



Investigating European railway managers' perception of transaction costs at the train operation/infrastructure interface



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ABSTRACT

This paper discusses the effects of institutional organisation on the transactions and interactions between train operators and infrastructure managers in the three most liberalised rail systems in Europe, namely Britain, Germany and Sweden. The heart of the analysis is a major in-depth interview programme with 81 senior rail managers in 2008 followed by a survey of the same managers 4 years later (2012/2013). Our results reveal how rail managers perceive their transactions in the real world as opposed to pure transaction cost theory. For both snapshots, co-ordination and contractual aspects particularly related to timetabling and real time operations are seen as more crucial than the traditional investment hold up or lock in transaction cost economics issues. In all three systems good relationships are indicated as the most important contributor to making the system work. It does appear that having many of these issues resolved internally by members of a single group simplifies the transactions considerably. But there is a cost to this when competition is desirable, as it creates greater uncertainty and fear of discrimination on behalf of those train operators outside the group.

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1. Introduction

In the last two decades the European Commission has been very active in restructuring the European rail sector and as of December 2012 is finalising proposals for a fourth railway package to further strengthen the position of rail as an efficient mode of transport. In order to promote competition between train operating companies, current European legislation (Directives 91/440/EEC and 2001/12-14/EC) requires that main line rail systems in Europe are vertically separated at least to the extent of having separate accounts and divisions for infrastructure, passenger and freight operations. If the management of the infrastructure is not independent of train operators, then key decisions on the allocation of capacity and the setting of track access charges must be taken by a third party. This does not rule out the holding company model, in which infrastructure and train operations remain part of the same group, and following the example of Germany, several European countries (e.g. Austria and Italy) have followed this model. It appears that the advantages and drawbacks of the railway holding model approach are now much at the heart of the debate related to the preparation of the fourth rail package which has the potential to substantially change the structure of the European rail industry.

Whilst it is clear that complete separation of infrastructure and operations has the benefit of removing a prime motive for discrimination by the infrastructure manager, there is concern that it may raise costs. Econometric evidence on this from studies of European experience (e.g. [Friebel et al., 2010](#); [Growitsch and Wetzel, 2009](#); [Cantos et al., 2010](#)) does not yield consistent results, whilst evidence from the US (e.g. [Bitzan, 2003](#)) relies on extrapolating models estimated on railways which in

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most of their operations are vertically integrated to the case of vertical separation. [Van de Velde et al. \(2012\)](#) show that cost savings from complete vertical separation compared with vertical integration or the holding company model are limited to railways with relatively low density and low proportions of freight traffic, and that imposition of complete vertical separation throughout Europe would substantially raise costs.

There is substantial fear that contractual relationships between the separated train operation and infrastructure management would result in higher transaction costs than in an integrated or a holding model ([Preston, 2002](#); [Pittman, 2005](#); [Growitsch and Wetzel, 2009](#)) and [Merkert's \(2012\)](#) empirical results suggest that vertical separation indeed increases transaction costs. However, in further quantitative studies [Merkert et al. \(2012\)](#) reveal that even in the most extreme case of full vertical separation, transaction costs at the train operation/infrastructure interface only account for 3% of total operating cost. It is hence questionable whether the transaction cost argument is indeed of significant importance to the discussion of vertical separation of railways. Our discussions with senior rail management and anecdotal evidence presented by previous commentators suggest that transaction costs still matter.

The aim of this paper is to analyse empirically how managers of European railways perceive their transactions at the train operation/rail infrastructure interface and which areas of interaction they find most problematic in terms of transaction cost economics. We also investigate whether these perceptions change over time. By applying [Williamson's \(1998\)](#) model of transaction cost economics to the rail systems of the United Kingdom (UK), Sweden (both fully separated) and Germany (holding company model) we evaluate what effects institutional differences have on perceived transaction/interaction attributes along the train operation value chain. The rail systems of the UK, Germany and Sweden are interesting because they operate in competitive environments (according to [IBM/Kirchner, 2011](#), they are the most liberalised railways in Europe) but differ substantially in regard to their approach to rail organisation. A particular interest of this paper is whether full separation makes interactions between train operators and infrastructure managers substantially more problematic (beyond directly measurable increases in transaction costs) compared to the holding model and if so which stages/areas along the production chain are most critical. The paper is structured as follows. Section 2 reviews briefly in what sense transaction cost economics matter to the organisation of railways. Building on this, Section 3 presents the methodology and the sample of our analysis. Section 4 discusses the results with a focus on the rail managers' perceptions. Finally, our key findings are summarised in Section 5.

2. Theoretical framework and gaps in the literature

In a free market situation, one would assume that firms organise themselves in a (transaction) cost minimising way. From a theoretical perspective ([Williamson, 1998, 2005](#)) the firm is seen as a safeguarding governance structure which minimises transaction cost. Where transactions are associated with problems of small-number exchange relationships, lack of partnerships, high *asset specificity*, *complex environments*, *frequent exchanges* and *uncertainty* firms tend to internalise stages of the production process. Particularly asset specificity is seen as problematic in the traditional transaction cost economics literature. It is argued that highly specific assets would result in investment hold-up or lock-in issues. Given the case that one contracting partner has undertaken specific investments in expectation of the future contract/deal with a downstream or upstream partner, he or she might be locked into that particular relationship. The non-redeployability of specific assets is seen as the reason for shifting an ex-ante competitive environment towards an ex-post bilateral dependency (lock-in), the so-called fundamental transformation. The partner who did not make the investment in the specific asset may extract the quasi-rent ([Klein et al., 1978](#)). Furthermore, if the contract is due for renewal the problem where the stronger partner is trying to dispossess the quasi rent of the weaker partner is inherent (hold-up). Both situations usually result in a desire for more integration for example in the form of long term contracts. Following Williamson, large railways with only one operator and one infrastructure manager with specific technical characteristics (e.g. signalling and electricity systems) would from a transaction cost perspective have strong incentives to vertically integrate (as their transactions are specific, frequent and often uncertain).

For EU railways, the choice of organisational structure is made by governments, subject to the provisions of EU directives (which aim to introduce competition between train operators). This means that, except in some cases where there is a temporary derogation, the traditional model of complete vertical integration is not an option. What is found in practice is a choice between complete vertical separation, the holding company model in which infrastructure and operations are separate subsidiaries of the same company, and various hybrids of the two. This paper is, therefore, not considering the case of pure vertical integration but is concerned with set-ups, where several operators compete for capacity of one infrastructure manager. We investigate what degree of vertical rail separation provides benefits of competition and still works well enough in terms of transaction cost economics.

In vertically integrated railways processes are coordinated by hierarchical administrative mechanisms. Once vertical separation has occurred these processes must be contracted between the different parties and coordinated by either markets or third parties such as regulators. The holding model sits in between these two extremes, in that the holding company itself may play a part in these coordination processes and is therefore from a theoretical transaction cost economics perspective a very interesting case.

Because of their strong incentives spot markets are generally seen as most efficient. However, depending on the transaction attributes, vertical integration or hybrid modes of governance like joint ventures, franchises or long-term contracts

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