

UPDATED VERSION



Analyses of the European air transport market

Annual Report 2008

SUMMARY



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**Deutsches Zentrum
für Luft- und Raumfahrt e.V.
in der Helmholtz-Gemeinschaft**

German Aerospace Center

Air Transport and Airport Research
Porz-Wahnheide
Linder Höhe
51147 Köln
Germany

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Head:

Prof. Dr. Johannes Reichmuth

Editors: Erik Grunewald, Amir Ayazkhani, Dr. Peter Berster, Gregor Bischoff, Prof.
Dr. Hansjochen Ehmer, Dr. Marc Gelhausen, Wolfgang Grimme, Michael
Hepting, Hermann Keimel, Rainer Kiehne, Alexandra Leipold, Dr. Sven
Maertens, Dr. Peter Meincke, Melanie Murphy, Dr. Janina Scheelhaase

web: <http://www.dlr.de/fw>

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Oil price, credit crunch, recession, slump in demand: Turbulence in the air

By the end of 2008, the growth of the global economy had come to a halt for the first time since the end of the Second World War. Billions of losses in the banking sector, a stock market crash in September/October 2008 and widespread fear of a recession in 2009 marked the economic development in 2008. Air transport, particularly the cargo traffic, witnessed the drop in demand during the second half of 2008 as a result of these heavy turbulences on the overall global markets.

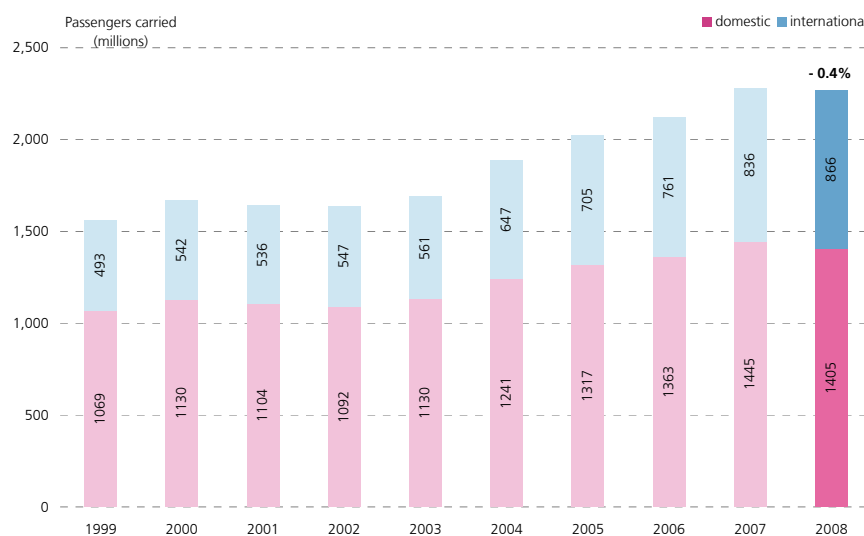
The economies in the industrial countries had been characterised by high production growth up until the beginning of 2008, but this trend was dampened by the events on the US real estate market in the middle of the year, leading then to a credit crunch and finally to the recession. However, the economic decline did not just impact upon the industrial nations - it also spread to developing countries more and more throughout the year. The only positive development in the second half of 2008 was, from a consumer's point of view, in the oil price and retail prices. While rising resource prices caused an inflation rate of around 4.6% in the industrial countries through to summer 2008, this only amounted to 1.6% in November 2008 and meant a clear relaxation for consumers.

Annual results

Air Traffic

2008 had two sides for world aviation. The first half of the year featured the growth characteristic of the previous years. The opposite was the case for the rest of the year: passenger numbers dropped drastically. The beginning of the effects of these turbulent times in the middle of the year approximately levelled off the annual result in global aviation. All in all, 0.4% fewer passengers than in 2007 were recorded in global air traffic according to the ICAO (2007 vs. 2006: +6.2%).

