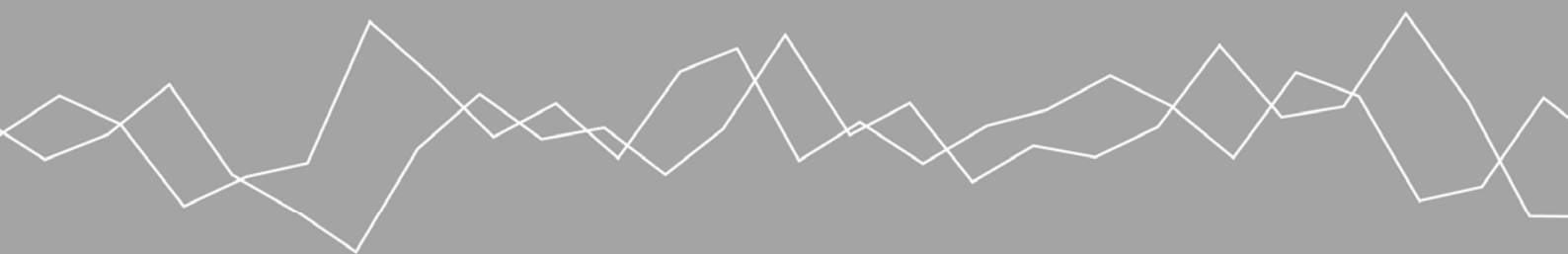


Benchmark for airport charges and governmental taxes



Amsterdam, May 2008
Commissioned by the Dutch Directorate General for Transport and Civil Aviation

Benchmark for airport charges and governmental taxes

for the years 2003, 2006 and 2007

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Summary

On the instructions of the Dutch Directorate General for Transport and Civil Aviation (DGTL), SEO Economic Research/AAE has actualized the benchmark model and extended it to apply to nine major European airports (Amsterdam Schiphol, Brussels, Paris Charles de Gaulle, Frankfurt, London Gatwick, London Heathrow, Madrid, Munich, and Zurich). In this study, research has been conducted into the (developments in) airport charges, terminal navigation charges, and governmental taxes at the various airports. The airport charges, terminal navigation charges, and governmental taxes have been calculated for the various airports on the basis of the air traffic movements in 2006 of a representative selection (referred to as the Schiphol selection) of aircraft types. The selection represents almost 98% of the total aircraft movements at Amsterdam Schiphol and is assumed to be equal for all airports and all years to facilitate a consistent comparison between the airports and between the different years. The central research questions are:

- How much are the total revenues from airport charges, terminal navigation charges, and governmental taxes at the nine airports studied, what trends in time can be seen, and what is the position of Amsterdam Schiphol compared with the other airports?
- What is the influence of the intended air tax on the total revenues at Amsterdam Schiphol?
- What tariff differentiations are used and what are the differences between the airports?
- What are the backgrounds underlying the security charges, noise charges, terminal navigation charges, and governmental taxes and what are the differences between the airports?

The most important conclusions that can be drawn from the report are:

- Amsterdam Schiphol takes fifth place in terms of the total revenues in the summer of 2007. London Heathrow is by far the most expensive airport, but Paris Charles de Gaulle, Frankfurt, and London Gatwick are more expensive than Amsterdam Schiphol. Madrid is the cheapest airport.
- The differences between Amsterdam Schiphol and Paris Charles de Gaulle and Frankfurt decreased slightly between 2003 and 2007. In the summer of 2003, Paris Charles de Gaulle and Frankfurt were 15% and 9% respectively more expensive than Amsterdam Schiphol, while these airports were 13% and 7% respectively more expensive in the summer of 2007. Because of the strong increase in governmental taxes (air passenger tax) in the United Kingdom, the revenues for the London airports have increased considerably. In the summer of 2003, London Gatwick was 14% cheaper than Amsterdam Schiphol, but it was 10% more expensive in the summer of 2007. In the summer of 2007, London Heathrow was 50% more expensive than Amsterdam Schiphol, although in the summer of 2003 Heathrow was only 12% more expensive. In the summer of 2007, Brussels, Madrid, Munich, and Zurich were 20%, 41%, 21% and 7% respectively cheaper than Amsterdam Schiphol. It is remarkable that Munich and Zurich were more expensive than Amsterdam Schiphol in the summer of 2003.
- The main cause of the increase of the total revenues between 2003 and 2007 at Amsterdam Schiphol was the 43% increase in the security charges. The increase in the

insulation costs tax and the new tax for costs that are not related to noise account for 19% of the total increase in revenues. The rest of the increase was caused by increases in passenger charges (19%) and landing charges (17%). It must be remembered that the revenues hardly increased from the summer of 2006 to the summer of 2007.

- The security charges at Brussels and Zurich also increased markedly after 2003 (by 76% and 34% respectively). Increases were more moderate at other airports such as Paris Charles de Gaulle (security taxes: 9%), Frankfurt (security charges and taxes: 9%) and Madrid (security charges: 12%). At Munich, the security charges and taxes even decreased by 3%. The security charges and taxes form a considerable part of the total revenues at Amsterdam Schiphol (27%), Brussels (28%), Paris Charles de Gaulle (24%), Frankfurt (24%), Munich (24%), and Zurich (25%). At Madrid this share is only 7% and at the London airports there is no separate security charge or tax.
- On 1st July 2008, the air tax will be introduced at Amsterdam Schiphol. If it had been introduced in the summer of 2007, the revenues would have been substantially higher than they were. In that case only London Heathrow would have been more expensive than Amsterdam Schiphol. One has to remember, however, that other (future) changes (after the summer of 2007) in the airport charges and governmental taxes have not been taken into consideration. These changes would also have had some effect on the total revenues at the different airports.
- An important conclusion that can be drawn from the analysis of the differentiations is that at Amsterdam Schiphol the difference in tariffs between O/D and transfer passengers is the largest (for the passenger charges as well as the security charges). Furthermore, there is no tariff differentiation at Amsterdam Schiphol between different destinations, but there is at other airports (Paris Charles de Gaulle, Frankfurt, London Gatwick, London Heathrow, Madrid, and Munich). At Paris Charles de Gaulle, Frankfurt, the London airports, Madrid (partly), and Munich the 'domestic' category is also applied. With respect to the noise categorization, one can conclude that different categorizations are applied at the airports examined. Based on the noise categorization of Amsterdam Schiphol and the aircraft types from the Schiphol selection, Amsterdam Schiphol seems to have the most effective noise categorization. However, when other traffic data and another noise categorization are used, the results would perhaps show a different picture. The final conclusion drawn from the analysis of the differentiations is that the London airports differentiate most sharply in favour of intercontinental and full freighter flights.
- Questionnaires related to their airports were sent to contacts in the various countries to obtain more insight into the background underlying the security charges and taxes, noise charges and taxes, ATC and other taxes. The most important conclusion concerns security: the questionnaires related to security charges and taxes were returned from Amsterdam Schiphol, Brussels, Madrid, and Zurich. None have been returned from Paris Charles de Gaulle, Frankfurt, the London airports or Munich. Of the four airports that supplied information on security, only at Amsterdam Schiphol are the security costs completely covered by the revenues from security charges.

1 Introduction

The Directorate General for Transport and Civil Aviation (Dutch acronym: DGTL) has commissioned SEO Economic Research cluster Amsterdam Aviation Economics (AAE) to actualize the quantitative benchmark of airport charges and governmental taxes exacted in 2006. SEO/AAE has also been asked to undertake some additional (sensitivity) analysis.

We have carried out an actualization of the benchmark from 2006 not only to obtain an overview of the airport charges (airport related), terminal navigation charges and governmental taxes (government related) at different European airports, but also to determine Schiphol's position and development relative to competitive airports. Consequently, the airport charges, terminal navigation charges and governmental taxes have also been calculated for 2007. Additionally, the selection of airports in the benchmark has been expanded to nine. The original selection of Amsterdam Schiphol, Paris Charles de Gaulle, Frankfurt, London Gatwick, and London Heathrow has been supplemented by Brussels (similar catchment area), Madrid, Munich, and Zurich (competitors on the transfer market). Paris Orly was removed from the benchmark, because the tariffs there are similar to those at Paris Charles de Gaulle. The 2006 traffic data for Amsterdam Schiphol and information from the IATA airport & air navigation charges manual have been used as input data for all three years (2003, 2006, and 2007). As a result, a consistent longitudinal comparison could be made as well as a consistent comparison of the different airports.

Besides calculating and presenting the total revenues from airport charges, terminal navigation charges, and governmental taxes for all the airports concerned, we have paid attention to every separate charge and tax and the differentiations that play an important part in the calculation of the charges and taxes. Furthermore, the total revenues per airport for three different aircraft types (large, medium, and small) have been calculated. Background information about the security charges and taxes, noise charges and taxes, ATC and other taxes has also been gathered and presented.

Finally, DGTL has asked us to explore the influence of the intended aviation tax on the total revenues at Amsterdam Schiphol. We give a descriptive as well as a graphic impression of the consequences of the introduction of the aviation tax on 1st July 2008.

The research questions and the working method are elaborated in the following chapter. In chapter 3, the results of the benchmark are discussed, while the foreseen consequences of the aviation tax are presented in chapter 4. In chapter 5 we concentrate on the differentiations in the airport charges and governmental taxes. The revenues per aircraft type are presented in chapter 6; chapter 7 contains background information concerning certain specific charges and taxes. Finally, the main conclusions are summarized in chapter 8.

2 Working method

The effects of changing airport charges and governmental taxes have been determined with the new benchmark model. This model provides a detailed insight into the revenues for nine European airports. Only the revenues from the charges and taxes that the airlines have to pay for a turnaround (landing, stay, and take-off) have been taken into account. The IATA Airport & Air Navigation Charges Manual forms the basis for the model. The input is made complete with information from the airports' reports about airport charges, governmental taxes and conditions. The airport charges and governmental taxes have been divided into various categories. In this benchmark, the following charges and taxes are distinguished:

The airport charges consist of:

- Landing charges (at all airports)¹
- Parking charges (for aircraft) (at all airports)²
- Passenger charges (at all airports)
- Cargo charges (at MAD and ZRH)
- Noise charges (at FRA and ZRH)
- Security charges (at all airports, except for CDG, LGW, and LHR)

The governmental taxes consist of:

- Noise taxes (at AMS and CDG)
- Security taxes (at CDG, FRA and MUC)
- Other governmental taxes (as indicated in the IATA manual) (at AMS, CDG, LGW and LHR)

The other charges consist of:

- terminal navigation charges (Air Traffic Control) (at all airports)

To facilitate a consistent comparison between the airport charges, terminal navigation charges, and governmental taxes at the nine airports, the amount and composition of the air traffic is assumed to be equal at all airports. The traffic data used is based on the Schiphol selection, which consists of a representative fleet of 45 aircraft types. The contents of the Schiphol selection have been determined in consultation with DGTL and represent almost 98% of the total air traffic in 2006 for Amsterdam Schiphol. To make a consistent comparison over time, the data forms the basis for all three years. Furthermore, we have made some assumptions concerning the load factors per aircraft type and the share of transfer passengers per aircraft type to guarantee the

¹ If a charge is mentioned as a landing charge it concerns landing and take-off charges. At some airports (Amsterdam Schiphol, Brussels, Frankfurt and Munich) airport charges are paid for both take-off and landing.

² At Amsterdam Schiphol, Brussels, Madrid, Munich, and Zurich there is a free parking period. Because of the assumptions concerning the parking hours (one hour for aircraft types that mainly serve European destinations and three hours for aircraft types that mainly serve intercontinental destinations) it seems (in the following chapters) that parking charges are not charged at the airports above, which is of course not the case. The revenues mentioned in the following chapters from parking charges at Brussels and Madrid concern charges that are directly connected with parking charges (boarding bridge charges).

consistency mentioned earlier. For a complete overview of the assumptions made we refer to appendix A. The specifications per aircraft type can be found in appendix H.

