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Wolfgang Maennig\* and Stephan Wittig\*\*

# WTO Dispute Settlement Proceedings: European Support for Airbus in the Spotlight

The bilateral WTO Agreement on Trade in Large Civil Aircraft (TLCA) of 1992 regulated the permitted levels of support for the European and American aviation industries. In October 2004, the US unilaterally withdrew from the TLCA, right as Boeing was about to lose its market leader status. Together with the termination of the TLCA, the US requested the initiation of WTO dispute settlement proceedings against the EU as well as against the governments of Germany, France, the UK and Spain regarding alleged direct and indirect subsidisation of Airbus. In response, the EC requested, on that same day, the initiation of dispute settlement proceedings regarding certain US federal, state and local subsidies granted to the American aircraft producer Boeing, which the EC regarded as incompatible with WTO rules. What European subsidies exist for Airbus, and how extensive are they?

By 2028 global air traffic is expected to triple, leading to demand in the large civil aircraft segment for up to 17,000 new aircraft with a total value of approximately €1.3 trillion (Airbus Global Market Forecast 2009-2028). The battle for this market is understandable - as is the United States' long-standing scepticism about Airbus, the European aviation consortium founded in 1970. Once the US realised that its hopes to stabilise market shares with the TLCA<sup>1</sup> had been off base, the American withdrawal from the agreement did not come unexpectedly.

In the current proceedings before the WTO Dispute Settlement Body (DSB), both parties claim violations of the WTO Agreement on Subsidies and Countervailing

Measures (SCM) and of the GATT 1994. Both proceedings (DS 316 and DS 317/DS 353) are far behind the schedule laid out in WTO guidelines due to their complexity. A confidential interim WTO report on the Airbus case was issued in September 2009. A final ruling on the Airbus proceedings is expected in the near future; the case against the United States is expected to be resolved approximately half a year after the Airbus decision. Given the importance of the cases, subsequent appeals by both parties seem to be very likely. A final ruling by the WTO Appellate Body would not be issued before 2011/2012.

Measuring the level of subsidies in favour of Airbus is a difficult undertaking given the complex ownership structure and the multiple functions of aircraft engineering in the civil and military aircraft industry as well as in the aerospace sector.

Governmental, non-repayable grants (direct subsidies) are relatively easy to measure. Indirect subsidies, however, provide the subsidy recipient only with an indirect financial advantage. In the case of Airbus, this includes primarily granting loans with performance-based repayment obligations. Finally, there is also non-monetary support in the aviation sector, as illustrated by the current example of the American tanker aircraft tender.

These problems are joined by other computational problems such as fluctuating exchange rates and inflation. In this paper, the nominal values are deflated for

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1 The scope of the agreement referred to the producers of civil wide-body aircraft in the US and the EU. Major provisions of the agreement include the following articles: Art. 3 prohibited production subsidies. Art. 4 allowed direct development subsidies if they do not exceed 33% of the total development cost, are paid back within 17 years from the beginning of the development period and are made subject to interest on fixed rules. Indirect state aid was limited, under Art. 5, to a maximum of 3% of the annual turnover of the commercial aircraft industry, or to a maximum of 4% of the annual turnover of each company in civil aviation. A precise definition of indirect aid, however, was never supplied. Art. 8 regulated the transparency of subsidies, Art. 10 the intention of avoiding conflict, and Art. 11 the exchange of information, cf. N. Pavcnik: Trade Disputes in the Commercial Aircraft Industry, in: *The World Economy*, Vol. 25, No. 1, 2002, pp. 741 ff.

the base year 2005<sup>2</sup>, while non-euro data is converted using the average exchange rate of 2005<sup>3</sup>. In the interest of comparability, this text and its tables show only inflation-adjusted euro values with 2005 as the base year. As the WTO panels began in 2005/2006, the period of observation runs from 2000 to 2006.

### Direct Research Funding by the EU

In its research and technology policy, the EU pursues what are known as Framework Programmes for Research, Technological Development and Demonstration (FRP), which serve mostly to subsidise technologies at the pre-competitive stage. Since 1998, the Commission has been committed to strengthening the integration of the European aviation industry into the FRP. The trigger is believed to have been the acquisition of McDonnell-Douglas by Boeing in 1997, which helped Boeing to secure the lead position in the market of wide-body civil aircraft. In the course of the Fifth Framework Programme (1998-2002), the European aviation and aerospace industries received subsidies of €784 million, representing approximately 4.6% of the total budget of the fifth programme.<sup>4</sup> Around 300 projects were funded, which means the EU supported about 30% of all civil aeronautics research. The Sixth Framework Programme (2002-2006) provided the aviation industry with as much as €857 million in funding. Under the Seventh Framework Programme (2007-2013) – which set security and aerospace research as its new thematic priority and came with a total budget of €50.5 billion – EU subsidies more than doubled for the aviation and aerospace sector, even though the share for the aviation industry in the total funding volume remained relatively constant over time. These funds were granted for R&D support in the aerospace sector in general; direct funding for research on Airbus aircraft was not approved. However, because Airbus/EADS dominates the European market for civil aircraft and is also active in the aerospace sector, it can be

