EUROPEAN COMMISSION

Brussels, 29.5.2019
C(2019) 4097 final

In the published version of this decision, some information has been omitted, pursuant to articles 30 and 31 of Council Regulation (EU) 2015/1589 of 13 July 2015 laying down detailed rules for the application of Article 108 of the Treaty on the Functioning of the European Union, concerning non-disclosure of information covered by professional secrecy. The omissions are shown thus […]		PUBLIC VERSION This document is made available for information purposes only.

Subject: **State Aid SA.53791 (2019/N) – Germany**
Methodology for the determination of the aid amount for repayable advances financing R&D expenses in civil aviation projects

Sir,

1. PROCEDURE

(1) On 29 March 2019, the German authorities notified to the Commission a methodology to calculate the gross grant equivalent (hereinafter "GGE") of a repayable advance pursuant to the condition of transparent aid of article 5 of the General Block Exemption Regulation[1] (hereinafter "GBER"), for projects financing Research and Development (hereinafter "R&D") expenses in civil aviation projects.

(2) Further contacts took place between the Commission and the German authorities on 5 and 10 April 2019. The German authorities supplemented the notification respectively on 17 and 29 April 2019.

[1] Commission Regulation (EU) N° 651/2014 of 17 June 2014 declaring certain categories of aid compatible with the internal market in application of Articles 107 and 108 of the Treaty on the Function of the European Union, published on OJ 187 26.6.2014 p.1

Seiner Exzellenz Herrn Heiko Maas
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(3) By letter dated 24 April 2019, Germany agreed exceptionally to waive its rights deriving from Article 342 of the Treaty on Functioning of the European Union ("TFEU") in conjunction with Article 3 of Regulation 1/1958[2] and to have the present decision adopted and notified in English.

2. DESCRIPTION OF THE METHODOLOGY

2.1. Scope of the methodology

(4) The methodology notified by the German authorities aims at rendering transparent the repayable advances financing R&D expenses in civil aviation projects pursuant to Article 5(2)(j) of the GBER. To this end, the methodology proposes an approach to calculate the corresponding GGE.

(5) Article 2(21) of the GBER defines a repayable advance as a loan for a project which is paid in one or more instalments and the conditions for the reimbursement of which depend on the outcome of the project. Generally, if the project succeeds, the investor (i.e. the grantor of the repayable advance) will receive a return on investment, including additional royalties if the project exceeds the sale forecasts. The investor also normally receives interest on the outstanding amount (i.e. amount of repayable advance not yet repaid).

(6) The German authorities clarify that the notified methodology will only apply to repayable advances granted to support R&D in civilian aircraft experimental development projects, undertaken by private undertakings, for aircrafts with a capacity of 20 seats and more. The methodology does not apply to R&D expenses in projects concerning cargo aircraft, military aircraft, state development programmes and light transport aircraft with seats capacity below 20.

2.2. GGE calculation methodology

(7) The methodology notified by the German authorities relies on establishing the market conform return (the return that a market economy investor would require for the repayable advance) and on calculating the GGE of the aid of a repayable advance as the difference between the market conform return and the actual return of the repayable advance. In the proposed methodology, the market return reflects the R&D risk and the licensing risk, the specific market risk, the administrative costs and the risk-free rate of return.

(8) For the application of the methodology, the starting point is the consideration that the project has only two possible outcomes depending on R&D success (base case) or failure (failure case):

[2] Regulation No 1 determining the languages to be used by the European Economic Community, OJ 17, 6.10.58, p.385.

- If the R&D project fails (i.e. essential work packages cannot be finalised successfully or the project does not lead to an aircraft that can be commercialised and no aircraft is certified), the entire amount of the repayable advance will count as a grant where the GGE equals to the outstanding amount (failure case scenario).

- If the R&D project leads to the commercialisation of aircraft(s), the repayable advance will be repaid according to a pre-agreed baseline repayment scenario (base case scenario). Actual repayments will depend on the degree of the project's commercial success. Possibly, once the success threshold is reached, the specific agreement can include additional payments to the investor (bonus success fee).

