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Equity or debt financing of DB AG:
An analysis from the taxpayer's point of view

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1. Summary

Significance of the current capital structure of the federally owned company DB AG

1. As the sole owner, Germany is currently also DB AG's sole equity provider. In addition, the German Government *de facto* guarantees all its borrowed funds. The capital markets reflect this protection of DB AG: "'Strong' assessment of resource management reflects the lack of constraints regarding resources (Fitch 12/2020)" [1].

2. In principle, it also applies to the state-owned DB AG, that the income streams generated with the help of assets must be sufficient to satisfy the claims of debt and equity investors. At DB AG, however, the management "itself" can decide the value of the assets via revaluation and thus also influence the value of the equity: this is what happened, for example, with the special write-down of assets at DB Cargo in 2015 by EURO 1.3 billion, which was followed by an equity injection (fresh money) in 2017 by EURO 1 billion to DB Netz AG.

3. It follows from the sole equity provider status of the Federal Government that, in the absence of market valuation of debt and equity, the current capital structure of DB AG is only as meaningful as its management shares its information on the current value of assets with the equity provider. An equity problem for the state is that it is constantly surprised by management with new "depreciation problems" that lead to equity losses. The more frequent adjustment of special effects in EBIT (e.g., most recently in 2019 with a total of EUR 391 million from the addition to a provision for impending losses at DB Arriva)[2] could be interpreted as such management behaviour.

4. Not only does the owner, the German government, and the supervisory bodies of DB AG have no direct influence on the valuation of the fixed assets, but each reduction in equity also reduces the company's creditworthiness. This puts even more pressure on the owner to provide equity as a source of financing.

[1] Fitch (2020).
[2] DB (2019); it is also important to note the impairment loss of EUR 1.41 billion at Arriva in the first half of 2020, which is fully attributable to the amortization of goodwill recognized by DB Arriva; see Deutsche Bahn (2020), p. 65.

Optimal capital structures of private companies as a reference

1. Decisions on the use of (additional) equity are taken exclusively by the corporate bodies, i.e., essentially by the Board of Management. As in the case of private companies, increases in equity capital are also not earmarked for a specific purpose in the case of public companies, because equity capital serves as a financial buffer and liability mass. Political declarations on the use of funds, such as in the climate protection package, remain non-binding under company law. De facto, an increase in equity for DB AG's management means an increase in the resources available to them in their own sphere of influence at the expense of taxpayers.

2. In contrast to the necessarily unconditional use of equity capital, debt capital contracts offer extended options for investors. Covenants can be used to steer DB AG management's options in a more target-compliant manner. These are contractually binding assurances given by the borrower or bond debtor during the term of a loan or bond.

3. At DB AG, after the experience with failed diversification programs, with the avoidance of economically necessary corporate restructurings and problematic acquisitions, the prevention of unprofitable activities should be a central goal of the equity investor. In the case of DB AG, pressure from outside capital providers to choose lower-risk investment projects must be in the interest of the owner.

Aid and capital support: the examples of DLH and Commerzbank

1. In the case of state aid, e.g. in the Corona case, according to the EU Commission, it must be ensured: Necessity, appropriateness and scope of the measures, participation of the Member State in the capital of companies and remuneration, exit of the Member State from the participation in the companies concerned and governance; in addition, there are prohibitions on cross-subsidization and takeover bans and obligations to maintain effective competition and ensure public transparency and reporting.

2. The combinations of debt financing measures and competition safeguarding conditions correspond structurally in the Commerzbank and Lufthansa aid cases. Regarding DB AG, the following is relevant: Financing assistance and guarantees can only be granted for a limited period and must be remunerated. In addition, there are tough conditions (see covenants) which impose direct and massive restrictions on entrepreneurial action.

3. The divestments (slots, shareholdings) are also about preventing anti-competitive behaviour. The prevention of anticompetitive pricing at Commerzbank, i.e., the prohibition of more favourable prices than those of its three most favourable competitors, is a very strong restriction that makes the competition restraints have a direct effect. It is inconceivable that these conditions could be linked to an equity increase that is not time-limited, not remunerated on a fixed basis, and not conditioned in any other way.

Equity and debt raising at DB AG subject to conditions.

1. While DB AG's consolidated revenue grew[3] by just under 30% in the years from 2010 to 2019, personnel expenses increased by 56%. EBIT over this period remained relatively stable: However, as a percentage of revenue, EBIT fell from 5.2% to 3.1%. If we carry forward the ratio of sales to personnel expense from 2010, then c.p. personnel expense in 2019 should be EUR 3.13 billion lower than the reported EUR 18.16 billion. Over this period, the development of equity follows the weak profitability development with long-term debt remaining constant – in absolute terms. From an initial equity ratio of 29.2% in 2011, this fell to just 18.1% in 2019, after adjusting for the additions made previously and the inclusion of hybrid bonds.

2. The rating agencies accordingly speak about "Credit challenges": "Continued pressure on profitability, strained FCF generation because of an intense capital spending program (and)... Very high leverage for the rating category". Complementary the threat of a downgrade is pointed out: "A failure to improve the company's operating performance from current levels, with its Moody's-adjusted EBITA margin remaining below 4.5%. Moody's-adjusted debt/EBITDA failing to decrease towards 5.5x from around 7.0x forecast in 2019" [4].

3. DB AG's self-imposed goal of "achieving appropriate debt ratios", i.e., adequate "repayment coverage to manage debt", was completely missed. Fitch therefore formulates in 12/2020 for the international capital market that DB AG is not creditworthy on the basis of its own economic ratios, but only because the German taxpayer cannot afford to let DB go insolvent [5].

[3] DB (2019).
[4] Moody's (2019).
[5] Fitch (2020).

4. Regarding the application to DB AG, the following is relevant: the aid is to be granted in the form of debt capital, subject to strict conditions, with little protection for the state, limited in time and remunerated. The conditions explained for the aid to DLH and Commerzbank apply analogously to DB AG; specific proposals are made for the form of the aid with conditions (see 8.).

5. In particular, it concerns the prohibition of cross-subsidization and obligations to maintain effective competition and ensure public transparency and reporting, which suggests the following demands on DB AG:
   - Termination of control and profit and loss transfer agreements,
   - Price Observatory,
   - Prohibition of bonuses as long as it is not ensured that additional equity capital from subsidies is not used to finance them.
   - External review of the requirements regarding the necessity, suitability, and scope of the measures in the DB AG computing centres.

6. Further competition-securing conditions could be, among others, analogous to DLH and Commerzbank:
   - Opening of the bahn.de and DB Navigator sales portals to all competitors and the release of all sales and tariff data causally linked to this, as well as other data such as load factor data,
   - The liquidation of Regionalverkehre Start Deutschland GmbH, a company that was established to regain market share, but in doing so was endowed with an uncatchable cost advantage over competitors due to its exemption from the group levy, which constitutes impermissible cross-subsidization.

