ANALYSIS OF FINANCIAL SUPPORT TO THE AVIATION SECTOR IN GERMANY

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1. INTRODUCTION

The aviation sector itself acknowledges that air transport is coupled with considerable environmental damages but argues, that the industry, unlike other transport modes, covers its own infrastructure costs and maintains that this causes an intermodal distortion of competition between transport modes. This is, of course, not the whole picture. When compared to other transport modes there are some very obvious and well known taxation advantages for air transport such as the exemption from paying VAT on the ticket price of international flights and the fuel tax exemption for commercial jet fuel. Apart from this, the aviation sector benefits from various indirect and less obvious financial support.

This paper analyses the level and structure of subsidisation to the German aviation sector and to the German partner in the European Airbus Industries. It represents only a part of a comprehensive study on the external costs of aviation conducted for the Federal Environmental Agency of Germany (Umweltbundesamt) in 2001 (UBA 2003). The paper describes both the methodology applied to analyse subsidies to the aviation sector and provides quantitative results for the year 2001 (and where possible for the period 1998-2001) in a case study form for the major airports and airlines in Germany and for the Airbus industries. In 2001, the base year of the study, air transport in Germany carried approximately 140 million passengers with a corresponding transport performance of 342 billion passenger kilometres (ADV 2003). This amounts to 0.2 % of all passengers transported in Germany and to 4.6 % of all passenger kilometres.

The paper is organised as follows: Chapter 2 gives an outline of the methodology used to determine subsidies. Chapter 3 presents the results of the analysis of subsidies to German airports, National Air Traffic Control (DFS) and the German Meteorological Services (DWD), airlines and to the Airbus industries. Chapter 4 concludes.

2. METHODOLOGY

To evaluate subsidies given to the aviation sector, a broad definition of general subsidies was applied. Subsidies, as defined in this paper, include all direct and indirect measures related to public budgets at all political levels, e.g. federal, state and municipal level, which lead either to an increase of expenditures or to a decrease of revenues of public budget. Furthermore, non-budgetary measures such as regulatory interventions were analysed. This paper does not go into the details of an impact analysis.

Direct subsidies are considered to be government expenditure paid directly to the economic subject in question without any market-based return service of the recipient. They decrease the cost of producing a specific good or service and thus support the production sale or purchase of a good or service. Indirect subsidies are considered to be all governmental interventions and regulations which favour specific economic agents by reducing their costs or by guaranteeing purchases of their products. For example, these include tax subsidies, price reducing subsidies, purchase subsidies, regulatory subsidies and guarantees.

Two complementary approaches were applied for analysing subsidies to airport infrastructure and to the National Air Control in Germany. First, a financial flow analysis, e. g. an expenditure-based approach was performed which was aimed at identifying (i) who pays for what?, and (ii) who receives the payments? Second, a macro-economic approach of cost accounting was used, which considers, in contrast to the financial flow analysis, depreciation and interest instead of investment expenditures. The basis for this approach was a perpetual inventory model for calculating the capital stock and the capital costs of airports, air control and meteorological services (for details see Link et al. 1999). The cost/revenue account considers the capital costs of all investments, independent of the source of funding, going into airport infrastructure (including DFS and DWD) and all running costs occurring in 2001, while the financial flow analysis covers for example only running costs which were covered by grants from public budgets. On the revenue side, the cost/revenue account considers all airport revenues earned via start/landing fees and other fees for the use of airport infrastructure and the charges raised by DFS and DWD. The approaches are not comparable but rather shed light on subsidies in the aviation sector from different perspectives. From the methodological point of view, the cost accounting approach is preferable because it considers the full economic costs on a social cost basis and avoids the random effects of picking up the financial flow situation of one given year. However, for the airlines, the aircraft industry and aviation-related research and development expenditures, the analysis was restricted to the financial flow analysis due to missing data for the cost accounting approach. For more details on the cost/revenue accounting methodology see Link et al. (2000).

The institutional principle was used to determine the financial responsibility of common assets. For example, if airport railway stations are under the financial and operating responsibility of rail companies the respective financial flows

and costs were not counted as airport costs. The analysis also included non-aviation related business falling under the responsibility of the airports (for example shops, restaurants, facilities for cargo, parking facilities). However, transport related and non-transport related functions were treated separately wherever possible.

The territorial principle was used for calculating the indirect subsidies due to the fuel tax exemption for commercial jet fuel, and for determining the tax loss due to the VAT exemption on the price of international air tickets. The hypothetical loss of fuel tax revenues were calculated for jet fuel purchased in Germany independent of the airline. The hypothetical tax loss caused by the VAT exemption on the ticket price of international flights, was estimated by using Government information about the possible introduction of VAT on the domestic route sections of cross-border flights.

