

Cost recovery and economic efficiency of track access charging in Germany

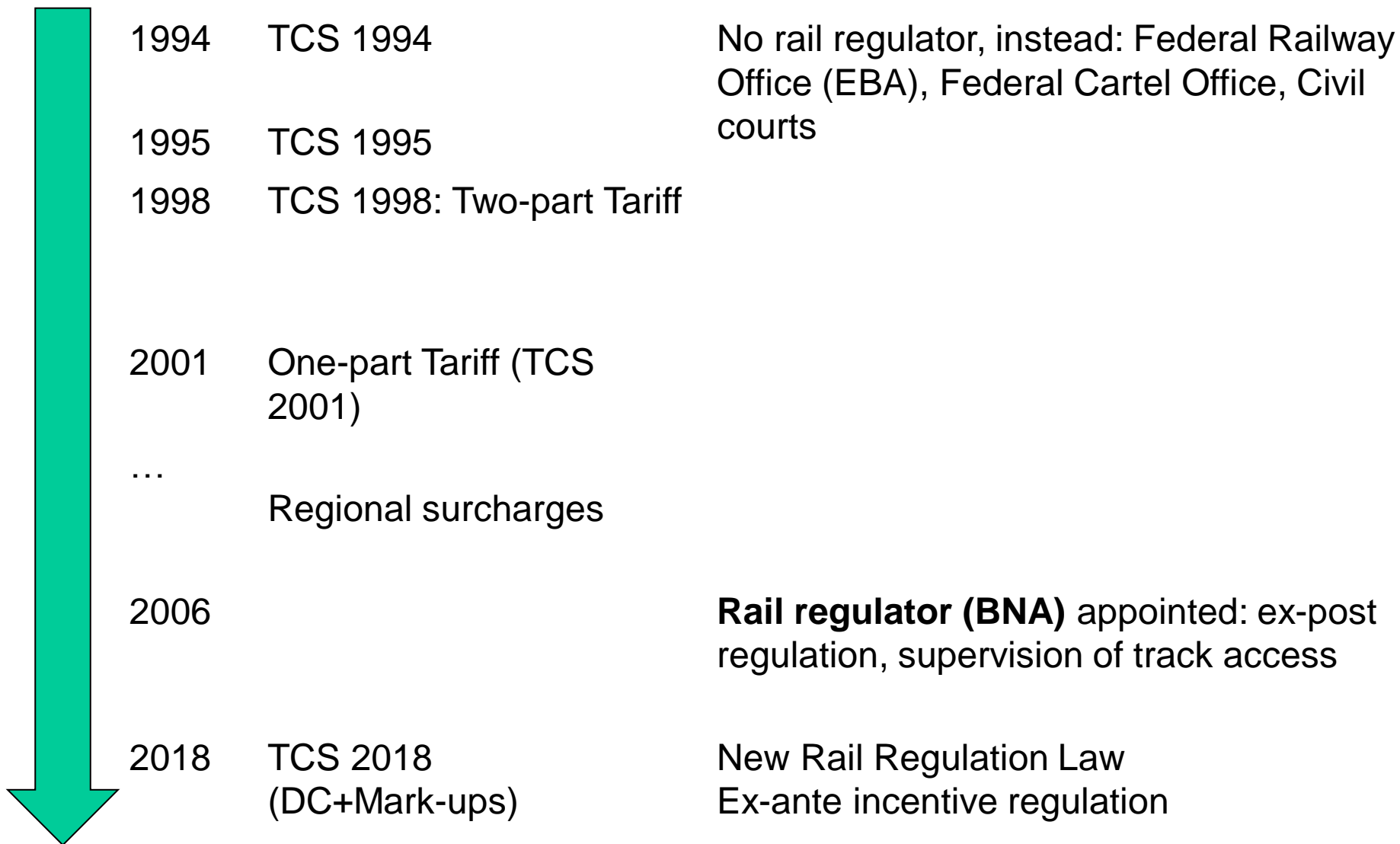
Track Access Charges Summit – RailTech 18