2. Introduction

The Covid 19 pandemic caused financial losses for many companies, particularly in the rail sector. The compensation planned exclusively for Deutsche Bahn AG by the German government in the amount of EUR 5 billion for the time being, according to the budget resolution, must guarantee the necessity, appropriateness, and scope of the measures in accordance with the requirements of the EU Commission, as well as containing obligations to maintain effective competition and ensure public transparency[6]; it has been the subject of critical discussion for ten months. DB AG regards itself as a normal company where it operates in competition. Accordingly, the financing of aid must meet the requirements formulated by the EU. In addition, it must be optimally structured from the taxpayer's point of view, be it through debt or equity. From the taxpayer's point of view, this means that the choice of financing form must be in line with the objectives of DB AG's management.

To examine which form of financing meets these requirements, we first briefly examine equity or debt financing of DB AG from a taxpayers' perspective (3.).

Thereafter, the significance of the current capital structure of the public enterprise DB AG is considered against the background that the federal government of Germany is de facto liable for all its borrowed funds, thus indemnifying external capital providers against default risks (4.).

It also follows from the federal government's sole equity provider position that, in the absence of market valuation of debt and equity, DB AG's current capital structure is only as meaningful as management shares its information on the current value of assets with the equity provider. To gain a reference for the financing of DB AG, optimal capital structures of private companies are analysed (5.).

The different incentives of debt and equity financing on the investment behaviour of management are considered. Building on this, the aid and capital support provided to DLH and Commerzbank are described and analysed (6.).

In each case, these represented combinations of debt financing measures and competition-securing conditions to guide the management's options for action in a likewise (partially) state-owned company in line with its objectives. After that, the previous equity and debt capital raising at DB AG is analysed (7.).

[6] For the EU's temporary framework, see in detail EU (2021).

It is shown that the reduction in equity following the weak profitability development was offset by unconditional equity injections of EURO 3 billion. Then, a transfer of the aid solutions to Deutsche Lufthansa (DLH) and Commerzbank to DB AG is outlined (8.), which guarantees the steering of DB AG management's scope for action in line with the objectives from the taxpayers' point of view. In particular, this must ensure the preservation of effective competition and the safeguarding of public transparency.

3. Equity or debt financing of DB AG from a taxpayer's perspective

Government objectives in a sector, such as the railroad sector, are usually represented in a welfare function, which consists, for example, of the components: Profits of the companies, welfare of consumers and competitors, and the wage bill of the company's employees. This assumes that these individual items are accurately valued by the government. Thus, if the equity or debt financing of Deutsche Bahn AG is to be analysed from a taxpayers' perspective, it is obvious that it is not just a matter of an isolated financial consideration for DB AG.

Even the EU Commission's current indication that the aid will only be paid if DB AG forgoes a bonus program for around 3,500 - 4,000 employees shows the link between corporate financing and the welfare of the employees. In other words, even if the direct competitive relationship of this payment is not the focus of public debate, it is evident that a state equity injection that significantly improves the economic situation of these employees in difficult times gives the state-owned company DB AG a clear competitive advantage over its competitors in recruiting and retaining staff at the expense of taxpayers. This even applies to activities such as "DB-Wohnen," a collaboration between DB AG and Vonovia, where DB personnel receive special conditions that are not customary in the market, such as freedom from rent deposits, easier access to viewing appointments, and preferential consideration in housing allocations, with DB AG also securing occupancy rights for apartments. From the taxpayer's point of view, the above-mentioned benefits for DB AG employees, if acquired in return for payment, compete with the claims of other companies and citizens. Such activities must be financed by DB AG out of self-generated cash flow; in the case of state aid without control over its use, they must be rejected.

4. Significance of the Current Capital Structure of the Public Company DB AG

DB AG management formulates the following regarding the capital structure issue:

> *"In addition to achieving a sustainable increase in enterprise value, the financial management of the DB Group also aims to maintain a capital structure that is appropriate for maintaining a very good credit rating. A key objective is therefore to achieve appropriate debt ratios. Our central key figure for managing debt is "repayment coverage".*

A "capital structure problem" for DB AG could therefore be that its current capital structure has a negative impact on its current financing options and on the sale of corporate holdings. At present, the German government is DB AG's sole equity provider, which also provides a de facto guarantee for all its borrowed funds. Prior to the sale of equity stakes, DB AG is therefore not exposed to any bankruptcy risk, and consequently there is no default risk for lenders. The fact that this is also the view of the capital markets in the case of Germany was shown earlier by the absence of a risk premium on postal bonds compared with normal federal bonds. For the period after a sale of parts of a company or equity interests, only that part of the debt capital which is newly raised and not covered by the federal government's guarantee would be subject to risk.

This is in line with the view of the capital markets at DB AG (Moody's Credit Opinion 10/2019):

> *Deutsche Bahn AG's (DB) Aa1 issuer rating incorporates a three-notch uplift from its a1 Baseline Credit Assessment (BCA), reflecting the high support and dependence between the company and the Federal Republic of Germany (Aaa stable)* [7].

Fitch writes in the same vein:

> *"'Strong' assessment of resource management reflects the lack of constrains regarding resources"* [8].

Moody's elaborates on any rating downgrade reasons:

> *"Moody's-adjusted debt/EBITDA failing to decrease towards 5.5x from around 7.0x forecast in 2019"* [9].

In terms of borrowing, DB AG currently has no fundamental financing problems on the markets.

[7] Moody's (2019).
[8] Fitch (2020).
[9] Moody's (2019).

In the opinion of the Federal Audit Office (Bundesrechnungshof), however, further borrowing by DB AG has been ruled out for some time because there was a risk that the debt ceiling defined by the Budget Committee of the Bundestag would be exceeded.

This also indicates that DB AG inevitably has an equity problem. Before statements can be made about this current "equity problem", some clarification of terms is required. When solving the equity problem of private companies, the market value, not the balance sheet value, of equity becomes relevant. The key factor in determining the market value of equity is what future cash flow can be earned from the company's assets. In real economic terms: What sales revenues can be generated in the future by DB AG at what cost with services that can be offered on its own network, for example? Using the isolated example of a private DB Cargo AG, the application of this view through capital markets can be explained. Its enterprise value would result from its discounted cash flows. The market value of the equity is calculated as the total enterprise value less liabilities. Depending on the severity of future competition, these values would differ greatly. An "equity problem" could therefore become apparent if DB Cargo AG and its future service capability were valued lower than the nominal value of its liabilities. But even then, the "equity problem" would not be a cause but only an effect of the underlying real economic problem.

Of course, the view that the income streams generated with the help of assets must be sufficient to satisfy the claims of debt and equity investors also applies in principle to the state-owned DB Cargo AG. Here, the management can decide "on its own" on the revaluation of the value of the assets and thus also influence the value of the equity. This is what happened with the special write-down of assets at DB Cargo in 2015 by EUR 1.3 billion, which was followed by an equity injection in 2017 by EUR 1 billion, albeit to DB Netz AG (see 3.2 and 5.1.).