assumed that it and its partner companies receive part of the subsidies for civil aviation.<sup>5</sup>

### Research Funding by the Airbus Consortium States

#### Germany

As part of the German Aviation Research Programme (*Luftfahrtforschungsprogramm* or LuFo), the Federal Ministry of Economics and Technology (BMWi) supports the German aviation industry with 40% non-repayable grants for research and technology projects. The rate of funding can be increased to 50% if R&D subcontracts are awarded to SMEs. The German federal states (*Länder*) are invited to contribute an amount comparable to that of the federal government to the current aviation research programme. Most of the funding goes to pre-competitive research projects, which are based, for each programme, on key concepts that are proposed by the industry.<sup>6</sup> The programme priorities for the LuFo II (1999-2002) were “mega-liners” (large aircraft with capacity for more than 400 passengers), “all-weather helicopters” and “environmentally friendly propulsion systems”. For example, the “mega-liners” key concept is credited with creating the scientific and technological requirements for the A380, such as a reduction in fuel consumption by 30% and correspondingly lower carbon dioxide emissions. The federal government supported the programme to the tune of €130.2 million<sup>7</sup>. The key concepts of the LuFo III (2003-2006, total volume €323 million) included “environmental protection”, “flight safety” and “efficiency”.<sup>8</sup> The focus of the LuFo IV (2007-2012, €330 million) is on developing technologies and engines of the next generation, developing methods for optimising the air transport system, and reducing energy consumption, noise and pollution.<sup>9</sup>

Another German source of funding for basic aeronautics research is support for the major research facility

2 The information source used is the Eurostat database. The indices of the respective countries are used. [http://epp.eurostat.ec.europa.eu/portal/page?\\_pageid=1090/1&\\_dad=portal&\\_schema=PORTAL](http://epp.eurostat.ec.europa.eu/portal/page?_pageid=1090/1&_dad=portal&_schema=PORTAL).

3 The exchange rates are based on data from the European Central Bank. <http://www.ecb.int/stats/exchange/eurofxref/html/index.de.html>.

4 European Commission: Die Europäische Luft- und Raumfahrtindustrie – Antworten auf die globalen Herausforderungen, KOM (97) 446, Brussels 1997. European Commission: The Priorities of the Sixth Framework-Programme 2002 – 2006, in: FTE info – Magazin für Europäische Forschung, 2002, Brussels. European Commission: Herstellung von Luft- und Raumfahrtzeugen in der Europäischen Union, in: Statistik kurz gefasst, Vol. 7, 2006, Luxembourg.

5 Cf. also W. Maennig, K. Hölzer: Zur aktuellen Förderung der Airbus-Industrie, in: Wirtschaftsdienst Vol. III, 1999, pp. 191-200.

6 BDLI: Bericht der High-Level-Group – Deutsche Luft- und Raumfahrt: Zukunftsbranche des 21. Jahrhunderts im europäischen und globalen Wettbewerb, 2001, Potsdam.

7 Cf. BMF 2002 budget, and BMWi: Innovationsmotor Luftfahrt – Die Luftfahrtforschungsprogramme der Bundesregierung – Bilanz und Ausblick, 2003, Berlin.

8 Cf. BMF Subsidies Report 2006, Berlin; and European Commission: Stellungnahme der Kommission – Richtlinie des Europäischen Parlaments und des Rates zur Förderung der Verwendung von Biokraftstoffen oder anderen erneuerbaren Kraftstoffen im Verkehrssektor, KOM (2003) 193, 22.04.2003, Brussels.

9 Cf. BMWi: Bekanntmachung – Förderung von Forschungs- und Technologievorhaben im Rahmen des nationalen Luftfahrtforschungsprogramms, 17.03.2006, Berlin.