We focus on three aircraft types included in the Schiphol selection. These account for more than 19% of the aircraft movements in 2006. They are common at Amsterdam Schiphol, namely a large (intercontinental) type, a medium (especially aimed at European destinations) type, and a small (exclusively aimed at European destinations) type. Moreover, all three aircraft types belong to a different noise category at Amsterdam Schiphol. These types have been chosen by the commissioner and are as follows:

- Boeing 747-400 MC (397 tonnes, 278 seats)
- Boeing 737-800 (76 tonnes, 174 seats)
- Fokker 70 (38 tonnes, 80 seats)

Attention is also paid to the influence of the planned aviation tax on the total airport charges and governmental taxes at Amsterdam Schiphol and thus on the complications foreseen for the national airport's competitive position.

The differentiations in the airport charges and governmental taxes by airport are then discussed. These figures make clear the manner in which the various airports' airport charges have been constructed. The graphs that result from this exercise provide a picture of the division of the airport charges on the one hand between O/D and transfer passengers and on the other hand between passengers with different geographically-grouped destinations and origins. The differences between the tariffs used and the total revenues at the nine different airports based on the Schiphol selection are discussed. The analysis also sheds light on the division of the landing charges between the different noise categories that are put into effect at Amsterdam Schiphol. Finally, information is provided about the differentiation in the landing charges between full freighters and passenger aircraft.

Finally, the background of the security charges and taxes, noise charges and taxes, terminal navigation charges and other taxes is considered. To obtain the appropriate information, questionnaires were sent to contacts in all the countries concerned. In the final chapter, the data obtained from these questionnaires are discussed and a consistent comparison made between the different countries and the background of their charges and taxes.

3 Results

3.1 Revenues in 2007

The revenues calculated for the summer of 2007 from airport charges, terminal navigation charges, and governmental taxes are shown in table 3.1. Similar tables for the years 2003 and 2006 are to be found in appendix B. As mentioned above, the Schiphol selection is used for all the years and all the airports. Consequentially, the results for the different airports and the three separate years are mutually comparable.³

Table 3.1 Calculated revenues (x € 1,000,000) for the summer of 2007 for the Schiphol selection⁴

	AMS07		BRU07		CDG07		FRA07		LGW07		LHR07		MAD07		MUC07		ZRH07	
Landing charges	196	27%	80	14%	135	17%	71	9%	80	10%	160	15%	169	40%	69	12%	114	17%
Parking charges			2	0%	42	5%	22	3%	28	4%	41	4%	22	5%				
Passenger charges	203	28%	272	47%	200	25%	435	57%	237	30%	434	40%	120	28%	283	50%	202	30%
Cargo charges													28	7%			19	3%
Security charges	193	27%	159	28%			37	5%					28	7%	11	2%	167	25%
Noise charges							10	1%							34	6%	93	14%
Airport charges	593	83%	514	90%	376	46%	574	75%	346	44%	634	59%	366	86%	400	71%	595	89%
Terminal navigation charges	69	10%	60	10%	70	9%	42	6%	40	5%	40	4%	59	14%	42	7%	71	11%
Security taxes					193	24%	150	20%							125	22%		
Noise taxes	44	6%			13	2%												
Other taxes	10	1%			158	19%			400	51%	400	37%						
Governmental taxes	54	8%			364	45%	150	20%	400	51%	400	37%			125	22%		
Total revenues	716	100%	575	100%	810	100%	767	100%	786	100%	1,074	100%	425	100%	567	100%	666	100%

When considering the total revenues from airport charges, terminal navigation charges, and governmental taxes, one can conclude that the larger airports (Amsterdam Schiphol, Paris Charles de Gaulle, Frankfurt, and London Heathrow), based on the Schiphol selection, generally have higher revenues than the smaller airports in the benchmark (Brussels, Munich, and Zurich). Madrid and London Gatwick clearly differ from this picture. In Madrid, the total revenues are by far the lowest in the benchmark, while the airport is, with regard to number of passengers, similar to Amsterdam Schiphol. At London Gatwick, the total revenues are approximately equal to those of Paris Charles de Gaulle and Frankfurt, while the airport is, with regard to number of passengers, similar to Munich. The ranking from high revenues (expensive) to low revenues (inexpensive) appears to be as follows:

³ The figures for the London airports and Zurich are affected by currency exchange rate fluctuations. For all three years we have used the average rates of the British Pound and the Swiss Franc respectively to convert the tariffs to Euro. The exchange rate (with respect to the Euro) for the British Pound has risen over the years, while the rate of the Swiss Franc (with respect to the Euro) has fallen.

⁴ The revenues are those for the summer of 2007: the airport charges at Amsterdam Schiphol from November 2007, and at other airports after the summer of 2007, have not been taken in account. The aviation tax that will be put in operation in July 2008 at Amsterdam Schiphol has of course also been disregarded in the calculations.

1. London Heathrow, € 1,074 million
2. Paris Charles de Gaulle, € 810 million
3. London Gatwick, € 786 million
4. Frankfurt, € 767 million
5. Amsterdam Schiphol, € 716 million
6. Zurich, € 660 million
7. Brussels, € 584 million
8. Munich, € 567 million
9. Madrid, € 425 million

We discuss below (the developments of) the different airport charges, terminal navigation charges, and governmental taxes and compare the airports in detail.

3.2 Comparison with 2003 and 2006

3.2.1 General developments

Figure 3.1 Calculated revenues (x € 1,000) for the summer of 2003, 2006, and 2007 for the Schiphol selection

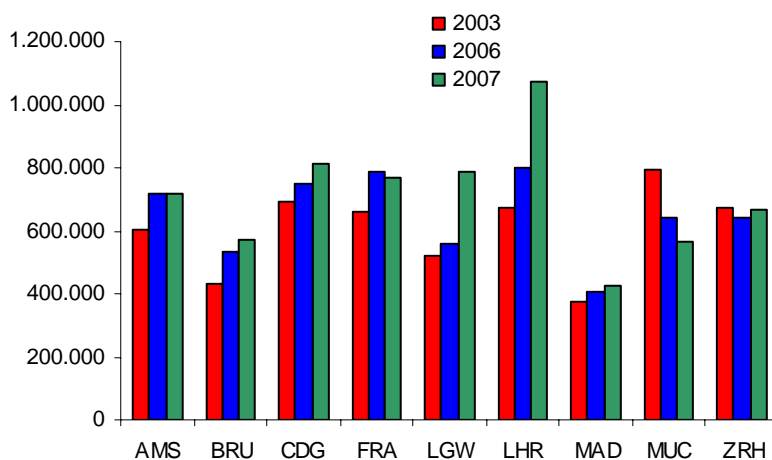


Figure 3.1 shows the development of the total revenues for the years 2003, 2006, and 2007. The revenues of Amsterdam Schiphol for 2007 are similar to those for 2006, because the new airport charges in 2007 were put into operation in November 2007 (after the summer of 2007). Furthermore, the terminal navigation charges at Amsterdam Schiphol have not changed and the minimum increase in the noise taxes has no effect, because of rounding off. Striking increases (with respect to 2006) at the London airports and, to a lesser degree, at Paris Charles de Gaulle are explained by the increase in the air passenger tax at the London airports and the introduction of the solidarity tax at Paris Charles de Gaulle. Decreasing revenues are shown for Munich, where the landing charges fell considerably between 2003 and 2006. This decline continued to a lesser degree in 2007. On the other hand, the passenger charges have steadily increased at Munich.

Table 3.2 Calculated revenues (x € 1,000,000) for the summer of 2003, 2006, and 2007 based on the Schiphol selection and the relative growth between 2003 and 2007 and between 2006 and 2007.

	AMS			Growth		BRU			Growth		CDG			Growth	
	2003	2006	2007	h 03-07	06-07	2003	2006	2007	h 03-07	06-07	2003	2006	2007	h 03-07	06-07
Landing charges	177	196	196	11%		55	60	80	45%	34%	118	132	135	14%	3%
Parking charges							2	2		2%	32	40	42	32%	4%
Passenger charges	182	203	203	12%		225	268	272	21%	2%	172	193	200	16%	3%
Cargo charges															
Security charges	144	193	193	34%		90	142	159	76%	12%					
Noise charges															
Airport charges	503	593	593	18%		371	472	514	39%	9%	322	365	376	17%	3%
Terminal navigation charges	66	69	69	5%		59	60	60	2%		68	69	70	3%	1%
Security taxes											178	188	193	9%	3%
Noise taxes	33	44	44	33%	1%						9	13	13	37%	
Other taxes		10	10								113	117	158	39%	35%
Governmental taxes	33	54	54	63%	1%						301	318	364	21%	15%
Total revenues	603	716	716	19%	0%	430	532	575	34%	8%	691	752	810	17%	8%
	FRA			Growth		LGW			Growth		LHR			Growth	
	2003	2006	2007	h 03-07	06-07	2003	2006	2007	h 03-07	06-07	2003	2006	2007	h 03-07	06-07
Landing charges	69	71	71	3%	-1%	71	76	80	13%	6%	113	142	160	41%	13%
Parking charges	28	28	22	-21%	-20%	25	27	28	14%	6%	58	38	41	-31%	8%
Passenger charges	305	432	435	43%	1%	197	224	237	20%	6%	277	391	434	57%	11%
Cargo charges															
Security charges	4	40	37	817%	-8%										
Noise charges	24	23	10	-61%	-58%										
Airport charges	430	594	575	34%	-3%	293	327	346	18%	6%	448	570	634	41%	11%
Terminal navigation charges	59	38	42	-29%	11%	29	34	40	39%	18%	29	34	40	39%	18%
Security taxes	168	156	150	-11%	-4%										
Noise taxes						196	199	400	104%	101%	196	199	400	104%	101%
Other taxes						196	199	400	104%	101%	196	199	400	104%	101%
Governmental taxes	168	156	150	-11%	-4%						196	199	400	104%	101%
Total revenues	657	788	767	17%	-3%	518	560	786	52%	41%	673	803	1,074	60%	34%
	MAD			Growth		MUC			Growth		ZRH			Growth	
	2003	2006	2007	h 03-07	06-07	2003	2006	2007	h 03-07	06-07	2003	2006	2007	h 03-07	06-07
Landing charges	154	167	169	10%	1%	378	160	69	-82%	-57%	123	119	114	-7%	-4%
Parking charges	21	23	22	7%	-1%										
Passenger charges	107	116	120	11%	3%	177	258	283	60%	10%	217	210	202	-7%	-4%
Cargo charges	14	14	28	98%	98%						20	20	19	-7%	-4%
Security charges	25	27	28	12%	3%		20	11		-43%	125	121	167	34%	38%
Noise charges						43	34	34	-19%		101	97	93	-7%	-4%
Airport charges	321	346	366	14%	6%	597	473	400	-33%	-16%	586	566	595	2%	5%
Terminal navigation charges	52	57	59	14%	3%	59	38	42	-29%	11%	89	74	71	-20%	-4%
Security taxes						140	133	125	-11%	-6%					
Noise taxes															
Other taxes															
Governmental taxes						140	133	125	-11%	-6%					
Total revenues	373	403	425	14%	5%	797	644	567	-29%	-12%	675	640	666	-1%	4%

Table 3.2 charts the developments of the airport charges, terminal navigation charges, and governmental taxes between 2003/2007 and 2006/2007. Comparing Amsterdam Schiphol with the other airports, one can see that at Amsterdam Schiphol the increase with respect to 2003 is average (19%). At the London airports and at Brussels the increases are larger (Brussels: 34%; London: Gatwick 52%; London Heathrow: 60%), brought about at the London airports by the considerable increase in the air passenger tax (other governmental taxes) and at Brussels by a sharp increase in, in particular, the security charges, but also the landing and passenger charges. At Paris Charles de Gaulle, Frankfurt (both 17%) and Madrid (14%), the increases are similar to those at Amsterdam Schiphol, whereas at Munich (- 29%) and at Zurich (- 1%) the revenues decreased between 2003 and 2007. The remarkable decline at Munich is the result of a sharp reduction in the landing charges.