This common (state) solution to the equity problem is demonstrated by a simple example. In one country, the former state-owned enterprise DB AG is supposed to have assets of 100, 50 of which are financed with equity and 50 with debt capital. In the course of revaluations by the management, it turns out that the assets of the company have a value of only 70, which would be financed with equity of 20 and debt capital of 50 after depreciation. Let us assume that the government wants to keep the equity ratio constant before and after special depreciation. It could then redeem debt capital of 15, resulting in financing with debt capital and equity capital of 35 each. In this simplified example, this operation cost the state 45: 30 from equity capital loss from special depreciation plus injection of 15 equity capital. From the state's provision of sole equity and the outlined example of immediate depreciation of the fictitious company, it

can be concluded that, in the absence of market valuation of debt and equity, DB AG's current capital structure is only as informative as management shares its information on the current value of assets with the equity provider. An equity problem for the state is that it is constantly surprised by management with new "depreciation problems" that lead to equity losses. The more frequent adjustment of special effects in EBIT (e.g., most recently in 2019 with a total of EURO 391 million from the addition to a provision for impending losses at DB Arriva [10]) could be interpreted as such management behaviour. Ideally, the hybrid bonds issued in 2019 could also represent such a "problem" in the future. There, in the case of a bond until (from) 2045 ff. The reference bank rate is the percentage based on the 5-year mid-swap rate quotations11, which is currently approx. -0.5%, but was over 3% in 2011. Assuming an interest rate of over 5% for the total amount of EUR 2 billion, the future interest payments to be generated from this alone would amount to EUR 100 million p.a.; this would create a further problem forcing the state owner to provide equity as a source of financing.

Based on an outline of the recent theory of capital structure for private companies, the question of what requirements the equity investor should place on the capital structure of a DB AG is explored to minimize these surprises by providing the right incentives for management.

5. Optimal capital structures of private companies as a reference

5.1. Sketch of the recent theory of capital structure

The starting point of all recent studies of the capital structure of companies is the contribution by Miller/Modigliani, in which it was established for a (model) world without capital market imperfections that the value of a company is independent of the financing mix between equity and debt[12]. The reasoning behind this is that the possibility of bringing about an increase in firm value through a mere change in the capital structure presupposes arbitrage: On the one hand, a buyer of a company is offered the possibility of achieving the increase in firm value through changes in the capital structure, but reducing its risk to that of the initial capital structure of the company through "home-made leverage". Recent contributions on corporate capital structure assume that financing decisions have an impact on corporate earnings and firm value.

[10] Reference must again be made to the impairment requirement at Arriva in the first half of 2020 of EUR 1.41 billion, which is fully attributable to the amortization of goodwill recognized by DB Arriva; see Deutsche Bahn (2020), p. 65.

[11] DB Prospectus (2019).

[12] Brealey (1996) and Ehrmann (1995).

The most important determinants of the capital structure are currently considered to be:

- Extent of conflicts of interest between investors and management,
- Transmission of private information to capital markets,
- Intensity of competition on sales markets,
- Results of Takeovers,
- Optimal financing of specific investments.

5.2.Conflicts between equity investors and management

Conflicts between investors and management are generally because management holds less than 100 percent of the equity in a group of companies. Thus, although they bear – through their labour efforts – all the "costs" of profit-enhancing activities, they participate in their success only in proportion to their equity shares or other performance – related salary components. This results in an incentive for management to invest in activities that increase their own benefits. This incentive decreases the higher the equity shares of the management or the performance-related salary components become.

This logic also applies to the management of public companies such as DB AG. In this case, all budgetary controls cease to apply once the equity increase has been approved and implemented. The use of funds is decided exclusively by the corporate bodies, essentially the Board of Management. As in the case of private companies, equity increases in public companies are not earmarked for a specific purpose because equity serves as a financial buffer and liability mass. In the case of some equity increases, such as those from the climate protection package, political declarations are made on the use of funds, but these remain non-binding under company law. This non-appropriation is clearly stated in the prospectus for the hybrid bonds: "The Issuer intends to use the net proceeds from the issuance of the Notes for general corporate purposes of Deutsche Bahn.“ De facto, an increase in equity for DB AG's management thus means an increase in the resources available to them in their own sphere of influence at the expense of the taxpayers. Accordingly, DB AG prefers an equity injection that does not correspond to any additional rights of action and control on the part of the equity provider as the "most favourable" form of financing. This is in advance a "sanctionless" form, e.g., of a general (value) loss compensation.

In the case of DB AG, a further advantage is that the regulatory calculation of train path prices follows the capital structure very closely. Since the return on equity in the calculation according

to Annex 4 of the Railway Regulation Act (ERegG) is high compared to the return on debt, there are strong incentives to expand the equity base: the write-down at DB Cargo was followed in 2017 by the equity increase at DB Netz AG of EUR 1 billion[13], which will bring the equity ratio there to a very high 40% in 2019. Only a cap on the network equity ratio for the calculation of train path prices would at least reduce this additional incentive for equity financing.[14.] From the point of view of taxpayers, even if state support could be required in the case of Corona, the suitability of equity injections compared with, for example, support for borrowing through guarantees or letters of comfort would have to be denied.

One response to the conflict between equity investors and management is to increase leverage because debt capital creates pay-out obligations that limit the space for non-profitable management activities c.p. Non-profitable management activities include [15]:

- Additional income from the employment relationship (e.g., bonus programs)
- Diversification programs
- Investment projects with low returns
- Avoidance of economically necessary company restructurings or liquidations
- Problematic acquisitions

In essence, such activities represent attempts by management to increase the resources available to them in their own sphere of influence at the expense of the providers of capital. In the case of profitable companies, the conflict between investors and management comes to a head regarding the payment of free cash flow to investors or its use within the company. Free cash flow is that part of the company's cash flow that remains after financing all investment projects with a positive net present value discounted at the cost of capital relevant to the company. In the case of non-profitable state-owned enterprises, the problem is more generally one of raising and using financial resources for the benefit of management and employees and at the expense of taxpayers as owners.

The additional income from the employment relationship, i.e., income that is not generated on the market, is striking: the DB AG bonus program for approximately 3,500 - 4,000 employees mentioned above is being objected to by the EU Commission precisely because a connection to unconditional state equity assistance seems likely.

[13] DB (2018).
[14] See Appendix for details.
[15] Brealey (1996) and Ehrmann (1995).

The practical relevance of the above-mentioned conflict between investors and management, especially for large corporate groups, can be seen in many failed large investment programs in the recent past, in which diversification into sectors remote from the core business in particular led to below-average results for investors.

For DB AG, only the Other/Shareholdings (Sonstige/Beteiligungen) segment and the Arriva and Schenker shareholdings can be mentioned as striking examples from the above list of unprofitable management activities with access to equity. The Other/Shareholdings segment employs a total of more than 50,000 people in over 50 companies. The negative EBIT generated in this segment remained almost constant from 2013 to 2018 at EUR -0.5 billion p.a. (EBIT before adjustments in 2019: EUR -0.7 billion)[16].

