Update of the determination of the costs of capital for rail infrastructure managers with due consideration of the specifics of the German railway sector (2013)

A consortium comprising Frontier Economics Ltd. and the IGES Institut GmbH was commissioned by the Federal Network Agency to update the results of the report drawn up in 2009 on the determination of the costs of capital in the German railway infrastructure sector.

I. Overview – Under § 14(4) of the AEG costs of debt must be allocated to the full costs whereas a *return achievable at market rate* is to be deemed a return on equity. The regulatory maximum entitled return is calculated by the multiplication of the interest rate and the capital base, which embraces the balance-sheet items required for the provision of the standard benefits.

Taking the full costs as a yardstick, the **costs of debt** are calculated in accordance with the costs of debt actually incurred by the standard benefits. Should it prove not to be possible to determine the real costs of debt, the report of 2009 was to present a concept for determining these costs on an imputed basis.

For determining the interest rate on equity the Capital Asset Pricing Model (CAPM) is applied. This model uses comparable groups of quoted companies to calculate the corporate risks. Since there are no pure infrastructure managers that trade on a stock exchange, the consortium decided to create different comparable groups to adequately mirror infrastructure managers' corporate risks, thus ensuring that the different rail infrastructure-specific demand patterns in the passenger and freight services are borne in mind. In addition, a comparable group comprising exclusively regulated infrastructure managers ensures that the impact of regulation on corporate risks is also taken into account.

The consortium derived **adequate limits** and recommends that the mean of each range be used for *non-federally owned infrastructure managers* as an appropriate interest rate on equity. Infrastructure managers with *maintenance facilities, other technical facilities and refuelling facilities* are investigated separately. A higher return on equity is recommended for such managers as their exposure to fluctuating demand is greater due to their specific market position.

For *federally owned infrastructure managers* a lower interest rate on equity is deemed appropriate.[1] These considerations are justified in particular by the special position of the *Bund* safeguarded by law as sole owner and as such its inherent warranty obligations. Private parties are not entitled to take shares in infrastructure managers, but infrastructure managers can raise debt at very favourable terms (3.82%[2]) due to an assumed government liability. Since debt hence determines the relevant capital costs of the federally owned infrastructure managers, the equity amount should also not be paid for at a higher level. Merely the higher rate of taxation of equity should be taken into account, resulting in a rate of return on equity of 4.53% before tax.[3] However, against the backdrop of wishing to create investment incentives, the consortium deem it admissible to permit a higher interest rate. Yet it should also be borne in mind that in the case of federally owned infrastructure managers, investments are not financed primarily by the manager's own resources but by the state. The consortium therefore recommended applying a value at the lower end of the asset beta range.

[1] See the Report 2009, chapter 6, as well as IGES, Impact of the legal position of the federally owned infrastructure managers on the interest rate on equity, 2013.
[2] See Report 2013, chapter 5.3.
[3] See IGES, fig. 1 in, Impact of the legal position of the federally owned infrastructure managers on the interest rate on equity, 2013.

II. Implications for the Federal Network Agency's regulatory policy – From the limits determined by the consortium and the consortium's recommendations the following approach may hence be derived with regard to the determination of appropriate capital costs in the railway sector:

Capital structure	Equity portion	40%
	Debt capital portion	60%

Interest rates on debt[4]	Federally owned infrastructure managers	3.82%
	Non-federally owned Infrastructure managers	5.28%

Interest rates on equity before tax	The interest rate takes into account that 15.8% need to be paid for corporate tax and solidarity surcharges by the generated capital costs.		The interest rate takes into account that 30.18% need to be paid for corporate tax, trade tax and solidarity surcharges by the generated capital costs.	
	SPV (100%)	**SGV (100%)**	**SPV (100%)**	**SGV (100%)**
Federally owned Infrastructure managers[5] [6]	6.19%	6.19%	7.46%	7.46%
Non-federally owned infrastructure managers[7]	7.30%	10.02%	8.80%	12.08%
Maintenance, other technical facilities or refuelling facilities	7.85%	11.94%	9.47%	14.40%

Passengers services (SPV); freight services (SGV)

The interest rates on equity are examples for managers offering 100% of their services for passenger or freight conveyance. The interest rate on equity for infrastructure managers offering services for both passenger and freight conveyance varies accordingly and consequently depends on the relevant demand risk.[8] As far as federal infrastructure managers are concerned, it should be noted that the interest rate of 6.19% recommended by the consultants is well above the adjusted refinancing costs before tax of 4.53% of the federally owned infrastructure managers and also significantly exceeds the interest rate[9] applicable under the Federal Traffic Route Plan.

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4 See Report 2013, Table 10. The mean value of the range presented is used.
5 All infrastructure managers expect refuelling facilities, maintenance other technical facilities.
6 Basis is the mean value of the equity risk premium and the lower limit of the asset beta.
7 All infrastructure managers expect refuelling facilities, maintenance other technical facilities.
8 See Report 2013, Table 1.
9 This value constitutes a risk-free rate at 3.0% and takes into account that infrastructure managers have to pay 15.8% corporate tax and solidarity surcharges.