(9) Starting from the considerations above in recital (8), the German authorities propose to calculate the present value of the GGE as the valuation of the probability that the R&D project fails (failure case scenario) plus the discounted value of the interest rate benefits obtained (calculated on the basis of a market conform return minus the contractual rate of return) in relation to the annual conditional loan disbursements and repayments (base case scenario):

$$GGE = (RDR * RP) + (1 - RDR) * \left(\sum_{i=1}^{t} (CF_i * ((FR + CR + MR) - IRR)/(1 + DF)^i \right)$$

Where

RDR is the R&D failure probability;
RP is the amount of the repayable advance;
t is the entire project's duration (planned target sales period);
CF is the the cumulative cash flows of the repayable advance at time *i*, according to the base case scenario;
FR is the funding rate;
CR is the corporate risk rate;
MR is the specific market rate;
IRR is the internal rate of return of the base case scenario i.e. the contractual rate of the specific project;
DF is the applicable discount factor[3].

2.3. Determination of the R&D risk factor

(10) The proposed methodology puts forward that an investor (i.e. the grantor of the repayable advance) would expect remuneration for the risk of failure of the R&D project. The aid element representing the specific R&D project risk (*RDR * RP)* reflects both the R&D risk and the licensing risk (i.e. failure case). If the project

[3] On the discount factor applied see Communication from the Commission on the revision of the method for setting the reference and discount rates (https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52008XC0119(01)&from=EN)

fails during the R&D phase, it means that the commercialisation of the aircraft is not possible and that therefore there are no repayment obligations.

(11) The methodology requires an independent expert valuation of the specific R&D failure probability (*RDR*) based on the analysis of the specific project's business case.

2.4. Determination of funding costs

(12) The proposed methodology puts forward that an investor would ask a remuneration of the risk-free rate[4] and other administrative costs linked to the funding of the repayable advance. Germany proposes that the funding rate (*FR*) corresponds to the risk-free rate plus an appropriate add-on for other costs. The applicable risk-free rate is equal to the swap rate corresponding to the currency and the maturity of the repayable advance. The relevant maturity in this case is the period under the base case scenario after which the nominal amount of the repayable advance is repaid in full (i.e. until the success threshold is reached).

(13) An additional rate of minimum 0.25% is added to the risk-free rate to reflect other costs linked to the granting or administration of the loan (administration fees, handling costs, etc.). The value is based on the German public bank Kreditanstalt für Wiederaufbau's (KfW) current administration costs.

2.5. Determination of the corporate default risk factor

(14) On top of the funding costs, the proposed methodology puts forward that a market economy investor would ask the remuneration of the risk linked to the debtor's creditworthiness[5].

(15) According to Germany, the corporate risk margin (*CR*) depends on the debtor's creditworthiness and collaterals. For that purpose, the rating of the benefiting company is used as well as its level of collateralisation or alternatively the one of the mother company if this would result in a lower rating.

(16) The proposed methodology foresees that the corporate risk margin is determined according to the Communication from the Commission on the calculation of reference rates and discount rates.

(17) The methodology puts forward the fact that the valuation of the level of collateral offered can take also into account collateral either in the form of guarantees or pledged assets, as it also hedges the insolvency case of the company.

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[4] The risk-free rate of return is the theoretical rate of return of an investment with zero risk. The risk-free rate represents the interest an investor would expect from an absolutely risk-free investment over a specified period of time.

[5] This is distinct from the risk linked to the specific project explained before in recitals 10 and 11.

2.6. Determination of the specific market risk factor

(18) Future sales depend on demand, price levels, supply and the competitive environment. The proposed methodology puts forward that a market economy investor would ask remuneration for the risk relating to the sales forecasting errors.

(19) Germany proposes that the specific market risk rate (*MR*) reflects the risk of not reaching the expectations in term of sales i.e. possibly leading to only a partial repayment of the repayable advance. It also reflects the risks lying in unforeseen cost increases or performance decreases due to changing regulatory requirements or other commercial risks leading to failing to reach sales targets.

(20) Germany puts forward that the market risk premium is established with reference to market credit default swap (CDS) premiums[6] for projects/companies with comparable rating and thus comparable risk.

(21) The starting point for determining the project rating is the derivation of a specific default rate i.e. the estimation of the risk of not reaching sales target, in terms of volume and/or value, under R&D civilian aircraft experimental development projects. The proposed methodology puts forward that the specific default rate or viability gap (*PD*) will be determined on the basis of an empirical study of aircraft developments over the last three decades, which have a comparable R&D character. Germany submitted this study to the European Commission.