For Arriva (acquired in 2010 for EUR 1.8 billion, to which EUR 1.1 billion in debt was added) and for Schenker (acquired in 2002 for EUR 2.5 billion),[17] it is true in each case that synergies with the core business – e.g., with rail freight transport in Germany – cannot be demonstrated. This fulfils the above-mentioned point of remoteness from the core business. Although the two shareholdings together generate over 40% of DB AG's total revenue, they only account for 15% of EBIT; management has therefore bought revenue growth with a decline in returns. If the goodwill from the purchase of Schenker is considered, it can be assumed that this investment never generated its cost of capital, which can also be assumed for Arriva.

From the taxpayer's point of view, the use of equity capital for unprofitable management activities is problematic not only for reasons of profitability, but also because the purchase sums as well as the employment and wage effects are largely generated abroad, i.e., a transfer of funds takes place there.

[16] BRH (2019a).
[17] BRH (2019b).

5.3.Benefits and costs of debt capital and optimal capital structure

Increased borrowing serves as a substitute for dividend payments, which are increased by this free cash flow. This substitute has the following consequences for the weakening of targeted unprofitable management activities [18]:

- Reduction of existing investment alternatives to those that are actually profita-ble,
- Reducing the scope for "fringe benefits."
- Shortening of the intervention period for reorganizations in the event of declin-ing company values
- thereby increasing the probability of survival of companies.

In contrast to the use of equity capital (see above), which is inevitably not conditional, debt capital contracts offer extended options for investors. Covenants can be used to steer DB AG management's options in a more target-compliant manner[19]. These are contractually binding assurances given by the borrower or bond debtor during the term of a loan or bond. From the large number of possible covenants, financial ratios and corporate financial covenants are high-lighted as being useful for DB AG.

Financial covenants include business ratios that can be derived from the balance sheets or in-come statements of borrowers: compliance with balance sheet ratios (capital structure, etc.) and other financial covenants can be stipulated in loan agreement clauses. Compliance with the clauses can be accompanied by incentives to sell equity interests.

Corporate financial covenants restrict dividend payments, for example, or prohibit the provision of collateral to other creditors in negative clauses. There are also restrictions on the disposal of significant assets such as shareholdings and the definition of an "ordinary course of business", which is particularly important for the management restriction to core businesses.

What are the implications of debt financing for investment policy? Let a company have two investment projects with the same expected net present value but different risks, as measured by the standard deviations of the present values. Let Vh, Vl, be the expected values for the market value of debt from the investment projects, with Vh > Vl,. V decreases as the standard deviation increases. The agency costs result from the fact that, in the case of limited liability of the equity investors, they can book high expected returns for themselves for the investment

[18] Ehrmann (1995).
[19] Dgl. Covenants are not new; they were developed and refined for the restructuring of U.S. railroads in the **19th century,** see Tufano (1997).

alternative Vl, but only have to bear the risk of a poor realization of the company's results up to the amount of their capital investment. Lenders who are unfavourably affected by a bad realization of the investment project but cannot participate in a good realization beyond the credit interest rate will accordingly insist on the choice of the lower-risk investment project. As a result, as leverage increases, there is pressure to choose investment projects that are not firm value maximizing. The assumption of opposing conflict cost curves for equity and debt thus establishes the existence of an optimal capital structure for a private company. This capital structure *"is determined by trading off the benefit of debt in preventing investment in value decreasing projects against the loss of debt in preventing investment in value increasing projects"*[20] .

At DB AG, after the experience with failed diversification programs, with the avoidance of economically necessary corporate restructurings and problematic acquisitions, the prevention of unprofitable activities should be a central goal of the equity investor. Pressuring debt investors to choose lower-risk investment projects should be in the equity investor's interest at DB AG.

6. State Aid and capital support: the examples of Deutsche Lufthansa (DLH) and Commerz-bank AG

For Corona aid to companies, the European Commission refers to Article 107 (3b) of the TFEU. According to Article 107 (3b), " aid to promote the execution of an important project of common European interest or to remedy a serious disturbance in the economy of a Member State"[21] may be considered compatible with the internal market. The EU Commission states that[22] such aid may be granted to prevent the disruption of economic activity from causing unnecessary market exits by companies that were profitable prior to the COVID outbreak. In the case of Art. 107 (2b), which was brought into play by the Federal Republic of Germany and deals with natural disasters, the direct connection between these and the economic losses of companies would have to be proven. However, DB AG itself has pointed out that it has fulfilled its social responsibility, i.e., it has operated without a mandate and without economic interests, and has provided transport services that have not generated any corresponding revenue and for which economic cost adjustments have been waived. Against the background of the lack of a directly

[20] Harris, M./Raviw, A. (1991): p. 303.
[21]For the EU's temporary framework, see in detail EU Commission (2021).
[22] Op. cit.

attributable connection to a natural catastrophe, the EU Commission is questioning the reimbursement of any resulting damage (see 8.).

As already explained, an increase in equity in this context also means for management a de facto increase in the resources available to them in their own sphere of influence at the expense of competitors and taxpayers.

So what, according to the EU Commission, must be prevented or ensured when aid is paid, e.g., in the Corona case? The EU formulates requirements for this with regard to: the necessity, appropriateness and scope of the measures, the participation of the member state in the capital of companies and remuneration, the exit of the member state from the participation in the companies concerned and governance; in addition, there is a ban on cross-subsidization and a takeover ban and obligations to maintain effective competition and ensure public transparency and reporting.

In the following, some relevant aspects of the aid to DLH and the earlier aid to Commerzbank after the financial crisis in 2008 are briefly explained to provide an assessment framework for aid to DB AG. The focus will be on the form of financing and the conditions that safeguard competition.

As main measures at DLH, Germany will contribute EUR 6 billion to the recapitalization of Lufthansa and provide a state guarantee of EUR 3 billion for a loan [23]. The measures are subject to conditions, including ensuring sufficient remuneration for the state and further precautions to limit distortions of competition.

In particular, the following conditions apply:

1. *requirements with regard to the necessity, appropriateness and scope of the measures*: For review purposes, consideration is given to DLH's capital and liquidity requirements at Group level by the EU Commission.
2. *Conditions regarding the participation of the Member State in the capital of enterprises and remuneration*: there is adequate remuneration to the State for the investment, as well as additional incentive mechanisms for DLH to repurchase the State's capital participation and dormant equity holdings.
3. *Conditions regarding the exit of the Member State from the participation in the companies concerned:* Submission of a business plan prepared by DLH after both the loan and

[23] EU Commission (2020.

the recapitalization instruments are redeemed by 2026; otherwise, a restructuring plan for DLH will be notified to the Commission.

4. *Governance requirements:* Until 75% or full repayment, there is a strict ban on dividend payments and share buybacks, as well as a strict restriction on executive compensation, including a ban on bonus payments.
5. *Ban on cross-subsidization and takeover ban:* To avoid unjustified advantages that impair fair competition, ban on using DLH aid to support integrated companies that were already in economic difficulties before December 31, 2019; against this backdrop, foreign – as opposed to equity – borrowing forces clarification of whether borrowed funds can be repaid from business operations or are used *for general corporate purposes.* To this end, there is a prohibition on acquiring stakes of more than 10 percent in competitors or other companies operating in the same business segment until the recapitalization instrument has been redeemed at 75 percent.
6. *Commitments to preserve effective competition:* Due to DLH's significant market power, take-off and landing slots were in short supply at its congested Munich and Frankfurt hubs. To preserve effective competition, up to 24 slots per day and related other assets are to be divested to competitors there; this will reduce disadvantages for consumers and competitors.
7. *Public transparency and reporting:* compulsory publication of relevant information on the use of the aid received.