Table 1  
**R&D Funding for Civil Aviation by the French Government**

	2000	2001	2002	2003	2004	2005	2006	Total
R&D funding for civil aviation from BG (in million €)	280.5	281.1	283.0	313.0	300.0	272.0	260.5	1,990

Source: Sénat: Projet de loi de finances, 2001-2006.

of the German Aerospace Centre (DLR) through the Federal Ministry of Education and Research (BMBF) and by technical programmes of the Federal Ministry of Transport, Building and Urban Development (BM-VBS). The annual research budget is around €220 million.<sup>10</sup> The research results are publicly available at the Technical University of Braunschweig, unless they are derived from private contract research, which currently constitutes 50% of the research. The implicit support for Airbus from this is difficult to calculate since Airbus functions both as a “private” client and as a beneficiary of public research funding, while the public share of contract research is, on principle, also available for other, even non-German, companies.

The German *Länder* also have their own aviation research and technology programmes. The Hamburg Aviation Research Programme, as part of the “Aviation Cluster Hamburg/Northern Germany” project<sup>11</sup>, mainly funds co-operation projects in order to expand the network of industry, scientific institutions and universities on site; its focus is on the field of pre-competitive research.<sup>12</sup>

Between 2001 and 2005, projects were funded with a total volume of €37.6 million – with about 50% coming from the Hamburg Ministry of Economics and Labour (BWA). Airbus was only directly supported in 4 out of 42 projects,<sup>13</sup> but the SME projects received only half of the funding. Moreover, Airbus is likely to benefit indirectly, as the main regional contractors and beneficiaries work with Airbus. By 2010, the City of Hamburg had

put up a further €16.4 million for this programme. Further measures to strengthen Hamburg as an international competence centre in the civil aviation industry are funded by the BWA as part of individual investment programmes.

## France

Funding for civil aviation from the so-called Budget Générale (BG) of the Ministère de l'Équipement, des Transports, du Logement, du Tourisme et de la Mer increased between 2000 and 2003 but since then has been falling. During the observation period, funding for the aviation industry reached a total amount of €1.9 billion (see Table 1). The extent to which Airbus Industrie has benefited from this has not been disclosed, but it is likely that, apart from Airbus, a large number of its suppliers and sub-suppliers participate directly in R&D subsidy programmes.

## United Kingdom

The UK aviation industry - with its turnover of around €26.3 billion (£18.4 billion) in 2005 and an export share of 8% of total exports of industrial products - is among the most successful industries in the UK.<sup>14</sup> The UK's Department of Trade and Industry (DTI) is the lead agency for R&D funding. As part of the Civil Aircraft Research and Development Programme (CARAD), it funded a total of €229 million of the civil aviation industry's basic and applied research from 1997-2004. Company-specific data are not supplied, but as an example, around €5.4 million a year went into the design of airplane wings, which in the UK is conducted almost exclusively by Airbus.<sup>15</sup> After completion of the CARAD programme in 2005, the Technology Programme was launched, which supports both the aviation industry and research projects of other sectors. Nevertheless, the aviation sector now has at its disposal a bigger budget of around €73 million per year. Information on the funds allocated to Airbus projects is not disclosed in this case either.

## Spain

The Spanish government has funded R&D projects for the aeronautics industry since 1993 as part of the Plan Tecnológico Aeronáutico I (1993-1998) and Plan Tecnológico Aeronáutico II (1999-2003), and since 2000

10 Cf. BMBF: Bundesbericht Forschung 2004, Berlin.

11 The central focus of this project is on the building and strengthening of a research network in the civil aviation sector. The subsidy rates are usually 40% for large companies, up to 50% for SMEs and up to 100% for universities and research institutions. Cf. Hamburger Bürgerschaft: Bericht über die Abwicklung der Maßnahme “Hamburg als Standort für die Produktion und die Endlinienfertigung des Airbus A380”, Drucksache 18/4115, 2006, Hamburg.

12 Cf. Hamburger Bürgerschaft: Haushaltsplan 2005/2006, Drucksache 18/2925, 2005, Hamburg.

13 Ibid., p. 6.

14 Cf. House of Commons: Trade and Industry – Fifteenth Report, Session 2004-05, available at: <http://www.publications.parliament.uk/pa/cm200405/cmselect/cmtrdind/151/15102.html>.