(22) The empirical study includes R&D aircraft development programmes from 1990 onwards and programmes developed before 1990 but discontinued or continued after 1990. In line with the definitions set out in recital (6), the study covers only R&D civilian aircraft experimental development projects, developed by private undertakings, concerning aircrafts with a capacity of approximately 20 seats and more. The list of programmes do not include cargo aircrafts, military aircrafts or state development programmes and light transport business aircrafts with seats capacity below 20. The list also excludes aircraft projects carried out in Russia, China and a number of emerging countries.

(23) On the basis of the criteria set in recital (22), a total of 60 aircraft programmes have been identified. An independent expert has assessed each individual aircraft programme, and assigned a score of 0 or 1 to each project depending on whether the project ended prematurely. Excluded from the analysis were programmes that did not result in aircraft licensing and which the expert considered to be failures of R&D, and which were hence to be covered by a separate risk factor as explained in recitals 10 and 11. To determine whether a project ended

[6] A CDS is a financial derivative or contract that allows an investor to "swap" or offset his or her credit risk with that of another investor.

prematurely, the independent expert considered both the duration of the programme and the number of aircraft produced. […][*]

(24) The one-off multiannual default rate is then derived from the ratio between the number of projects that were not fully successful (i.e. scored 0) over all projects that resulted in a licensed aircraft. An Annualised Probability of Default (APD) is then obtained under the assumption that the cumulative default rate is a conditional probability[7]. This is expressed by the formula:

$$APD = 1 - (1 - PD)^{(1/t)}$$

where t is the average maturity of non-successful programmes.

(25) In order to translate the APD in a corresponding commercial annual risk spread reflecting the market risk, the proposed methodology takes the following steps:

a) Express the probability of default as an expected loss (EL). Based on the empirical analysis, the independent expert judged that the exposure at default (EAD), i.e. the remaining outstanding notional amount at the moment of project failure, is 50%.

EL = APD * EAD

b) In a repayable advance, recovery will not be achieved by enforcement of collateral or other liquid assets i.e. when the project stops, no more sales are realised and therefore the loss given default, for the remaining sales that will not be realised, is equal to 100%. Since this LGD is higher than the typical LGD on CDS (the average LGD on senior unsecured bonds is 60%)[8], a corresponding adjustment of the probability of default (PD) is required for subsequent derivation of a corresponding credit rating as follows:

APDadj = EL / LGD[9]

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[*] Confidential information

[7] In the first time period, a fraction of the credit exposures in the cohort either defaults or survives. The credit exposures that survive period one may then go on to default or survive in period two; those that survive period two may go on to default or survive in period three, etc. Because the time periods are non-overlapping and the probability of default in each period is assumed to be independent, the T-period cumulative default rate is defined as one minus the product of the T marginal survival rates. See Moody's November 2006, "Measuring Corporate Default Rates"

[8] When pricing a CDS contract for a corporate, a market convention is that the baseline LGD is 60%. See Moody's March 2010, "CDS-implied Expected Default Frequency Credit Measures and Fair-value Spreads"

[9] The general formula is indeed EL= PD*EAD*LGD

c) Calculate the adjusted multi-annual default probability of the specific project for which the valuation methodology is applied (PDp)

$$PDp = 1 - (1 - APDadj)^{(tp)**}$$

Where

PDp is the multi-annual default probability of the project;

APDadj is the annual default probability based on past empirical evidence, adjusted for an LGD of 60%;

tp is the maturity of the project (i.e. the period required until the nominal amount of the repayable advance is repaid in full, under the base case).

d) Identify the corresponding credit rating by looking up the *PDp* in the average cumulative corporate default rates table provided by one reference credit rating agency given the project specific maturity[10].

e) The relevant market rate (*MR)* corresponds to calculating the average spread over a basket of single name CDS of the corresponding maturity. That basket contains all EU companies for which a CDS is traded in the same rating category (as identified in recital (25)(d)) from the selected Rating Agency.

f) For each single name CDS, the last mid-prices at the time of the day the valuation is taken. Then a simple average over the resulting prices is taken to arrive at the CDS basket benchmark value. In case there are no traded CDS for the relevant project maturity, the traded CDS with the next greater maturity can be substituted.

g) If there are less than ten single CDS names in a given basket, the methodology cannot be applied.