3. ANALYSIS OF FINANCIAL SUPPORT TO THE GERMAN AVIATION SECTOR

3.1 Financial support to airports and National Air Traffic Control

In Germany, airport infrastructure is organised as a decentralised system with 17 international airports and a variety of smaller regional airports. Airports in Germany are usually in public ownership, in most cases shared between federal state governments and municipal governments, although a small number of airports are characterised by mixed public/private ownership. Air control services are provided by the German National Air Control (DFS) which is owned 100 % by the federal government, but organised as a company of private law. The German Meteorological Services (Deutscher Wetterdienst or DWD) is responsible for delivering meteorological services for various purposes, amongst them for aviation.

Financial flow analysis

As indicated in chapter 2, financial support for airport infrastructure and air control was analysed in two ways: by compiling data on the financial flow relations and by developing cost-revenue accounts. The financial flow analysis has shown, that in 2001 an amount of about €125 million was spent by public budgets for airport financing (table 1). More than one third of this amount was spent for running costs of airports, one quarter was granted either as loans or concerned taking over of debts, and about 20% took the form of equity participation and capital contributions. Only 16% served for investment purposes. The major source of airport subsidies were the federal state governments which granted three quarters of all subsidies in 2001.

Analysing the period between 1991 and 2001, we can conclude that total financial support ranged between €81 million (1996) and €278 million (1993). On an average over the years, public budgets spent €134 million with a decreasing tendency between 1995 and 1999 and an increase between 2000 and 2001. Both the spending sources and the spending purposes have changed over this period (see figure 1). Between 1991 and 1994 loans and

taking over of debts played the major role while in all subsequent years (except 1995) the major part of financial support was granted for covering running costs of airports. Between 1992 and 1997 financial support from the federal government decreased and none was given in the following years until 2000 and 2001 when an increase was observed again.

Table 1
Financial flow analysis of public budgets at different administrative levels in 2001 – airports (€ million)

Type and purpose of financial support	Administrative level			
	Federal government	Federal states government	Municipal governments	Total
Investments	-	17.11	2.43	19.54
Running costs of airports	-	46.26	0.21	46.47
Loans and taking over of debts	4.70	25.56	-	30.26
Equity participation and capital contributions	24.03	-	-	24.03
Compensation payments for air traffic control at smaller airports	-	4.13	-	4.13
Total	28.73	93.06	2.64	124.43

Sources: Public budget plans of the federal government, federal state governments and selected municipalities

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The treatment of financial support for German Air Navigation (DFS) was more complicated due to the complex chain of financial flows and the time lags in payment of the institutions involved[1)]. In total, the federal government spent €100 million for German air navigation including membership fees of €97 million for EUROCONTROL, ICAO, ECAC, the Island/Greenland North Atlantic aviation control and the contribution towards the "open-skies" agreement. About €90 million, which were generated by navigation charges, flowed from DFS back to the federal budget.

Cost/revenue account for 2001

The results of the second approach, the cost-revenue account show that in 2001 the total infrastructure costs of airports, air control and German Meteorological Services amounted to €4.53 billion (table 2). This total splits into €1.6 billion for capital costs and €2.9 billion for running costs. Due to insufficient data disaggregation it was not possible to split these costs between airports, air control and meteorological services. Total costs are almost balanced with revenues of €4.49 billion. In contrast to the costs, it was possible to split the revenues into airport revenues, revenues of German Air Control and revenues of DWD:

- The German airports earned approximately €3.5 billion. The largest part of this amount were revenues received for ground services, passenger and trucking services (one third of all revenues) and start and landing fees which amounted to about 30% of all airport revenues. The remaining revenues refer to renting, leasing and long-term aircraft parking, to turnover charges including concessions of non-aviation related business and to other revenues.