With respect to 2006, it is difficult to make a consistent comparison between Amsterdam Schiphol and the other airports, because the changes in airport charges for Amsterdam Schiphol in 2007 were put into operation just after the summer, so that the revenues for summer 2007 are equal to those for summer 2006. It is, however, appropriate to look at the other airports. At Paris Charles de Gaulle, Brussels, and Madrid the increases in revenues are fairly small (8%, 8%, and 5% respectively). The increases between 2006 and 2007 at the London airports are striking, as they were between 2003 and 2007, (London Gatwick: 41%, London Heathrow: 34%); the increase in the air passenger tax was responsible. At the German airports the revenues decreased between 2006 and 2007. We have already seen that the revenues at Munich decreased between 2003 and 2007. Between 2006 and 2007 the revenues at Frankfurt also decreased (Frankfurt: -3%, Munich: -12%). The changes in revenues at Zurich are mainly caused by exchange rate fluctuations. Because of a fall of the rate of the Swiss Franc (with respect to the Euro) Zurich has become more competitive the last years.

3.2.2 Developments in airport charges

The content of the airport charges at the different airports differs substantially. All airports have landing, passenger, and parking charges (some with extensive free parking hours, as a result of which no revenues appear). Security charges are applied at six airports (Amsterdam Schiphol, Brussels, Frankfurt, Madrid, Munich, and Zurich) and noise charges at three (Frankfurt, Munich, and Zurich). The variation in the developments in the airport charges is marked. The revenues of some airports are characterized by an average increase between 2003 and 2007 (Amsterdam Schiphol: 18%, Paris Charles de Gaulle: 17%, London Gatwick: 18% and Madrid: 14%). However, certain other airports have had spectacular increases (Amsterdam Schiphol, security charges: 34%; Paris Charles de Gaulle, parking charges: 32%; Madrid, cargo charges: 98%). Increases at three airports were sharp (Brussels: 39%; Frankfurt: 34%; London Heathrow: 41%). The increases arise from the sharply increased passenger charges (Frankfurt (43%) and London Heathrow (57%)), landing charges (Brussels (45%) and London Heathrow (41%)) and security charges (Brussels (76%) and Frankfurt (817%)). At Zurich, the airport charges have remained much the same, because of a fall in the exchange rate of the Swiss Franc (with respect to the Euro) and an increase in the security charges. Munich differs from the other airports with a decrease in the revenues from airport charges between 2003 and 2007 of 33%. The passenger charges increased sharply (60%), but the even sharper decrease in the landing charges (- 82%) led

to a considerable overall decrease in the airport charges. At Frankfurt the noise charges decreased by a striking 61%.

The differences in changes in the revenues from airport charges between 2006 and 2007 were of course much lower. These vary from an increase of 11% (London Heathrow) to a decrease of 16% (Munich). The changes are mostly caused by the factors mentioned above.

3.2.3 Developments in terminal navigation charges

Some differences also appear in the developments in terminal navigation charges between 2003 and 2007 and 2006 and 2007. The terminal navigation charges between 2003 and 2007 increased steadily at several airports (Amsterdam Schiphol: 5%; Brussels: 2%; Paris Charles de Gaulle: 3%), whereas the increase at some other airports was sharper (Madrid: 14% and the London airports: 39%). In Germany and Switzerland, the terminal navigation charges decreased by 29% and 20% respectively between 2003 and 2007.

Developments between 2006 and 2007 provide further insight. In this period the terminal navigation charges in Germany increased by 11%, whereas at four other airports there was no or just a marginal increase (Amsterdam Schiphol and Brussels: 0%; Paris Charles de Gaulle: 1%; Madrid: 3%). Just as between 2003 and 2007, the increase between 2006 and 2007 at the London airports was the highest (18%), whereas at Zurich the terminal navigation charges decreased (-4%) as a result of the fall in the exchange rate of the Swiss Franc with respect to the Euro.

3.2.4 Developments in governmental taxes

While examining the developments in the government taxes, it is important to remember that there have been no governmental taxes at three airports, namely Brussels, Madrid, and Zurich. At the German airports a noise tax is applied; this has decreased slightly in the last few years (between 2003 and 2007: -11%, between 2006 and 2007: Frankfurt: -4% and Munich: -6%). On the other hand, the security charges at Frankfurt (as a part of the airport charges) increased sharply between 2003 and 2007. Between 2006 and 2007, however, the security charges at both Frankfurt and Munich decreased. Looking at the security charges and taxes together at the different airports one can conclude that, while the level of the charges differs, the revenues seem to stabilize at the airports. Exceptions to this observation are the sharp increase at Zurich (38%) and the decrease at Munich (-11%). In 2007, the air passenger tax (at the London airports) increased strikingly (in 2007, with respect to 2006: 101%). The increase with respect to 2003 is a little larger, but that was caused by exchange rate fluctuations of the Pound Sterling with respect to the Euro. The noise tax at Amsterdam Schiphol increased with respect to 2003 by 33%. As of 2005, alongside the noise tax another tax has been introduced to cover the costs of non-noise related activities. The increases in the noise tax and the other (non-noise related) tax between 2006 and 2007 were practically nil. Looking at the sum of noise charges and taxes, it appears that, just as in the case of the security charges and taxes, the levels of the revenues are stabilizing at most airports. Only at Frankfurt can a sharp decrease of the noise charges be seen (-58%). At Paris Charles de Gaulle a large part of the total revenues comes from governmental taxes. The security taxes (airport tax) increased by 9% between 2003 and 2007 and by 3% between 2006 and 2007. The noise tax increased by 37% between 2003 and 2007, but between 2006 and 2007 there was no change in the noise tax. The other taxes (civil aviation tax and solidarity tax) increased by

35% in the last year, because of the introduction of the solidarity tax. The increase in the total governmental taxes between 2003 and 2007 (21%) can largely be accounted for by the introduction of the solidarity tax.

3.2.5 The position of Amsterdam Schiphol

Table 3.3 shows that, with respect to most airports in the benchmark, Amsterdam Schiphol became more expensive (or less cheap) in the period between 2003 and 2006. This is not the case with respect to Frankfurt and Brussels; Frankfurt was more expensive than Amsterdam Schiphol in 2003 by 9% and in 2006 by 10%. Brussels was 27% cheaper than Amsterdam Schiphol in 2003 and 25% cheaper in 2006. On the other hand, Paris Charles de Gaulle was 15% more expensive in 2003, while this difference decreased to just 5% in 2006. London Gatwick (14%) and Madrid (38%) were already cheaper than Amsterdam Schiphol in 2003 and became even cheaper in 2006 (22% and 44% respectively). Munich (32%) and Zurich (13%) were more expensive than Amsterdam Schiphol in 2003, but were markedly cheaper than Amsterdam Schiphol in 2006 (in both cases by 10%). London Heathrow was 12% more expensive than Amsterdam Schiphol in both 2003 and in 2006.

Table 3.3 The (relative) differences between Amsterdam Schiphol and the other airports in terms of total calculated revenues (x € 1.000.000) based on the Schiphol selection for the summer of 2003, 2006 and 2007.

	2003		2006		2007	
	Revenues	Difference from AMS %	Revenues	Difference from AMS %	Revenues	Difference from AMS %
AMS	603		716		716	
BRU	430	-29	532	-26	575	-20
CDG	691	15	752	5	810	13
FRA	657	9	788	10	767	7
LGW	518	-14	560	-22	786	10
LHR	673	12	803	12	1,074	50
MAD	373	-38	403	-44	425	-41
MUC	797	32	644	-10	567	-21
ZRH	675	12	640	-11	666	-7

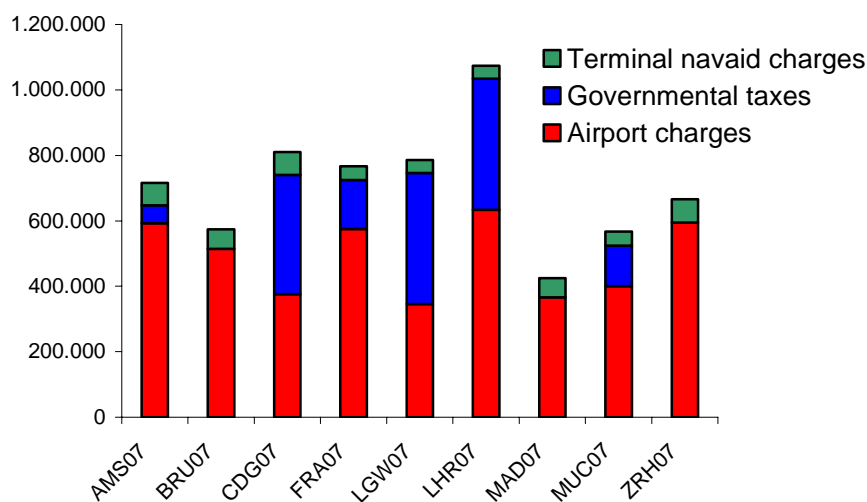
Comparison with 2007 is difficult, because of the change of the tariffs at Amsterdam Schiphol late in the year. Thus a decrease of revenues in 2007 with respect to 2006 at other airports has a positive influence on their competitive position with respect to Amsterdam Schiphol and an increase of the revenues at other airports has a negative influence on their competitive position with respect to Amsterdam Schiphol. In specific terms, the fact that the German airports became cheaper in 2007 had a positive influence on their competitive position with respect to Amsterdam Schiphol. Frankfurt is now 7% more expensive than Amsterdam Schiphol (compared with 10% in 2006) and Munich is 21% cheaper than Amsterdam Schiphol (compared with 10% in 2006). The other large competitors, Paris Charles de Gaulle and London Heathrow, were 13% and 50% respectively more expensive than Amsterdam Schiphol in the summer of 2007. In 2006, these figures were just 5% and 12%. Through the increase in the air passenger tax London Gatwick also became more expensive than Amsterdam Schiphol. Brussels (20%), Madrid

(41%), and Zurich (7%) were still cheaper than Amsterdam Schiphol, but because of slight tariff increases the differences were smaller than in 2006.

3.3 Graphs

The previous section is presented here graphically. Figure 3.2 shows the division between airport charges, terminal navigation charges, and governmental taxes in the summer of 2007. The figures for 2003 and 2006 can be found in appendix C. The highest airport charges were levied at Amsterdam Schiphol, Brussels, Frankfurt, London Heathrow, and Zurich. In contrast, there were no governmental taxes at Brussels and Zurich and they were at a reduced level at Amsterdam Schiphol and Frankfurt. Governmental taxes are the highest by far at Paris Charles de Gaulle and the London airports. At first sight differences in the terminal navigation charges seem slight, but a more detailed picture (figure 3.4) shows that there are some relative differences. The three categories are further differentiated in figures 3.3, 3.4, and 3.5 below.

Figure 3.2 Calculated revenues per category (x € 1,000) for the summer of 2007 for the Schiphol selection



In figure 3.3, the revenues from airport charges are divided into charges for landing, parking, passengers, cargo, noise, and security. The figure shows that at Amsterdam Schiphol, Brussels, and Zurich a considerable share of the revenues from airport charges comes from security charges. There are substantial differences in the landing charges as well. Amsterdam Schiphol has the highest landing charges, while at Brussels, Frankfurt, London Gatwick, and Munich these charges constitute just a small part of the airport charges. At Brussels, Frankfurt, and Munich the passenger charges are, however, relatively high. London Heathrow also has high passenger charges. The influence of parking, cargo, and noise charges has been limited. Only at Zurich do the noise charges constitute a substantial share of the total airport charges.

