On Track Competition for High Speed Rail Services: A French Case Study

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Abstract

Railways were initially envisaged as open access facilities with head-on competition between service providers. However, concerns about safety quickly resulted in railways being largely developed as vertically integrated monopolies at a route level. Over time, competition from other modes reduced the scope for internal competition. In most countries of the world rail services became a state-owned monopoly. This has been reversed over the last thirty years (Gomez-Ibanez and de Rus, 2006), but direct on the tracks competition between rail operators has been limited, especially for passenger services, due a large number of barriers to entry.

For example, in Great Britain the 1993 Railways Act promised open access competition between passenger rail operators (Preston 2009). In the event, regulatory intervention heavily moderated competition up to 2002. Nonetheless, some open access competition has emerged in Britain with three passenger train operators having entered the market (Griffiths, 2009). There has been open access competition in passenger rail markets elsewhere – most notably Germany where open access has been permitted since 1999, but accounting in 2013 for less than 1% of services. When permitted, niche competition has emerged in other rail markets: for instance, in Italy, Nuovo Trasporto Viaggiatori (NVT), with a 20% stake held by SNCF, began operating on two routes in April 2012 (Turin – Salerno and Rome – Venice). From a global point of view, on track competition for passenger services has so far been limited and it is particularly obvious in France where SNCF has still the monopoly. One competitor (Thello) operates a daily train between Paris and Venice and considers opening in 2014 a service between Marseille and Milano.

The aim of this paper is to assess the likelihood of entry for a new operator on the French high speed line (HSL) Paris - Lyon, the most profitable for SNCF. What are the barriers to entry? What are the economic conditions of a successful entry for a competitor (Nash 2010)? How to limit the retaliations of the incumbent?
Methodology

In order to design a viable competition, we put the focus on two key actors: the competitor and the rail regulator.

- For the potential competitor, and considering the long list of barriers to entry, we determine the cost function for a “shadow HSR operator” on the Paris-Lyon line. The cost structure is based on that applied by SNCF. In other words, we have begun by considering that the shadow operator has the same costs as SNCF and then go on to consider hypotheses in which it could do better. The cost components are the following:
  - The hourly cost of traction and the train crew expressed in €/hour
  - The per kilometre cost, which takes account of the maintenance of the rolling stock and the energy required to run trains. This cost is expressed in €/km and is based on the SNCF's maintenance costs.
  - The fixed cost associated with shunting trains. This is expressed in €/run.
  - The passenger cost, which includes ticketing costs and station costs and which is therefore expressed in €/passenger. A new entrant could reduce its ticket distribution costs by selling tickets exclusively on the Internet.
  - Structure costs which on average amount to 30% of the costs mentioned above. These include the cost of buildings and, for example, the creation of an outlet for a foreign operator who sets up in France when its head office is elsewhere in Europe.
  - Depreciation of the rolling stock which is expressed in €/km. This has been calculated on a linear basis, taking account of the purchase cost, the cost of mid-life renovation, and a zero residual value after 30 years. The purchase cost is €M 26.2/trainset. Mid-life renovation costs €M 7.0, the amortization period is 30 years and the residual value is zero. In this way, we were able to maintain the depreciation cost per day and per kilometre for each trainset used by the operator.

For the totality of these costs, in the final function, we have considered that they vary according to whether the train in question is a single trainset (8 cars plus locomotives) or a double trainset (16 cars). This is because during off-peak hours, a single trainset is sufficient while a double trainset is needed to meet peak hour demand. We have therefore made the hypothesis that the new entrant will apply this type of organization.

- For the “benevolent regulator”, the challenge is to offer to the new entrant a sustainable set of train paths. It is therefore necessary to conduct an in depth analysis of the demand function. This enables us to compute the potential market share of a new entrant competing with SNCF. The demand function shows that demand varies strongly in peak and off-peak periods. A key issue for the regulator is to obtain from
the infrastructure manager and for the competitor an optimal set of train paths, mainly in peak period.

Results

Our main result is the definition of the potential market share of the competitor according to the number of train paths per day and the mix between peak and off-peak periods (fig. 1).

Figure 1: Market share of the new competitor and number of train paths per day (HN = off peak period; HP = peak period)

We observe that the market share is very sensitive to the set of train paths. Another interesting and paradoxical result is that the profitability does not depend on the level of access charges. The high level of access charges at peak periods is not an obstacle to the entry of new competitors. It is even at peak periods, when the access charges are at their highest, that it is easy to achieve profitability by lowering fares without reducing costs in relation to the SNCF. But the problem is that during off-peak periods, the load factor remains insufficient to obtain profitability. Cross subsidies are necessary between peak and off-peak periods. It is therefore necessary to reach a high profitability during peak periods and therefore to have enough train paths during the peak period. Obviously, we can suppose that the response strategies of the SNCF, in whose interest it would be to engage in a preventive price war if it were threatened by the advent of a new operator. Is it therefore possible for the “benevolent regulator” to avoid such a behavior?
References

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