With this, around 2.3 billion passengers were achieved. The number of passenger kilometres performed rose in comparison to the previous year by 1.3% to 4,283 billion pkm (2007: +6.6%). Global domestic services even declined (-1.9%). Only international traffic still grew (3.4%).



The regions of the world were differently affected by the events of 2008. Measured in revenue passenger kilometres (RPKs) and posted by IATA, air traffic especially shrank in Africa (-4.0%). Above average growth was, however, observed in the Middle East (+7.0%) and Latin America (+10.2%). Europe's air traffic growth of 3.7% (according to ICAO) or 1.8% (according to IATA) was of a moderate level.

The air cargo sector was distinctly marked by global decline. Measured in freight tonne kilometres, the market shrank by 4.0% (IATA numbers). Cargo traffic in Europe recorded a drop of -2.8% following years of continued growth. The decline in Latin America was especially severe: -13.5% was recorded compared to the previous year. Only the Middle East bucked the global trend and even managed to grow strongly by +6.3%.

Airlines

The airlines' supply, measured by the number of seats offered, was continually adjusted to the demand expectations in 2008. The Full Service Network Carriers slightly reduced their capacity offered by 1%, the Regional Carriers by as much as 5%. The Holiday/Charter Carriers reduced their supply by around 25% in response to the increasing sales decline throughout 2008. Only the Low Cost Carriers significantly extended their network on the price-sensitive market, which was surely promoted by the crisis-induced increase in price-awareness. Airlines like Ryanair and easyJet offered an average of 14% more seats Europe-wide compared to the previous year despite the challenging market conditions.

For the 50 largest European Full Service Network Carriers, the load factor was 76.9% in 2008 (2007: 77.3%). The 25 largest Low Cost Airlines of the EU Member States achieved a seat load factor of 76.4% (2007: 79%), compared to the 25 largest EU Regional Carriers which only achieved 75.1% (2007: 77.1%). The Holiday/Charter Airline business model achieved the highest seat load factor with 86% (based on the 15 largest airlines concerned) (2007: 84.1%).

Top 20 airlines worldwide

2008

Rank 2008	RPK	Airline	Region	Mill PAX	change	Mill RPK	change
1		American Airlines	North America	92.8	-5.5%	212,098	-4.8%
2		Air France-KLM Group	EU	73.8	0.8%	207,242	3.2%
3		United Airlines	North America	63.2	-7.7%	177,171	-6.2%
4		Delta Air Lines	North America	71.7	-34.3%	170,147	-13.4%
5		Continental Airlines	North America	48.7	-4.5%	133,297	-1.7%
6		Lufthansa	EU	57.0	1.1%	125,955	7.1%
7		Southwest Airlines	North America	102.0	0.0%	118,543	1.7%
8		Northwest Airlines	North America	48.9	-8.9%	115,332	-1.9%
9		British Airways	EU	32.3	-3.3%	110,831	-3.0%
10		Emirates Airline	Middle East	22.4	9.5%	100,672	11.2%
11		US Airways	North America	54.8	-5.3%	97,506	-1.5%
12		Singapore Airlines	Asia	19.1	0.7%	93,626	3.0%
13		Cathay Pacific	Asia	25.0	7.1%	90,975	11.2%
14		China Southern Airlines	Asia	58.2	2.3%	83,117	1.9%
15		Japan Airlines International	Asia	46.9	-1.7%	82,122	-5.2%
16		Qantas	Australia	24.5	-2.7%	81,438	-3.5%
17		Air Canada	North America	23.2	-1.2%	74,731	0.2%
18		Air China	Asia	34.2	-1.6%	66,019	-1.4%
19		Ryanair	EU	57.7	13.3%	61,983	21.9%
20		ANA - All Nippon Airways	Asia	48.6	-4.0%	58,858	-3.9%

The continuing expansion of networks stagnated in 2008 for the first time in years. The opening of new routes had exceeded the routes closed since 2002, but in 2008 they were both about equal in absolute terms. There were, nevertheless, differences when considering the type of airline. Low Cost Carriers (LCCs) dominated in the number of routes opened, whereas many

