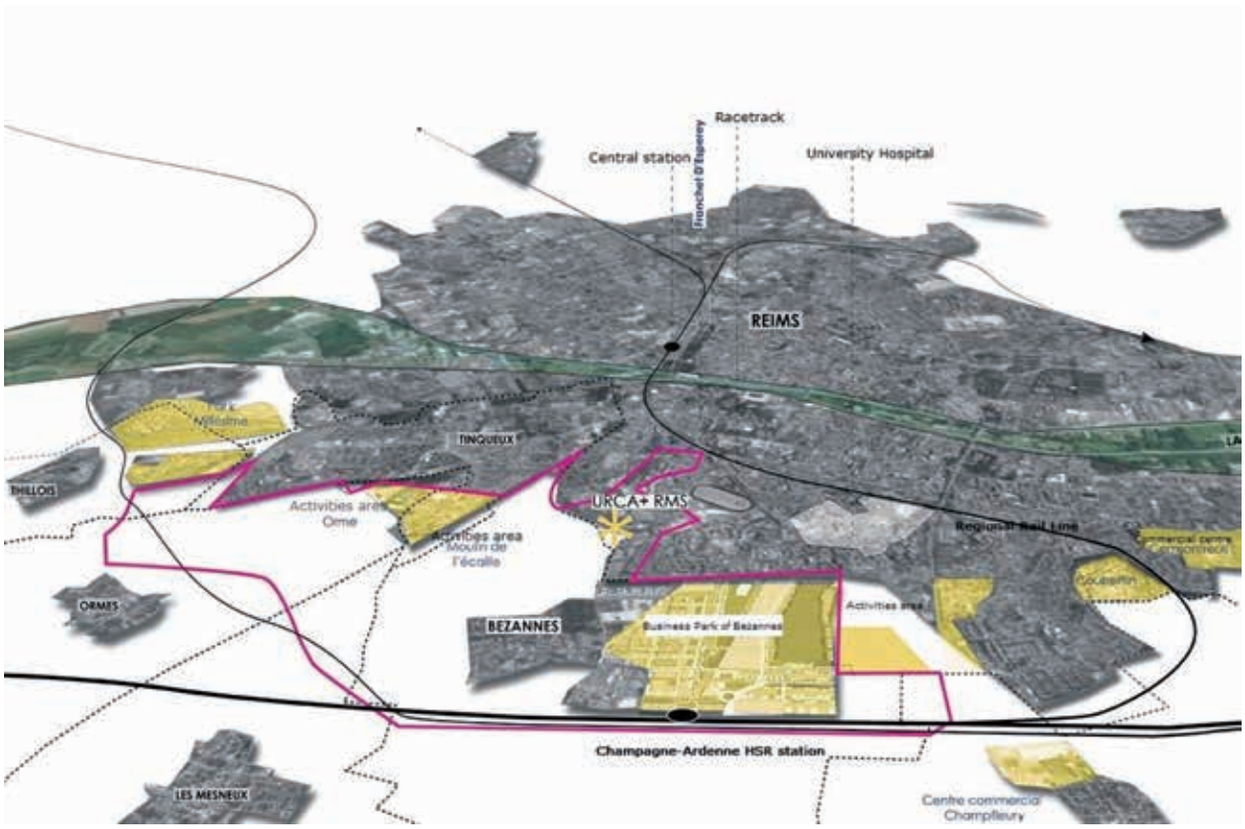

Figure 1. The two stations in Reims

Source: http://www.saisonmenu-architectes.com/projets/reims-pole-urbain-de-l-innovation/, modified by the authors.

Accessibility was improved by HSR at both stations, but in different ways. Similarly, although business premises were built around both of these stations, the circumstances and realization of these projects were different.

3.1 The accessibility's modifications in both stations

The central station in Reims is 45 minutes from Paris by HST, with eight round trips per day (Table 2). However, this new HSR service has led to the discontinuation of conventional rail services between Reims and –Paris[4].

4 The launch of the HSR service has also led to increases in regular and season ticket prices. For example, when the HSR began operating, the price of a one-way trip from Reims to Paris was EUR 38.00 in rush hour and EUR

In addition to HSTs, this central station is still served by conventional trains and regional express trains (TERs), as well as the city tram network, which has been in operation since 2011, four years after the arrival of the HSR service.

Champagne-Ardenne station is 40 minutes from Paris by HST, with six round trips per day. It also offers links to other French destinations on the high-speed network (Table 2), including Paris Charles de Gaulle airport, and, to a more limited extent, international connections (Brussels and Luxembourg).