It became clear that even where equity-like instruments were chosen, financing tends to be classified as debt financing. This can be seen, among other things, from the fact that while equity capital is generally available for an unlimited period (or is traded on stock exchanges) and only gives rise to a claim to profit, debt capital is generally time-limited and involves fixed remuneration claims. In the case of the aid to Lufthansa, both are the case. The same applies to the covenants. These seek to ensure in relative detail that the recapitalization and other financing funds received are not used to finance measures that impede competition. In this respect, reference should be made once again to the covenants, i.e., behavioural conditions, from debt financing. These are classic instruments for restricting the freedom of management to behave in a way that is not in line with the objectives of the providers of capital (e.g., the taxpayers), including, for example, anti-competitive behaviour or unprofitable management activities. In contrast, an increase in equity capital would mean an increase in the resources available to management in its own sphere of influence at the expense of the taxpayers, which cannot be restricted by behavioural constraints imposed by external parties.

In addition, some financing measures in favour of Commerzbank and the associated conditions are outlined below[24]:

1. A dormant equity holding in the amount of EUR 8.2 billion. The agreement on the dormant equity holding provides for both a fixed interest rate on the entire amount of 9% p.a. and a variable interest rate based on the dividend distributed.
2. Provision of a guarantee facility of EUR 15 billion, which can be used to collateralize bearer bonds; Commerzbank pays a fee for this.
3. To offset negative competitive effects, Germany and Commerzbank have proposed measures that include divestments of shareholdings and other assets, restrictions on future growth including core business areas, and restrictions on Commerzbank's competitive behaviour and market presence.
   3.1. In particular, Germany shall ensure that Commerzbank does not make any acquisitions of financial companies or other potentially competing companies until April 30, 2012; this prohibition on acquisitions includes, for example, the acquisition of companies by way of transfer of shares and assets as well as the conclusion of other transactions that serve the purpose of acquisitions.
   3.2. In the market segments in which Commerzbank has a market position that is not merely subordinate [...], it will not offer more favourable prices for its products and services, in particular in retail and corporate banking, than its three most favourable competitors by [...].
   3.3. Assurance of the reduction of business activities and sale of numerous shareholdings (e.g., the separation from EuroHypo); thus, permanent reduction of total assets by around 45% and strong reduction of risk-weighted assets [...]; the extent of the measures is suitable to reduce any distortions of competition.

The combinations of debt financing measures and competition-securing covenants correspond structurally in the cases of Commerzbank and Lufthansa. Regarding the possible applications at DB AG, the following is relevant: on the one hand, the financing aids, which also include guarantees and the like, are limited in time and subject to remuneration. Furthermore, there are hard conditions which mean direct and massive restrictions on entrepreneurial action.

In the case of divestments (slots, shareholdings), the aim is also to prevent anti-competitive behaviour. Particular attention should also be drawn to the restriction of pricing policy in those

[24] EU Commission (2009)

market segments in which Commerzbank has a more than subordinate market position. Ensuring a restrictive pricing policy, i.e., prohibiting more favourable prices than those of its three most favourable competitors, is a very strong restriction that makes the competition restraints directly operational. It is difficult to imagine that such a condition could be linked to an increase in equity that is not time-limited, not remunerated on a fixed basis and not conditioned in any other way.

7. Equity development, financing measures and capital market assessment DB AG

DB AG itself formulates its corporate goals (see DB Integrated Report 2018; Management Report 10-Year Overview 2018), which are directly related to its financing options. In compact terms, these goals were found in the Integrated Reports until 2018 (in 2019, the goals are scattered throughout the report), which are divided among the overall goals into: profitable quality leader, top employer, and environmental pioneer. The profitable quality leader aims to measure itself according to the categories: Customer Satisfaction Travelers, Customer Satisfaction Freight, Product Quality, Adequate Return on Investment, and Financial Stability. There are no quantitative targets for DB Netz AG that are communicated to the outside world in the same way, except for the statement that integrated capacity management should enable an overall increase in capacity of 30 % by 2040.

For its creditworthiness, DB AG formulates:

> *"In addition to sustainably increasing the value of the company, the DB Group's financial management also aims to maintain a capital structure that is appropriate for maintaining a very good credit rating. Financial stability is an essential component for sustainable business. For the DB Group as an asset-intensive company, access to the capital market at good conditions at all times is essential. A key objective is therefore to achieve appropriate debt ratios. Our central key figure for managing debt is repayment coverage"*[25].

According to its own management reports, DB AG (within the Group) has for many years fallen short of its self-imposed targets in all dimensions of profitable quality leadership[26]. The situation is dramatic in terms of the targeted appropriate return on capital employed (ROCE). It was 4.3% in 2019 and 5.8% in 2018, compared with the starting value of 8.3% in 2012 and the target

[25] DB (2019).

[26] Basic background analysis provided by: Böttger (2016), Böttger (2019), and Böttger (2020).

value of 7% in 2018[27]; this was 2.1% (2019) and 1.2% (2018) below the cost of capital before taxes. Financial stability was also not in line with DB's own targets: redemption coverage was well below the target of 25% (2018) in 2019 (15.3%) and 2018 (17.6%). The starting value for this ratio was 22.2% in 2012. It should be noted that in the fine print of the 2019 report, the targets for ROCE were lowered to 6.5% (compared to 7% in 2018) and for repayment coverage to >20% (op. cit., p. 107).

For the Corona pandemic, DB AG claims a high loss from declining sales. Contrary to initial appearances, this argument linking revenue and profit is only valid to a limited extent if one looks at the development of DB AG over a longer period. While Group revenue grew by just under 30% in the last few years from 2010 to 2019, personnel expenses rose by 56%. If one accepts the growth in the cost of materials and abstracts from depreciation and amortization, then this development alone results in a deterioration in profitability, which is largely self-made because revenue growth was "bought in" with a decline in returns through low-margin business.

EBIT over this period remained relatively stable, but as a percentage of sales it decreased from 5.2% to 3.1%[28]. For a simple comparison of the development over time[29], EBIT is averaged over three years to avoid annual effects. The average EBIT for the years 2010 to 2012 was EUR 2.19 billion per year. If we continue to apply the ratio of sales to personnel expense from 2010, personnel expense in 2019 should be EUR 3.13 billion lower than the EUR 18.16 billion reported.

The deterioration in returns over such a long period of time corresponds to the activities of DB AG management already mentioned:

- Diversification programs
- Investment projects with low returns
- Avoidance of economically necessary company restructurings or liquidations
- problematic acquisitions.