Amsterdam, 4-5 April 2018

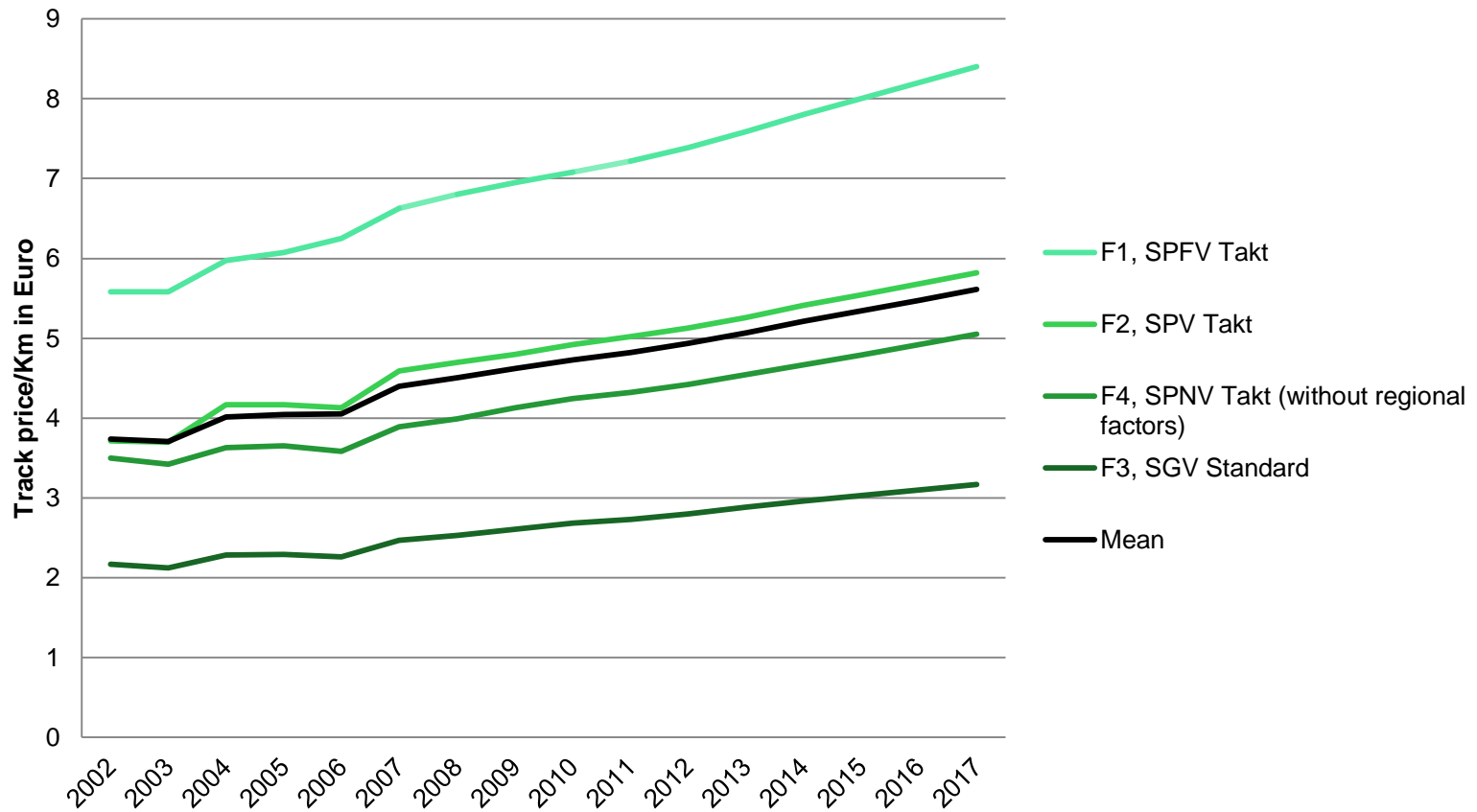
The German Rail Market

- 452 rail companies with license, 350 are active
- Open access to all rail networks
- DB Netz: 33.000 km, state-owned, vertically integrated
- Full cost recovery constraint for track charges
- State subsidies for infrastructure (multi-annual contract)
- Regional rail services (RRPS):
 - franchised
 - subsidised through regionalisation funds
 - access charges passed through within PSO contracts to PTAs