Table 2. Modification of journey times from both Reims stations to major cities in France since 2007[5]

	Before 10 June 2007	After 10 June 2007	Time saved
Paris Gare de l'Est (from Reims central)	**1 h 35 min**	**45 min**	**50 min**
Paris Gare de l'Est (from Champagne-Ardenne, the peripheral station)	Not served	40 min	New service
Meuse TGV station	Not served	30 min	New service
Lorraine TGV station	Not served	40 min	New service
Metz	3 h 10 min (direct)	47 min	2 h 23 min
Strasbourg	30 min + change in Épernay (15 min) + 2 h 30 min = 3 h 15 min	1 h 55 min, reduced to 1 h 17 min since July 2016	1 h 20 min,increased to 1 h 55 min since July 2016
Marne-la-Vallée Chessy	Not served	30 min	New service
Paris Charles de Gaulle airport	Not served	30 min	New service
Lille	1 h 35 min + transfer in Paris (45 min) + 1 h 05 min = 3 h 25 min	1 h 25 min	2 h 00 min
Nantes	1 h 35 min + transfer in Paris (45 min) + 2 h 15 min = 4 h 35 min	3 h 15 min	1 h 20 min
Rennes	1 h 35 min + transfer in Paris (45 min) + 2 h 05 min = 4 h 25 min	3 h 15 min reduced to 2 h 46 min since july 2017	1 h 10 min increased to 1 h 39 min since July 2017
Bordeaux	1 h 35 min + transfer in Paris (45 min)+ 3 h 15 min = 5 h 30 min	4 h 25 4h 8 min reduced to min since july 2017	1 h 10 min to 1 h 27 min since July 2017
Luxembourg	Not directly served	1 h 31 min	New service
Brussels	Not directly served	2 h 14 min	New service

Source: authors' own work, adapted from SNCF data.

5 *Champagne-Ardenne station is also served by some regional express trains.*

This station has become the western gateway to the new Grand Est region (created in January 2016), with Strasbourg, the regional capital, 1 hour and 17 minutes away by HST. Since July 2017, Champagne-Ardenne station has also been served by Ouigo trains (the French low-cost HSR service) to and from Strasbourg, Marne-la-Vallée and Paris Charles de Gaulle airport.[6] In addition, it is served by regional express trains: the former Champagne-Ardenne region and the French state financed a line connecting both stations, enabling TERs that previously terminated at the central station to continue to Champagne-Ardenne station. The station is also served by urban trams and buses, financed by the intermunicipal structure covering Greater Reims.

Both stations benefit from good service levels, but Champagne-Ardenne station has the advantage of being directly linked to Paris Charles de Gaulle airport, a number of large French cities, and to a lesser extent Paris and the other towns and cities in the former Champagne-Ardenne region.

Companies wishing to locate in Reims now have the option of choosing between the city's central and peripheral stations, but this was not always the case, as premises were not available around both stations at the same time.

3.2 The projects and the realizations around both stations

The central station is located in the Clairmarais district, which developed during the second half of the 19th century with the onset of industrialization. At the beginning of the 1990s, the district was still marked by the vestiges of this industrialization and became the object of urban-renewal operations. From the mid-1990s, the public authorities wanted to create a business district here (Bazin *et al.*, 2009, Beckerich *et al.*, 2016) and the arrival of the East European HSL in 2007 led the various public and private stakeholders (Reims City Council, SNCF (the French national rail operator) and RFF (its sister organization responsible for managing the national rail infrastructure)[7], banks, property developers) to think about how to transform the district. For the city of Reims, this arrival was also an opportunity to remodel one of the city's principal gateways: its railway station. The aim was to transform this district into a tertiary pole with some 70,000 m² of office space while respecting the urban mix (economic activity and housing) required by the Urban Renewal and Solidarity Law (*Loi SRU*) of 2000. SNCF freed up land and created a new station entrance accessible from Clairmarais by means of an underground passage, the city centre being on the other side of the station. This new business district was thus connected to the city centre via the station. Its forecourt was redeveloped in order to allow a better connection to Place d'Erlon, the square at the commercial heart of the city.

In 2005, an office complex, an apartment hotel, a residential building, and further office and housing were delivered. In 2007, a mixed complex comprising offices, business premises and housing was finalized. In 2008, the second phase of 10,000 m² of office space and a budget hotel is delivered (Figure 2). In 2009, a multi-storey car park was built. In 2011 and 2012, various new constructions were completed in the streets farthest from the station: another office building in 2011, followed by business premises, housing and a student residence in 2012. In 2015, a residential complex containing social and private housing was developed; and in 2017, two new business complexes should be delivered. Reims City Council, which was the main stakeholder in this project, was backed by local developers. In all, more than 70,000 m² of offices and 500 housing units have been built.

6 However, Ouigo HSTs will not serve Bordeaux, Nantes or Rennes. For these destinations, a change will be necessary at Marne-la-Vallée Chessy station, but timely interconnections are not guaranteed.

7 Since 2015, SNCF Réseau.

Figure 2. Real-estate operations in the Clairmarais district

The case of Champagne-Ardenne station is different in many respects. First of all, the station is located in a rural environment without any buildings (Figure 3), close to the historic village of Bezannes (1,286 inhabitants in 2006) located to the south-west of Reims.