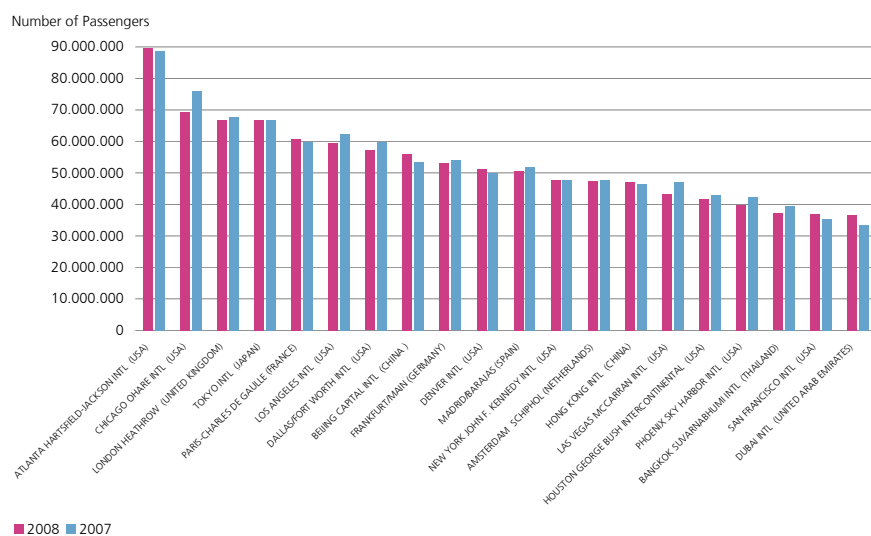
of the routes closed had been offered by network airlines. One example of this is the United Kingdom (the largest national passenger market in the EU) where of 273 newly created routes 236 were offered by LCCs but of 280 closed routes only 68 were attributed to LCCs.

Operating a successful business was much more difficult for the airlines in 2008 than in the preceding growth years due to the aforementioned exceptional circumstances. On the cost side, the airlines were confronted with ups and downs in fuel costs like never before. After starting the year with about 295 US-cents per gallon in January 2008, speculation drove the kerosene price to a peak of over 400 US-cents per gallon during the main holiday season of 2008. At the end of the year, the price sank again to around 150 US-cents per gallon – the lowest value in years. But the decisive dampener for the airlines came with the decline in demand starting in the second half of the year. The airlines' reaction to this included capacity reduction and a postponement of long-term investment plans. With the capacity reductions, airlines were able to maintain seat load factors. The financial markets' expectations regarding the future developments in commercial air transport in the form of share prices reflect investors' crisis-awareness. In correlation with the stock market trend for all other industries, the airlines' share prices devalued in some cases very heavily.

It is more evident than ever that the strategy of a network carrier is to be a part of one of the three large global airline alliances. The dynamic growth figures in offered seats seem to support this. As all three major alliances accepted new members in 2008, their capacities grew considerably compared to a year earlier. Star Alliance (+16%), Skyteam (+13%) and Oneworld (+19%) all increased their number of worldwide weekly flights offensively. As the number of airlines not associated with any alliance shrank, the capacity of unaffiliated airlines was reduced by 20% on average.

