



Autorité de régulation
des activités ferroviaires

Implementing Act on Direct Costs & First Experience in France

2. SYMPOSIUM DER SCHIENEN-CONTROL

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Outline

- 1. Charging principles laid down in Directive 2012/34/EU and implementing regulation 2015/909 on direct costs**

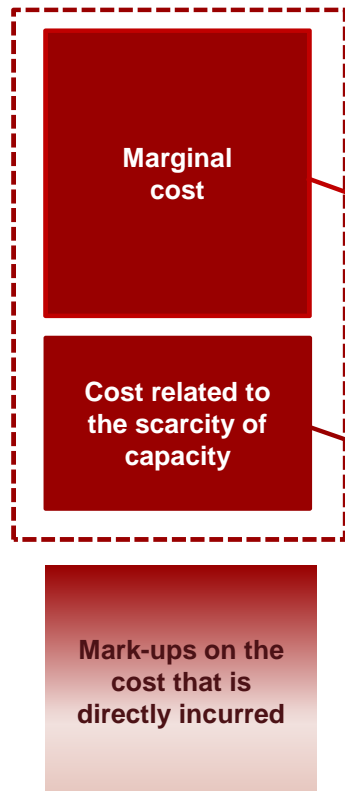
- 2. Estimating direct costs : the French case**



1. DIRECTIVE 2012/34/EU & IMPLEMENTING REGULATION 2015/909 ON DIRECT COSTS

1. Charging principles laid down in Directive 2012/34/EU and regulation 2015/909 on direct costs

Directive 2012/34/EU



✓ Article 31 : Principles of charging

- " [...] the charges for the **minimum access package** and for **access to infrastructure connecting service facilities** shall be set at the **cost that is directly incurred** as a result of **operating the train service**. Before 16 June 2015, the Commission shall adopt measures setting out the modalities for the calculation of the cost that is directly incurred as a result of operating the train" (**Article 31.3**)
- "[t]he **infrastructure charges** referred to in article 31.3] may include a charge which reflects the **scarcity of capacity** of the **identifiable section** of the infrastructure during **periods of congestion**" (**Article 31.4**)

1. Charging principles laid down in Directive 2012/34/EU and regulation 2015/909 on direct costs

Directive 2012/34/EU

✓ Article 32 : Exceptions to charging principles



- "In 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 of rail market segments. The charging system shall **respect the productivity increases** achieved by railway undertakings" (Article 32.1)
- The level of charges **shall not, however, exclude the use of infrastructure by market segments which can pay at least the cost that is directly incurred** as a result of operating the railway service, plus a rate of return which the market can bear" (Article 32.1)
- "For specific future **investment projects**, or specific investment projects that have been completed after 1988, the infrastructure manager may set or continue to **set higher charges** on the **basis of the long-term costs** of such projects if they **increase efficiency or cost-effectiveness** or both and could not otherwise be or have been undertaken. Such a charging arrangement may also incorporate agreements on the sharing of the risk associated with new investments" (Article 32.3)



1. Charging principles laid down in Directive 2012/34/EU and regulation 2015/909 on direct costs

- **Implementing act on direct costs :**
 - A core implementing regulation for access charges
 - Three positions papers adopted by IRG-Rail
 - (Some) important provisions :
 - Recital 12 : « *It is a **well-established economic principle that user charges based on marginal costs ensure the optimum effective use of available infrastructure capacity. Hence, the infrastructure manager may decide to use the **proxy of marginal costs for calculating its cost directly incurred** as a result of operating the train service*** »
 - Recital 13 : « *Furthermore, **international best practice has established methods and models such as econometric or engineering modelling**, to calculate the marginal costs of infrastructure use.[...] Consequently, the **infrastructure manager should be allowed to use such models** to identify the direct costs incurred by the operation of the train service»*
 - Article 3.2: « *The Member State may decide that the infrastructure manager applies the **costs of efficient service provision for the purposes of calculation of direct costs** on a network-wide basis»*
 - Article 3.4 : variable« *costs of points infrastructure* » (including **switches and crossings**) and «*costs of staff needed for preparing the **allocation of train paths and the timetable*** » may, in particular, be included in direct costs
 - Article 4.1 : non eligible costs (e.g. « *network-wide overhead costs, including overhead salaries and pensions, depreciation which is not determined on the basis of real wear and tear* »)
 - Article 6 : **econometric or engineering cost modelling**
 - Article 7 : conditions for a **simplified control**
 - *Article 9 : phase-in process*



1. Charging principles laid down in Directive 2012/34/EU and regulation 2015/909 on direct costs

- Implementing act on direct costs :
 - Two methodologies
 1. **Article 5.1** : « *The infrastructure manager shall calculate average direct unit costs for the entire network by **dividing the direct costs on a network-wide basis by the total number of vehicle kilometres, train kilometres or gross tonne kilometres forecasted for or actually operated** »*
 2. **Article 6** : « *By derogation to Article 3(1) and the first sentence of Article 5(1), the infrastructure manager may **calculate direct unit costs by means of robustly evidenced econometric or engineering cost modelling**, provided it can demonstrate to the regulatory body that the direct unit costs include only direct costs incurred by the operation of the train service and, in particular, do not include any of the costs referred to in Article 4 »*