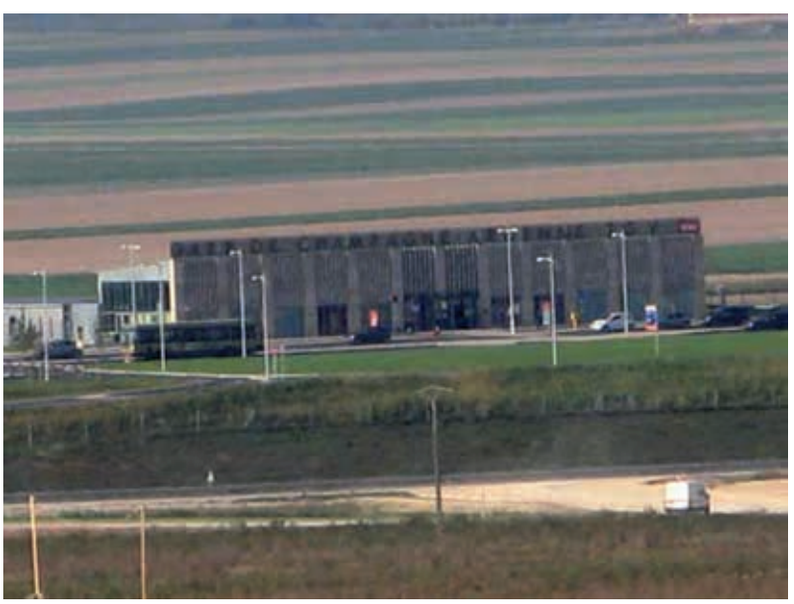

Figure 3. Champagne-Ardenne station, in a rural environment
Source: the authors

Bezannes is not (yet) part of the Reims built-up area, although the new business park has helped to close the gap somewhat. Nevertheless, Bezannes has always participated in the intermunicipal structures covering Reims and its suburbs, from the District of Reims created in 1964 to the Urban Community of Greater Reims (Communauté Urbaine du Grand Reims) that came into being on 1 January 2017. Moreover, although the mayor of Bezannes was initially against the location of an HSR station within the village boundaries, a compromise was found with the intermunicipal structure in the form of a 172-hectare ZAD (deferred-development area) (Figure 4). As with the area around the central station, the aim here was to promote a mix of functions, with a third of the area dedicated to housing, a third to offices, businesses and services, and the final third given over to green spaces. The laying of the foundation stone took place on 1 February 2006. However, the area's development has been very slow: the first business premises were only built in 2010, followed in 2011 by a hotel and a head office (for the Frey group, with 2,321 m² of floor space), and in 2012 by two office buildings and the head office of an architecture firm.

The following year, 2013, saw significant developments (a 59-unit residential complex, a second hotel, a new office block, and the arrival of the luxury-goods firm Cartier International). In 2014, a new medical services complex and, in 2015, two new office and business complexes were built. In 2016, five new projects were initiated (including housing projects, a head office or one of France's largest sugar manufacturers and the first phase of a private hospital with the construction of a 112bed nursing home).

