



Rail infrastructure charges in Europe and the internalisation of rail transport external costs

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Outline



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1. Track access charge principles
2. The current position
3. Why has there not been more progress in charging for external cost?
4. Conclusions



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TRACK ACCESS CHARGE PRINCIPLES



1st railway package recast

Charges must be based on 'costs directly incurred as a result of operating the train service'.

They may include:

- Scarcity charges
- Environmental costs (but must not add to rail costs unless other modes also charged)

Specifically noise costs, taking account of composition of trains and population affected

- Differentiation according to whether ETCS fitted (required on designated international corridors)
- Non discriminatory mark ups
- Time limited schemes to compensate for undercharging on other modes

Direct cost interpreted as short run marginal social cost



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- Charges train operators the additional costs they create by running a train
- Should therefore create the right incentives regarding
 - Type of rolling stock to use
 - Number of trains to run
 - Route and time of day
- BUT
- Does nothing to incentivise infrastructure manager
- Relies on the state or regulator to do that

The Elements of Marginal Social Cost



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1. Wear and tear costs: Maintenance and accelerated renewals
2. Congestion or scarcity or the cost of capacity
3. Train planning and operations
4. Electricity
5. Other Services (information, stations, marshalling yards)
6. External Costs (noise, air pollution, global warming, external accident costs)



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THE CURRENT POSITION

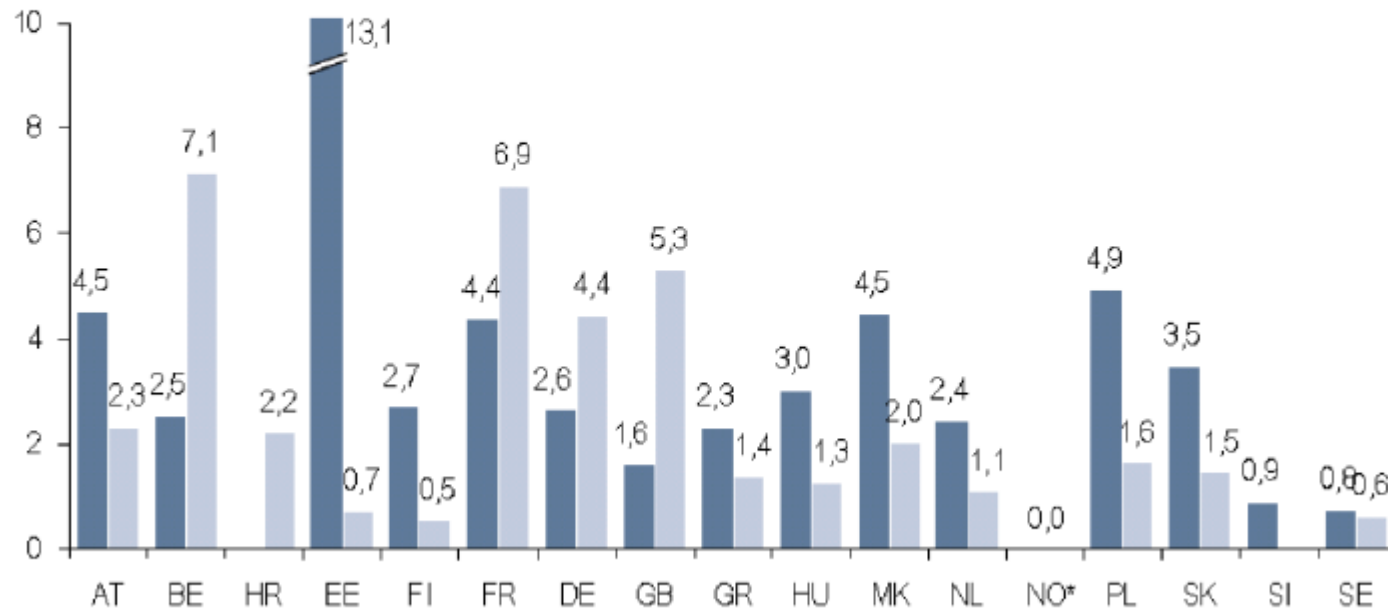


Track access charges

Euro per train kilometer, 2011

■ freight train charges

■ passenger train charges



* Track access is generally not charged in Norway.