15 Cf. DTI: The Government Expenditure Plans 2002, 2003 and 2004, London.

Table 2  
Costs of Export Credit Financing Provided for Airbus Aircraft by the UK and German Governments

In million €	2000	2001	2002	2003	2004	2005	2006	Total
Export financing aid of the UK government	6.1	8.0	4.4	4.1	-	-	-	22.6
Export financing aid of the German government	15.4	49.2	43.5	39.0	36.5	18.7	34.3	236.6
Hermes guarantees of the German government	399.6	386.0	370.0	135.2	325.0	239.8	-	1855.6
Total export financing by the German government	415.0	435.2	413.5	174.2	361.5	258.5	34.3	2092.2

Source: BMF (Subsidies reports (*Subventionsberichte*), various years), DTI (2002), (2003), (2004); own calculations.

through the Programa de Fomento de la Investigación Técnica (PROFIT) (2000-2003) and (2004-2007). PROFIT 2000-2003 received annual grants in the amount of €12 million and PROFIT 2004-2007 received €18 million per year,<sup>16</sup> although the extent of Airbus subsidies has not been disclosed.

### Export Financing

Since 1975, Germany, France and the UK have provided export credit support in the form of interest rate subsidies.<sup>17</sup> In Germany, export credit guarantees are provided and monitored by the Euler Hermes Kreditversicherungs AG (*Hermesdeckungen*); in France, this is done by the Compagnie Française d'Assurance pour le Commerce Extérieur (COFACE); and in the UK, by the Export Credits Guarantee Department (ECGD). These export credit agencies (ECA) serve to maintain economic relations and to exploit rather difficult markets. Exports to all OECD countries, developing countries as well as the CIS and CEE countries can be hedged.<sup>18</sup>

Export guarantees and public loans reduce the capital cost of the buyers and aim to ensure the competitiveness of Airbus aircraft versus Boeing, which has long benefited from a similar practice.<sup>19</sup>

There are two kinds of European export financing for large civil aircraft: for Large Aircraft Sector Under-

standing (LASU)<sup>20</sup> financing based on the OECD Aircraft Sector Understanding<sup>21</sup>, fixed-interest periods of up to three years were granted free of charge as an additional way to cover export and credit risk. This form of financing was eliminated in 2004 but then replaced on 30 July 2007 by the Aircraft Sector Understanding (ASU). In the meantime, export financing for Airbus aircraft was provided on the basis of so-called "Pure Cover" financing. With this form of financing, a (fee-based) Hermes cover was granted at an interest rate equivalent to the LIBOR rate plus a margin. Losses from the Hermes cover that exceeded revenue were offset by the German federal government, which constituted a subsidy for the cover premium. In the period 2000-2006, approximately €240 million was provided by the federal government (see line 2, Table 2).

The support from the UK government in 2000-2004 amounted to only €22.6 million. Since the elimination of LASU financing, no further export credit financing has been provided (DTI, various years). Data on French export support are not disclosed and cannot be accessed.

### Financing from the European Investment Bank (EIB)

Through partial funding of investment projects (generally up to 50% of the purchase price), the European Investment Bank (EIB) funded the renewal of passenger aircraft fleets, which was usually accompanied by capacity expansions. The bulk of its financing portfolio (about 65%) went to state-owned airlines that usually hold a dominant position in each market. The carriers

16 Consesión de las ayudas del Programa de Fomento de la Investigación Técnica dentro del Plan Nacional de Investigación Científica, Desarrollo e Innovación Tecnológica (2004-2007), en la parte dedicada al Fomento de la Investigación Técnica, available at: [http://www.itenergia.com/pdf/Ayudas\\_2005\\_Profit\\_Energia.pdf](http://www.itenergia.com/pdf/Ayudas_2005_Profit_Energia.pdf)

17 Spain does not participate in sales financing, cf. Maennig and Hölzer (1999).

18 Cf. U. Hartmann, M. Rumpf: Möglichkeiten der Exportfinanzierung und -absicherung, in: Finanzierung im Mittelstand – Neue Herausforderungen und Chancen, pp. 109-134, 2005, Friedberg.

19 The most important actor in US credit insurance is the state-authorized US Ex-Im Bank. Between 1998 and 2004, the US Ex-Im Bank funded Boeing aircraft exports in the amount of €25.1 billion. Cf. T. Carney: Airbus vs. Boeing – Clash of the Corporate Welfare Titans, in: Competitive Enterprise Institute, 2005, Washington, p. 3.

20 The LASU agreement under the OECD Sector Agreement of 1986 is the first part of the "Sector Understanding on Export Credits for Civil Aircraft", which sets out specific conditions for new wide-body aircraft.

21 The OECD sector agreement defines the scope and intensity of export promotion measures. Cf. also S. McGuire: Airbus Industrie – Conflict and Cooperation in US-EC Trade Relations, p. 53, 1997, London.