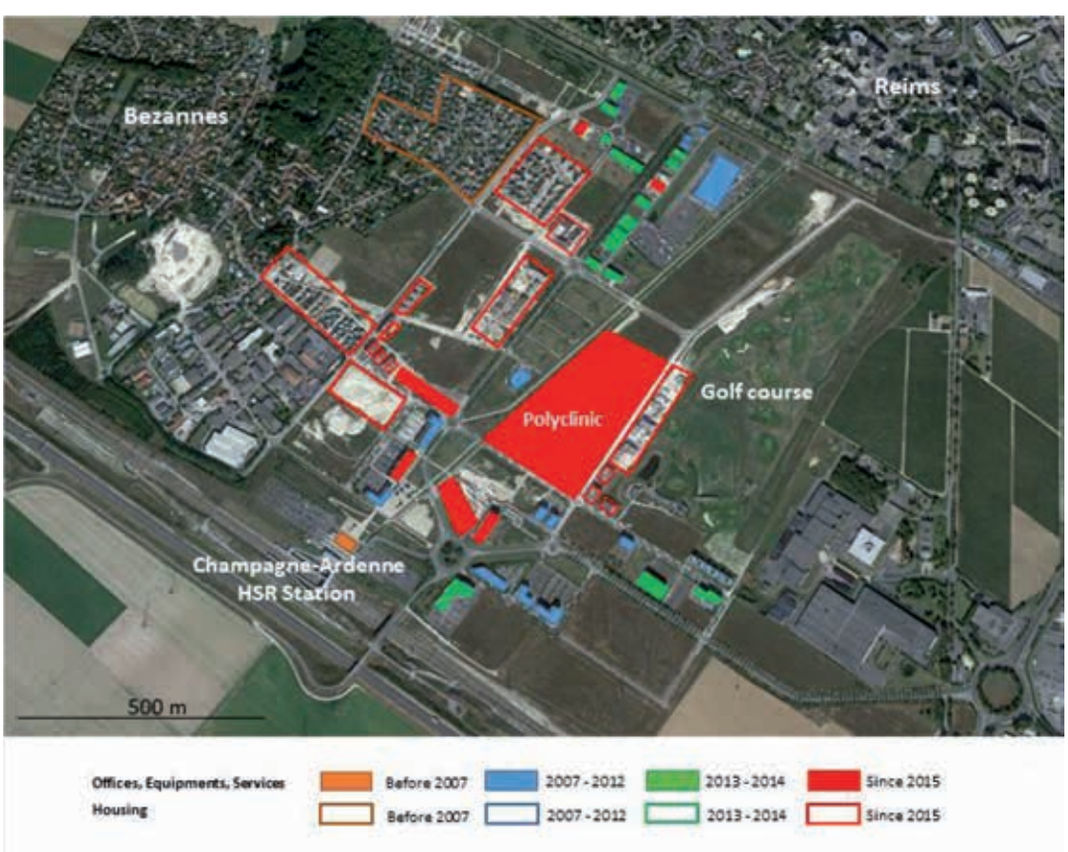

Figure 4. The Champagne-Ardenne Station business park

So far, 2017 has been marked by the construction of seven new projects: a senior-living complex comprising 124 apartments, a development of 69 collective housing units, a development of 41 new houses, and 3 office developments. Several firms and local authorities joined forces to create a co-working space of 7,000 m² dedicated to start-ups, which should be operational in 2017. Lastly, in 2018, a further development of 32 housing units are set to be built, along with the head office of Rédeim, a Reims-based property developer, and three housing developments by social landlord Plurial Novilia.

In parallel, cycle and pedestrian paths have been realized. In all, according to the mayor of Bezannes, some 300,000 m² of office space – more than four times the amount in Clairmarais – and 8,000 jobs should be created.

So, while housing, offices and businesses around the central station were all built at the same time – and in some cases even before the arrival of the HSL – around the peripheral station it has been necessary to wait, respectively, four and six years for business premises and housing to appear.

Finally, around this peripheral station, office rents range from EUR 135 to EUR 165 per square metre, with larger surface areas available (from 400 to 4,700 m²), whereas around the central station the equivalent rents are between EUR 160 and EUR 180 per square metre for smaller surfaces, ranging from 120 to 790 m².

4. The location of businesses around the two stations: the results of a comparative analysis

To understand why an individual firm chooses to locate where it does requires specific surveys, as statistical data alone only provides a snapshot of the situation at a given moment in time, and does not provide any information concerning the micro-economic behaviour of businesses. Consequently, two surveys were conducted using a questionnaire administered either by phone or face to face with firms located in each district. The first survey conducted in 2014 aimed to identify the types of businesses located around the central station (in the Clairmarais district), their location factors, the impact of the HST on their choice of location, and their use of the HST. In all, 42 firms agreed to participate, out of the 100 firms operating in the district as of late 2014 (42%).

The second survey was conducted using the same methodology, but for firms located in the new area around Champagne-Ardenne TGV (Bezannes) station in 2015. Of 65 firms, 26 agreed to participate (39%). Both of these surveys provide valuable information, even if the response rate was not particularly high.

4.1 Activity sectors and differentiated dynamics of location

In the Clairmarais district, there is a predominance of financial and insurance activities (38.10%), scientific and technical activities (23.81%), and public administration and educational activities (16.67%), reflecting a strong specialization in services, including personal services (see Table 3).

In Bezannes, the structure of firms is completely different, with a strong specialization in offices for industry-related activities (food products, electricity, mining, etc.; 24%). Indeed, the area is characterized by a significant presence of local industrial headquarters, as well as scientific and technical activities (16%), administrative and support services (16%), and accommodation and catering activities (16%). Unlike Clairmarais, which is close to the city centre, there are no restaurants for employees. Similarly, while there were already numerous hotels in the city centre close to Clairmarais, none existed in Bezannes. Finally, Bezannes is also characterized by the presence of information- and communication-related activities (8%).

Table 3. Comparison of business sectors in each area[8] and in Reims as a whole

Business sectors	Reims (2012)	Clairmarais (2014)	Bezannes (2015)
Hotels and restaurants	5.76%	16,00%	2.38%
Construction	9.36%	4.00%	0.00%
Financial and insurance activities	6.10%	8.00%	38,10%
Information and communication	2.86%	8.00%	4.76%
Manufacture of electrical, computer and electronic equipment; Manufacture of machinery	0.35%	8.00%*	0.00%
Manufacture of food products, beverages and tobacco products	1.69%	4.00%*	0.00%
Manufacture of transport equipment	0.04%	0.00%	0.00%
Mining and quarrying; energy, water supply, sewerage, waste management and remediation activities	0.95%	4.00%*	0.00%
Other manufacturing	3.01%	8.00%*	0.00%
Other service activities	7.56%	4.00%	0.00%
Professional, scientific, technical, administrative and support service activities	15.89%	16,00%	23,81%
Public administration and defence, education, human health and social work activities	14.97%	8.00%	16.67%
Real estate activities	5.09%	0.00%	2.38%
Total	**100%**	**100%**	**100%**
Transportation and storage	2.72%	4.00%	4.76%
Wholesale and retail trade; repair of motor vehicles and motorcycles	23,63%	8.00%	7.14%
Total	**100%**	**100%**	**100%**

** forms part of the 24% of industry-related activities. Source: authors' own work, surveys and INSEE data.*

8 For all business sectors and both areas, the null hypothesis H0 (that there is no difference between the distribution) must be rejected. The calculated p-value with Fisher's exact test (0.004) is less than the level of confidence a = 0.05; the alternative hypothesis H1 (that there is a difference between the distributions) can be accepted.