Figure 3.4 provides an overview of the revenues from terminal navigation charges by airport in the summer of 2007. The terminal navigation charges at Frankfurt, the London airports, and Munich are slightly lower than those at the other airports. The highest terminal navigation charges are at Zurich, but they are also high at Amsterdam Schiphol and Paris Charles de Gaulle.

Brussels and Madrid take an intermediate position. The share of the terminal navigation charges in the total revenues is, however, relatively small for all airports.

Figure 3.3 Calculated revenues from airport charges (x € 1,000) according to subcategory per airport for the summer of 2007 for the Schiphol selection

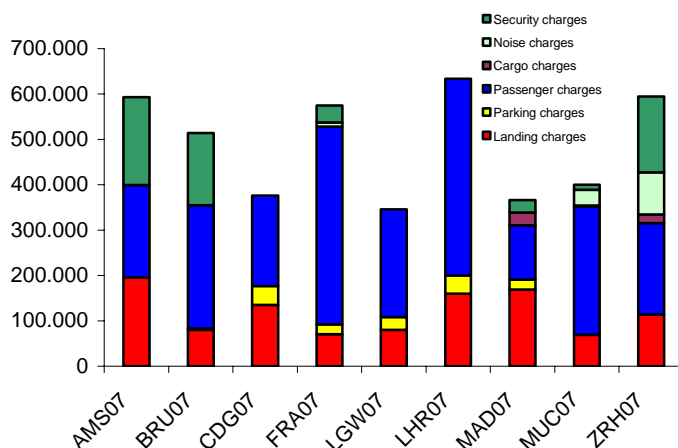


Figure 3.4 Calculated revenues from terminal navigation charges (x € 1,000) per airport in the summer of 2007 for the Schiphol selection

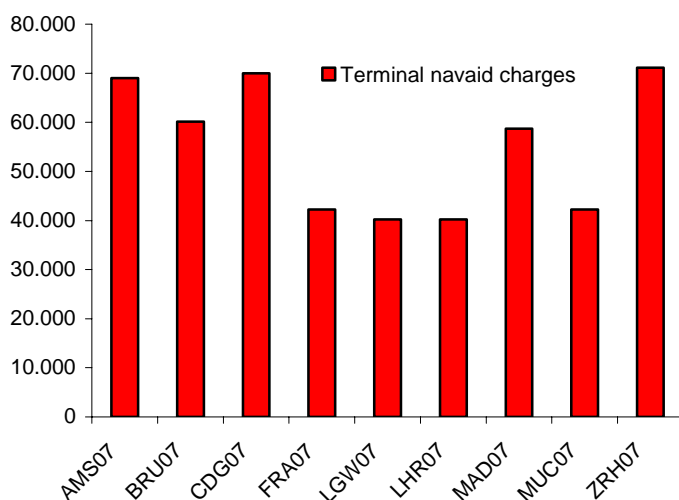
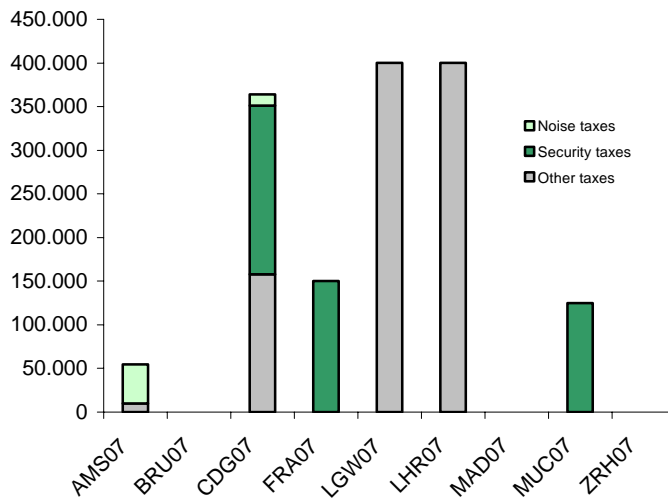


Figure 3.5 provides an overview of the governmental taxes by airport in the summer of 2007. The graph makes clear that, as mentioned above, no governmental taxes are levied at Brussels, Madrid or Zurich. The total governmental taxes are the highest at Paris Charles de Gaulle and at the London airports. At Paris Charles de Gaulle, Frankfurt, and Munich considerable security taxes are charged. Noise taxes are only levied at Amsterdam Schiphol and Paris Charles de Gaulle. Compared with Frankfurt, Munich, and particularly with Paris Charles de Gaulle and the London airports, the level of total governmental taxes at Amsterdam Schiphol is rather low.

Figure 3.5 Calculated revenues from governmental taxes (x € 1,000) according to subcategory per airport in the summer of 2007 for the Schiphol selection



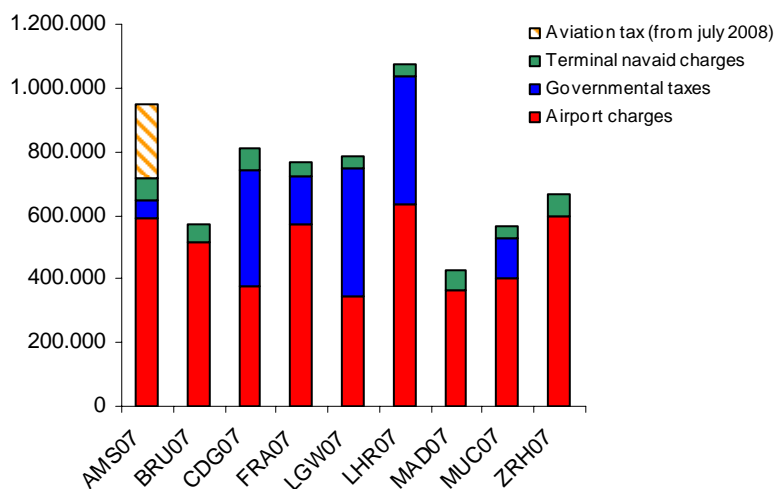
In appendix D two graphs concerning security and noise can be found. The first graph contains the security charges, other airport charges, security and other governmental taxes. The second graph contains the noise charges, other airport charges, noise taxes, and other governmental taxes. These graphs show whether the airports impose security charges or taxes and noise charges or taxes and what share they have in the total airport charges and governmental taxes.

4 The consequences of the aviation tax

According to our calculations, the total revenues from airport charges, terminal navigation charges, and governmental taxes in the summer of 2007 at Amsterdam Schiphol amounted to € 716 million (see table 3.1). That figure makes Amsterdam Schiphol cheaper than Paris Charles de Gaulle, Frankfurt, London Gatwick, and London Heathrow. The aviation tax becomes effective on 1st July 2008. An indication of the impact of the aviation tax was obtained by calculating the total revenues from the aviation tax for Amsterdam Schiphol (based on the Schiphol selection) and adding them up to the total revenues in the summer of 2007 (€ 716 million). The calculations show that the total revenues will then increase by more than 30%, so that only London Heathrow would still be more expensive. Figure 4.1 shows this. The additional revenues from the aviation tax will amount to approximately € 230 million. This is striking, because the additional revenues aimed at were € 350 million. Factors that may contribute to this difference are that the Schiphol selection represents only 98% of the total number of flights at Amsterdam Schiphol and that the € 350 million aimed at is the sum of the revenues of all Dutch airports, as a result of which the real revenues will be slightly higher. The number of aircraft movements in 2008 will probably be higher than in 2006, which also contributes to the fact that € 230 million is an underestimate. Moreover, the assumption of the proportions of O/D passengers on European (60%) and intercontinental flights (40%) also influences the aforesaid difference.

Finally, one must also bear in mind that other tariff changes occurring after the summer of 2007 at Amsterdam Schiphol and the other airports in the benchmark have not been taken into account.

Figure 4.1 Calculated revenues (aviation tax included) per category (x € 1,000) for the summer of 2007 for the Schiphol selection'



5 Differentiations in airport charges and governmental taxes

5.1 Overview of airport charges and governmental taxes

If we wish to account for the various differentiations of both the airport charges and the governmental taxes, it is important to understand the bases that apply at the different airports. These tariff principles are shown in appendix E. In the following sections each differentiation is considered separately.

5.1.1 Landing charges

There are some differences with regard to landing charges. At some airports they are only applied to a landing (Paris Charles de Gaulle, the London airports, Madrid, and Zurich), whereas at other airports charges are applied to each landing and take-off (Amsterdam Schiphol, Brussels, Frankfurt, and Munich). At every airport the maximum take-off weight (MTOW) forms the basis for the landing charges; there are, however, several other differentiations. Many airports differentiate on noise production (Amsterdam Schiphol, Brussels, Paris Charles de Gaulle, the London airports, and Munich). At some airports (Amsterdam Schiphol, Brussels, and Paris Charles de Gaulle) a reduced tariff is applied to one noise category and so a discount on the base rate is applied to the aircraft types belonging to that category. Furthermore, the categories at the different airports differ markedly; this differentiation is discussed in section 5.2.3. At the airports where there is no differentiation by noise category, there will often be a noise charge (Frankfurt and Zurich). A noise charge applies also at Munich. Further differentiations apply according to the part of the day (day/night) (Amsterdam Schiphol, Brussels, Madrid and Munich), type of plane (freight/passengers) (Amsterdam Schiphol and Paris Charles de Gaulle), and emission (the London airports and Zurich). Finally there are some differentiations that are specific to certain airports. Examples are the distinction between disconnected and connected handling at Amsterdam Schiphol, the fixed lightning charges at Paris Charles de Gaulle, the additional variable charges at Frankfurt, and a peak/off-peak distinction at the London airports.

5.1.2 Parking charges

The basis for the parking charges is generally the MTOW; only at Frankfurt is aircraft size used as a basis for parking charges. At most airports some free parking hours are allowed (Amsterdam Schiphol, Brussels, Madrid, Munich, and Zurich). The number varies from the first three hours at Madrid to the first eight hours at Brussels (for cargo aircraft). At a few airports parking by night is considerably cheaper than parking by day (Paris Charles de Gaulle and Frankfurt). This is possibly because at these airports there is no free parking period. The London airports use a peak/off-peak division for parking charges and at Brussels and Madrid a boarding bridge charge is levied that has been treated as parking charges in the calculations.

5.1.3 Passenger charges

The passenger charges are levied at all airports on departing passengers. Two differentiations are applied: one related to type of passenger (O/D or transfer); the other to the passenger's destination. Some airports use a mix of these two differentiations (Paris Charles de Gaulle, Frankfurt and Munich), while others only distinguish between O/D and transfer (Amsterdam Schiphol, Brussels and Zurich) or between destinations (the London airports and Madrid). These differentiations are explained in more detail in section 5.2.

5.1.4 Cargo charges

Cargo charges are only levied at Madrid and Zurich. At Madrid a fixed tariff per kilogram of shipped cargo (incoming as well as outgoing) is applied. At Zurich the tariff is only applied to incoming cargo (there is a distinction between transfer cargo and unloaded cargo).

5.1.5 Noise charges

Noise charges are, in contrast with noise taxes, a component of the airport charges. At Frankfurt, Munich, and Zurich noise charges are charged; in all three cases these have been based on noise categories. At Frankfurt and Zurich there is also a surcharge on landing and taking off at night.

5.1.6 Security charges

Security charges are applied at a large number of airports. These charges are part of the airport charges and should not be confused with the security taxes, which are a governmental tax. No security charges are applied at Paris Charles de Gaulle or the London airports. However, at the London airports security costs are financed from a part of the revenues of the passenger charges. At three airports O/D passengers and transfer passengers are distinguished (Amsterdam Schiphol, Brussels, and Zurich), at two airports different tariffs per departing passenger and per 100 kilograms incoming/outgoing shipped cargo are used (Frankfurt and Munich) and at Madrid distinctions are made between destinations. At all airports where security charges are applied, a tariff per departing passenger is levied.