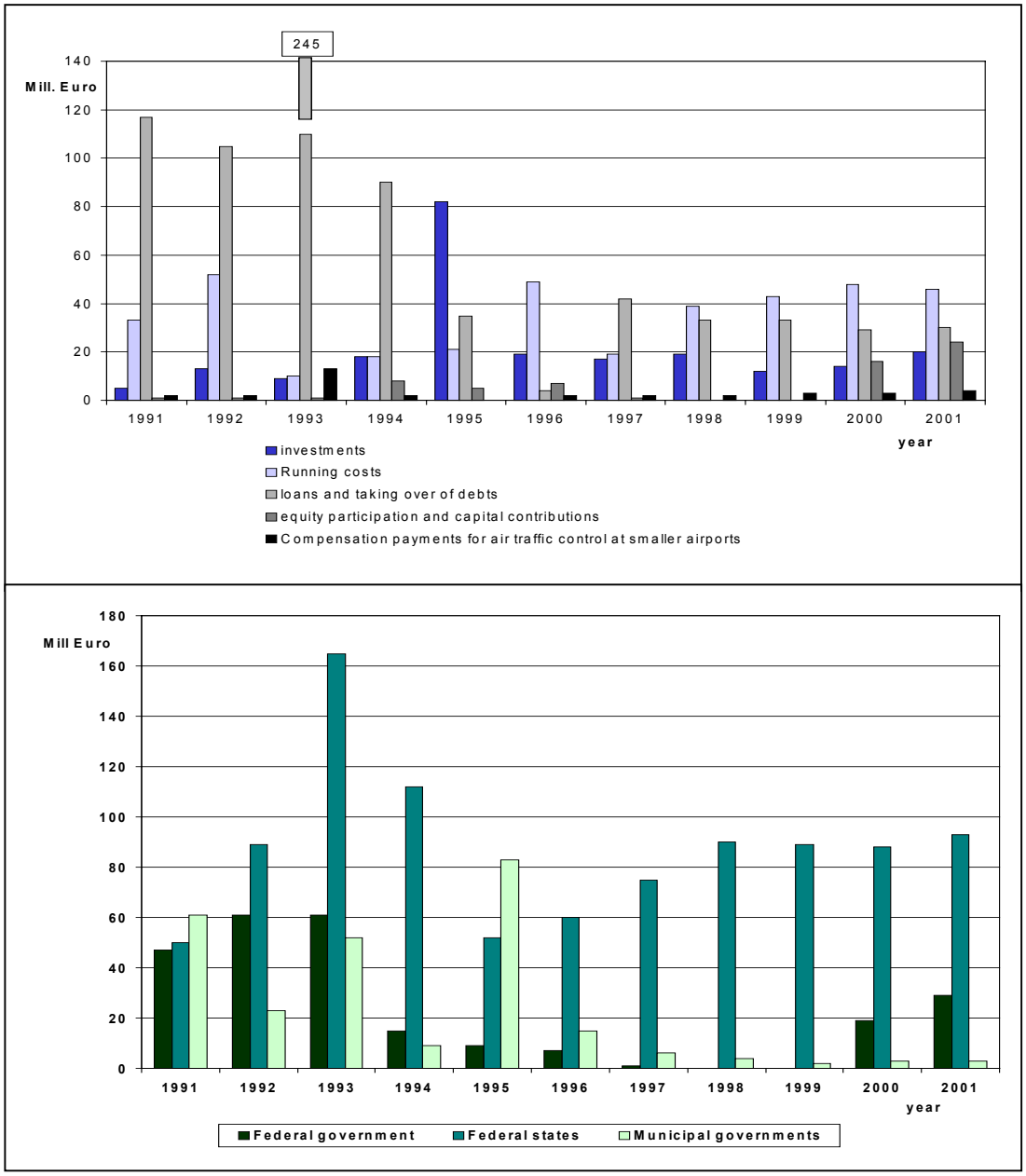


Figure 1: Financial support for airports from 1991 to 2001

- German Air Control received about €897 million in fees and charges. More than half of these revenues were earned from en-route navigation charges and one third from navigation charges for aircraft approach to airports. A

smaller amount of €60.4 million was received from the federal government for compensation for flights which were exempt from paying navigation charges. In 2001, the DFS realised a net loss of €33.4 million. From this sum, the operational under-recovery amounting to €23.1 million was carried forward and taken into account when determining user charges for 2003.

- German Meteorological Services (DWD) earned €51 million for weather forecast and other meteorological services in relation to aviation.

The conclusion from the cost-revenue account analysis is, that a full cost recovery of aviation infrastructure cost was achieved. However, this finding has to be seen in the light that not all subsidies could be quantified. Airport authorities are exempted from paying real estate taxes. The loss of tax revenues could not be estimated, because the value of land on which the calculations for real estate tax are based, is not standardised, but determined by the individual taxation departments. Furthermore, the revenues obtained from duty-free shopping profits can also be considered to be an indirect subsidy to airports but due to lack of information it was not possible to quantify these revenues. Another issue are the road and rail links to airports which are usually built with public money. While some of them also serve as commuting links for suburban areas, others are exclusively built to link airports to city centres. Given the difficulties in separating out these different purposes, the subsidies granted for road and rail links to airports were not quantified. Further tax reductions or indirect subsidies for airport authorities in Germany were not identified. In contrast for example to the Netherlands, all airport authorities in Germany have to pay corporate taxes.

Some final remarks seem to be necessary for avoiding wrong conclusions from comparing the financial flow analysis with the results of the cost/revenue account. While the financial flow analysis shows only the financial support from public budgets to airports, air control and DWD in the given year, the cost/revenue account compares costs at a social cost basis with revenues. It considers implicitly a number of direct and indirect subsidies (for example investment support which is included in the investment time series of the perpetual inventory model for calculating capital value and capital costs, or tax exemptions which reduce the total at the revenue side). However, apart from subsidies which could not be quantified there are further types of financial support such as capital contributions, loans and taking over of accumulated debts which are to a large part (as far as they do not refer to investment financing and running costs) outside the system's definition of the cost/revenue account. An exact total to be considered in addition to the cost/revenue account cannot be given since an unknown part of the loans, taking over of debts and capital contributions could already be implicitly covered in the cost/revenue account. The amount of €54 million for loans and taking over of debts, equity participation and capital contributions from table 1 might be the upper bound of subsidies to be added to the small difference between costs and revenues, e. g. the subsidisation level according to the cost/revenue account, from table 2.