2.7. Determination of the contractual rate of return

(26) The proposed methodology puts forward that, in order to estimate the GGE, the contractual rate of return of the project takes into account all the credit costs under the base case, the specific pre-agreed loans disbursements and repayments and the returns in case of payment of the success fees. The internal rate of return (IRR) is calculated as the discount rate that makes the net present value of all cash flows under the base case scenario equal to zero.

(27) The individual annual aid equivalents are calculated on the basis of the difference in interest rate calculated at the rate of return in line with the market

** Correction of a clerical error.

[10] The Commission encourages the use of the rating grids of one of the four External Credit Assessment Institutions (ECAI) approved by ECB. (Moody's, Fitch, S&P and DBRS). The Commission can also approve the use of other primary rating agencies if the granularity (maturity, rating scale etc…) of their rating grids is more suitable to the characteristics notified project.

remuneration for projects of similar risk (= CR + MR + FR) minus the contractual rate of return (= IRR) in relation to the annual loans disbursements and repayments. This amount is then discounted at the applicable reference rate[11], the aid element reflecting the specific R&D risk is then added (see recitals 10 and 11).

2.8. Monitoring and data collection

(28) Germany will submit a yearly report on the application of the calculation method, on a case by case basis.

(29) In addition, Germany will provide detailed information on (a) the GGE and the main accounting parameters, (b) the total outstanding aid amounts (in nominal terms) and (c) the amounts of any loan defaults that may have been taken over by the Federal Government.

3. ASSESSMENT

(30) Article 5(1) of the GBER specifies that the GBER shall apply only to aid in respect of which it is possible to calculate precisely the GGE of the aid *ex ante* without any need to undertake a risk assessment ("transparent aid"). Article 5(2)(j) of the GBER complements that, aid in the form of repayable advances can be deemed a transparent form of aid, if the total nominal amount of the repayable advance does not exceed the thresholds applicable under the GBER or if, before implementation of the measure, the methodology to calculate the gross grant equivalent of the repayable advance has been accepted following its notification to the Commission.

(31) The Commission notes that the notified method will apply only to repayable advances financing R&D expenses in civil aviation projects within the scope set out in section 2.1. The Commission acknowledges the applicable scope of the proposed methodology. A repayable advance is a tool to provide support to a company in the context of risky projects such as R&D experimental development projects[12]. The repayable advance offers a partial risk sharing that provides debt relief in case the project fails.

(32) The Commission notes that, pursuant to recital 101 of the Commission Notice on the Notion of State aid[13], a market return of a transaction can be assessed in the

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[11] A discount factor is an expression for the present value of an amount of 1, given the applicable interest rate over the period. The present value of a cash flow is thus obtained as the multiplication of the cash flow and the discount factor for the value date of that cash flow. Assuming positive interest rates, discount factors are numbers between 0 and 1.

[12] As defined in Article 2(86) of the GBER.

[13] See Commission Notice on the notion of State aid as referred to in Article 107(1) of the Treaty on the Functioning of the European Union (2016/C 262/01) https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52016XC0719(05)&from=SL

light of the terms under which comparable transactions carried out by comparable market economy operators. It is therefore necessary to pay particular attention to the kind of operator concerned, the type of transaction at stake, the timing of the transaction and the market concerned. The timing of the transactions is also particularly relevant when significant economic developments have taken place. Where appropriate, the available market benchmarks should be adjusted according to the specific features of the transaction[14].

(33) In particular, the Commission notes that the notified method reflects the different possible scenarios (failure, partial success and success) in the event of licensing default, corporate default and specific market default.

(34) More specifically, for the market-oriented price to be paid for the repayable advance, the Commission positively notes that:

- The specific R&D default probability will be tailored to the specific R&D risks of the project and will be certified by an independent expert.

- Swap rates are used as benchmarks for establishing the funding rate and, for benchmark purposes, swap rates is a reliable indicator of what markets consider being the prevailing risk-free yield curve[15].

- A 0.25 % mark-up is applied to the funding rate to take account the administrative costs. The parameter is quantified on the reliable basis of the costs normally borne by the Kreditanstalt für Wiederaufbau (KfW), which is the largest public player in the capital market.

- The corporate default rate is set in accordance with the Communication from the Commission on the revision of the method for setting the reference and discount rates i.e. a risk margin depending on the rating of the beneficiary undertaking and the level of collateral offered.