5.1.7 Noise taxes

Noise taxes are governmental taxes and are only levied at Amsterdam Schiphol (for landing) and at Paris Charles de Gaulle (for take-off). Both are based on a fixed unit rate, which is multiplied by a formula, and based on certified noise production (Amsterdam Schiphol) or on the noise category to which the aircraft type belongs (Paris Charles de Gaulle).

5.1.8 Security taxes

Security taxes are levied as part of the governmental taxes at Paris Charles de Gaulle and on the two German airports. At Frankfurt and Munich these are determined per departing passenger and at Paris Charles de Gaulle different tariffs are used per departing passenger and per tonne of shipped cargo.

5.1.9 Other taxes

Other taxes forming part of the governmental taxes are levied at Amsterdam Schiphol, Paris Charles de Gaulle, and the London airports. The basis at Amsterdam Schiphol is the MTOW, which is multiplied by a certain factor to determine the 'governmental compensation levy'. This tax is intended to cover non-noise related costs. In the 'civil aviation tax' at Paris Charles de Gaulle, meant to cover costs concerning control and air operations, tariffs per different destination (by departing passenger) and per tonne of shipped cargo are used. In the 'solidarity tax', used to finance medicines for developing countries, and also levied per departing passenger at Paris Charles de Gaulle, differentiations are made between economy and business class and between destinations. The 'air passenger tax' at the London airports is levied per departing passenger and distinction is made between economy and business class and between destinations.

5.2 Differentiations

The previous section covers the tariff principles of the different airport charges and governmental taxes. In this section the most important differentiations in the airport charges and governmental taxes are discussed in detail and illustrated with graphs. Tables 5.1 and 5.2 provide an overview of the differentiations applied to the various airport charges and/or governmental taxes at the different airports in the summer of 2007.

Table 5.1 Overview of the differentiations used at airports where an aeronautical charge and/or governmental tax were levied in the summer of 2007

	O/D and transfer	Destination	Noise production
Amsterdam Schiphol	- Passenger charges - Security charges		- Landing charges - Noise taxes
Brussels	- Passenger charges - Security charges		- Landing charges
Paris Charles de Gaulle	- Passenger charges	- Passenger charges	- Landing charges - Noise taxes
Frankfurt	- Passenger charges	- Passenger charges	- Noise charges
London Gatwick		- Passenger charges	- Landing charges
London Heathrow		- Passenger charges	- Landing charges
Madrid		- Passenger charges - Security charges	
Munich	- Passenger charges	- Passenger charges	- Landing charges - Noise charges
Zurich	- Passenger charges - Security charges		- Noise charges

Table 5.2 Overview of the differentiations used at airports where an aeronautical charge and/or governmental tax were levied in the summer of 2007

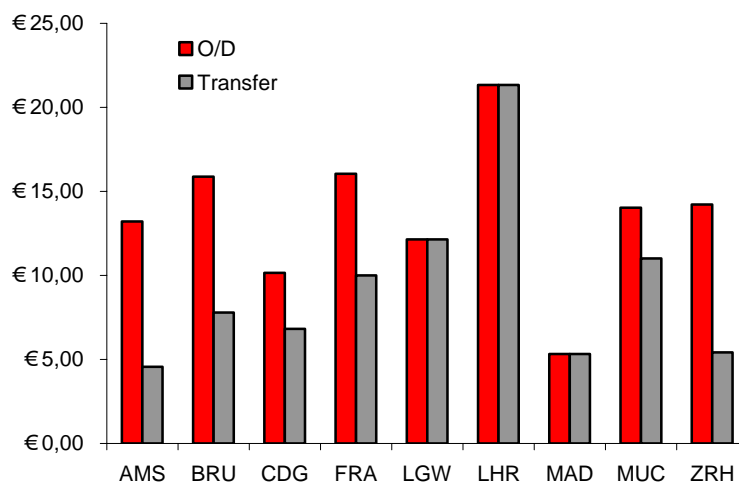
	Freight and passenger	Day and night	Peak and off-peak
Amsterdam Schiphol	- Landing charges	- Landing charges	
Brussels	- Parking charges	- Landing charges	
Paris Charles de Gaulle	- Landing charges - Security taxes	- Parking charges - Noise taxes	
Frankfurt	- Security charges	- Parking charges - Noise charges	
London Gatwick			- Landing charges - Parking charges
London Heathrow			- Landing charges - Parking charges
Madrid		- Landing charges - Parking charges	
Munich	- Security charges	- Landing charges	
Zurich		- Noise charges	

5.2.1 O/D and transfer

Figure 5.1 clarifies the differences between the tariffs that airports use for O/D and transfer passengers in the passenger charges. If an airport also differentiates between destinations, the average tariff has been used in figure 5.1. The graph shows that there is no difference at the London airports or Madrid between the tariffs for O/D passengers and transfer passengers. Large differences appear at Amsterdam Schiphol, Zurich, and Brussels (tariffs for transfer passengers are 66%, 62%, and 51% lower than those for O/D passengers) and smaller differences at Frankfurt, Paris Charles de Gaulle, and Munich (38%, 33% and 22%).

At some airports there is also a distinction made between O/D and transfer passengers in the security charges. This is the case at the airports that already show the most extreme differences in passenger charges, namely Amsterdam Schiphol, Zurich, and Brussels. The tariffs for transfer passengers are lower than the tariffs for O/D passengers by 4% (Brussels), 31% (Zurich), and 68% (Amsterdam Schiphol) respectively.

Figure 5.1 Overview of the O/D and transfer differentiation in passenger charges for the summer of 2007 (tariff per departing passenger)



5.2.2 Destination

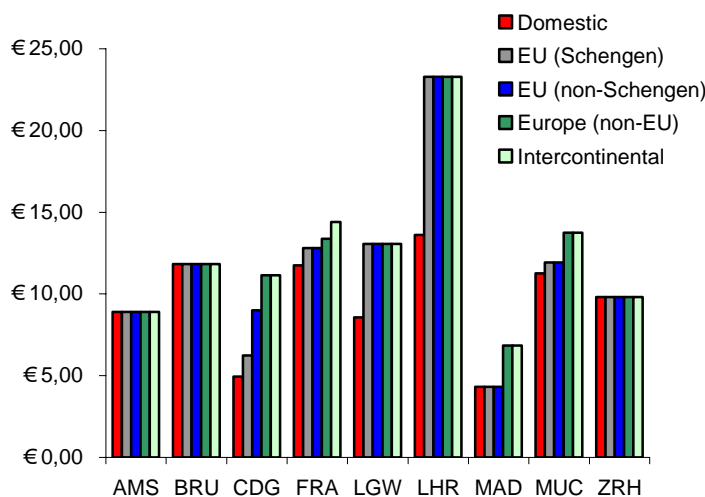
Figure 5.2 presents the tariffs by destination for the passenger charges for each airport. At Amsterdam Schiphol, Brussels, and Zurich there is no differentiation by destination. These are precisely the airports at which the differences between the tariffs for O/D and transfer passengers are the largest. At the other airports we see several differentiations between destinations. At Paris Charles de Gaulle (domestic, EU (Schengen), Europe (non-Schengen) and intercontinental) and Frankfurt (domestic, EU, Europe (non-EU), and intercontinental) four groups of destinations are used, whereas at Munich (domestic, EU, and non-EU) three groups of destinations and at the London airports (domestic and international) and Madrid (EU and non-EU) two groups are distinguished. At some airports additional tariffs for certain areas are still in use (Ireland for the London airports, French overseas territories and departments for Paris Charles de Gaulle). Moreover, Switzerland, Norway, and Iceland are treated as EU-members at both Frankfurt and Munich.

Differentiations between destinations are mainly used in the passenger charges, but they are also used in the security charges at Madrid, which means that a lower tariff is used for domestic flights to and/or from the Canary Islands and the Balearics and for charter flights.

Finally, at both Paris Charles de Gaulle and the London airports, distinctions between destinations are also made in the 'other governmental taxes'. In the 'civil aviation tax' at Paris Charles de Gaulle a tariff of € 3.92 is applied to the European Union, Norway, Iceland, Switzerland, and the French overseas territories and departments, whereas a tariff of € 7.04 is levied for the remaining countries. In the 'solidarity tax' a distinction between passengers who travel to the European Union (economy: € 1.00, business: € 10.00) and passengers who travel to other countries (economy: € 4.00, business: € 40.00) is made. In the 'air passenger tax' at the London airports differentiations are also made between destinations, for domestic passengers, and passengers who travel to the EU, Iceland, Norway, Switzerland, Albania, Herzegovina, Macedonia or Kosovo. A tax of € 14.77 (economy class) or € 29.55 (business class) is levied,

whereas for passengers who travel to other countries € 59.10 (economy class) or € 118.20 (business class) applies.

Figure 5.2 Overview of the destination differentiation in passenger charges for the summer of 2007 (tariff per departing passenger)



5.2.3 Noise production

A noise categorization is used at all airports (with the exception of Madrid) for one or two types of airport charges and/or governmental taxes. These categorizations vary in number from two (Munich, landing charges) to eleven (Munich, noise charges). An overview of all the categories can be found in appendix F. The number of categories for landing charges varies from two (Munich) to six (Paris Charles de Gaulle). However, it must be noted that at Paris Charles de Gaulle all except two aircraft types included in the Schiphol selection belong to the same category. At Munich all except four aircraft types also belong to the same category. At the London airports there are three categories and most aircraft types belong to the same one. At Amsterdam Schiphol (three categories) and Brussels (four categories) the noise differentiation seems to be the most efficient, because the aircraft types are divided more evenly over all categories. The noise charges at Frankfurt (seven categories), Munich (eleven categories), and Zurich (five categories) also seem to be efficient, although at Frankfurt and Munich there are no aircraft types from the Schiphol selection in two and one categories respectively. For the noise taxes at Paris Charles de Gaulle the same categorization is used as for the landing charges and so does not lead to a sharp distinction between the different aircraft types. One must remember that the above is all based on the Schiphol selection. The reality may be different to some extent, because at other airports the division in aircraft movements between the different aircraft types probably differs from the division at Amsterdam Schiphol. In appendix F the different categorizations are presented for the aircraft types that have been included in the benchmark.

Besides the content of the noise categories, an analysis of the factors and the level of the surcharges for the different categories is also relevant. At every airport where noise categorizations are used, the landing charges are multiplied by a fixed factor that depends on the category to which the aircraft type belongs. The levels of the factors at Amsterdam Schiphol, Brussels, and the London airports are fairly similar. At Amsterdam Schiphol the factors vary

from 1.3 for the noisiest category to 0.9 for the quietest. At the London airports the factors run from 1.5 to 0.9 and at Brussels from 1.7 to 0.9. At Paris Charles de Gaulle the noise system is similar to the airports cited above, but because almost all aircraft types included in the Schiphol selection belong to category 5a, the categorization seems to be ineffective. The factors of the two functional categories (based on the Schiphol selection) vary from 1.0 to 0.85. At Munich a factor (1.6 by day and 1.75 by night) applies to aircraft types that have not been included in the bonus list. In comparing the factors quoted, one has to remember that the absolute influence of the factors depends to a large extent on the level of the landing charges. It is possible that a high factor is lower than a low factor in absolute terms.

Fixed surcharges per movement or per Landing/Take-off (LTO) are used to determine the noise charges based on noise categories. At Frankfurt these surcharges range from € 0 to € 355 per movement by day and from € 34 to € 1200 per movement by night. At Munich the surcharge is per LTO and ranges from € 56 to € 340. The noise charge at Zurich varies by day from € 0 to € 610.60 per LTO and by night from € 30.53 to € 5414.40 per start and from € 30.53 to € 244.24 per landing. Factors are applied to the noise tax at Paris Charles de Gaulle. A factor of 2.0 is applied to the two aircraft types that belong to category 4, while for the other aircraft types no factor is applied. For both categories these factors are multiplied by six for night flying.

