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POSITION PAPER ON THE CONCEPT OF "*COST THAT IS DIRECTLY INCURRED*"

Directive 2001/14/EC, Article 7 (3)

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A. Main purpose of the paper

This paper aims at clarifying the concept of "***cost that is directly incurred*** *as a result of operating the train service*" as set out in article 7 (3) of directive 2001/14/EC. As a first step it provides explanatory guidelines on the way this charging principle may be interpreted and implemented.

According to national legislation an infrastructure manager may nevertheless be obliged to consider higher costs than the costs directly incurred for the minimum access package, if he is obliged to cover his total costs via mark-ups.

B. Introduction

The objective of economic regulation is the efficient allocation of resources within an individual industry, so that society maximises the benefits accruing from that industry. Pricing of infrastructure is important within regulated network industries, because it provides signals to both the supply side (in this case the infrastructure managers) and the demand side (railway undertakings) which affect each of these party's decisions and the incentives that they face to act in an 'efficient' manner.

The EU has recognised the importance of infrastructure pricing in the European railway industry, and has legislated to enforce efficient pricing policies through the First Railway Package. In particular article 7 (3) of Directive 2001/14/EC reads as follows:

"Without prejudice to paragraphs 4 or 5 or to Article 8, the charges for the minimum access package and track access to service facilities shall be set at the ***cost that is directly incurred*** *as a result of operating the train service."*

The minimum access package referred to in article 7 (3) includes the following services (Annex II of Directive 2001/14/EC):

a) handling of requests for infrastructure capacity;

b) the right to utilise capacity which is granted;

c) use of running track points and junctions;

d) train control including signalling, regulation, dispatching and the communication and provision of information on train movement;

e) all other information required to implement or operate the service for which capacity has been granted.

The combination of article 7 (3) and Annex II of Directive 2001/14/EC therefore prescribes that the charges applied under the minimum access package should not exceed the costs directly incurred by the infrastructure manager as a result of using the services listed.[1]

C. Explanatory guidelines

- **The cost that is directly incurred as a result of operating the train service**

The IRG-Rail charging working group supports the view that the "*cost that is directly incurred*" should be interpreted as "short-run marginal cost" (SRMC), and that short-run marginal cost should be taken to include:

[1] Nevertheless the directive 2001/14/EC in article 8, paragraph 1 states that "[i]*n order to obtain full recovery of the costs incurred by the infrastructure manager a Member State may, if the market can bear this, levy mark-ups on the basis of efficient, transparent and non-discriminatory principles, while guaranteeing optimum competitiveness in particular of international rail freight. The charging system shall respect the productivity increases achieved by railway undertakings".* Therefore, the directive allows, under conditions, for a surcharge on the costs directly incurred even for the minimum access package. Another position paper will be produced by the IRG-Rail charging group working group on this specific charging question.

- Operating costs (*e.g.* signalling);
- Maintenance costs (*e.g.* wear and tear repairs);
- Renewal costs.[2]

IRG-Rail underlines that, by definition, all fixed costs shall be excluded from the costs considered within Article 7 (3) of Directive 2001/14/EC.

Given that infrastructures managers tend to face high fixed costs, and are generally considered to be natural monopolies, the adoption of a SRMC-based approach as proposed in Article 7 (3) means that IMs are likely to under-recover fixed costs in the short term. Directive 2001/14/EC does, however, permit mark-ups to SRMC for the purpose of fixed cost recovery where it can be demonstrated that the market in question is able to bear it.

- **Determining marginal costs**

IRG-Rail charging working group recommends the following understanding:

Why use marginal cost for determining access charges?
Marginal cost pricing is an important principle concept in rail regulation because it provides incentives to both the supply side (infrastructure managers) and the demand side (railway undertakings) to reach an allocatively efficient outcome; it is only when the price of consuming an additional unit of output reflects the cost of producing that unit that the infrastructure manager will provide all requested capacity efficiently and will not extract unearned revenue[3]. In other words, charges based on marginal cost pricing lead according to economic theory to an optimal use of the infrastructure.

What is marginal cost?
Whilst the theory of marginal cost pricing is relatively simple, it is more complex to apply in network industries, in particular for the rail industry because track capacity tends to be 'lumpy' and can only be added or removed in discrete sections. So whilst output (expressed as train-kilometers or tonne-kilometers) can vary to some extent, a small incremental increase in output can mean that significant investment in additional capacity will be required to accommodate this increase. Our interpretation of the Directive is that the unit of measurement should be short in the medium-run in nature rather than reflect longer term cost impacts such as enhancement costs (see below). The actual cost for calculation should be short-run.