2. ESTIMATING DIRECT COSTS : THE FRENCH CASE



2. Charging principles laid down in Directive 2012/34/EU and regulation 2015/909 on direct costs

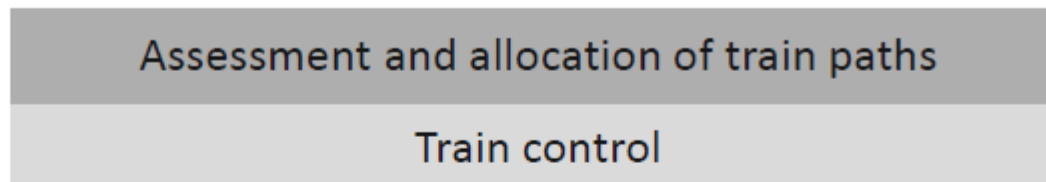
- **A new cost model** implemented by the infrastructure manager (SNCF Réseau) in 2014
- **Econometric approach** to estimate the **cost that is directly incurred**
- **Previous cost model from 2008 reviewed** following **ARAF's opinion** on NS 2012
- **Substantial improvements** of the new cost model:
 - **Uses more recent and extensive databases** from **2007 to 2009**
 - **Marginal operating and maintenance costs** estimated using **advanced econometric methods**



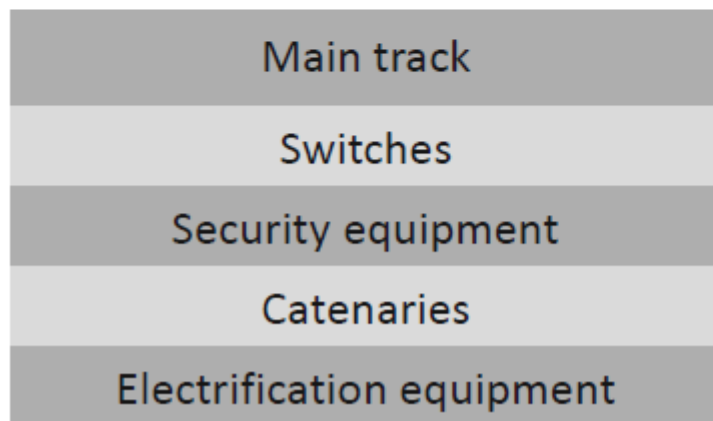
2. Charging principles laid down in Directive 2012/34/EU and regulation 2015/909 on direct costs

- Perimeter of the cost model :

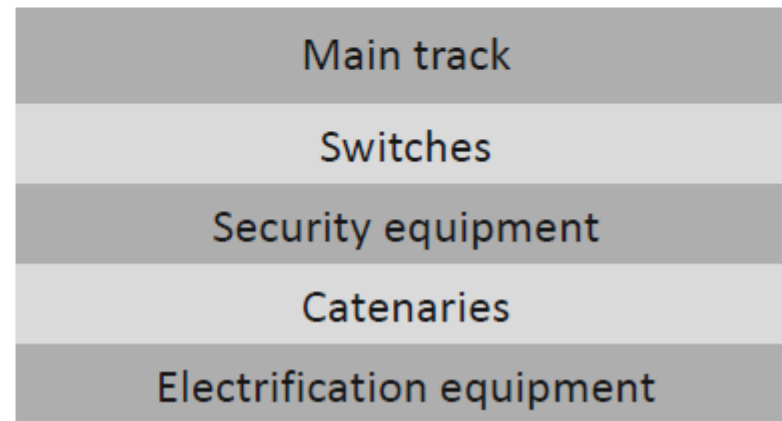
OPERATING COSTS



MAINTENANCE



RENEWAL





2. Charging principles laid down in Directive 2012/34/EU and regulation 2015/909 on direct costs

- Perimeter of the cost model :
 - **Categories out of the perimeter :**
 - Cost of capital (fixed cost)
 - Costs related to the extension of the network (\neq SRMC)
 - **Actual costs data on :**
 - **Operational, maintenance and renewal costs**
 - **Traffic** (number of circulations, train-km, tonne-km)
 - **Physical properties of the network** (e.g. age of rail, maximal allowed speed)



2. Charging principles laid down in Directive 2012/34/EU and regulation 2015/909 on direct costs

Estimation strategy :

- **Top-down approach** (econometric analysis)
 - Advanced econometrics methods to estimate the correlation between traffic and actual expenses for each category considered (consistent with the CATRIN approach)
 - Large number of '*control variables*' included
 - Unit of observation : **small network subset**
 - Units of traffic considered:

Cost category	Traffic Unit
Operating costs	€/train
Maintenance costs	€/tonne.km (track & switches) €/train.km (security and electrification equipment)
Renewal costs	€/tonne.km



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Estimation strategy :

- **Weighted average short run marginal cost** estimated **by activity**, considering the **level of traffic** for each segment.
- Example :



$$\rightarrow \text{Marginal cost TET activity} = \frac{T_a * Cm_A + T_b * Cm_B}{T_a + T_b} = 3,18 \text{ €}/\text{tr-km}$$



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Results :

Marginal costs (€ 2016/tr-km)	TAGV on HSL	TAGV on CL	Other main lines ²⁴	TER	Transilien	Freight
Maintenance	1.449	1.670	1.513	1.025	2.812	1.315
Operation	0.119	0.153	0.180	0.173	0.343	0.206
Renewal	2.825	1.762	1.481	0.644	1.243	3.322
Total	4.394	3.584	3.174	1.842	4.398	4.844

Source : SNCF Réseau (NS 2016)

- The cost model enables the estimation of a **marginal cost** for **each activity** and **each cost category**
- The **share of each cost category** in the **total marginal cost** differs according to the activity
- **Direct costs** significantly differs among activities



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Results :

- Usage elasticities by cost category :

Operational management	Maintenance	Renewal	TOTAL
10%	34%	37%	23%

- Usage elasticities by activity :

High speed trains	Regional trains (Ile-de-France)	Regional trains (outside Ile-de-France)	Freight
24%	36%	15%	27%



THANK YOU

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