Airports

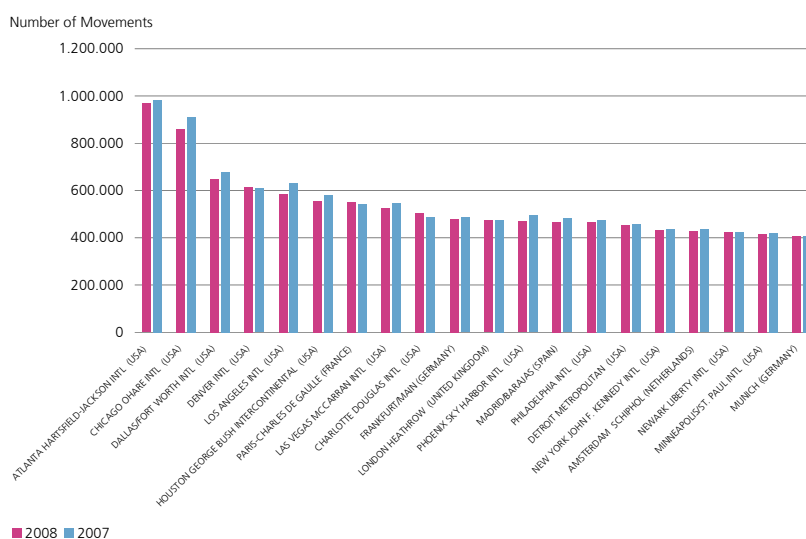
As reported by the Airports Council International (ACI), 2008 marked a break in the growth in passenger numbers experienced during the recent years. Starting with positive results, the year 2008 stopped the positive trend in airports' figures. For the year 2008, there were 56 million commercial passenger



aircraft movements worldwide, which is around 2% fewer than in 2007.

The Top 20 airports worldwide ranked by passenger numbers are made up of five EU, ten US and five Asian airports, including one from the Middle-East. The two busiest airports worldwide are still the US-airports Atlanta Hartsfield-Jackson International and Chicago O'Hare International.

The largest European airport in terms of passenger numbers is London Heathrow on place three. The traffic results for the five largest EU airports within the world Top 20 show slightly differing tendencies. Only Paris Charles De Gaulle achieves an increase in passenger numbers, growing by nearly one million (67 million). In contrast, the decline in passenger numbers at London Heathrow, Frankfurt/Main, Madrid Barajas and Amsterdam Schiphol ranges from 0.4 to 1.3 million passengers.



The Top 20 in terms of commercial aircraft movements is dominated by US and European airports (14 and 6 airports respectively). The two largest airports worldwide are again the US-airports Atlanta Hartsfield-Jackson International and Chicago O'Hare International. The largest European airport is Paris Charles De Gaulle, which appears on place seven, followed by Frankfurt/Main on place ten. Of these six European airports, only Paris Charles De Gaulle and Munich manage to increase their numbers of flight movements, growing by 7,364 (+1.4%) and 1,698 (+0.4%) respectively. Otherwise, the decline in aircraft movements at the top European airports ranges between 2,574 (-0.5%) for London Heathrow and 13,470 (-2.8%) for Madrid Barajas.

Forecasts

The forecasts from Airbus and Boeing in 2008 for the period through to 2027 are similar. Global air traffic is expected to grow annually by 4.9% (Airbus) or 5.0% (Boeing) on average, measured in passenger kilometres. Compared to the ICAO forecasts published a year earlier, which predicted 9.2 billion passenger kilometres (pkm) for 2025, the two manufacturers forecast almost 12 billion pkm worldwide for 2027. According to Boeing, the front runner in

growth terms will be intra-Asia-Pacific services (+7.0% p.a.) and the markets within Latin America (+6.7% p.a.). The largely saturated markets "within Europe" and "within North America" will only grow by an annual 3.5% and 2.8% respectively and therefore show the lowest expected growth potential (in pkm).

Distinct growth differences are expected for Europe in the short term. For 2009, Eurocontrol expects an average of a 3.1% decrease in flight movements. The national developments diverge with an assumed reduction of 12% in IFR movements for Sweden and Italy, while Eurocontrol expects growth of 3.1% and 3.4% respectively for their immediate neighbours Finland and Slovenia. A tendency towards negative growth is expected for Central and Western Europe, but generally positive growth for countries toward the east, stretching from Finland (+3.1%) in the north to Turkey (4.2%) in the south.