Table 2: Cost/revenue accounts[1)] of German aviation infrastructure[2)]

2001

Costs	€ mill.	**Revenues**	€ mill.
		Airport revenues	3544
		out of these: fees for	
Capital costs	1576	*starts and landings*	*1026*
Depreciation	*947*	*ground services, pass. & trucking services*	*1194*
Interest[3)]	*629*	Air control (DFS)	897
Running costs	2950	out of these:	
		En-route navigation charges	*633*
Additional information:		*Approach navigation charges*	*197*
Gross capital value[2)]	*27 716*	German Meteorological Services (DWD)	51
Net capital value[2)]	*20 956*		
Total infrastructure costs	**4526**	**Total revenues**	**4492**

[1)] At prices of 2001. – [2)] Airports, German Air Control (DFS), German Meteorological Services (DWD). Including land value. – [3)] Calculated with a social interest rate of 3 %.

Sources: ADV, DFS, DWD, calculations by DIW.

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3.2 Subsidies to German Airlines

The year 2001 was the most difficult year for the airline industry since the end of World War 2. In Germany, economic slowdown was reflected in poor ticket sales early in the year. Lufthansa, the major German airline, was affected by strikes over a pay dispute for cabin crew which led to the cancellation of all air services for several days. These problems combined with the terrorist attacks of 11th September reduced the demand for air transport dramatically (see figure 2).

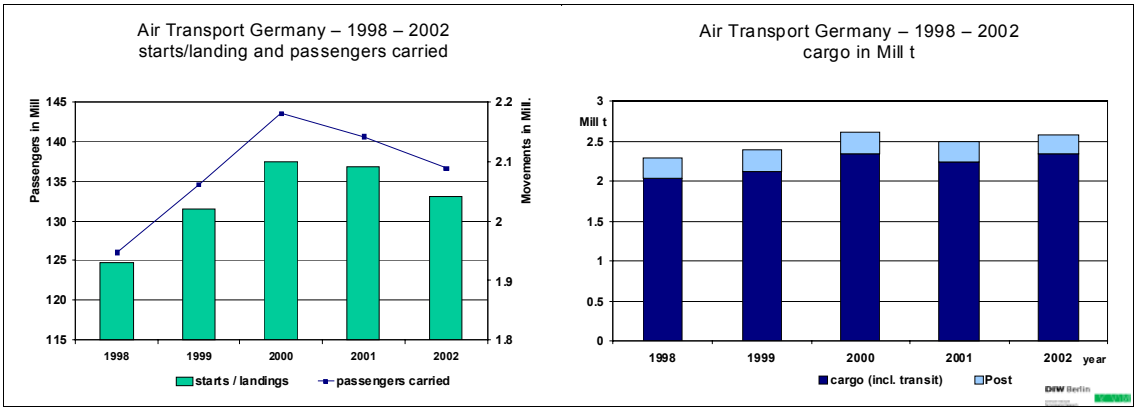


Figure 2 Basic performance indicators for German air transport 1998 – 2002 (ADV 2003)

The International Air Transport Association (IATA) estimated that in 2001 the aggregate loss sustained by all the IATA affiliated airlines was US$15 billion. In Europe the situation grew so acute that the major airlines Sabena and Swissair were forced to file for bankruptcy. However, it should be borne in mind that these problems affected an industry which was already suffering from serious economic problems.

German airlines

The major subsidies to airlines are indirect subsidies, namely (i) the fuel tax exemption for commercial aviation fuel, and (ii) the VAT exemption for international flight tickets.

The Council Directive 92/81/EEC of 19 October 1992 on the harmonisation of the structures of excise duties on mineral oils grants an exemption for commercial aviation fuel in article (1)(b). Our calculation of the indirect subsidy due to the fuel tax exemption for jet fuel is based on actual fuel sales in Germany (Aral 2002). If these sales were taxed using the reference level of €245 per 1000 litres, the minimum rate of excise duty on commercial diesel within the EU, the hypothetical revenues in 2001 would have been €2.24 billion (see figure 3 for the development between 1998 and 2001). This figure is, of course, a considerable over-estimation of the "true" revenues lost. If we assume that fuel tax costs are passed directly onto passengers and cargo, we must also expect some reduction in air transport demand. As we have not modelled the outcome of demand reduction, the revenues given should be seen as a higher bound for lost taxation revenues based on the minimum excise rate.