History: Track Access Charges (TAC) and Regulation



Development of track access charges - examples



Change	F1	F2	F4	F3	Mean
Total growth	51%	57%	44%	46%	50%
Average growth per year	2,8%	3,1%	2,5%	2,6%	2,8%

**In response to EU Directive 2012/34
(2001/14):**

**New Rail Regulation Law and
TCS 2018**

TAC Scheme 2018: From Track types to market segments

Direct costs of train operation

929 mill. € of costs of DB Netz
= 20% of track revenue



Mark-ups for cost recovery

- 4117 mill. € remaining costs of DB Netz (cost recovery constraint)
- Based on price elasticity of demand
- Mark-up must not exclude any segment from usage
- Can include long-term investment costs



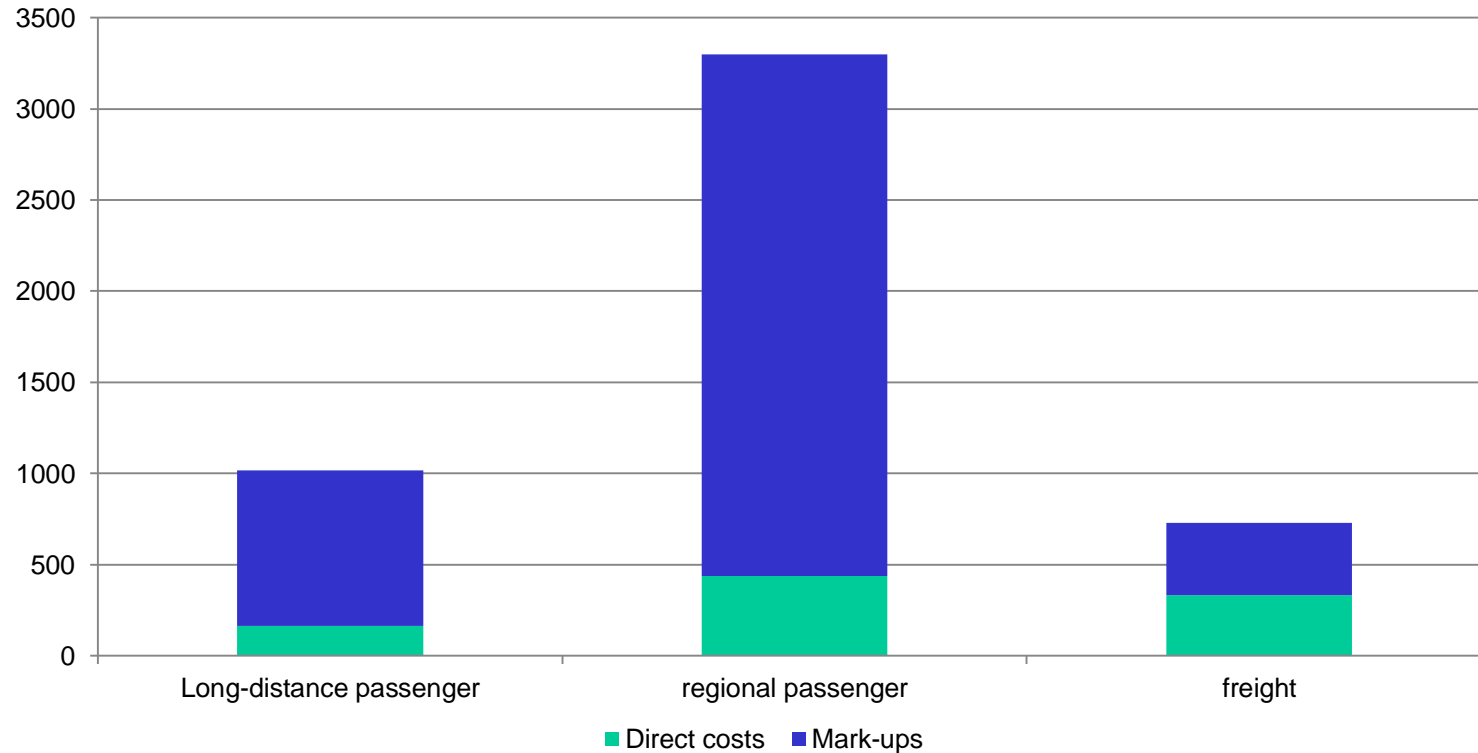
Reductions and Surcharges

- Environmental effects (noise)
- Capacity constraints
- Flexibility departure/arrival time
- Priority in time-tabling

Market segments

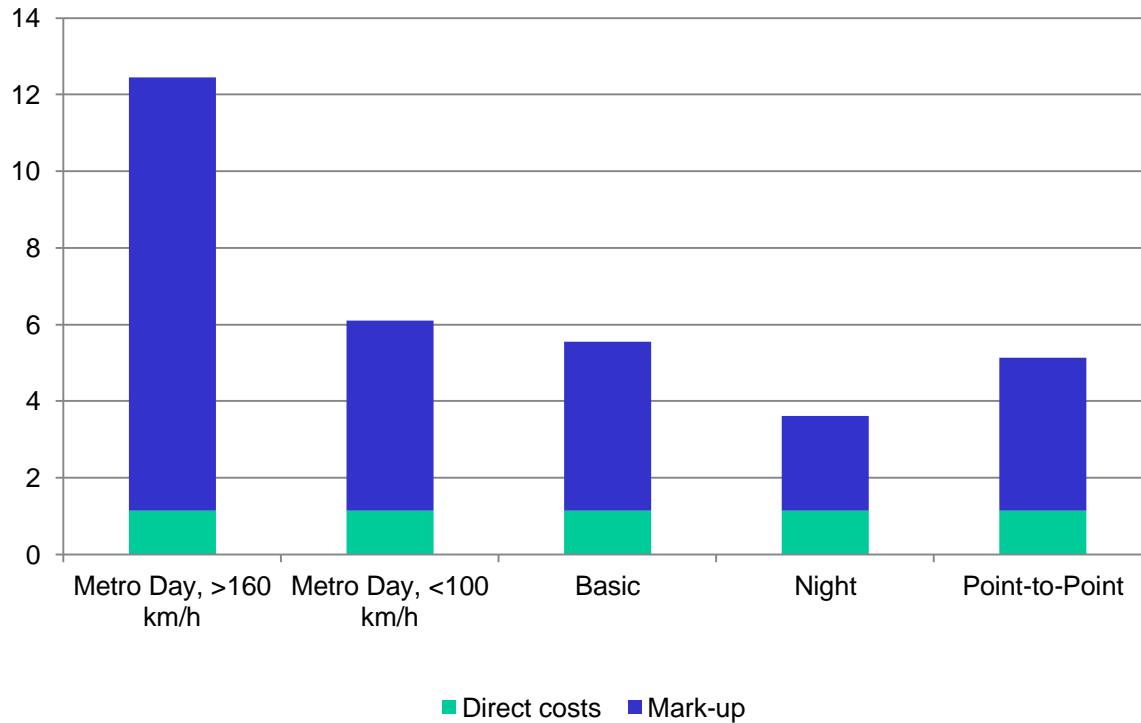
Long-distance passenger	Regional passenger	Freight
Metro Day >160 km/h	16 Federal states	Standard
Metro Day 100- 160 km/h		Heavy
Metro Day <100 km/h		Regional
Basic		Dangerous goods, regional
Night		Dangerous goods, other
Point-to-Point		
Nostalgic		
Loco/Empty runs	Empty runs	Loco

Direct costs (DC) and Mark-ups 2017/ 2018 (€ mill.)