The statements made so far clearly demonstrate that, even without Corona, if business continues unchanged, internal financing in which Deutsche Bahn AG receives more cash and cash equivalents in a period than it incurs cash outflows in the same period was and is highly unlikely. It follows that the increase in shareholders' equity from taxed profits by transferring profits to

[27] DB (2018).
[28] DB (2019)
[29] DB (2019)

reserves is unlikely. The growth in sales in recent years has been accompanied by disproportionate increases in expenses, e.g., personnel expenses.

in Mio. €	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
GEWINN- UND VERLUSTRECHNUNG										
Umsatz	44.430	44.065	42.693	40.557	40.403	39.728	39.107	39.296	37.979	34.410
Gesamtleistung	47.596	47.156	45.593	43.298	43.102	42.422	41.756	41.910	40.436	36.617
Sonstige betriebliche Erträge	3.030	2.998	2.954	2.834	2.772	2.824	2.853	3.443	3.062	3.120
Materialaufwand	-22.262	-22.258	-21.457	-20.101	-20.208	-20.250	-20.414	-20.960	-20.906	-19.314
Personalaufwand	-18.152	-17.301	-16.665	-15.876	-15.599	-14.919	-14.383	-13.817	-13.076	-11.602
Abschreibungen[1]	-3.671	-2.688	-2.847	-3.017	-4.471	-3.190	-3.228	-3.328	-2.964	-2.912
Sonstige betriebliche Aufwendungen[1]	-5.157	-6.088	-5.890	-5.677	-5.750	-5.057	-4.817	-4.719	-4.375	-4.092
Operatives Ergebnis (EBIT)	1.384	1.819	1.688	1.461	-154	1.830	1.767	2.529	2.177	1.817
Ergebnis an at Equity bilanzierten Unternehmen	-12	12	14	33	22	8	3	14	19	17
Übriges Finanzergebnis	-36	-14	-30	-16	0	-3	-15	-13	3	-23
Zinsergebnis[1]	-655	-645	-704	-772	-800	-898	-879	-1.005	-840	-911
Ergebnis vor Ertragsteuern	681	1.172	968	706	-932	937	876	1.525	1.359	900
Jahresergebnis	680	542	765	716	-1.311	988	649	1.459	1.332	1.058
Dividendenausschüttung (für Vorjahr)	650	450	600	850	700	200	525	525	500	-
WERTMANAGEMENT										
EBITDA bereinigt[1]	5.436	4.739	4.930	4.797	4.778	5.110	5.139	5.601	5.141	4.651
EBIT bereinigt	1.837	2.111	2.152	1.946	1.759	2.109	2.236	2.708	2.309	1.866
Capital Employed per 31.12.[1]	42.999	36.657	35.093	33.066	33.459	33.683	33.086	32.642	31.732	31.312
Return on Capital Employed (ROCE)[1] in %	4,3	5,8	6,1	5,9	5,3	6,3	6,8	8,3	7,3	6,0
Tilgungsdeckung in %	15,3	17,6	18,7	18,1	19,0	20,3	20,8	22,2	22,0	18,8
CASHFLOW/INVESTITIONEN										
Mittelfluss aus gewöhnlicher Geschäftstätigkeit[1]	3.278	3.371	2.329	3.648	3.489	3.896	3.730	4.094	3.390	3.409
Brutto-Investitionen[1]	13.093	11.205	10.464	9.510	9.344	9.129	8.224	8.053	7.501	6.891
Netto-Investitionen[1]	5.646	3.996	3.740	3.320	3.866	4.442	3.412	3.487	2.569	2.072
BILANZ PER 31.12.										
Langfristige Vermögenswerte[1]	53.213	46.646	45.625	45.290	45.199	45.530	43.949	44.241	44.059	44.530
davon Sachanlagevermögen und immaterielle Vermögenswerte[1]	50.485	44.487	43.207	42.575	42.821	43.217	41.811	41.816	41.541	42.027
Kurzfristige Vermögenswerte	12.615	11.881	10.811	11.034	10.860	10.353	8.945	8.284	7.732	7.473
davon flüssige Mittel	3.993	3.544	3.397	4.450	4.549	4.031	2.861	2.175	1.703	1.475
Eigenkapital	14.927	13.592	14.238	12.657	13.445	14.525	14.912	14.978	15.126	14.316
Eigenkapitalquote[1] in %	22,7	23,2	25,2	22,5	24,0	26,0	28,2	28,5	29,2	27,5
Langfristiges Fremdkapital[1]	32.820	29.104	27.510	28.525	28.091	28.527	26.284	25.599	24.238	24.762
davon Finanzschulden[1]	23.977	20.626	19.716	20.042	19.753	19.173	18.066	17.110	16.367	16.394
davon Pensionsverpflichtungen	5.354	4.823	3.940	4.522	3.688	4.357	3.164	3.074	1.981	1.938
Kurzfristiges Fremdkapital	18.081	15.831	14.688	15.142	14.523	12.831	11.698	11.948	12.427	12.925
davon Finanzschulden[1]	4.716	2.618	2.360	2.439	2.675	1.161	1.247	1.503	1.984	2.159
Netto-Finanzschulden[1]	24.175	19.549	18.623	17.624	17.491	16.212	16.362	16.366	16.592	16.939
Bilanzsumme[1]	65.828	58.527	56.436	56.324	56.059	55.883	52.894	52.525	51.791	52.003

Fig. 1: Development of key figures DB AG (DB, 2019, p. U3)

How has equity developed over the last decade? The initial equity ratio in 2011 was 29.2%; the development of equity over time follows the weak profitability development with long-term debt remaining absolutely constant. While equity was still EUR 14.52 billion in 2014, it fell to EUR 13.44 billion in 2015. This reduction in equity is largely attributable to the write-down of fixed assets at DB Cargo by EUR 1.3 billion in 2015 due to lower earnings expectations. An optically positive side effect of this special write-down in subsequent years was the reduction in regular depreciation and amortization, which improved adjusted EBIT accordingly – by around EURO 100 million in 2016.

Equity in 2016 then still amounted to EUR 12.66 billion and was only increased again by EUR 1 billion to EUR 14.24 billion with the addition in 2017. With the issue of the hybrid bonds in 2019, which are classified as equity under IFRS, equity then increased again by EUR 1.992 billion to EUR 14.93 billion[30]. If the equity from 2019 is adjusted for the previously made additions and the hybrid bonds, which under German GAAP[31]can be counted in full as debt, the equity figure is reduced by EUR 3 billion, resulting in an equity ratio of only 18.1%. If, in line with the rating agencies, only 50% of the hybrid bonds are included in net debt, the equity ratio is 19.6% (if these bonds were called by DB AG, they would have to be redeemed by the federal government with equity). It has thus fallen continuously since 2012. This observation indicates the dramatic nature of the equity development long before Corona. At the same time, it becomes clear that the debt ceiling defined by the Budget Committee of the Bundestag is being undermined by this type of financing.