If we compare the business activities present in Reims (dominated by commercial and repair activities; 23.63%), each of the two areas studied is quite highly specialized: in service-sector activities in Clairmarais, and in industry-related administrative activities in Bezannes.

The types of firms are also somewhat different: firms tend to be smaller in Clairmarais than in Bezannes (Table 4). With this in mind, business sector (services) and company size are factors likely to explain a greater frequency of use of the HST (see below).

Furthermore, analysis of the dates of implementation shows differentiated dynamics.

Table 4. Size of firms in each district

Size	Bezannes	Clairmarais
Small and medium-sized businesses	20.00%	11.76%
Very small businesses	80,00%	88.24%
Total	100.00%	100.00%

Source: authors' own work.

In late 2009, in Bezannes, 53% of the total floor area of the mixed development zone (in French, ZAC, or *zone d'aménagement concerté*) intended for business use remained unoccupied, and there were not many new constructions (see above).

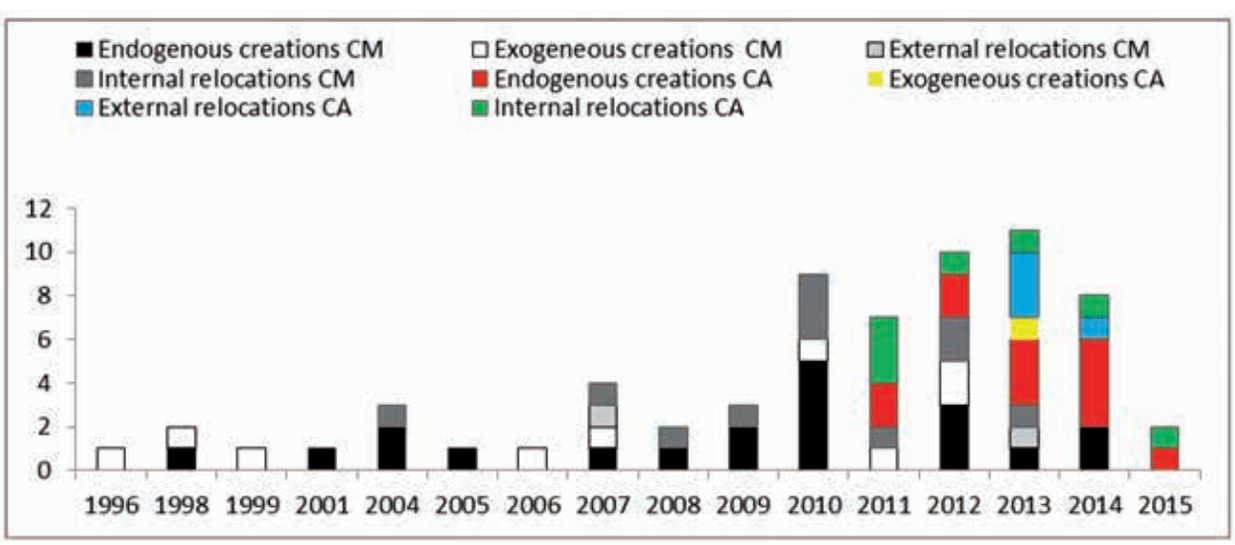

Figure 5. The dates and types of locations in each district

Source: authors' own work.

The economic context hampered its development[9], as well as the creation of other business parks in the metropolitan area. Development accelerated in 2013 and 2014 (see Figure 5) with endogenous creations (i.e. business creations originating from within the local area) representing 50% of company locations.

9 *Archaeological excavations also delayed operations.*

Internal relocations (i.e. from within the Reims area) mostly took place a few years earlier, in 2011, and subsequently tailed off. The total proportion of company establishments of internal origin is close to 80%.

In the Clairmarais district, the setting-up of firms occurred in several waves, in 2004, 2007 and 2010, as soon as business real estate became available. The role of real-estate developers was therefore particularly important. However, they exhibited different behaviours around each of the two stations. While developers maintained their construction projects around the central station, some of them postponed projects around the peripheral station amid the economic crisis. For example, the Mazars group, which had bought land in Bezannes with the aim of building offices just before the arrival of the HSR, sold off this land quickly from 2008 onwards.

Centrality therefore probably played an insurance role for real-estate developers, and particularly for local developers, which helped in turn to reassure external developers; however, by definition, this insurance effect of centrality did not benefit the peripheral station.

In the new development area in Bezannes, the settlement of outside firms – "exogenous creations" – has always been very rare. Only one exogenous creation set up in Bezannes in 2013 (corresponding to 4.17% of all firms in the area). Since that date, growth in the number of external relocations (16.67%) has been increasing. External locations as a whole represent more than 20% of firms in Bezannes.

If we compare company locations of internal and external origin in both areas, the proportion of outside firms is approximately a quarter in Bezannes, compared with a little over a third in Clairmarais. It is therefore fair to say that both areas mainly attract local firms.