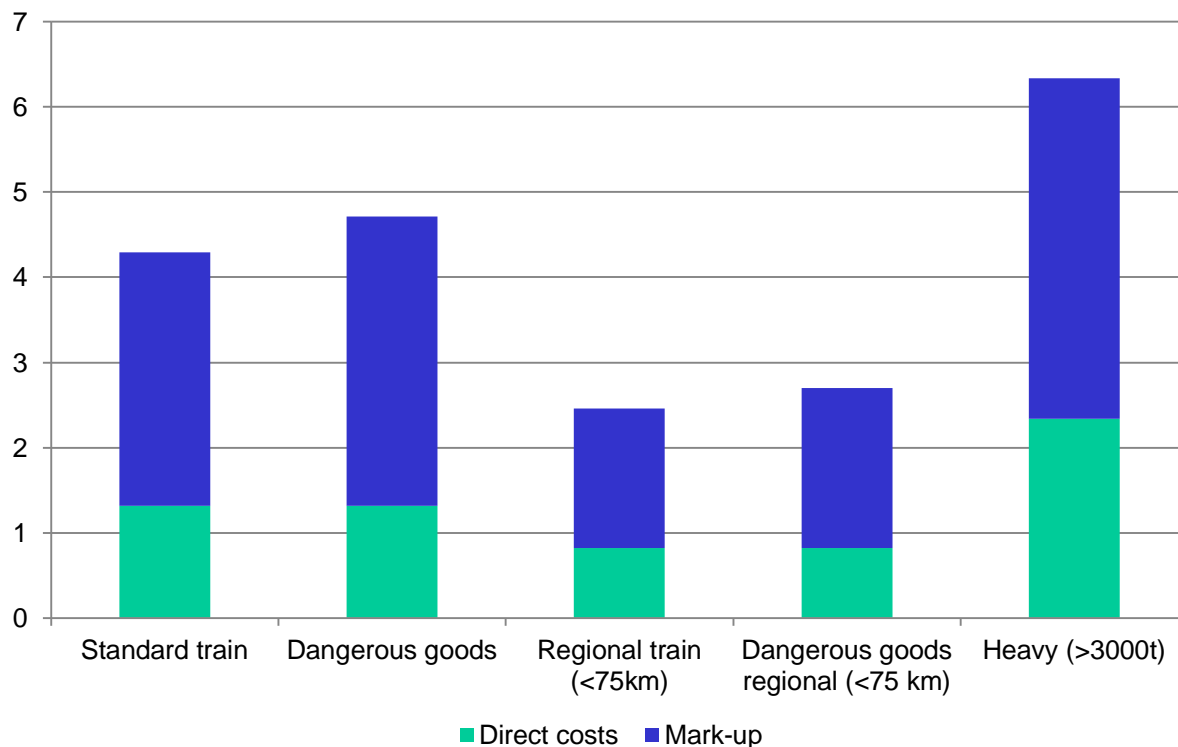
Per train-km: Long-distance passenger : 6.6
 Regional passenger : 5.2
 Freight : 2.8