Regulatory

The first step of an Open Skies Agreement between the USA and the EU came into force on 30th March 2008 replacing the previous "community carrier" concept recognised by US. All participating airlines are now free to offer flights between the EU and the USA and beyond. However, ownership of US airlines remains limited to 25% for investors from the EU and EU airlines are not allowed to operate domestic services within the US (cabotage). Negotiations between the EU and the US will continue for a second phase of the Open Skies Agreement, driven by the principle of liberalisation and harmonisation of the markets.

At the end of 2008, the EU finalised its negotiations with Canada concerning a comprehensive aviation agreement. After only one year of negotiations, the agreement will significantly improve the aviation sector as it covers all possible aspects of aviation. It will offer a gradual liberalisation of traffic rights, investment opportunities and will establish a close cooperation across a wide range of issues including safety, security and environmental matters. The final text of the EU-Canada Air Transport Agreement was endorsed in May 2009.

In May 2008, the first horizontal agreement between two regional organisations was reached between the EU and the eight states of the Economic and Monetary Union of Western Africa (UEMOA). This agreement brings the 47 bilateral agreements concerned into line with EU law.

In continuation of the successful liberalisation of the aviation sector, the new regulation on air services entered into force to ensure internal market competition. The new framework on the single market for air transportation in the European Community includes updated rules concerning intra-Community air services, licensing, leasing and public service obligations (PSO) as well as traffic distribution between airports and pricing issues.

On consumer protection, an important milestone was reached in 2008 in the field of transparency in pricing information. Airlines are now obliged to provide information on prices in their advertising inclusive of all applicable fares, charges, taxes and fees. Precise information on and the breakdown of air fare or rate, the taxes, the airport charges and the other charges, surcharges or fees must also be indicated. All optional, additionally bookable services must be made clear right from the beginning of the booking procedure in order to offer the consumer a genuine opportunity to compare prices. Further, optional services are not allowed to be pre-activated - they have to be pro-actively selected by the consumer. This ensures that the customer cannot unwillingly purchase pre-selected options due to having overlooked them.

In March 2009, a new Regulation introducing a new Code of Conduct for computerised reservation systems (CRS) entered into force. It simplifies the existing Code of Conduct and strengthens competition between the CRS providers while ensuring the provision of neutral information to customers at fair distribution costs.

Environment

The European Commission aims to improve the quality of the environment by counteracting the growing climate change impact of aviation. Therefore, aviation will be included in the existing EU Emissions Trading Scheme for the limitation of CO₂ emissions by the year 2012. On October 27th 2008, the EU Council formally adopted a directive on this issue which will come into force in 2009. In order to also limit aviation's NO_x emissions, which can contribute to anthropogenic climate change too, the European Commission will publish a draft proposal on such measures in the year 2009.

Consumer

Beyond the aforementioned price transparency regulation there are further topics of consumer interest. In 2008, four out of five flights travelled punctually within Europe. With this, the performance level of the previous year was more or less achieved and the deterioration in punctuality stopped. The reduced supply from the airlines led to a relaxation of the heavily utilised infrastructure and thus reduced the probability of delays. Among the airlines associated under the AEA, large differences were nevertheless seen. During the summer season - when particularly large numbers of people fly on holiday - Scandinavian Airlines SAS was the most punctual (89% punctuality). At the other end of the scale, some airlines were punctual in fewer than two thirds of all arrivals. There are also flight routes in Europe which display a particularly high probability of delays: those wanting to fly from, for example, Scandinavia to Greece in summer 2008 had to reckon with an over 50% chance of being delayed on their way to their destination. In contrast, there was a positive development in delayed baggage: according to AEA, the number of passengers seeking baggage in summer 2008 dropped from 17 to 13.8 per 1,000 in comparison to the previous year. Here, the range stretched between an excellent 3.6/1,000 cases (AeroSvit/Ukraine) through to an inadequate 24.5/1,000 (bmi/UK).