5.2.4 Freight and passenger

There are no differences between the tariffs for cargo aircraft and passenger aircraft at most airports. However, at Amsterdam Schiphol and Paris Charles de Gaulle there is a difference in the landing charges. At Amsterdam Schiphol cargo aircraft receive a discount of approximately 48% and at Paris Charles de Gaulle a discount of approximately 14%. For the security taxes at Paris Charles de Gaulle and the security charges at Frankfurt and Munich there are also separate tariffs for cargo (per tonne cargo) and passenger aircraft (per departing passenger).

5.2.5 Day and night

Day and night is also an important differentiation aspect. At four airports there are different day and night tariffs for landing charges (Amsterdam Schiphol, Brussels, Madrid, and Munich). However, the content of the day and night differentiations in the tariffs differs widely. At Brussels and Madrid the night tariff applied is more than twice the day tariff, whereas at Amsterdam Schiphol (landing: 27% higher; start: 40% higher) and Munich (14%-21% higher) the differences between day and night tariffs are smaller. Furthermore, at Paris Charles de Gaulle, Frankfurt, and Madrid an adjusted tariff is used for parking at night. At Paris Charles de Gaulle and Frankfurt tariffs per hour are a little lower at night than in the day, while at Madrid the first six hours' parking are free (provided the aircraft leaves next morning by 7:59) hours. Finally, at Frankfurt and Zurich different day and night tariffs are used for noise charges. On top of the standard noise charges, an extra amount also has to be paid for landing or taking off at night. At both airports airlines pay different surcharges for certain periods in the night and at Zurich there is a difference between a landing and a start fee. A lower tariff is used for a landing than for a start.

5.2.6 Peak and off-peak

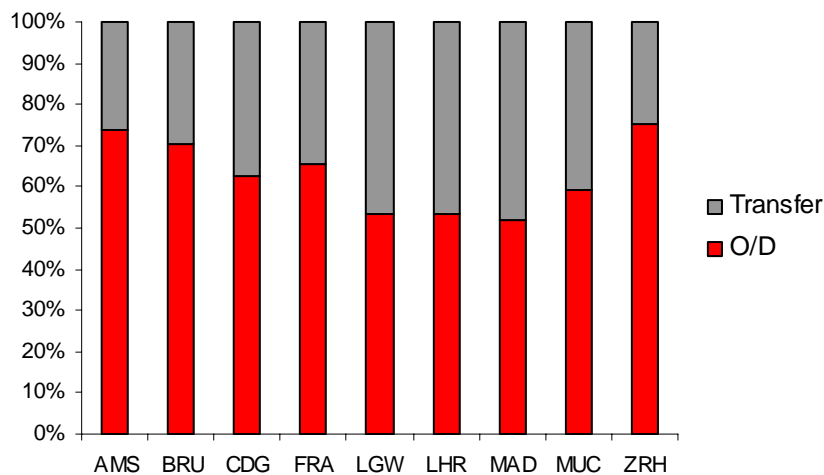
Only at the London airports are peak and off-peak differentiated. Certain hours have been defined as peak hours for both landing and parking charges. However, for landing charges this only applies to London Gatwick. At London Heathrow as from 2007 no distinction has been made between peak and off-peak tariffs for landing charges. The standard tariff is only multiplied by 2.5 at London Heathrow for a period of three and a half hours in the night. At both airports the standard tariff for parking charges is multiplied by 3 for a substantial part of the day.

5.3 Differentiations in total revenues

An examination is also relevant of the impact of the differentiations described for the total calculated revenues based on the Schiphol selection. In this section the total revenues from passenger charges are divided according to O/D and transfer passengers and type of destination. The total revenues from landing charges to successively the noise categories (applied at Amsterdam Schiphol), European and intercontinental flights, and passenger and cargo aircraft have also been split up. It must again be emphasized that the figures presented are based on the Schiphol selection and therefore do not involve real revenues. However, the graphs provide a view of the proportions of the revenues in relation to the different segments at the airports.

5.3.1 Passenger charges

Figure 5.3 Calculated relative revenues from passenger charges for the summer of 2007 based on the Schiphol selection for O/D and transfer passengers

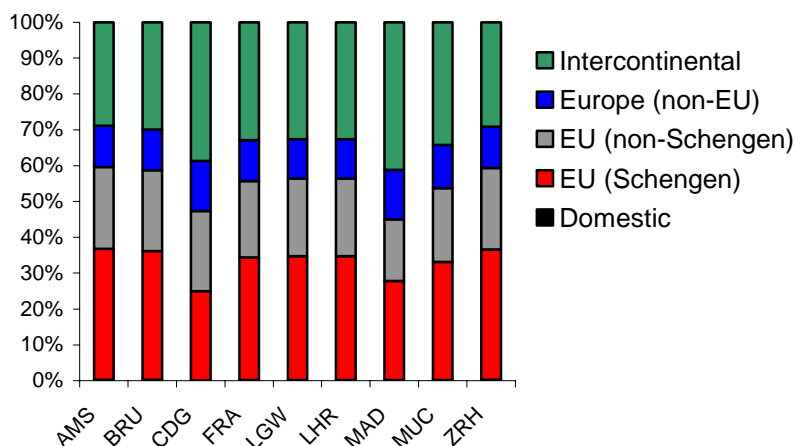


If one looks at the differentiation between O/D and transfer passengers in the passenger charges (figure 5.3) then it is noticeable that, once again, Amsterdam Schiphol seems relatively cheap for transfer passengers. Of the total revenues 73.6% comes from O/D passengers. At Brussels (70.1%), Frankfurt (65.6%), and Zurich (75.2%) a large part of the revenues from passenger charges is also received from the O/D segment. In contrast, at the London airports (53.6%) and Madrid (more than 52.0%) a relatively small part of the passenger charges is received from the O/D segment. This difference harmonizes with the fact that the London airports and Madrid do

not distinguish between O/D and transfer passengers. Paris Charles de Gaulle and Munich are somewhere in between the groups mentioned above.

Figure 5.4 provides an overview of the differentiation at the different airports according to type of destination. The largest deviations are at Paris Charles de Gaulle and Madrid, where the revenues from the passenger charges concerning intercontinental flights are relatively high (38.7% and 41.1%). At the other airports the intercontinental part amounts to between 28.8% (Amsterdam Schiphol) and 34.2% (Munich). Amsterdam Schiphol (28.8%), Brussels (29.9%), and Zurich (29.1%) receive the least from the intercontinental segment. Looking at the passenger charges from the EU (Schengen) segment, Paris Charles de Gaulle (24.8%) and Madrid (27.6%) receive by far the least amount. At the other airports this share varies from 32.9% (Munich) to 36.5% (Amsterdam Schiphol). In the other categories the differences between the cheapest and most expensive airports are no larger than 3% or 4%. Finally, it is noteworthy that the domestic category disappears in figure 5.4, because there is very little domestic air traffic in the Netherlands (the calculated revenues are based on traffic data from Amsterdam Schiphol). It is, however, important to remember that at some airports (Paris Charles de Gaulle, Frankfurt, the London airports, Madrid (partly), and Munich) other tariffs are applied for domestic flights.

Figure 5.4 Calculated relative revenues from passenger charges for the summer of 2007 based on the Schiphol selection according to five different types of destination



5.3.2 Landing charges

In this section the three noise categories and the surcharge percentages applied at Amsterdam Schiphol are compared with the average surcharge percentages applied at the other airports (for the same noise categories). The percentages, as mentioned in table 5.3, are the averages of the percentages per aircraft type. Every aircraft type has been included in the calculation of the average percentage in proportion to the yearly movements. Logically, the percentages for Amsterdam Schiphol are equal to the real percentages. Aircraft types that belong to category A, the most noisy category, have a surcharge of 30%; for aircraft types that belong to category B no surcharge is applied and for aircraft types that belong to category C a discount of 10% is applied. From table 5.3 one can conclude that the noise categorization at Brussels is the most similar to the noise categorization at Amsterdam Schiphol. At the London airports, Frankfurt, and Munich

(landing charges) the same trends can be seen (for aircraft types belonging to category A at Amsterdam Schiphol the highest surcharge percentages are applied), but the differences between the categories are not as great as at Amsterdam Schiphol. As mentioned above, at Paris Charles de Gaulle almost all aircraft types from the Schiphol selection belong to the same category so the table reveals little or no difference between the different categories for this airport. At Frankfurt, Munich, and Zurich the percentages represent the level of the noise charges with respect to the landing charges. Consequently, 100% means that the noise charges are as high as the landing charges. At Zurich, and especially at Munich, we see a trend that, for aircraft types that belong to category A at Amsterdam Schiphol, the lowest surcharge percentage is applied. At first sight this seems strange, but the explanation lies in the fact that the differentiations in landing charges are greater than the differentiations in noise charges. As a result the landing charges of aircraft types that belong to category A are often very high so that the noise charges are relatively low. In absolute terms, these noise charges are often higher than the noise charges for the aircraft types that belong to category C.

Table 5.3 Surcharge percentages (based on the standard landing charges) for all aircraft movements according to the three Schiphol noise categories

	Category A %	Category B %	Category C %
Amsterdam Schiphol	30.00	0.00	-10.00
Brussels	20.31	8.08	-8.84
Paris Charles de Gaulle	-14.34	-15.00	-15.00
London Heathrow/Gatwick	1.21	-0.15	-9.33
Frankfurt	12.60	3.85	1.18
Munich (landing charges)	3.62	0.32	0.00
Munich (noise charges)	65.67	76.44	88.11
Zurich	89.09	100.62	92.34

It is also important to consider the division of the revenues between intercontinental (ICA) and European flights (EUR). Figure 5.5 shows that the share of ICA flights in the total revenues at the London airports (35.1% and 36.2%) is considerably smaller than at the other airports. The revenues of ICA flights at Brussels and Frankfurt are also quite low (64.0% and 62.6%). By far the largest part of the revenues from the landing charges comes from ICA flights at Amsterdam Schiphol (71.2%), Paris Charles de Gaulle (70.6%), Munich (72.1%), and especially Madrid (79.9%) and Zurich (74.7%). The results for the London airports are logical, because of the extensive local market and, possibly because of the coming shortage of physical capacity, these airports aim especially at large aircraft types and ICA flights. The London airports therefore use relatively high tariffs for smaller aircraft types to discourage airlines from using them.

Finally, figure 5.6 shows us the revenues from landing charges for passenger and cargo aircraft. It becomes clear that the share of cargo aircraft in the total landing charges are the highest at Madrid (22.6 %), Munich (21.9%), and Zurich (19.4%). At the London airports the share in the total revenues from landing charges of cargo aircraft is relatively low (7.% and 8.4% respectively), which implies that, with respect to passenger aircraft, flying with cargo aircraft at both London Gatwick and London Heathrow is relatively cheap. Besides the London airports, Amsterdam Schiphol (12%) has the lowest proportion of revenues from landing charges for the cargo segment. One must remember that the real revenues of cargo aircraft at Amsterdam Schiphol

and/or at the London airports can be higher than the real revenues at the airports at which cargo aircraft have higher relative revenues. The real revenues are concerned not only with the share of cargo aircraft in the total landing charges, but also with the real level of the landing charges.