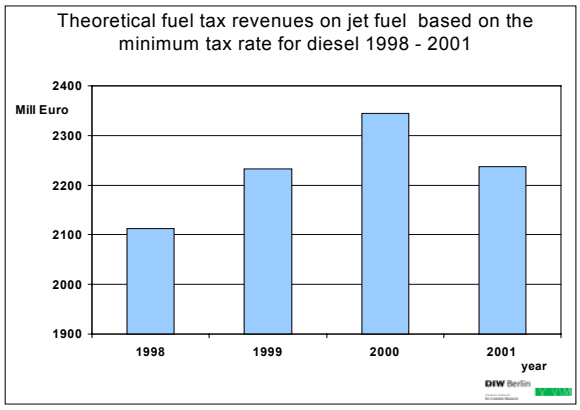


Figure 3 Hypothetical revenues from fuel tax on aviation fuel sold in Germany 1998 - 2001

In addition to our estimate there are two further estimates, one from the German Federal Government's subsidies report (BMF 2001) and another one from the Federal Ministry of Transport (see BDI 2001). The first lists for 2001 foregone revenues from aviation fuel taxation exemption to be €409 million, however, this estimate is based on the fuel consumed on German sections of flights only and can be regarded as a considerable underestimation of the tax loss. The second source estimates a tax loss of €5.5 billion in 2000. This

figure was calculated with the then current German fuel excise rate of €562/1000l, more than double the minimum EU excise duty on commercial diesel. What level a kerosene tax would have if it were introduced is unknown. We consider our estimate to be a conservative figure when regarding the tax rate assumed, but at the same time an overestimation because we did not consider demand responses.

For the second major type of indirect subsidies, the VAT exemption for international flight tickets, government information was used. For flights starting and landing within Germany the standard VAT rate of 16% is levied on the prices of tickets. No VAT is raised on the ticket price of international flights, however, the Federal Government is considering the introduction of VAT on the domestic sections of cross-border flights and has calculated, that revenues of €500 million could be expected if this taxation would be introduced (DBA 2003). For our analysis we have used this figure (see table 3).

Within this study it was not possible to identify the value of other indirect subsidies such as VAT exemptions of deliveries, construction work, maintenance activities, rentals and insurance of airlines, for extraordinary depreciation for aircraft and for loans at lower interest rates for operating certain types of aircraft. Furthermore, the tax loss due to on-board duty-free shopping could not be quantified.

Special subsidies to Lufthansa and LTU

Deutsche Lufthansa AG has been a group of affiliated companies in their own right since the beginning of 1995. It was formerly fully owned by the federal government but from 1994 onwards, the federal government has decreased its shares and Lufthansa is now mainly owned by private shareholders. The profit/loss statement of Deutsche Lufthansa group shows that the business years 2000 and 2001 closed with a net income of €0.69 billion and minus €0.63 billion respectively, which reflects the general poor financial state of the industry in 2001. In 2002 the net income was €0.72 billion.

The most important direct financial flows from the federal government to Deutsche Lufthansa were payments in order to enable the transition of Deutsche Lufthansa from a publicly owned to a privately owned company. These are payments into a special pension fund (VBL) for civil servants and employees with a similar status to civil servants. These obligations, amounting to €1 billion in total, are spilt into two parts. Firstly, €41.4 million are paid annually into the VBL pension fund for Lufthansa and secondly, a differing amount is granted directly to Lufthansa for pension contributions (see table 3).

In 2001, rescue aid in the form of a loan guarantee was approved by the European Union and granted to the German airline company LTU (Lufttransport Unternehmen GmbH). The loan of €120 million was used to restructure the company after its major shareholder, Swissair, announced bankruptcy. The loan must be paid back by 2009 (see EU 2001 and EU 2003).

Table 3
Direct and indirect financial support to German Airline Companies 2001

Purpose and type of support	€ mill.
I. Direct financial support	
Contributions of the federal government to the pension funds VBL in order to enable privatisation of Lufthansa[1)]	41.4
Special grants to Deutsche Lufthansa with respect to the VBL[2)]	0.23
Direct aid compensating the terrorist attacks of September 2001	44.5
Total direct financial support granted by the federal government	**86.13**
II. Indirect financial support	
Tax losses due to the fuel tax exemption of international air traffic [3)]	2237
Tax losses due to VAT exemption on cross border flights [4)]	500
Total indirect financial support	**2737**
III. Total financial support	**2823.13**

[1)] Taking over of obligations (in total €750 million) of Deutsche Lufthansa to VBL, a special pension funds for employees of publicly owned companies in Germany in order to enable privatisation of Lufthansa. – [2)] Part of the privatisation agreement with Lufthansa employees in order to maintain their rights to VBL-pensions. In total €250 million.- [3)] Calculated at reference level of 0.245 €/litre for all aviation fuel tanked in Germany. – [4)] VAT loss calculated by German Government based on the full VAT of domestic route sections of cross border flights.

Source: Public budget plans, calculations of DIW, German Government.