However, the nature of the businesses coming to Reims from outside the city is completely different in each area. While Clairmarais attracts mostly exogenous creations (21.43%), this proportion falls to 4.17% in Bezannes. Conversely, exogenous relocations are quite rare in Clairmarais (4.76%) but are more frequent in Bezannes (16.67%). Indeed, firms with large office spaces are mainly concerned by exogenous relocations. Their activities require large offices, of which Bezannes has a plentiful supply. Furthermore, office rents and real-estate prices are more attractive in Bezannes than in Clairmarais (see above). Exogenous creations – generally smaller firms – typically seek to benefit from the centrality and image of Clairmarais. Therefore, they tend to choose locations around the central station.

4.2 The location factors self-reported by firms

The location factors self-reported by the firms surveyed are analysed first overall, and then hierarchically, initially by order of citation and lastly by business type.

First, in both areas, the number-one factor cited was office availability (14.93% for Bezannes – at the same level as accessibility and the district's image – and 20.23% for Clairmarais). Other factors then differed (Table 5).

In Bezannes, the next most important factors are the proximity of clients (11.94%) and car parking (10.45%); by contrast, HSR is only cited by 5.97% of firms. In Clairmarais, the image of the neighbourhood, the proximity of clients and the presence of HSR were all cited by 10.71% of firms.

Table 5. Location factors self-reported by firms[10]

Location factor	Bezannes	Clairmarais
Office availability	14.93%	20.23%
Image of the district	14.93%	10.71%
Proximity of clients	11.94%	10.71%
HSR	5.97%	11.90%
Proximity of the city centre		8.33%
Proximity to highways	1.49	5.95%
Rail station		5.95%
Rent costs	2.99%	5.95%
Accessibility	14.93%	4.76%
Car parking	10.45%	3.57%
Public transport	1.49%	3.57%
Proximity of services		2.38%
Lack of competition	2.99%	
Employment area		1.19%
Image of Reims	2.99%	1.19%
Proximity to home	2.99%	1.19%
Proximity of head offices		1.19%
Business takeover		1.19%
Available land	1.49%	
Location	2.99%	
Proximity of Reims	1.49%	
Company strategy	2.99%	
Visibility	2.99%	
Total	**100.00%**	**100.00%**

Source: authors' own work.

In both cases, it is also the image associated with a neighbourhood located near to HSR that firms are looking for. Free car parking is also sought-after in Bezannes. In Clairmarais, all previously free parking became paid parking after the launch of the HSR service.

HSR is not very important for businesses in Bezannes (5.97%) while it is more so for those in Clairmarais (11.90%)[11]. In both cases, rent costs are not a major factor in location choice; however, it is more important in Clairmarais than in Bezannes.

During both surveys, firms could rank the top three factors that contributed to their choice of location in the area in question. The analysis of this hierarchy of location factors paints a different picture (Table 6) from the overall view outlined above.

10 For all factors and both areas, the null hypothesis H_0 (that there is no difference between the distribution) must be rejected. The calculated p-value with Fisher's exact test (0.001) is less than the level of confidence a =

11 This was not the case in 2007 (cf. Bazin et al., 2009).

Table 6. Hierarchy of location factors self-reported by firms[12]

Location factor	1st factor		2d factor		3rd factor	
Frequency (%)	Bezannes	Clairmarais	Bezannes	Bezannes	Clairmarais	Bezannes
Lack of competition	4.00%				5.26%	
Accessibility	24,00%		17.39%	10.71%		5.26%
Public transport			4.35%	7.14%		
Proximity to highways		6.06%	4.35%	3.57%		10.53%
Employment area				3.57%		
Proximity of city-centre		6.06%		14,29%		5.26%
Available land	4.00%					
Rail station		6.06%		7.14%		5.26%
Image of Reims	4.00%	3.03%	4.35%			
Image of the district	8.00%	9,09%	8.70%	17.86%	31,58%	5.26%
Location	4.00%		4.35%			
Office availability	4.00%	15.15%	26.09%	21.43%	15.79%	21.05%
Rent costs		9,09%	4.35%	3.57%	5.26%	5.26%
Car parking	12.00%		8.70%	3.57%	10.53%	10.53%
Proximity of clients	12.00%	21.21%	4.35%		21.05%	10.53%
Proximity of services		6.06%				
Proximity to home			4.35%	3.57%	5.26%	
Proximity of Reims					5.26%	
Proximity of head offices		3.03%				
Business takeover		3.03%				
Company strategy	4.00%		4.35%			
HSR	12.00%	12,12%	4.35%	3.57%		21.05%
Visibility	8.00%					
Total	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**

Source: authors' own work.

In Bezannes, the analysis of prime location factors cited by stakeholders shows the importance of accessibility (24%), HSR (12%), car parking (12%), and the proximity of clients (12%). In Clairmarais, proximity of clients (21.21%) is the number-one factor cited, followed by office availability (15.15%) and finally the presence of HSR (12%).

The role of HSR, as a location factor, is different in each area. In Clairmarais, HSR is an additional factor (it is rarely cited as the number-one location factor), while it is almost always reported as the primary location factor in Bezannes.