**Table 3**  
**Aircraft Acquisitions Financed by the EIB, 2000-2006**

Manufacturer	Country of origin	Number of aircraft	Total amount of loans (million €)	Percentage of total loans (%)
Airbus	EU	Min. 106	2,410.3	61
Boeing	USA	45	720.6	23.5
Bombardier	Canada	20	350.0	11
Embraer	Brazil	10	140.7	4.5
Total	-		3,621.6	-

Source: EIB, List of Loans, 2006; own calculations.

are mainly from EU countries, but it also funds projects from outside the EU - increasingly in developing countries. During the observation period, the EIB financed the purchase of aircraft from four manufacturers, with Airbus accounting for a total of €2.4 billion, about 61% of the total grant volume (Table 3). Although the data on the number of aircraft financed are not complete, there are no distortions with respect to the place of production.

The recipients of EIB loans include governments, state banks, intermediary banks and project companies, which then lease the planes to airlines. Once again, the financial benefit of EIB financing for the airlines results not only in a lower interest rate but also in the provision of guarantees. Funding from other sources for non-EU projects, such as from international banks or the ECA, produces significantly higher costs.<sup>22</sup> As part of the WTO proceedings initiated in 2004, the US alleges that Airbus Industrie has benefited greatly from EIB financing.<sup>23</sup>

### Indirect Support via Launch Aid

The development of new aircraft models entails tremendous development and launch costs, which, in the case of the A380, amounted to €11.9 billion, exceeding the market capitalisation of EADS at the time of development. In this and other cases, the development costs are likely to exceed the capabilities of private companies to raise capital.<sup>24</sup> The corresponding subsidies granted - Launch Aid or Reimbursable Launch Aid (RLA) - can be described as discounted loans from the public sector

with subsidised interest rates, which are redeemable only if the recipient is economically successful, thus avoiding threatening the company's existence. The European Commission approves these loans with reference to Article 87.3 of the EC Treaty, which recognises state aid as being compatible with the common market if and when it helps to support important projects of common European interest.<sup>25</sup> The loans that have been given out in recent years were structured according to the provisions of the bilateral Agreement on Trade in Large Civil Aircraft (TLCA). According to this agreement, the ceiling of government support was fixed to a maximum of 33% of the total development costs, and the loans had to be provided with an interest rate that would at least cover the loan costs of the government. Furthermore, public support of the capital-intensive development costs results in a more favourable credit rating, which in turn leads to reduced borrowing costs on capital markets, thereby constituting another financial advantage.

Since 1990, three of the eight Airbus programmes have been supported by the consortium states (A320, A330/340 and A380). By early 1999, Airbus Deutschland GmbH had repaid all Launch Aid grants previously received.

### The A380 Project

The level of Launch Aid for the A380 project from the Airbus consortium member states amounted to €3.5 billion, of which Germany contributed €1.06 billion. Within the first year (2002), as much as 78% of the total amount had already been disbursed. For the following calculations, a uniform distribution of payments over the remaining years was assumed, i.e. around €37 million per year. The loan agreement was linked to the obligation to create 500 additional jobs in the new (former East German) federal states.<sup>26</sup>

From 2002 to 2009, the French government provided Airbus France with Launch Aid in the amount of €1.24 billion. By 2006, €801.1 million, i.e. 64%, had been transferred (see Table 4).<sup>27</sup>

22 Cf. C. Thomson, M. Bianchi: Evaluierung der EIB-Finanzierungen zugunsten von Fluggesellschaften, in: Europäische Investitionsbank, 2004, Luxembourg, pp. 13 ff..

23 Cf. European Commission: WTO Dispute Settlement – EU notes first submissions to US Boeing-Airbus panel in Geneva, Press release, 15.11.2006, Brussels.

24 Cf. N. Pavcnik: Trade Disputes in the Commercial Aircraft Industry, in: The World Economy, Vol. 25, No. 1, 2002.

25 Cf. C. Koenig, J. Kühling, N. Ritter: EG-Beihilfenrecht, Verlag Recht und Wirtschaft, Heidelberg 2002.

26 Cf. Deutscher Bundestag: Antwort der Bundesregierung – Aufschüttung der Elbe im Mühlenberger Loch für den Bau des A380 und A400M, Drucksache 14/10002, 16.10.2002, Berlin.

27 Moreover, the French Prime Minister Dominique de Villepin announced in November 2006 that in order to mitigate the negative economic consequences from the delay in the construction of the A380 for suppliers affected by contract terminations, €80 million in government loans and guarantees would be provided through 2008. An additional €65 million was to go to the aviation industry to finance its R&D projects. There is no information on the period of payout, which is why these grants have not been considered in this analysis.