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Subsidies related to the terrorist attacks of 11th September 2001

In the extra-ordinary situation after the terrorist attacks of 11th September 2001, the national government granted subsidies for a certain time period which have to be treated separately from the ordinary level of subsidisation. The European Union approved subsidies of €71 million for Germany to compensate for unavoidable expenses incurred through the closure of air space over the USA between the 11th and 14th of September 2001 and over Israel on the 11th and 12th of September 2001. However, only €44.5 million were deemed necessary by the Federal Government (BMVBW 2002). The majority of this amount, €43 million, was granted to Lufthansa (see table 4). Indirect subsidies related to the terrorist attacks that can not be quantified were also granted. During the period in which aircraft were generally not covered by insurance the Federal Government took over this risk. The “use it or loose it” rule around airport slots was relaxed. Slots that were not used, due to the cancellation of flights, were not lost by the airline company.

For comparison, we mention that in 2001, US airlines were given direct subsidies of US$5 billion to cover the losses caused by the terrorist attacks, a further US$10 billion in Government loans was made available.

Table 4
Direct subsidies given to airlines in the aftermath of the September 2001 terrorist attacks 1000€

Airline company	**Subsidy level**
Deutsche Lufthansa	43.013 €
Condor Flugdienst	584 €
LTU	361 €
DaimlerChrysler	297 €
Aero Lloyd	148 €
Eurowings	72 €
Deutsche BA	16 €
Total	**44.491 €**
Source: The German Ministry of Construction, Transportation and Housing (BMVBW 2002)	

3.3 Financial Support to Airbus Industries

General Overview

The aerospace industry has always been considered to be very important for the development of national economies. Air transport demand is growing constantly at an enormous rate (disregarding the September 11 event, the yearly growth rate is 5 % world wide) and guarantees high turnovers for aircraft manufacturers. Apart from this direct economic importance and its strategic relationship with the military sector, the aerospace industry has enormous affects on other industries (spill-overs), and these effects diffuse into the whole economy. The research and development (R&D) share in the aerospace industry varies between approximately 10% and 15 % related to the turnovers, which is much higher than in most other sectors of industry see AECMA (2001), SBAC (2003).

In 1970 Airbus Industry was founded by France and Germany. In 1971 Spanish CASA (Construcciones aeronauticas SA) and in 1979 the newly founded British Aerospace (BAE) joined the consortium. In 1999 the Airbus Integrated Company (AIC) was founded directly out of the Airbus Industry, and became a listed company on the stock exchange in 2000. The key was the formation of the European Aeronautic Defence and Space Company (EADS). In this company all activities of the three incorporates (Daimler Chrysler Aerospace (DASA) of Germany, Aerospatiale Matra of France and CASA of Spain) are bundled. This consortium holds an 80% share of Airbus Industry, the remaining 20% are owned by BAE Systems. In 2001 AIC made an operating profit (EBIT) of €1.7 billion on turnover of €30.8 billion, which means an operating margin of almost 6%. About two thirds of EADS´ turnover was created by AIC.

Subsidies to Airbus Industry in Germany

The overall picture regarding subsidies to Airbus is very fragmented and only rough estimations about the financial situation have ever been made. This study provides results from different sources and most of the available data concerning the government support of Airbus is available only up to 1989/90. This is simply because of the preparations needed for the GATT/WTO negotiations in 1992 (see Zimmermann 1998). In this paper the subsidies granted by the German government are highlighted.

Government support for the civil aircraft industry have taken various direct and indirect forms such as : synergies between military and commercial work; funding of civil research and development; direct financial subsidies for specific aircraft projects; equity infusions (especially in France); debt forgiveness; government subsidies and support to organise industry; efforts to steer aircraft demand toward domestic suppliers through government negotiations; taxation rules that favour domestic manufacturers; tax breaks; export credits; political assistance by offering counter-deals in other areas; export guarantees; guarantees against losses caused by exchange rate changes; and government present and/or previous ownership of airlines in most European countries.

Most of the support to Airbus has been in the form of launch aid. According to the US Congress (1991), by the end of 1989 European governments had disbursed a total of US$5.6 billion to the member companies of the Airbus Consortium and another US$9.5 billion were committed (Hornschild 1992). Of the disbursed amount, roughly US$500 million had been repaid. Repayment of the remainder had been either forgiven, or deferred, or was never intended. An additional US$2.3 billion had been pledged for the development of the long-range A330/340, and the German Government had committed a further US$3 billion as part of the merger between Daimler and MBB. The overall government financing represented roughly 75% of the development costs required for all Airbus models up to that date. According to Morris (2003) Airbus received between US$13.5 billion and US$25.9 billion in government subsidies between 1970 and 1990, depending on whether or not commercial interest rates were applied. The estimations from the European Commission (EU 1990) quote a sum of €10.9 billion for the same time period.
In addition to these estimates, the German Government had provided the German Airbus manufacturer with loans to cover losses incurred during the production phase of Airbus projects:

- Paying off of outstanding production phase dept in 1988 by the German Government - US$1.05 billion.
- Guarantee from the German government against losses caused by the exchange rate falling below €0.92 (DM 1.80) to the Dollar - until 1996 US$1.3 billion, between 1997 and 2000 US$863 million.