Cross-referencing the number-one location factor and the type of company location is also interesting (Table 7).

12 For the first factor and both areas, the null hypothesis H_0 (that there is no difference between the distribution) must be rejected. The calculated p-value with Fisher's exact test (0.003) is less than the level of confidence a = 0.05; the alternative hypothesis H_1 (that there is a difference between the distributions) can be accepted.
For the second factor and both areas, the null hypothesis H_0 (that there is no difference between the distribution) can be accepted. The calculated p-value with Fisher's exact test (0.598) is greater than the level of confidence a = 0.05.
For the third factor and both areas, the null hypothesis H_0 (that there is no difference between the distribution) can be accepted. The calculated p-value with Fisher's exact test (0.097) is greater than the level of confidence a = 0.05.

Table 7. Number-one location factor self-reported by firms, by type of location

Location factor	Bezannes					Clairmarais					
Frequency (%)	Endogenous creation	Exogenous creation	External relocation	Internal relocation	Total Bezannes	Endogenous creation	Exogenous creation	External relocation	Internal relocation	Total Clair-marais	Overall total
Lack of competition	7.69%				4.00%						1.72%
Accessibility	30.77%	100.00%		14.29%	24.00%						10.34%
Proximity to highways						11.76%				6.06%	3.45%
Proximity of citycentre						5.88%		50.00%		6.06%	3.45%
Available land			25.00%		4.00%						1.72%
Rail station						5.88%			10.00%	6.06%	3.45%
Image of Reims	7.69%				4.00%	5.88%				3.03%	3.45%
Image of the district	7.69%			14.29%	8.00%	11.76%	25.00%			9.09%	8.62%
Location	7.69%				4.00%						1.72%
Office availability				14.29%	4.00%	11.76%			30.00%	15.15%	10.34%
Rent costs							25.00%		20.00%	9.09%	5.17%
Car parking			25.00%	28.57%	12.00%						5.17%
Proximity of clients	23.08%				12.00%	17.65%		50.00%	30.00%	21.21%	17.24%
Proximity of services						5.88%	25.00%			6.06%	3.45%
Proximity of head offices									10.00%	3.03%	1.72%
Business takeover						5.88%				3.03%	1.72%
Company strategy	7.69%				4.00%						1.72%
HSR			25.00%	28.57%	12.00%	17.65%	25.00%			12.12%	12.07%
Visibility	7.69%		25.00%		8.00%						3.45%
Total	**100 %**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Source: authors' own work.

In Bezannes, in the case of exogenous relocations, firms are seeking available land, car parking, HSR, and visibility (25% for each). In the case of exogenous creations, accessibility is always sought-after. Stakeholders are looking for traditional location factors (land, accessibility, etc.), and HSR is one key element of accessibility among others.

Local firms (whether creations or relocations) report much more heterogeneous factors. New firms are looking for accessibility (30.8%) and proximity to clients (23.1%); 28.6% of firms (internal relocations) are looking for free car parking[13] and the HSR service. Some local firms therefore seem to use the HSR service in their work-related travel. Before the availability of HSR, employees and managers would travel to Paris by car.

In Clairmarais, the opposite was recorded. HSR is especially important for endogenous creations (17.65%, on an equal footing with proximity to clients) and exogenous creations (25%, on an

13 *Many firms that are themselves located around the central station are moving out to areas around the peripheral station, where parking is free.*

equal footing with rent costs, proximity of services and the image of the district). In the case of the one external relocation, the firm is especially interested in the proximity of the city centre and the proximity of clients (50% each). In the case of the single exogenous creation, the firm sought to benefit from the image of the district, low rent costs, proximity of services and the HSR (25%). For local firms located in Clairmarais and Bezannes, the location factors are more heterogeneous, with priority given to the proximity of clients (17.6% for Clairmarais and 30% for Bezannes) and the availability of offices for relocations. By contrast, outside firms that do not know the area well reported just a few key factors such as available land, combined with car parking and accessibility, including HSR. In both areas, local firms are characterized by the importance of proximity to clients. With particular regard to HSR, firms in Bezannes (whether internal or external relocations) appreciate a factor such as HSR accessibility (even if this isn't the only factor that counts), while in Clairmarais only new firms (endogenous or exogenous creations, i.e. small businesses) mentioned it.

4.3 High-speed rail use

In Clairmarais, firms declared more often that they used the HSR service than firms in Bezannes. However, this HSR use varies according to the type of business in question. In Bezannes, the one newly created firm (i.e. an exogenous creation) and 71.4% of internal relocations (7 firms) declared that they use the HSR service (Table 8).

Table 8. Use of HSR and type of firm

	Bezannes			Clairmarais		
	No	**Yes**	**Total**	**No**	**Yes**	**Total**
Endogenous creation	53.85%	46.15%	**13**	35.00%	65.00%	**20**
Exogenous creation	0.00%	100.00%	**1**	44.44%	55.56%	**9**
Relocation	50.00%	50.00%	**4**	0.00%	100.00%	**2**
Internal relocation	28.57%	71.43%	**7**	27.27%	72.73%	**11**
Total	**44.00%**	**56.00%**	**25**	**33.33%**	**66.67%**	**42**
Type	No	Yes	**Total**	No	Yes	**Total**

Source: authors' own work.