How to determine marginal cost of rail usage?

In reviewing costs, it is important that national rail regulatory bodies understand maintenance and renewal costs[4] (as well as the trade-off between the two) in order to be able to estimate the impact of 'wear and tear' on marginal costs. There are two main

[2] Renewal costs can be included, but are not considered in all available and representative studies. Their consideration is up to further research, as the classification of costs to be considered as renewal or maintenance costs is not definite.
[3] It is to be underlined that levying mark-ups to obtain a fixed cost recovery as set out in Article 8 (1) of Directive 2001/14/EC requires the determination of marginal costs as well, as the amount of an allocative efficient surcharge depends basically both on the bearing capability and the value of marginal costs.
[4] See footnote 2, p. 2.

approaches for estimating efficient marginal costs[5]. These are the so-called **'*bottom-up*'** and **'*top-down*'** approaches[6]. The bottom-up approach provides a good understanding of how costs are incurred from an engineering perspective, but it often relies on a number of disputable assumptions. The advantage of the top-down methodology is that it is based on actual information on 'wear and tear 'costs. As such, it provides a useful tool to check the robustness of the results of engineering methods. For this main reason, IRG-Rail considers that in most cases a combination of 'bottom-up' and 'top-down' benchmarking of costs methodologies would be appropriate.
Additionally, IRG-Rail suggests track access charges should be based on the efficient costs[7] that are likely to be incurred over a defined funding or regulatory period and therefore be consistent with the SRMC principle.

- **Cost indexation**

IRG-Rail charging working group recommends the following understanding of cost indexation:
Specifying cost indexation criteria (*e.g.* Retail Price Index, Consumer Price Index, Synthetic Price Indices) is likely to be an important element of the regulatory bodies charging review process because it provides some certainty to both the infrastructure manager and its customers about their relative exposures to future cost increases. Cost indexation is also useful because:

1. It can be difficult (time consuming and expensive) to calculate annual estimates of marginal costs;
2. The time lags between the marginal cost estimation and the establishment of charges for the use of the infrastructure can sometimes be significant.

However, IRG-Rail would like to reinforce the view that any chosen indexation formula should consider efficiency incentives wherever this is appropriate and possible.

- **Enhancements - Extension of the network**

As discussed above, short-run marginal cost pricing in a network industry is generally predicated on the capacity of the network effectively being fixed in the short-run. The implication of this is that price/output decisions by infrastructure managers and operators are made on the basis of that capacity existing in the first place. Because of this, where enhancements to the network take place, IRG-Rail considers that the costs of these enhancements should not be included in the "*cost that is directly incurred*" mentioned in article 7 (3).

[5] See, Wheat and Smith (2008, p.3) or Wheat *et al.* (2009).
[6] See definitions in annex (p.4).
[7] The exception of article 8 (1) Directive 2001/14/EC can be taken into consideration.

D. References

European Parliament (2001) "*Directive 2001/14/EC of the European Parliament and of the Council of 26 February 2001 on the Allocation of Railway Infrastructure Capacity and the Levying of Charges for Use of Railway Infrastructure and Safety Certification*", Official Journal of the European Communities L 075, March 15: 29-46.

Wheat, P. and Smith, A. (2008) "*Assessing the Marginal Infrastructure Maintenance Wear and Tear Costs for Britain's Railway Network*", Journal of Transport Economics and Policy, 42, 2: 189-224.

Wheat, P., Smith, A. and Nash, C. (2009) "*Rail cost allocation for Europe*", CATRIN (Cost Allocation of Transport Infrastructure cost) Deliverable 8, Funded by the European Commission 6th Framework Programme, VTI, Stockholm.

Annex: Definitions

- **Marginal / incremental cost:** change in variable cost as a result of an increase in output in one unit. In rail transport (for tracks' use), the unit could be the train.km or the tone.km**;**
- **Fixed cost :** cost that do not vary with the level of production ;
- **Top-down methodology** and **bottom-up methodology**: useful definitions can be found in the the academic paper by Wheat and Smith (2008) :
  - **Bottom-up methodology :** Approaches relying "*on engineering models and judgment to determine the likely wear and tear impact of running an extra vehicle on different components of the infrastructure network*";
  - **Top-down methodology:** Approaches using "*data on costs of maintaining and/or renewing the infrastructure and estimating what proportion of the total (average) costs are variable with traffic. The top down approach may be implemented through two methods: estimation of an infrastructure cost function using econometric techniques; and cost allocation methods which allocate constituent parts of total cost to common cost drivers and then use engineering judgment to determine the variability of these categories with the cost driver*".