It should be noted once again that the immediate write-down of EUR 1.3 billion at DB Cargo in 2015 was followed by an increase in equity of EUR 1 billion in 2017. Hidden depreciation problems of this kind cannot be ruled out in the future either and must by no means be confused with corona damage. One such problem could be the change in depreciation rules in the consolidated financial statements from 2018. This was accompanied in some cases by a major extension of the useful life of the network infrastructure. Although this reduction in depreciation visually[32] induces an improvement in adjusted EBIT – by a total of around EUR 180 million in fiscal 2018 alone (BRH 2019a). Whether this accounting extension of useful life corresponds to the actual investment backlog identified in external and internal railroad studies, including replacement investments in the double-digit billions in some cases, is more than questionable. In the worst case of "new findings", immediate write-downs would have to be made again against equity as in 2015.

How do the rating agencies view DB AG's creditworthiness? DB AG's own chosen benchmark for this capital market assessment has as its key objective:

> *"...to achieve appropriate debt ratios. Our central key figure for managing debt is repayment coverage."*

The operating cash flow used to calculate this repayment cover[33] and derived from adjusted EBIT is related to adjusted net debt. It has already been explained which positive distortions of

[30] DB (2019).
[31] BRH (2020).
[32] BRH (2019a).
[33] For the calculation scheme of redemption coverage at DB AG, see. DB (2019), P.110.

EBIT resulted solely from immediate write-downs or useful life extensions; the reduction in debt requires positive net cash inflows. Despite the measures being expensive for the equity provider, this ratio repayment coverage has deteriorated over time from 22.2% in 2012 to 15.3% in 2019.

Accordingly, Moody's opinion in the Credit Opinion of 10/2019, i.e., well before the appearance of Corona:

> *"The a1 BCA is very weakly positioned because of a number of challenges, particularly in terms of profitability as evidenced by very low margins (Moody's Adjusted EBITA margin of 3.1% in 2018), very high Moody's gross adjusted leverage (forecasted to be close to 7.0x in 2019) and negative free cash flow (FCF, an annual deficit of around EURO2 billion), which reflects increasing investments and operational challenges"*[34].

The "credit challenges" cited are:

> *"Continued pressure on profitability, Strained FCF generation because of an intense capital spending programme (and)... Very high leverage for the rating category".*

For this purpose, extra attention is drawn to factors for an impending downgrade:

> *"A failure to improve the company's operating performance from current levels, with its Moody's-adjusted EBITA margin remaining below 4.5%. Moody's-adjusted debt/EBITDA failing to decrease towards 5.5x from around 7.0x forecast in 2019"*[35].

In short, *DB AG's self-imposed goal of "achieving appropriate debt ratios,"* i.e., adequately designing *"repayment coverage to manage debt,"* was completely missed.

Accordingly, DB AG's rating is seen as sensitive: *"to any weakening in the likelihood of support from the German federal government, which we expect to remain high".*

Fitch writes identically in 12/2020 that the ranking is not determined by economic performance but solely by DB AG's connection to its sole equity provider:

> *"'Strong' assessment of resource management reflects the lack of constrains regarding resources"* [36].

[34] Moody's (2019).
[35] Moody's (2019).
[36] Fitch (2020).

Fitch draws the depressing conclusion for DB AG and its future business prospects:

> *"a default of DB could lead to a reputational risk for Germany...(it) could change investors' views of the credibility of Germany"* [37].

	31/12/20	31/12/20	31/12/20	31/12/20	30/06/2019	31/12/2019	31/12/2020
Revenue ($ Billion)	$ 45.5	$ 45.5	$ 49.0	$ 52.3	$ 52.8	$ 53.8	$ 55.7
EBITA Margin	1.7%	2.7%	3.0%	3.1%	2.4%	3.0%	3.7%
EBITA / Average Assets	1.2%	1.8%	2.1%	2.2%	1.7%	2.2%	2.7%
Debt / Book Capitalization	69.0%	71.7%	68.8%	71.2%	72.8%	68.6%	68.4%
Debt / EBITDA	6.2x	6.4x	5.7x	6.2x	7.2x	6.9x	6.2x
FCF / Debt	-4.8%	-1.1%	-6.9%	-3.9%	-5.5%	-9.3%	-6.3%
RCF / Net Debt	20.8%	18.7%	20.8%	18.4%	16.1%	13.1%	14.8%
(FFO + Interest) / Interest Expense	7.5x	7.6x	7.9x	7.6x	7.8x	6.7x	7.5x

Fig. 2: Debt ratios DG AG as presented by Moody's (Moody's, 2019)

In other words, Fitch formulates the expectation in 12/2020 for the international capital market that DB AG is not creditworthy on the basis of its own economic indicators, but because the German taxpayer cannot afford to let it go insolvent.

8. DLH and Commerzbank aid solutions: transfer to DB AG

Compared with borrowing, additional equity reduces DB AG's debt ratio and thus c.p. the interest that DB AG must finance. At the same time, the increase in equity for DB AG increases its borrowing options. (At least, this assumption is obvious, considering the previous flexibility to change the debt ceiling by the Budget Committee of the Bundestag, which keeps the ratio of equity to adjusted net financial debt just below 60% in each case)[38]. This strengthens DB AG's already creditworthiness-related competitive advantage over other market participants who do not receive any relevant emergency aid. DB AG could use this competitive advantage through the equity injection in a targeted, competition-distorting manner because, as formulated e.g., in

[37] Op. cit.
[38] Determined according to: BRH (2019a) and BRH (2019b).

the prospectus for *the* hybrid bonds *("The Issuer intends to use the net proceeds from the issuance of the Notes for general corporate purposes of Deutsche Bahn")*[39], equity funds are not earmarked. This use could take the form of:

- Squeezing out competitors through aggressive, loss-making pricing and service policies,
- Expansion policy through acquisition of weakened companies,
- Avoidance of economically necessary corporate restructuring,
- (Continued) financing of permanently loss-making product offerings,
- Selective cooperation with individual market participants.

In the following, considerations are given to aid solutions at DB AG. In the run-up to the granting of aid, however, it would have to be clarified to what extent the *expressis verbis* equity increase from hybrid bonds not used for growth projects (see above) in 2019 has already been used to compensate for deficits at some DB AG companies, meaning that the possibilities for using aid are already limited in advance[40]. In addition, a rough estimate of the damage must be made in advance, which is estimated by the Federal Network Agency (so called Bundesnetzagentur) for the *entire* "*German rail market .... at a total of more than 2.5 billion euros for 2020*"[41], whereby it allocates EUR 2 billion of this to DB AG.

1. General conditions must be met: the necessity, appropriateness, and scope of the measures[42], the participation of the Member State in the capital of undertakings and remuneration, the exit of the Member State from the participation in the undertakings concerned and governance; in addition to prohibition of cross-subsidization and takeover ban and obligations to maintain effective competition and ensure public transparency and reporting[43]. It follows from the examples of DLH and Commerzbank: The combinations of debt financing measures and competition safeguarding requirements correspond structurally in both cases and safeguard the interests of taxpayers and competitors. Restrictions on divestments, bans on bonuses and dividends, and even restrictions on pricing policy serve to prevent anti-competitive behaviour.