Figure 5.5 Calculated relative revenues from passenger charges for the summer of 2007 based on the Schiphol selection according to European and intercontinental flights

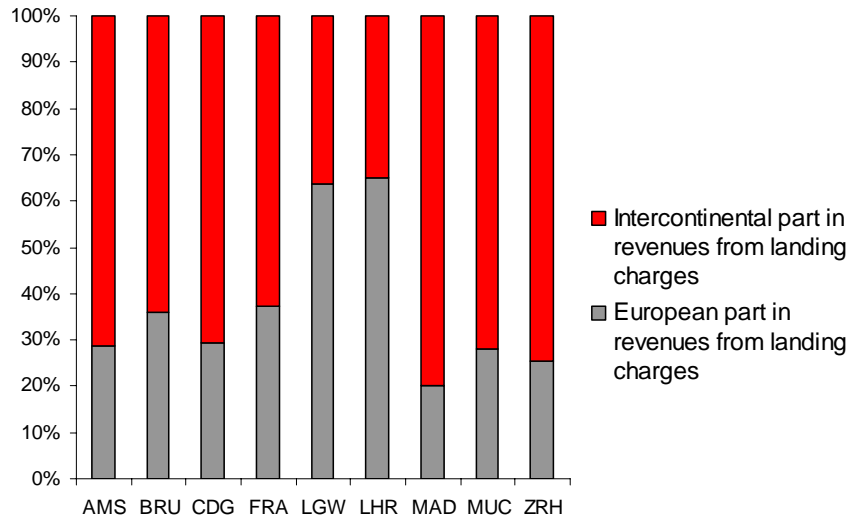
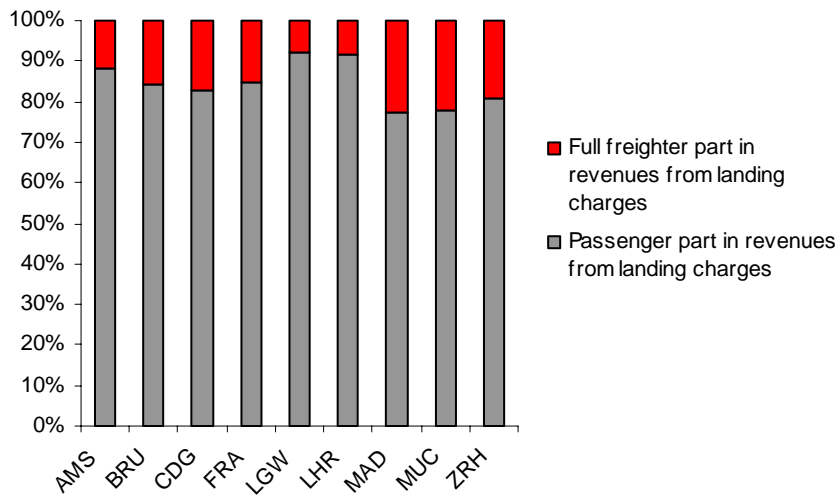


Figure 5.6 Calculated relative revenues from passenger charges for the summer of 2007 based on the Schiphol selection according to full freighter and passenger flights



6 Revenues for three aircraft types

Table 6.1 Calculated revenues (in €) per turnaround for the summer of 2007 based on the Schiphol selection

	AMS07	BRU07	CDG07	FRA07	LGW07	LHR07	MAD07	MUC07	ZRH07
Boeing 747-400MC									
Landing charges	4,899	966	2,665	1,212	387	777	4,064	1,328	2,385
Parking charges		37	1,172	305	656	940	364		
Passenger charges	1,785	2,496	2,374	6,156	2,616	4,666	1,522	2,983	1,793
Cargo charges							1,090		740
Security charges	1,686	1,596		466			280		1,603
Noise charges				375				292	1,397
Airport charges	8,370	5,094	6,212	8,514	3,660	6,383	7,320	4,603	7,918
Terminal navigation charges	541	724	1,241	451	554	554	1,041	451	932
Security taxes			1,951	1,511				1,257	
Noise taxes	689		91						
Other taxes	198		2,226		5,732	5,732			
Governmental taxes	887		4,267	1,511	5,732	5,732		1,257	
Total revenues	9,798	5,818	11,720	10,476	9,945	12,669	8,362	6,311	8,851
Boeing 737-800									
Landing charges	714	403	502	265	391	783	538	255	422
Parking charges		13	182	113	71	103	107		
Passenger charges	1,186	1,563	1,037	2,158	1,419	2,535	619	1,553	1,173
Cargo charges							8		6
Security charges	1,132	879		189			153		943
Noise charges				6				168	417
Airport charges	3,032	2,858	1,721	2,731	1,881	3,422	1,425	1,976	2,961
Terminal navigation charges	405	302	282	198	192	192	236	198	320
Security taxes			1,064	825				687	
Noise taxes	185		63						
Other taxes	38		813		2,228	2,228			
Governmental taxes	223		1,940	825	2,228	2,228		687	
Total revenues	3,660	3,161	3,943	3,755	4,300	5,841	1,661	2,861	3,280
Fokker 70									
Landing charges	254	141	278	130	332	684	221	126	198
Parking charges		0	2	18	33	48	3		
Passenger charges	551	726	458	1,013	375	806	262	703	545
Cargo charges							0		0
Security charges	521	408		88			71		438
Noise charges				1				110	175
Airport charges	1,325	1,275	738	1,249	739	1,538	557	938	1,356
Terminal navigation charges	184	106	150	140	95	95	126	140	203
Security taxes			494	383				319	
Noise taxes	128		39						
Other taxes	19		310		741	741			
Governmental taxes	147		843	383	741	741		319	
Total revenues	1,656	1,381	1,731	1,772	1,576	2,374	684	1,397	1,559

In table 6.1 the calculated revenues for a turnaround (arrival and departure) are presented for three aircraft types (selected by DGTL) for the summer of 2007. The tables for the years 2003 and 2006 appear in appendix G. The revenues presented are average revenues in which day/night shares and shares of certain destination regions have been taken into account. The analysis has concentrated on a large, a medium, and a small aircraft type, which taken together account for more than 19% of all flights at Amsterdam Schiphol.

We can see from the separate columns that London Heathrow has the highest revenues for all aircraft types. The differences are especially large for the medium (Boeing 737-800) and the small (Fokker 70) aircraft types. For the large (Boeing 747-400MC) aircraft type the differences are smaller. Paris Charles de Gaulle also has particularly high revenues for the Boeing 747-400MC. Brussels and Munich have the lowest revenues so that, in absolutely terms, these airports are attractive for large aircraft types. The revenues for the Boeing 737-800 are, with the exception of London Heathrow, fairly similar. The only other exception is Madrid, where very low revenues are applied to this aircraft type. The same picture emerges for the Fokker 70: revenues are high at London Heathrow, low at Madrid, and somewhere in between at the other airports.

7 Background information about airport charges and governmental taxes

Questionnaires were sent out to contacts in all the countries included in the benchmark to obtain a more detailed view of the security charges and taxes, noise charges and taxes, terminal navigation charges, and other taxes. The results of these questionnaires are discussed later in this chapter. In this chapter, in contrast with the previous chapters, the real revenues are presented (and not the revenues based on the Schiphol selection). Differences may therefore appear between the revenues mentioned in this chapter and those in earlier chapters.

7.1 Security charges and taxes

The questionnaire concerning the security charges and taxes includes the following questions:

1. What is the purpose of the charge or tax?
2. What is the basis for the calculation of the security charges or taxes?
3. What is the level of the security charges or taxes per unit?
4. How much are the total revenues per year from the security charges or taxes?
5. Which party collects the charge or tax?
6. Which party receives the charge or tax?
7. What cost components are financed with the revenues?
8. How much are the total security costs per year?
9. Are all security costs covered by the revenues?
10. If not, how is the part that is not covered taken care of?

In table 7.1 an overview is given of the security charges and taxes at Amsterdam Schiphol, Brussels, Madrid, and Zurich. No information regarding the security charges and taxes has been received from Paris Charles de Gaulle, Frankfurt or Munich. The aim of the charges and taxes at Amsterdam Schiphol, Brussels, Madrid, and Zurich is to finance the costs resulting from the security activities. A fixed amount has to be paid per departing passenger. At Amsterdam Schiphol the difference between the tariff for O/D and transfer passengers is the largest (O/D: € 12.78 and transfer: € 4.11). This difference at Brussels (€ 6.57 and € 6.29) and Zurich (€ 8.85 and € 6.72) is small. At Madrid there is no distinction between types of passenger. Furthermore, in comparison with the other airports, the tariff is low (€ 1.26). However, at Madrid a distinction is made according to type of destination. For passengers on domestic flights who travel to and/or from the Canary Islands or the Balearics, a reduced tariff (€ 0.19, € 0.63 or € 1.07) is paid. One must remember that, after the summer of 2007, the tariffs were modified at Amsterdam Schiphol (€ 10.00 and € 6.07), Brussels (€ 7.52 and € 7.24), and Zurich (€ 9.46 and € 6.72). The total security revenues at Amsterdam Schiphol are by far the highest (estimated at € 207.6 million). The revenues at Brussels (€ 65.6 million (2006)), Madrid (€ 31.2 million (up to and including November)) and Zurich (€ 76.3 million) are less than half those at Amsterdam Schiphol. At all four airports the revenues are received by the airports (airport charges). Only at Brussels (2.1%) and Madrid (30%) is a part of the revenues received by the government. Furthermore, only at Amsterdam Schiphol do the total security revenues cover the total security costs. At the other

airports the remainder of the costs is financed by commercial income (Brussels), non aviation-related income and other airport charges (Zurich) or by the airport operator (Madrid).

Table 7.1 Overview of the security charges and taxes for 2007

	AMS	BRU	CDG	FRA	LGW	LHR	MAD	MUC	ZRH
1.	To implement EU regulation 2320/2002 and more stringent national rules.	To finance the operational costs and depreciation.	No response	No response	No response	No response	To finance security activities in civil aviation.	No response	To finance security activities.
2.	Departing passenger	Departing passenger and via the landing charges.					Departing passenger		Departing passenger
3.	O/D: € 12.78 per passenger Transfer: € 4.11 per passenger	O/D: € 6.57 per passenger Transfer: € 6.29 per passenger Transit: € 1.88 per passenger 24% of the landing charges					€ 1.26 per passenger		O/D: € 8.85 per passenger Transfer: € 6.72 per passenger
4.	2006: € 205.9 million 2007: € 207.6 million	2005: € 49.7 million 2006: € 65.6 million					Up to november 2007: € 31.2 million		€ 76.3 million
5.	Schiphol	Brussels airport					Airlines		Zurich airport
6.	Schiphol	Brussels airport: 97.9% The government: 2.1%					Aena (airport operator): 70% The government: 30%		Zurich airport
7.	Integral costs of the security process.	Mainly personnel, maintenance, and depreciation costs.					45% of the total security costs.		General security costs
8.	2006: € 200.9 million 2007: € 200.8 million	2005: € 50 million 2006: € 63 million					Personnel: € 33 million Maintenance: € 12 million SICA: € 2 million Support supplies: € 1 million Other: € 2 million		Local police: € 52.8 million Unique personnel costs: € 4.9 million Rent: € 7.3 million Other: € 16.2 million
9.	Yes	No					No		No
10.		Subsidized by commercial revenues.					Aena covers the rest of the costs.		Partly cross subsidized by other non aviation-related revenues and partly by other airport charges.

7.2 Noise charges and taxes

The questionnaire concerning noise charges and taxes consists of the following questions:

1. What is the purpose of the noise charge or tax?
2. How much are the total revenues per year from the noise charges or taxes?

3. Which party collects the charge or tax?
4. Which party receives the charge or tax?
5. What cost components are financed with the revenues?