**Table 4**  
**Launch Aid of the French Government for the A380 Project**

	2000	2001	2002	2003	2004	2005	2006	2000-2006
Launch Aid for A380 (million €)	-	-	145.2	158.5	163.2	166.0	168.2	801.1
Total Launch Aid (million €)	157.3	218.2	244.8	245.1	232.5	216.0	219.6	1,533.5
A380-share of total Launch Aid (%)	-	-	60	64	70	76	76	52.2

Source: Sénat, *Projet de loi de finances*, 2001-2006; own calculations.

In the UK, Launch Aid has been granted since 1982 and the enactment of the Civil Aviation Act 1982. Airbus Industrie has received such grants to finance the development of its aircraft models A320, A330/340 and A380. For the A380 project, the UK government provided Launch Aid in the amount of €806.4 million to develop the A380 aircraft wings. In the first payout year 2001, a total of €210.9 million was already paid to Airbus UK.<sup>28</sup>

In addition to Airbus aircraft models, Launch Aid is also given to the UK manufacturer Rolls-Royce (RR) for the development of engines. Rolls-Royce, together with MTU Aero Engines and the two US companies Pratt & Whitney (P&W) and General Electrics (GE), is the main supplier of engines for Airbus and Boeing. The two newly developed RR engines TRENT 600 and TRENT 900, whose state support totals €684.6 million (£450 million), were approved by the European Commission and will be built into the A380.<sup>29</sup> Since the launch of the A320 in 1982, Airbus Industrie in the UK has received Launch Aid in the amount of €2.2 billion, of which Airbus has paid back around 65% thus far.<sup>30</sup>

The Spanish government has granted Launch Aid in the amount of €395 million to Airbus Industrie for the development of the A380 project.<sup>31</sup> Given the lack of infor-

mation on the amount of annual instalments up to 2013, this paper assumes a uniform distribution.

### The A350 Project

For the development of the Airbus A350 XWB, the German government had put in its 2005 budget a precautionary measure authorising loans of €820 million. However, this was blocked due to the uncertain outcome of the WTO proceedings.<sup>32</sup>

### Infrastructure Measures

Both the consortium member states and local governments at Airbus sites assist with infrastructure measures such as the expansion of Airbus manufacturing plants and airports. Thus, the Hamburg Senate committed to a runway extension at the Hamburg airport in connection with the production and finishing work of the A380 in Hamburg. This included the expansion of the Airbus factory by means of land reclamation in "Mühlenberger Loch", the extension of the existing runway to the north and south, and the related compensatory nature conservation measures for a total of €693.7 million.<sup>33</sup> In the opinion of the authorities, however, this would not constitute a subsidisation, as the city only exercised its sovereign task of land reclamation.<sup>34</sup> The developed land was leased to Airbus Deutschland GmbH. The firm, so it was argued, did not derive a direct benefit that would have impacted prices or products.<sup>35</sup>

Nordenham in Lower Saxony is a region with high employment losses in the manufacturing industry, recording an unemployment rate of 12.9% (1996-1998), which was well above the national average.<sup>36</sup> Since 2000, sup-

32 Cf. BMF 2005 budget.

33 Cf. Hamburger Bürgerschaft, Drucksachen 16/4734, 16/5991, 17/202, 17/1778, 17/364, 18/1512, 18/4115. Information regarding the distribution of payments in the underlying period is not provided. The amount is reported only in aggregate form. It is assumed, for the purposes of this analysis, that the payments are spread evenly over the subsidisation period.

34 The extension of the runway is a so-called "special infrastructure", which is being leased by Airbus for 20 years. The constructed area provided is "specific", that is, due to special properties its use can be restricted to a particular company (industry). In the context of special infrastructure facilities, the city levies what is known as "economic rent". The level of such economic rent here is higher than the market rent. As a result of the increased interest rate, the investment will amortise in full within 20 years. In the case of Airbus, this represents an annual return of 6%.

35 Cf. Hamburger Bürgerschaft: Bericht über die Abwicklung der Maßnahme "Hamburg als Standort für die Produktion und die Endlinienfertigung des Airbus A380", Drucksache 18/4115, 2006, Hamburg.

36 Cf. Deutscher Bundestag: Fünfunddreißigster Rahmenplan der Gemeinschaftsaufgabe „Verbesserung der regionalen Wirtschaftsstruktur“ für den Zeitraum 2006 bis 2009, Drucksache 16/1790, 07.06.2006, Berlin.

28 Cf. DTI The Government Expenditure Plans 2002, 2003 and 2004, London.

29 Cf. European Commission: State Aid N 120/01 – United Kingdom Aid to Rolls-Royce for the development of the TRENT 600 and TRENT 900 engines, COM (2001) 3266fin, 30.10.2001, Brussels.