Track access charges 2018 – Long-distance passenger transport



Surcharges and reductions	€/train -km
Priority Express**	+2,00

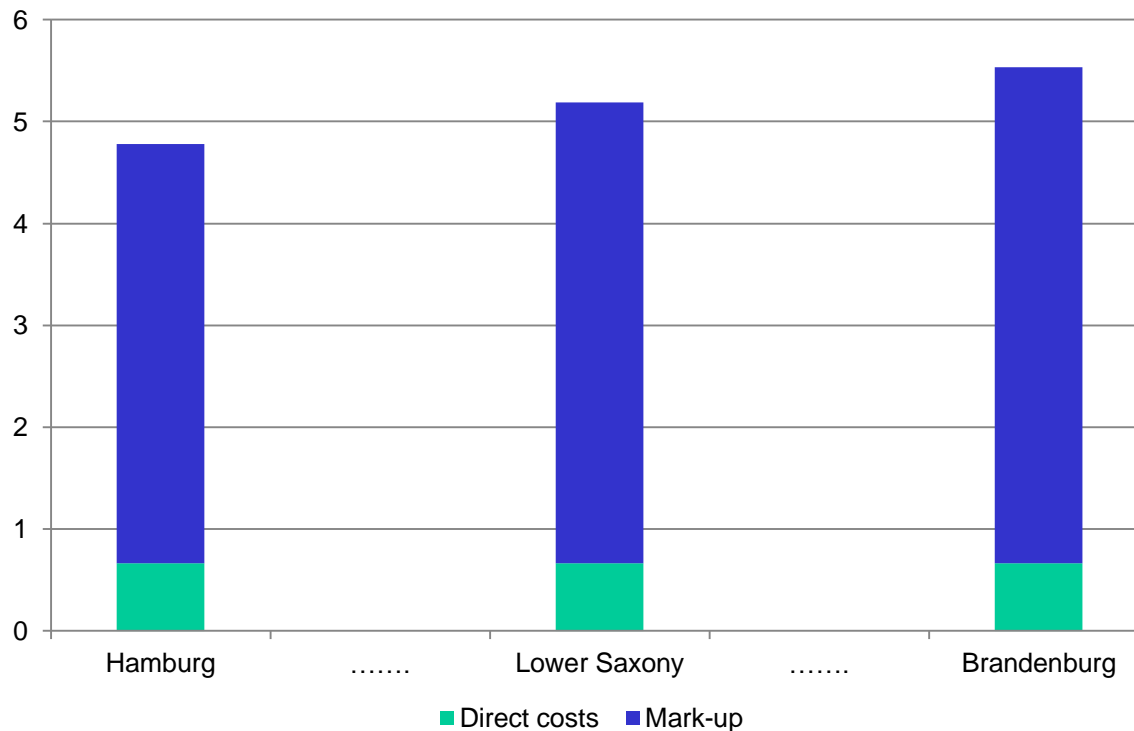
Track access charges 2018 – Freight



Surcharges and reductions	€/train -km
Time flexibility	-0.10
Route flexibility	-0,10
Priority – Fast*	+0,50
Priority Express**	+2,00

*) Priority over all freight trains (except those with status “fast” and “Express”. **) Priority over all trains except passenger trains with status “Express”.

Track access charges 2018 – Examples RRPS



Rail regulation Law:

- (i) segmentation by federal state
- (ii) Average charge per state = average charge for RRPS in 2016/2017 per state
- (iii) Increase TAC per state = increase regionalisation funds

Derivation of Direct costs

	€/Train-km	Total (€ mill.)	Method of estimation
Time tabling	0.044	42	Expert estimates
Operating	0.114	122	Expert estimates
Ongoing maintenance	0.286	304	Expert estimates
Other maintenance	0.013	14	Expert estimates
Maintenance operating nodes	0.210	218	Expert estimates
Depreciation	0.205	230	Regression analysis
Total	0.872	929	

Derivation of Mark-ups

The assumption:

change in access charge = cost increase of final customer
(100% transfer)

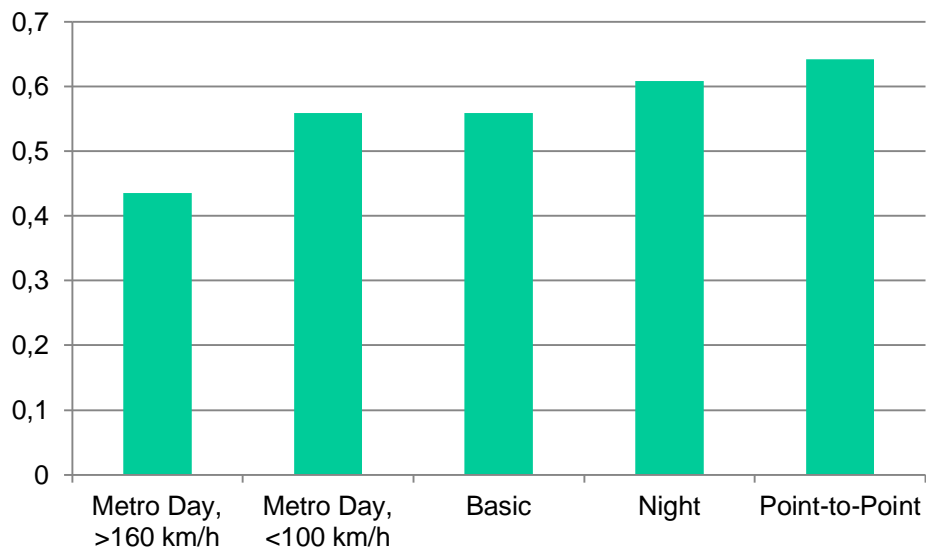
Leads to:

Mark-up = turnover/price elasticity of final customer * Lambda

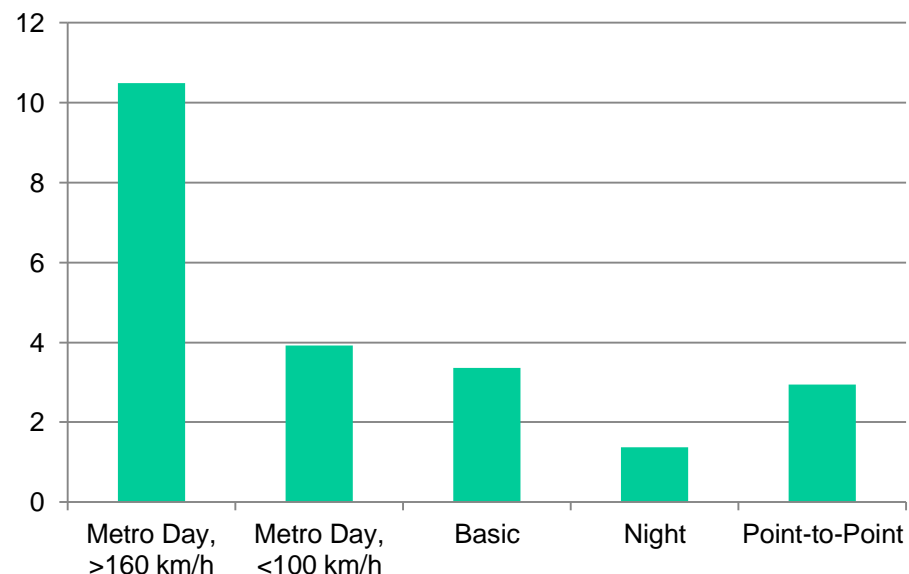
with Lambda=0.1011

Derivation of Mark-ups – Long-distance Passenger

Final Customer elasticity



Mark-up

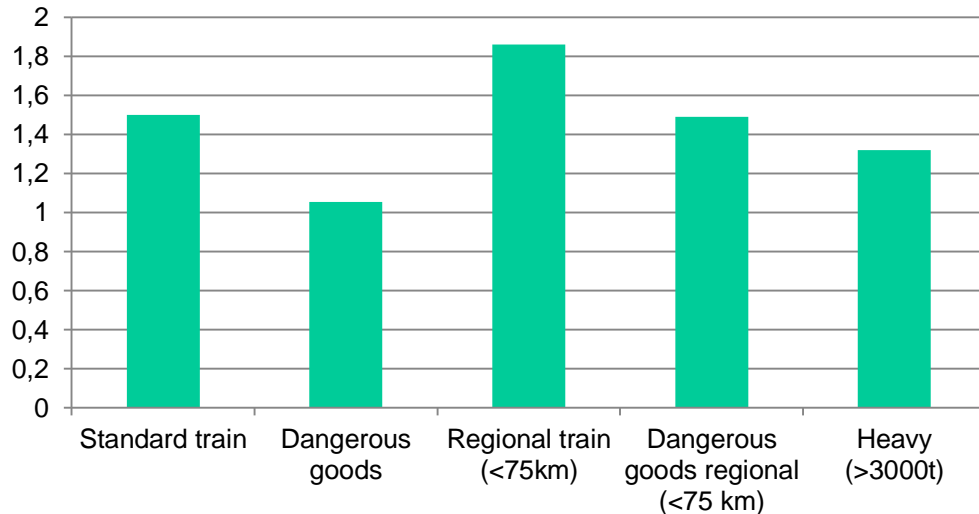


Empirical basis:

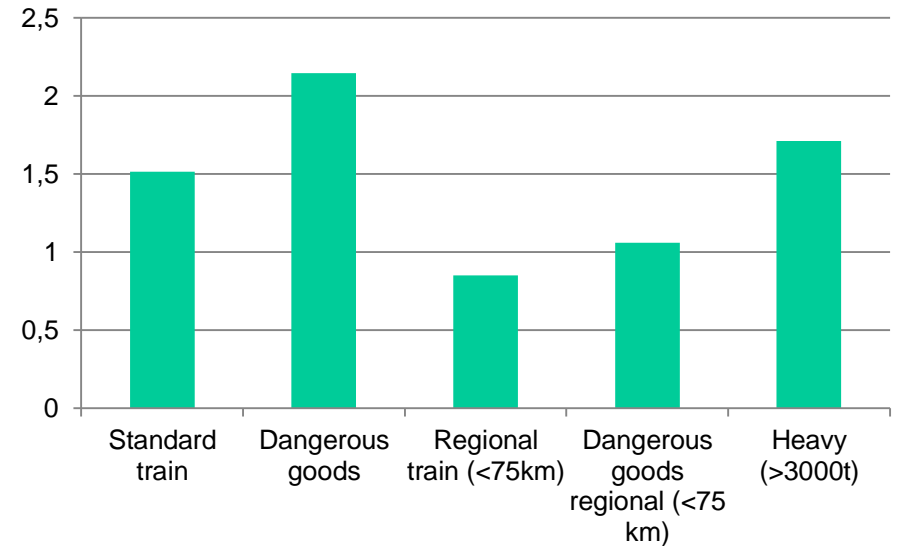
- Elasticity estimates for business travelers, commuters and leisure travelers
- Discrete choice model based on SP/RP survey (TNS Infratest et al. 2015)
- Combined with DB internal data on turnover shares for market segments

Derivation of Mark-ups – Freight

Final Customer elasticity



Mark-up



Empirical basis:

- Elasticity estimates by type of goods (BVU et al. 2016)
- Discrete choice model based on SP/RP survey
- For dangerous goods: non-public study (Produkt und Markt, 2015)
- Combined with DB internal data on turnover shares for market segments

Differentiation – Long-distance passenger transport

Criterion	Segments	Differences in direct costs		Differences in mark-ups	
		Expected	Charged	Expected	Charged
Relation	Metro/ Other	√	-	√	√
Time of day	Day/ Basic/Night	√	-	√	√
Speed	> 160 km/h 100 – 160 km/h Up to 100 km/h	√	-	√	√
Time flexibility	No flexibility/±30 min	-	-	√	√
Connectivity	Point-to-Point/Other	-	-	√	√
Frequency	Up to 4 trains/day > 4 trains/day	-	-	√	√
Prioritisation	Yes/ No	-	-	√	√

Differentiation – Freight

Criterion	Segments	Differences in direct costs		Differences in mark-ups	
		Expected	Charged	Expected	Charged
Relation	Regional (<75km) Other	-	√	√	√
Weight	Heavy (>3000t) Standard	√	√	√	√
Type of goods	Dangerous/Other	√	-	√	√
Train length	Block train (<370m) Single waggons train	√	√	√	√
Flexibility	Route: Yes/no Time: Low/High	-	-	√	√
Prioritisation	No/Fast/Express	-	-	√	√

Evaluation and Conclusion

Positive:

- More MC orientation, e.g. closer to efficient pricing
- ex-ante incentive regulation

But:

- Only few differentiation of MC
- less reflection of wear & tear than previously
- Only few incentives for efficient use of capacity
- Different schemes for efficient provision of infrastructure with different supervising bodies → potential conflicts?
- No claims against civil courts possible