Structure of charges - examples

Britain

Usage charge per vehicle km differentiated by vehicle type

Congestion charge per train km by location and time

France

Usage charge per train km (differentiated by type train and route)

Reservation charge per path km by type of route

Germany

Charge per train km differentiated by type of train, route and path (surcharge for trains over 3000 tonnes)

Factors determining variable access charges in Britain



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- tare weight;
- number of axles;
- unsprung mass;
- yaw-stiffness;
- maximum speed of the vehicle;
- suspension band (freight vehicles only); and
- operating weight (freight vehicles only).

Wagon types Impact on Variable usage charge rate



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- 4-wheel wagon with pedestal type suspension +9.8%
- 4-wheel wagon having leaf springs +5.8%
- Damped bogie wagon with three piece bogie +1.8%
- Bogie wagon with enhanced three piece bogie -2.2%
- Basic bogie wagon with primary springs -6.2%
- Bogie wagon with enhanced primary springs – low track force bogies -10.2%
- Bogie wagon with enhanced primary springs and Steering -14.2%

Weight per seat and track access charges per vehicle of rolling stock - emus



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Year	Class	Charge per vkm
1994	Networker Express	3.97-5.25
1999	375 Electrostar	5.48-6.8
2002	360 Desiro	6.67-7.98

Weight per seat and track access charges per vehicle of rolling stock - dmus



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Year	Class	Charge per vkm (p)
1989	158	6.07
1998	168/170/171 Turbostar	6.65- 7.25
2001	175 Coradia	11.8
2006	185 Desiro	12.53



Environmental charges

- Air pollution

Sweden. Charged for diesel/CNG powered trains.

Charge per litre of fuel varying with type of loco/dmu

- Noise

Germany

Bonus/malus scheme to encourage retrofitting of composite brakeblocks. (quiet trains are those over 80% so fitted)

Switzerland

Low noise bonus per axle km for suitably fitted vehicles



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**WHY HAS THERE NOT BEEN
MORE PROGRESS IN
CHARGING FOR EXTERNAL
COST?**

ITS

Why so little charging for externalities?

1. Lack of charges on other modes



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Directive 2011/76/EU permits kilometre based charging of heavy goods vehicles for:

- marginal maintenance and renewals costs

- noise

- air pollution

- differentiating charges according to levels of congestion,

But little implemented.

Charging of cars a matter for member states (some do differentiate according to environmental cost)

Why so little charging for externalities?

2. Complexity



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1. How to value noise and air pollution?

Extensive research leading to EC Handbook.

2. How to implement?

Really need km based charges that differentiate by characteristics of the vehicle and where and (in the case of noise) when it is being used

But cruder charges may be of some benefit, especially in achieving targets regarding how environmentally friendly rolling stock is

Why so little charging for externalities?

3. Lack of evidence on the effectiveness of track access charges



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- Charges sometimes too low according to econometric evidence: see for instance CATRIN and SUSTRAIL
- Rolling stock is built for a European market and few countries incentivise less damaging trains
- Many passenger services are on franchises of 7-10 years with Train Operating Companies in the lead on choosing stock – so short time horizon
- Freight operators are currently investing little (lack of profitability) and also have short time horizons



But some successes

1. In Britain almost all new freight vehicles have track friendly bogies
2. Noise charges in Germany



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CONCLUSIONS



Conclusions

- Efficient track access charges should be based on short run marginal social cost, and research has produced the evidence to do this
- But charges are currently very variable in level and structure and few countries have made any attempt to charge for externalities
- Reasons for this include
 - Lack of such charges on other modes
 - Complexity
 - Lack of evidence on the effectiveness of charges

But

- Important to give right incentives regarding type of rolling stock regardless of what other modes are doing (may need to do so in an overall cost neutral way)
- Evidence exists on which to base charges and simplified charging systems may still help influence rolling stock choices
- Some evidence of success (track friendly bogies in Britain, noise charges in Germany)
- So it is important to develop proposals to internalise externalities in rail