[39] DB Prospectus (2019), p. 19.
[40] EU Commission (2020b) derived from the temporary framework to DLH: "it may not use the aid to support the economic activity of integrated companies that were already in economic difficulties before December 31, 2019".
[41] BNetzA (2021), p.20.
[42] Op. cit.
[43] See BRH (2020) on the problems of further EC increases and other financial solutions.

2. Regarding the possibilities of application at DB AG, the following is relevant: on the one hand, the (external) financing aid, which also includes guarantees and the like, must be limited in time, and provided with remuneration. Furthermore, there must be tough conditions that impose direct and massive restrictions on entrepreneurial action. The following considerations are based on the assumption that the aid will *not be* paid out to competitors in the same form and to the same extent, as has been the case up to now.
3. If we start with the prohibition of cross-subsidization and the obligations to maintain effective competition and ensure public transparency and reporting, then the following demands on DB AG are obvious:

    - Termination of control and profit and loss transfer agreements,
    - Price Observatory,
    - Prohibition of bonuses as long as it is not ensured that additional EC from subsidies is not used to finance them.
    - External review of the requirements regarding the necessity, suitability, and scope of the measures in the DB AG computing centres.

4. Further competition-securing conditions may be analogous to DLH and Commerzbank:

    - Opening of the bahn.de and DB Navigator sales portals to all competitors and the release of all sales and tariff data causally linked to this, as well as other data such as load factor data,
    - A transfer of train paths – e.g., in long-distance passenger transport (SPFV) – to competitors; to make these measures effective, improved access to high-quality rolling stock is mandatory.
    - The liquidation of “Regionalverkehre Start Deutschland GmbH”, a company founded solely to regain market share, but which was given an unassailable cost advantage over its competitors due to its exemption from group levies. This constitutes unlawful cross-subsidization.
    - It would also be conceivable that, where there is competition, DB AG should be prohibited from undercutting competitors' prices – e.g., through supersaver prices (so called *Supersparpreise*) in long-distance transport – until the aid has been repaid (see Commerzbank case, point 3.2.).

5. The key issues are the time limit and remuneration of the aid, its structuring as a loan, and the establishment of conditions regarding the Member State's exit; it is advisable here, as in the case of DLH, to submit a business plan drawn up by DB AG showing when the loan will be repaid.

6. The loan repayment measures described above can be precisely defined (as at Commerzbank) by means of predefined disposals of shareholdings and other assets, restrictions on future growth including core business areas, and restrictions on DB AG's behaviour in terms of competition and market presence.
7. One very important area of anti-competitive behaviour is the train path prices complex for passenger and freight transport[44]. Train path prices are largely determined by equity financing, hence the cost of equity and the equity ratio of DB Netz AG. In short, any increase in equity capital, even if it is from subsidies to compensate for corona damage, which is achieved by passing on funds from DB AG to DB Netz AG *there,* increases train path prices. At the same time, it increases the additional profit of DB Netz AG and – via the profit and loss transfer agreements – that of DB AG. To reduce the associated serious barriers to market entry for competitors, long-term reductions in train path prices are required that will have an effect in the future; in view of DB AG's high market share, especially in the long-distance market, the reduction in train path prices, which is only retroactive, mainly rewards the incumbent and only slightly relieves the burden on competitors.

[44] See the Annex for a detailed explanation of the relationship between the equity ratio, the cost of equity, and additional profits of DB AG and DB Netz AG against the background of profit and loss transfer agreements.

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Annex Equity Subsidies, Cost of Capital, and Track Access Charges

The predefined dividend payments from DB AG to the federal government are immediately returned to DB AG in the so-called rail financing cycle under the *LuFV*. The dividend is related to the entire DB AG Group. The dividend yield in 2018 for DB AG was: D/EKkonz = 450/13592 = 3.3%, the dividend yield of the Dax in 2018: 3%. This reinvestment of DB AG's dividend payment does not involve DB AG's own financing, but must be understood as a form of public financing. On the one hand, the taxpayer as owner has in principle a right to dividend payments. On the other hand, the owner is free to use these funds, even outside the DB AG enterprise, e.g., to promote competition in the rail sector. With the financing cycle, he enters an obligation to use the dividends to which he is entitled from *all* subcompanies of DB AG – mainly from DB Netz AG itself – not only within the company but precisely for maintenance investments in the existing rail infrastructure, which implies the use of tax funds.

As a basis for the train path price determinations are relevant:

Netz AG equity (2019: 40 % equity ratio[45]); this value is in DB AG's discretion through allocation of equity increases (see DB Cargo special depreciation), k = difference between regulated cost of equity $_{er}$ and cost of debt i; m = market share of non-DB AG RUs, $_{Gi}$ = additional gross or additional net profit from equity versus debt utilization of a time period, D = dividend.

The additional gross profit of DB AG – and thus also of DB Netz – from train path prices through equity financing of DB Netz AG comes about as follows: the cost of equity, which includes an imputed profit, and the equity ratio of DB Netz AG form the basis of the train path prices paid by DB AG RUs and competitors in accordance with the provisions of the Railway Regulation Act.

In short, any increase in equity, even if it is from aid to compensate for corona damage, which is achieved by passing funds from DB AG to DB Netz AG *there,* increases train path prices. At the same time, as will be explained below, it increases the additional profit of DB Netz AG and – via the profit and loss transfer agreements – that of DB AG.

The cost of equity is higher than the cost of debt: $k = {}_{er} - i > 0$. The *additional income from* increased equity utilization with A = Netz AG equity *above minimum value (*capping as in the energy sector) is: $E = k\,A$; the dividend financed from the entire DB AG must be deducted from

[45] The level of the EC ratio and a cap as called for in the energy industry are criticized in: Monopoly (2019) https://www.monopolkommission.de/images/PDF/SG/7sg_bahn_volltext.pdf.

these revenues for the *additional gross profit:* $GB = k\,A - D$; *D,* however, is refunded immediately; without interest for any time delays from dividend payment to repayment, the *additional net profit* is: $GN = k\,A - D + D = k\,A$; the *additional costs for competitors* compared with the application of interest on borrowed capital in the train path price calculation on A, the equity capital of Netz AG *above minimum value* are: $K = - k\,m\,A$;

Thus, as their market share grows, the competitor RUs are increasingly called upon to finance DB AG's additional profits. The DB AG RUs "only" have to transfer their surpluses to the sister company DB Netz AG. An increase in payments from DB RUs to DB Netz AG from: $-(1 - m)k\,A$ means *uno actu* a reduction of DB EVU surpluses, consequently a reduction of any dividend shares arising there; however, they increase the surplus at DB Netz AG and thus the possibility of dividend payments to the Federal Government. Subsequent "refunds" from DB Netz AG to the DB AG RUs via profit transfers to the holding company, e.g., with the dividend repayment, make it possible to neutralize the intragroup train path price payments; these are obvious due to the high profitability of DB Netz AG compared with the DB AG RUs. In contrast, the train path price payments of the competitor RUs definitely go to the DB Netz AG company. To paraphrase the economist Nicholas Kaldor: *"DB AG earns what it spends, and the competitors spend what they earn"*. The additional profits from Corona equity grants for DB AG could only be avoided if these payments were granted as loans.