30 Cf. House of Commons: Trade and Industry – Fifteenth Report, Session 2004–05, available at: <http://www.publications.parliament.uk/pa/cm200405/cmselect/cmtrdind/151/15102.html>.

31 Cf. European Commission: EU-US Agreement on Large Civil Aircraft 1992 – Key Facts and Figures, 06.10.2004, Brussels.

Table 5

**Spain's Investments in Infrastructure for the Development and Construction of the A380 (in million euros)**

	2001	2002	2003	2004	2005	Total
Spanish central government	Seville: 3.3		Illecsas, Toledo: 39.4 Seville: 35.4 Puerto Real, Cadiz: 19.7		San Pablo, 119.8 Seville: 22.0	
Region Andalusia	Puerto Real, Cadiz: 9.3	Seville: 47.7	Puerto Real, Cadiz: 18.2	Seville: 63.1	Puerto Real, Cadiz: 30.5	168.8
Region Castilla-La Mancha			Illecsas, Toledo: 7.7			7.7

Source: WTO: European Communities and Certain Member States - Measures affecting Trade in Large Civil Aircraft, Request for the Establishment of a Panel by the United States, 2006; own calculations.

port for the city of Nordenham has been a structural measure as part of the framework for the joint task (*Gemeinschaftsaufgabe*, GA) to improve the regional economic structure.<sup>37</sup> GA programmes support structural change in specific German regions and are financed by federal and regional governments. An investment subsidy under the GA-support programmes for the Airbus production plants in Nordenham amounted to €6.2 million in 2002. This infrastructure investment, which has flowed into the Airbus project, is WTO-compliant, according to the BMWi.

Infrastructure projects have been funded in Toulouse as well. A 240-km road, connecting the city of Langon with the Airbus site at the airport Toulouse-Blagnac and specifically upgraded for the transport of A380 fuselage sections, was partly funded by the French government, which shouldered 43% of the total cost of €178 million. The road had become necessary because the capacity of the Airbus freighter *Beluga* was not sufficient for A380 components. In accordance with the new transport concept, the individual parts are first shipped by sea to Bordeaux from various European locations, then transferred to special roll-on/roll-off barges and taken to Langon. The rest of the way to Toulouse is then covered by lorry. The necessary upgrade of the Airbus

plant in Toulouse for the final assembly of the A380 was also paid for by the French government in the amount of €182 million.<sup>38</sup>

In 2004, the UK Airbus plant at Filton received a total of €7.5 million in grants from various UK authorities, including the DTI, to improve the local simulation centre.<sup>39</sup> Airbus sites in Spain had their conversion and improvement measures funded by Spanish authorities in the period 2001 to 2005. The extent of support in that period came to a total of €296.3 million (see Table 5).

### Military Funds

The funding of military programmes is not subject to WTO rules, which can provide a temptation to hide subsidies. Finding proof is difficult, as new military technologies can be partially adopted by the civilian sector and used in the development of new aircraft models. A close link between civil and military fields also results from the fact that the dominant military aircraft manufacturers in both the US and the EU also dominate the production of civil aircraft. The synergy between the two areas provides for high technological value and economies of scale, since overhead and fixed costs (sunk costs), as they occur in R&D, can be amortised more quickly.

In 2003, EADS began expanding its own military division further. This included the development of the A400M military transport - also known as Future Large Aircraft (FLA) - by EADS subsidiary Airbus Military Company (AMC). The impetus for this move was the desire for independence from the US defence industry and the civil aircraft sector, which is subject to cyclical fluctuations.<sup>40</sup>

Following the procedure of the so-called Commercial Approach (CA), AMC pre-finances all development, series preparation and system costs. In addition to accrued interest charges for company-side pre-financing, the fixed price, which comes due only upon delivery, includes compensation for inflation. The order book for the A400M, which listed orders for 197 aircraft in the preliminary agreement in 2001, has since been re-

37 See in detail the following documents ("Drucksachen") issued by the German Federal Government: 14/3250, 14/5600, 14/8463, 15/861, 15/2961, 15/5141, 16/1790.

38 B. Koch: Der Überflieger, in: Fraunhofer Magazin, Vol. 3, 2004, pp. 52-53.

39 WTO: European Communities and Certain Member States - Measures affecting Trade in Large Civil Aircraft, Request for the Establishment of a Panel by the United States, 2006.