In Clairmarais, all external relocations (2 firms) use it, as do 72.73% of internal relocations (11 firms). In each area, the frequency of use of HSR for work-related travel is different (table 9). In Bezannes, the HSR service is used by most firms several times per month.

Table 9. Frequency of work-related travel by HSR by job type[14]

	Bezannes				Clairmarais			
Frequency of work-related travel	Director	Manager	Employée	Total	Director	Manager	Employée	Total
1 to 5 times per week	2	2	2	**6**	10	2	5	**17**
1 to 5 times per month	6	4	5	**15**	4	2	2	**8**
Less than once per month	4	1	3	**8**	4	0	7	**11**
Total	**12**	**7**	**10**	**29**	**18**	**4**	**14**	**36**

Source: authors' own work.

This frequency of use is relatively equally split between directors, managers and employees. In Clairmarais, the use of HSR is more common (one or more times a week in general) and is most frequent for directors of smaller firms in the tertiary sector. In Bezannes, personnel working in construction, manufacturing and extractive industries, and information and communication activities are the most frequent users of the HSR service.

5. Conclusion

The case of Reims allows us to revisit the issue of firms' location choices with regard to HSR stations, by analysing two types of station: a peripheral station and a central station. Both of these stations have been served by HSR services for the same amount of time, since 2007, but the respective changes in accessibility have varied. The central station is the station with the best accessibility to Paris by HST and to the other towns in the former Champagne-Ardenne region. While ChampagneArdenne station is less well served by trains to and from Paris, the station has the advantage of being directly connected to the high-speed rail network.

The arrival of HSR is the main reason for the creation of a business district and business parks in Reims. It triggered the freeing-up of land around the central station, where offices have now been built. The arrival of HSR also led to the creation of the deferred-development area in Bezannes, close to Champagne-Ardenne station. In both cases, it was local companies that first chose to locate there. These "early adopters" had an insurance effect, encouraging companies from outside Reims to move in, but outside firms remain a minority.

14 For the frequency of work-related travel for all jobs and both areas, the null hypothesis H0 (that there is no difference between the distribution) must be rejected. The calculated p-value with Fisher's exact test (0.028) is less than the level of confidence a = 0.05; the alternative hypothesis H1 (that there is a difference between the distributions) can be accepted.
For the frequency of work-related travel for directors and both areas, the null hypothesis H0 (that there is no difference between the distribution) can be accepted. The calculated p-value with Fisher's exact test (0.112) is greater than the level of confidence a = 0.05. For the frequency of work-related travel for managers and both areas, the null hypothesis H0 (that there is no difference between the distribution) can be accepted. The calculated p-value with Fisher's exact test (1) is greater than the level of confidence a = 0.05. For the frequency of work-related travel for employees and both areas, the null hypothesis H0 (that there is no difference between the distribution) can be accepted. The calculated p-value with Fisher's exact test (0.234) is greater than the level of confidence a = 0.05.

Nevertheless, despite these similarities, each station is characterized by different dynamics. Around the central station, buildings were renovated or constructed ahead of the arrival of HSR, and company locations in the area were not halted by the economic crisis. By contrast, the crisis did have an impact on the development of the business parks around Champagne-Ardenne station, delaying their realization until 2015. Moreover, the companies in each area tend to be from different business sectors. Lastly, the location factors for firms in each area are similar but not identical by any means. Around both stations, office availability and the image of the district are the main location factors, but subsequent factors vary: the presence of HSR is a more important location factor in Clairmarais, but one that appears some way down the list in the location-factor hierarchy. By contrast, it was more often cited as the number-one location factor by firms located near the peripheral ChampagneArdenne station. Furthermore, it doesn't play the same role in each area: while HSR is one element of more general accessibility considerations in Bezannes, it is more important and used more in Clairmarais, where rail services to and from Paris play a more essential role.

In this way, by inducing a dynamic of business-district or business-park creation, HSR structures the urban space and segments it by function, with service-sector activities in the city centre and industry- and sales-related administrative activities on the outskirts, where firms can find large offices and good accessibility without the high costs of city-centre locations in terms of car parking and office rents.

To conclude, in the case of Reims, while location choice is partly linked to the type and level of accessibility provided by HSR in each type of station, it also depends on the types of firms in question, and in particular whether they are new or existing companies. For newly created outside firms, the most important location factors are office space, access to Paris, and lower rents than in Paris. For relocations within Reims, office availability and the proximity of clients passing through the station are most important in the case of the central station. Surprisingly, both surveys revealed that access of a large pool of qualified jobs in the Paris region was not an important factor for firms choosing to locate in Reims. It confirms that the economic climate is very important for business parks around peripheral stations but not for business districts around central stations, as centrality seems to be an insurance factor.

With an increase in the number of services to and from Paris – combined with existing services to Marne-la-Vallée Chessy and the fact that the future Grand Paris Express network will link the east of the Paris region with the north and south without having to pass through central Paris – the accessibility of Champagne-Ardenne station could be highly improved.

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