For the 1990s the available information is less than the preceding years. The financial situation of Airbus has always been obscure. According to Lipinski/Corr (1999), by the end of 1996, the overall support from the governments to Airbus summed up to approximately US$30 billion[2)] net repayments to governments by the consortium members. This amount has

never been denied. Since that date, the Airbus partner governments either have committed, or are in an advanced stage of consideration of providing additional funds and loans for derivative models of current Airbus aircraft, such as the A340-500/600. According to German budget planning the expenditures for the German aerospace industries (including military expenditures) ran to nearly €4.09 billion a year in the 1990s. Approximately €0.256 billion from this was spent for civil aeronautical projects.

The German Federal Government budget plans and estimates for the years between 1998 and 2002 were examined for this paper. The results, that are presented in table 5, show that financial aid is still being granted to Airbus. To develop the A380 €1.8 billion (Commitment Authorisation) is planned to be granted as reimbursable loans over the next budget years.

Table 5
Direct Payments to Airbus Industries
by the German Ministry of Economics and Technology from 1998 – 2002[1)]
- in Mill EUR –

	1998	1999	2000	2001	2002
Financial aid for sale of civil aircraft	0.0	0.0	14.3	46.4	77.8
R&D for civil aviation industry	12.6	51.9	46.7	38.1	23.0
Reimbursable loans for the development of the A380 (commitment authorisation for the next budget years €1.8 billion)[2)]	–	–	–	(76.7) [3)]	–
Reimbursable loans for the development of engine GP7000 (commitment authorisation for the next budget years €240 million)[4)]	–	–	–	–	–

[1)]1998 – 2001 actual figures; 2002 planned. - [2)] For the development of the airbus A3xxx passenger aircraft, in agreement between the European partners (and in accordance with international requirements) the German Government has granted Airbus an interest bearing loan of €1.07 billion. The repayment of the loan is dependant on the number of aircraft sold. The risk relating to the loss of interest for the German Government amounts to an additional €783 million. - [3)] Carried forward to 2002. - [4)] Loan of €134 million, risk of loss of interest €106 million.

Source: German Budget Plans.

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The German Government also provides aid for research and development, military and aerospace programs and purchases, see table 6.

The Airbus manufacturers are also the main actors in the European aerospace, military and civil R&D scene. It can be assumed, that parts of civil R&D programs and parts of the profits from government military and aerospace orders flow, to a certain extent, through to Airbus projects. Together with similar indirect support in France, England and Spain the overall financial support to Airbus Industries amounts to enormous sums.

The Export Credit Agencies (ECA: in Germany the "Hermes Kreditversicherungs AG", in France the "COFACE", in Spain the "CESSC" and in Britain the “ECDG”) of the Airbus countries played another important role in the history of Airbus (ECA also play a major role in the United States). The activities of the European ECA in 1998 (Germany, France, Spain and

Great Britain.) amounted to US$2.7 billion (in the United States: $3.0 billion)[3)]. In 1999 these activities increased in Europe to US$5.9 billion (US$7.0 billion). In Germany the ECA supported selling of aircraft increased from €396 million (1991) to €663 million (1998) and to €767 million in 2001.

Table 6
Financial Flows from the Federal Government of Germany to Aircraft Industry and Aviation and Aerospace R&D 1998 – 2002[1)]
– in € million –

	1998	1999	2000	2001	2002
Ministry of Education and Research					
Contributions to EWO (Paris)	494.4	495.6	501.1	532.3	561.7
National Aerospace Programme - R&D	114.2	101.3	-	115.3	104.0
National Aerospace Programme – Grants for investments	52.4	53.4	-	37.4	54.4
German Aerospace Research Centre (DLR) – Running costs	139.3	141	142.1	142.7[2)]	149.2
German Aerospace Research Centre (DLR) – Investments	30.5	28.5	28.0	29.2[2)]	27.7
Ministry of Defence					
Purchase of aircraft and aircraft related equipment	465.3	495.6	496.0	410.0	295.0
Purchase of MRCA (multi-role combat aircraft)	56.2	27.5	15.3	-	-
Purchase of Eurofighter 2000	510.4	624.8	645.8	869.2	920
Purchase of support helicopter	-	-	90.5	165.7	199
Purchase NATO helicopter 90	-	-	-	66.4	102
Purchase FTA (future transport aircraft) (commitment authorisation for the next budget years €5113 million)	-	-	-	-	-
Development of combat aircraft MRCA	71.6	63.9	62.4	80.3	52
Development of Eurofighter 2000	173.3	128.8	104.8	102.3	87
German Aerospace Research Centre (DLR) – Running costs	27.6	27.6	27.6	27.6	27.6
German Aerospace Research Centre (DLR) – Investments	2	-	-	2	2.0

[1)]1998 - 2001 actual figures, 2002 planned. - [2)]Planned.
Source: German Budget Plans.