40 Cf. European Commission: Mitteilung der Kommission an den Rat, das Europäische Parlament, den Wirtschafts- und Sozialausschuss und den Ausschuss der Regionen - Ein kohärenter Rahmen für die Luft- und Raumfahrt - Reaktionen auf den Bericht STAR 21, KOM (2003) 600, 13.10.2003, Brussels, p. 28.



duced: Germany, for instance, scaled back from 73 to 60 units, and Portugal cancelled its order for four planes. Airbus, due to increased material and labour costs and technical difficulties, now says that it is having problems with the original price of around €100 million.<sup>41</sup>

During the observation period from 2000 to 2006, military procurement costs from the BMVg, Germany's Ministry of Defence, came to a total of €14.4 billion, and in 2007 EADS recorded military sales of \$13.1 billion. However, this seems low when compared to Boeing's volume of \$30.5 billion.<sup>42</sup> Between 1998 and 2003 alone, the US Department of Defence awarded military contracts to Boeing in the amount of €66.2 billion. The supply of components for the US aviation industry accounted for half that amount, while R&D made up a quarter.<sup>43</sup> NASA R&D funds, too, brought a commercial benefit for Boeing. To this one must add the \$35 billion contract for 179 tanker aircraft, which is expected to go to Boeing exclusively after the final exit of the bidding consortium of EADS and Northrop Grumman.

## Conclusions

Launch Aid, subsidies for export credit financing and funding of infrastructure measures are the most important forms of support available to the civil aviation sector in the EU. For example, the current A380 project received €3.5 billion in loans, of which France covered 36%, Germany 30%, the UK 23% and Spain 11%. Export financing amounted to €2.1 billion, and the promotion of infrastructure activities totalled another €1.24 billion.

Airbus was able to expand its position in the world market in recent decades and in 1998 overtook Boeing in the number of orders for the first time. Between 2000 and 2009, Airbus succeeded in obtaining more orders than Boeing in seven of the ten years. According to the price list, the order value of Airbus aircraft models, for example, amounted to a total of €77.5 billion in 2005, which corresponds to a market share of 46%. At the same time, 56% of aircrafts delivered worldwide with more than 100 seats came from Airbus. Since 2003, the number of Airbus aircrafts pro-

duced annually has continuously been above that of Boeing.

Airbus employs more than 50,000 people throughout Europe, about 50% more than in 2000. More than three-quarters of employees work at the main sites in France and Germany. Looking at the entire European aviation industry, the UK has the largest number of jobs (29.2%), followed by France (22.6%), Germany (20.3%) and Spain (3.7%). In terms of value creation in the aerospace industry - totalling €29.1 billion - the UK also comes in first place with the biggest share (39%), followed by France (22%) and Germany (20%).<sup>44</sup>

Competition in international aircraft production is expected to intensify in future. In Russia, almost all the aircraft manufacturers joined forces under the banner of the United Aviation Corporation (UAC) in the spring of 2006 to develop large civil aircraft. China is also preparing for similar production activities. It is therefore questionable whether Airbus can secure its market share permanently. Even more questionable is whether the European employment success can be secured. For reasons of cost reduction, market development and sales increases, Airbus has shifted aircraft production to China, despite the risk of technology transfer.

Against this background, it remains particularly doubtful whether the subsidisation objective – that is, of accelerating technological progress – can be secured permanently. Airbus production has certainly helped to create a high-tech supply industry. But the related technology spillover effects are hardly quantifiable, which makes it next to impossible to determine whether such spillover effects might have been generated even without support for Airbus Industrie.

Although this could lead to reservations about the usefulness of the Airbus subsidies, an elimination of support measures in the aviation industry is politically unlikely in the foreseeable future. If the WTO proceedings were to produce a ban on EU subsidies in the form of Launch Aid, these funds could be redeployed in other forms of support, such as R&D. But according to some WTO insiders, the latest European Reimbursable Loan Mechanism will be confirmed to be a legal and compliant instrument of partnership between government and industry.

41 D. Urena-Raso: Interview with Frankfurter Allgemeine Zeitung, 11.12.2009, p. 15.

42 M. Theurer: Das Geschäft mit dem Krieg kennt keine Krise, in: Frankfurter Allgemeine Zeitung, 11.12.2009, p. 19.

43 Cf. T. Carney: Airbus vs. Boeing – Clash of the Corporate Welfare Titans, in: Competitive Enterprise Institute, 2005, Washington, p. 2.

44 European Commission: Herstellung von Luft- und Raumfahrtzeugen in der Europäischen Union, in: Statistik kurz gefasst, Vol. 7, 2006, Luxembourg.