- The specific market risk relies on parameters empirically established using a representative sample of historical data collected from the business (i.e. past sales figures for similar aircraft development programs of the last three

[14] See Judgment of the General Court of 6 March 2003, Westdeutsche Landesbank Girozentrale and Land Nordrhein-Westfalen v Commission, Joined Cases T-228/99 and T-233/99, ECLI:EU:T:2003:57, paragraph 251

[15] For benchmark purposes, swap rates have certain advantages compared to observed rates on sovereign bonds, the other main traditional type of risk free debt instrument. First, since the principal is not exchanged in an interest rate swap, swap rates only contain the counterparty default risk on the stream of interest payments, but not on the principal. Further, since an IRS is a standard ("vanilla") and liquid instrument, swap rates tend to contain a lower liquidity premium than observed bond rates. As a result, the swap curve is a fairly reliable barometer of what markets consider being the prevailing risk-free yield curve. Finally, swap rates exist for a wider range of maturities than rates for sovereign bonds.

decades) and the observed failure rate for comparable projects has been determined by an independent expert.

- The specific market risk is valuated as a commercial spread that includes the remuneration expected by an investor for compensating the expected loss risk in such market (standard commercial margin compensating for i.a. liquidity risk, risk aversion, unexpected losses and administrative costs) in addition to the pure expected loss. The Commission notes that the proposed approach to arrive at a corresponding CDS spread can be considered as a conservative estimate for this type of project and that it reflects properly the assumptions and standard valuation adopted by the credit derivative markets. Finally, the Commission underlines that, as a safeguard measure, if no robust market benchmark is available, (i.e. there are less than ten comparable single CDS names with traded prices for the relevant project maturity), the methodology cannot be applied.

- The method takes into account the specific risks associated with the beneficiary and the project (i.a. company rating and collaterals, specific project maturity, disbursements and repayments).

(35) Overall, the Commission considers that these factors are what a market economy operator, operating in the normal conditions of a market economy and for a comparable transaction size, would evaluate for the determination of a fair remuneration of his investment.

(36) In line with recitals 102 to 104 of the Commission Notice on the Notion of State aid:

- The Commission considers that, due to the debt nature of the financing instrument, it is correct to calculate the GGE of the aid of the repayable advance as the difference between the market conform rate and the actual return of the repayable advance.

- The Commission considers that the IRR is an appropriate measure of the actual return of the repayable advance considering that it corresponds to the present value of the cash flows foreseen in the financial structure of the contracted instrument. The Commission notes that the applicable discount rate is set in accordance with the Communication from the Commission on the revision of the method for setting the reference and discount rates.

(37) The Commission concludes that the methodology allows an appropriate risk appraisal of the transactions supported by the State for the determination of the aid element in repayable advances for R&D civilian aircraft experimental development projects.

(38) The Commission acknowledges that the additional information provided by Germany on the application of the proposed methodology will complement adequately the information already required under Article 6(1) of Commission Regulation (EC) 794/2004. In particular, it will allow monitoring and evaluating the calculation method and the valuation of each parameter.

4. DECISION

In light of the above, the Commission accepts that the methodology is used for the calculation of the GGE of aid in repayable advances to private companies to support R&D civilian aircraft experimental development projects concerning aircrafts with a capacity of 20 seats and more. The GGE of aid comprised in repayable advances and calculated according to the approved methodology will therefore be considered as a transparent form of aid in the meaning of Article 5(2)(j) of the GBER.

The methodology is approved from the moment of the adoption of this decision until 31st December 2020 or, if the validity of the GBER is prolonged, until 31st December 2022.

The Commission notes that the German authorities exceptionally accept the notified decision to be adopted and notified in the English language.

If this letter contains confidential information which should not be disclosed to third parties, please inform the Commission within fifteen working days of the date of receipt. If the Commission does not receive a reasoned request by that deadline, you will be deemed to agree to the disclosure to third parties and to the publication of the full text of the letter in the authentic language on the Internet site: http://ec.europa.eu/competition/elojade/isef/index.cfm.

Your request should be sent electronically to the following address:

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Yours faithfully,
For the Commission

Margrethe VESTAGER
Member of the Commission

CERTIFIED COPY
For the Secretary-General,

Jordi AYET PUIGARNAU
Director of the Registry
EUROPEAN COMMISSION

[…]