Manufacturer

The orders placed in 2008 for commercial passenger and cargo aircraft were once again under the 2,000 mark following an absolute high in the previous year. Here, customers from geographical Europe accounted for almost a fifth of the worldwide orders with a total of 390 aircraft. Customers from the EU accounted for 302 aircraft (15.3% of worldwide orders). The largest chunk of orders came from Asia (26.8%) and the Middle East (20.6%). Despite the dynamic order activity, around the same number of aircraft were delivered in 2008 as in the preceding years. A total of 1166 commercial aircraft were delivered in 2008 - 462 from Airbus, which was even 3.8% more than in the year before and 362 from Boeing, 16.8% fewer than in 2007. Boeing's deliveries were seriously impeded by strikes. The respective delivery figures for Embraer and Bombardier were 155 and 113 units.

The European company Airbus once again reported the highest number of ordered aircraft with 916 units, although this represented a drop of around 40% compared to the previous year. The decline in orders impacted even harder upon the American competitor Boeing. Boeing's orders dropped by more than 50% and fell back considerably to only 653 ordered aircraft. The average decline in orders for the industry was 47% compared to the previous year. Embraer and Bombardier received 145 (34 fewer than 2007) and 109 (141 fewer than 2007) respectively. In 2008, the order volume for the two Russian manufacturers Antonov and Sukhoi and for the Chinese manufacturer Harbin Aircraft Manufacturing Corporation grew completely against the trend, reaching double-digit growth rates. However, these manufacturers have a relatively small market share with a total of 44, 20 and 20 orders respectively in 2008.

Safety and Security

For the fourth time in a row, the number of fatalities in worldwide air traffic declined. However, 682 people lost their lives. Despite the positive trend, Europe witnessed two particularly severe air traffic accidents with civilian passengers on board. One was the failed take-off of a Spanair aircraft in Madrid which cost 154 people their lives. The other was the crash of a Russian aircraft during its landing approach in Perm with 88 deaths.

In 2008, the Commission published a proposal for a regulation amending Regulation (EC) No 216/2008 in the field of aerodromes, air traffic management and air navigation services and repealing Council Directive 06/23/EEC85. The proposal seeks to extend the EASA's competencies to the remaining key safety fields of aerodromes, air traffic management and air navigation services in order to improve safety in these subjects.

Based on Regulation (EC) No 2111/200577 ("Blacklist"), the Commission, in close cooperation with the authorities responsible in the Member States, has the right to ban operators from operating into EU airspace, should common safety criteria be violated. At the end of 2008, all

carriers from Angola, the Democratic Republic of Congo (DRC), Equatorial Guinea, Gabon (except for Gabon Airlines and Afrijet subject to strict restrictions), Indonesia, the Kyrgyz Republic, Liberia, Sierra Leone and Swaziland were banned. In addition, all operations of Air Koryo from the Democratic People's Republic of Korea, Air West from Sudan, Ariana Afghan Airlines from Afghanistan, Siem Reap Airways International from Cambodia, Silverback Cargo Freighters from Rwanda, Ukraine Cargo Airways, Ukraine Mediterranean Airlines and Volare Aviation from Ukraine remained on the blacklist.

The Directive (EC) 300/2008 on common regulations in the field of civil aviation security came into force in April 2008 after an agreement on the wording was reached in the arbitration commission. The Directive (EC) 2320/2002 was consequently repealed by (EC) 300/2008 in order to achieve a simplification, harmonisation and clarification of the existing regulations, plus the improvement of the security level at airports. Directive No. 300/2008 repeals the Directive 2320/2002 from the time point stated in the implementation regulations which are enacted in accordance with the procedures named in Article 4 Sections 2 and 3, at the latest however 24 months after their coming into force (April 2010).

DLR at a glance

DLR is Germany's national research center for aeronautics and space. Its extensive research and development work in Aeronautics, Space, Transportation and Energy is integrated into national and international cooperative ventures. As Germany's space agency, DLR has been given responsibility for the forward planning and the implementation of the German space program by the German federal government as well as for the international representation of German interests. Furthermore, Germany's largest project-management agency is also part of DLR.

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DLR

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Lilienthalplatz 7
38108 Braunschweig
Germany
www.dlr.de/fw

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