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In December 2000, the Airbus partners announced that they intend to construct the world's largest commercial passenger aircraft, the A380. Airbus shareholders, the four governments and several risk-sharing partners plan to jointly invest US$12 billion to develop the mega-transporter and to enlarge all production facilities in the four partner countries. The Governments of France, Germany, England and Spain will provide approximately one third of the program's funding in the form of low-interest, refundable loans. The consortium will contribute about US$6 billion to the project from its own resources. Additional industrial risk-sharing partners are expected to provide

an estimated US$2.8 billion. The loans are refundable, but the repayments depend on the number of aircraft sold. At the present time it is not possible to characterise these loans as hidden subsidies which would violate the so called 1992 EU-U.S. treaty about support for civil aircraft. According to this agreement, governments are authorised to fund up to 33% of "commercially viable" aircraft programs in the form of fully reimbursable loans.

The list price of the A380 aircraft will be US$230 million, not including the engines. Up until July 31st, 2003, eight airlines have ordered 116 A380s, obtaining discounts that industry sources estimate to be 30 % or more. The break-even point for Airbus is estimated to be 250 planes sold within 10 years. Airbus forecasts a market of 1300 aircraft in the A380 size category over the next 20 years (Emairport 2003).

Further support to Airbus arises from the enlargement of the A380 production facilities in Hamburg. The Senate of Hamburg will subsidise this enlargement with about €665 million.

To give a complete picture of the governments support to Airbus manufacturers, repayments from Airbus industry to their governments must also be taken into account. Over the past 30 years the German Airbus consortium member has been estimated to have paid back about €2.05 billion to the German government. There is no evidence that in France, Britain or Spain the overall repayments were higher than in Germany.

4. CONCLUSIONS

Our analysis has shown that the aviation sector benefits from various financial support from different public budgets. The main findings can be summarised as follows.

First, the degree of subsidisation is lowest for airports, national air control and German meteorological services. On average, the financial support granted to airports between 1991 and 2001 was €134 million per annum with a decreasing tendency between 1995 and 1999 and an increase between 2000 and 2001. The weight of financial support from the federal government decreased between 1992 and 1999 and increased between 2000 and 2001. Using a cost/revenue account at a social cost basis we calculated that German airports as an aggregate do recover their infrastructure related costs by revenues from landing fees, fees and charges for ground services, short-term and long-term aircraft parking and turnover/concession charges. However, airports benefit from indirect subsidies such as not paying land property taxes, from profits from duty-free shopping at airports and from publicly financed road and rail links to the city centres. Apart from these indirect subsidies, an amount of €54 million for loans, taking over of debts, equity participation and capital contributions can be considered as an upper bound of further subsidies to be added to the small difference of €34 million between costs and revenues from the cost revenue account. German Air Navigation (DFS) was not subsidised in 2001. Although DFS did not make a

profit in 2001, the majority of the losses were operational and can be passed on and recovered in future years.

A second conclusion is that the highest subsidies to German airlines are indirect subsidies due to tax exemptions (kerosene tax, VAT on the domestic part of international flights). These indirect subsidies amounted to €2.8 billion in 2001. Duty-free shopping at airports and on board international flights present further subsidies. Due to the lack of data, a quantification of these subsidies could not made. Direct subsidies to German airlines aimed at compensating the closure of airspace over the USA between 11th - 14th of September and over Israel on the 11th and 12th of September amounted to €44.5 million. Direct subsidies to Deutsche Lufthansa given to enable the transition to a private company (pension fund payments) amounted to €41.5 million in 2001. Several further types of indirect subsidies such as provision of land at lower costs, VAT exemptions on deliveries, construction work, maintenance activities, extraordinary depreciation of aircraft and loan guarantees do exist but could not be quantified in this paper.

A third conclusion is that the airbus industry absorbs a considerable amount of subsidies. It can be estimated that Airbus Industry members have received the equivalent of somewhat between US$30 billion and US$45 billion in subsidies from the governments of France, Germany, Spain, and Great Britain, net of repayments back to governments over the past three decades. This equals a share of between 10% and 15% of the accumulated turnovers of Airbus Industry in the same time period. This estimation seems to be more a conservative than an exaggerated estimation, especially if one considers that Airbus has more then 1500 suppliers and subcontractors around the world, many of which are also subsidised. Despite the high development costs for the A380 there is every indication that the overall subsidies to Airbus are gradually declining.

Notes

[1)] Initially, Eurocontrol´s central route charges office invoices all airlines for all services used during a flight. The DFS then receives the amount that corresponds to its level of services (within the German airspace) and afterwards divides up the amount to the three entities, 10 % DWD, 15 % Eurocontrol and 75 % remain within DFS for their part of service to air navigation services users.

[2)] This sum represents 75% - 100% of the development costs for all major lines of Airbus aircraft.

[3)] In Germany by the end of 1995 these export credits amounted to €1.4 billion.

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