Table 7.2 presents an overview of the noise charges and taxes as reported in the returned questionnaires. The purpose of introducing a noise charge or tax is twofold. On the one hand the revenues are used to reduce the noise and insulate the houses near the airport (Amsterdam Schiphol, Paris Charles de Gaulle, and Zurich). On the other hand the aim is to alert the aviation industry to the noise impact and encourage airlines to operate quieter aircraft (Frankfurt, Munich, and Zurich). At three airports (Amsterdam Schiphol, Paris Charles de Gaulle, and Zurich) the revenues are used effectively to finance noise-related costs, whereas at Frankfurt and Munich the revenues are used to cover aviation-related costs in general. It is relevant to mention that at Amsterdam Schiphol and Paris Charles de Gaulle a governmental noise tax is levied and that at Frankfurt, Munich, and Zurich the noise charges are part of the airport charges. At Amsterdam Schiphol the airport collects the tax and the government receives it, whereas at Paris Charles de Gaulle the converse is the case. At Frankfurt, Munich, and Zurich the airport both collects and receives the charges.

Table 7.2 Overview of the noise charges and taxes for 2007

	AMS	BRU	CDG	FRA	LGW	LHR	MAD	MUC	ZRH
1.	To reduce noise nuisance	-	To insulate houses in the surroundings of the airport.	To make the aviation industry aware of the noise impact and to reward operating with quieter aircraft.	-	-	-	To make the aviation industry aware of the noise impact and to reward operating with quieter aircraft.	To encourage airlines to use quieter aircraft and to finance noise-related costs.
2.	€33.4 million (noise tax) €10.2 million (tax for other Schiphol projects)		€30 million	€17 million				€28 mln.	€3 million (surcharge) €25 million (as part of the passenger charges)
3.	Schiphol		The government	Frankfurt airport				Munich airport	Zurich airport
4.	The government		Aéroports de Paris	Frankfurt airport				Munich airport	Zurich airport
5.	To insulate, buy up and demolish houses, and to cover claims for compensation.		To insulate houses and to cover additional administrative costs.	As part of the airport charges the revenues finance all aviation-related costs.				As part of the airport charges the revenues finance all aviation-related costs.	To reduce noise nuisance and to compensate people who live in the surroundings of the airport.

7.3 Terminal navigation charges

The questionnaire concerning the terminal navigation charges consists of the following questions:

1. How much are the total revenues per year from the ATC taxes?
2. Which party collects the tax?
3. Which party receives the tax?
4. Which cost components are financed with the revenues?
5. How much are the total ATC costs per year?
6. Are all ATC costs covered by the revenues?
7. If not, how is the part not covered dealt with?

Table 7.3 presents an overview of the questionnaires returned concerning the terminal navigation charges. Of course, terminal navigation charges are charged at all airports (no questionnaire returned from Paris Charles de Gaulle). The total revenues per year vary from € 32 million (Brussels) to € 75 million (Amsterdam Schiphol). Only at Brussels and Madrid do the revenues fail to cover the total terminal navigation costs. At Brussels the shortfall is compensated by positive results from other activities, whereas at Madrid the loss is assumed by Aena.

Table 7.3 Overview of the terminal navigation charges for 2007

	AMS	BRU	CDG	FRA	LGW	LHR	MAD	MUC	ZRH
1.	€ 75 million	€ 32 million	No response	€ 54.4 million			€ 59 million	€ 35.68 million	€ 34.19 million
2.	Schiphol	Belgocontrol (> 97.5%)		DFS	NATS *	NATS *	Aena	DFS	Zurich airport
3.	LVNL	Belgocontrol		DFS and the government	NATS *	NATS *	Aena	DFS and the government	Skyguide
4.	Personnel costs, operational costs, depreciation and investments.	Service costs and costs regarding the air traffic forecast.		Personnel costs, operational costs, depreciation, capital, DFS, MET and regulatory costs.	All costs regarding ATC services.	All costs regarding ATC services.	A percentage of the total.	Personnel costs, operational costs, depreciation, capital, DFS, MET and regulatory costs.	All terminal costs (direct, indirect and overhead) including MET costs.
5.	€ 75 million	€ 30.3 million (tower) € 3.7 million (approach)		€ 54.4 million	Unknown	Unknown	€ 71.5 (personnel) € 5.6 (operational) € 5.8 (written off) € 3.3 (capital)	€ 35.68 million	€ 30.22 million
6.	Yes	No		Yes	Yes	Yes	No	Yes	Yes
7.		Positive results from other activities.					Not		

7.4 Other taxes

The questionnaire concerning the other taxes consists of the following questions:

1. What is the purpose of the other taxes?
2. How much are the total revenues per year from the other taxes?
3. Which party receives the taxes?
4. What cost components are financed with the revenues?

Table 7.4 presents an overview of the other taxes charged at the different airports. For the overview, the Dutch aviation tax has been included in the table. However, one must remember that the aviation tax had not yet been put into effect in the summer of 2007. The table shows that the Dutch aviation tax has no specific environment-related purpose. The tax belongs to the government's general resources and can be considered as a 'normal tax measure' to express the social costs of flying. The French civil aviation tax has a more specific purpose. This tax is used partly to finance the administrative part of civil aviation and partly to finance and maintain the routes that ensure regional development. The solidarity tax levied at Paris Charles de Gaulle is used to finance medicines for developing countries. No information has been received about the aim of the air passenger tax at the London airports. The table shows that the total revenues of

the French ‘other taxes’ are almost € 500 million. This is almost € 150 million more than the estimated € 350 million in the Netherlands. In both cases the revenues are included from all airports in France and the Netherlands respectively. The real revenues at Amsterdam Schiphol may be higher than the real revenues at Paris Charles de Gaulle, because the share of the total aircraft movements at Paris Charles de Gaulle in France is considerably lower than the share of the total aircraft movements at Amsterdam Schiphol in the Netherlands.

Table 7.4 Overview of the other taxes for 2007

	AMS	BRU	CDG	FRA	LGW	LHR	MAD	MUC	ZRH
1.	Aviation tax: to express the social costs of the aviation industry	-	Civil aviation tax: no specific purpose Solidarity tax: no specific purpose	-	Air passenger tax: unknown	Air passenger tax: unknown	-	-	-
2.	Aviation tax: € 350 million (sum of all Dutch airports)		Civil aviation tax: € 337 million (sum of all French airports) Solidarity tax: € 160 million (sum of all French airports)		Air passenger tax: unknown	Air passenger tax: unknown			
3.	Aviation tax: the government		Civil aviation tax: the government Solidarity tax: the government		Air passenger tax: the government	Air passenger tax: the government			
4.	Aviation tax: the general resources of the Dutch government.		Civil aviation tax: "control and air operations budget": 50.44% and "support for the operation of air routes that are useful in terms of regional development": 49.56%. Solidarity tax: to finance medicines for developing countries.		Air passenger tax: none	Air passenger tax: none			

8 Conclusions

Over the years the airport charges, terminal navigation charges, and governmental taxes have undergone various changes, which of course have had an effect on the competitive position of the various airports. The Dutch Directorate for Transport and Civil Aviation (DGTL) has commissioned SEO Economic Research/AAE to research the competitive position of Amsterdam Schiphol with regard to these charges and taxes. This report contains all the relevant material to construct a valid and reliable overview.

To make a consistent comparison over time as well as between the different airports, the Schiphol selection has been used for the calculations. This selection consists of a representative fleet of 45 aircraft types based on the air traffic at Amsterdam Schiphol in 2006. The choices for the fleet were made in consultation with the commissioner; the selection represents almost 98% of the total traffic at Amsterdam Schiphol in 2006. Based on the Schiphol selection, Amsterdam Schiphol had in the summer of 2007 total revenues of € 716 million, which stand 19% higher than the total revenues in the summer of 2003 (€ 603 million). Thus the average increase per year stands at a little more than 4%. One must remember that the revenues in the summer of 2006 and the summer of 2007 were almost identical, because the airport charges were only changed on 1st November 2007.

The revenues at Amsterdam Schiphol have been compared with the revenues at eight other airports, namely Brussels, Paris Charles de Gaulle, Frankfurt, London Gatwick, London Heathrow, Madrid, Munich, and Zurich. If the Schiphol selection is used as the basis for the calculations then the three largest airports (Paris Charles de Gaulle: € 810 million; Frankfurt: € 767 million; and London Heathrow: € 1,074 million) and London Gatwick (€ 786 million) are more expensive than Amsterdam Schiphol. Brussels (€ 575 million), Madrid (€ 425 million), Munich (€ 567 million), and Zurich (€ 666 million) are cheaper than Amsterdam Schiphol. The trends between the summer of 2003 and the summer of 2007 at the different airports yielded strong increases at Brussels (34%), London Gatwick (52%), and London Heathrow (60%). At Paris Charles de Gaulle (17%), Frankfurt (17%), and Madrid (14%) the increase is similar to the increase at Amsterdam Schiphol, while at Munich (-29%) and Zurich (-1%) a downward trend is observed.

The airports differ considerably in the division between airport charges and governmental taxes. At Brussels, Madrid, and Zurich no governmental taxes at all are imposed; thus the total revenues consist for 100% of airport charges and terminal navigation charges. The share of the governmental taxes in the total revenues is remarkably high at Paris Charles de Gaulle (45%), London Gatwick (51%), and London Heathrow (37%). The share of the governmental taxes in the total revenues is also substantial at Frankfurt (20%) and Munich (20%). At Amsterdam Schiphol the share of the governmental taxes is only 8% of the total revenues. The share of the terminal navigation charges varies from 4% (London Heathrow) to 14% (Madrid). At Amsterdam Schiphol the share is 10%.

The airport charges have been divided into landing, parking, passenger, cargo, security, and noise charges. The share of the landing charges in the total revenues at Amsterdam Schiphol is fairly

high (27%). This share is only higher at Madrid (40%), while at Frankfurt it is only 9%. On the other hand, in comparison with the other airports, the share of the passenger charges at Amsterdam Schiphol is low (28%). It is only lower at Paris Charles de Gaulle (25%). The passenger charges share is by far the highest at the German airports (Frankfurt: 57% and Munich: 50%). Another important component of the total revenues at Amsterdam Schiphol is the security charges (27%). At Brussels the security charges share is the highest, namely 28%, while there are no separate security charges at Paris Charles de Gaulle or the London airports. The other charges are not applied at Amsterdam Schiphol and their share in the total revenues at other airports is also very limited.

In the governmental taxes, security, noise, and other taxes are distinguished. As mentioned above, no governmental taxes are levied at Brussels, Madrid or Zurich. At Amsterdam Schiphol the share of the noise taxes in the total revenues is 6%. Only at Paris Charles de Gaulle is a noise tax also levied, but its share is just 2%. At Paris Charles de Gaulle (19%), London Gatwick (51%), and London Heathrow (37%) the other taxes' share in the total revenues is substantial. At Amsterdam Schiphol that share is only 1%. A security tax is levied at three airports and the shares are considerable in all three cases (Paris Charles de Gaulle (24%), Frankfurt (20%), and Munich (22%)).

Furthermore, there has been a focus on the effects of the aviation tax that will be introduced on 1st July 2008 at Amsterdam Schiphol. The total revenues, based on the Schiphol selection, will increase by more than € 230 million. Only London Heathrow will be more expensive than Amsterdam Schiphol in that situation. One must remember, however, that other tariff changes from the summer of 2007 to the summer of 2008 have not been taken into account. It is therefore difficult to measure the precise consequences of the introduction of the tax. There is, however, a high chance that the introduction of the aviation tax will have a negative impact on the competitive position of Amsterdam Schiphol.

It is also important to give an overview of the differentiations implemented at the various airports. Most of the differentiations are applied to the landing and passenger charges. Examples are the separate tariffs for O/D and transfer passengers, for type of destination or for different noise categories. At some airports a distinction is made between full freighter and passenger flights, between flying during daytime or in the night and flying in the peak hours or outside them. An important conclusion to be drawn from the analysis of the differentiations is that, at Amsterdam Schiphol, the difference in tariffs between O/D and transfer passengers is the largest (for passenger charges as well as security charges). Furthermore, no tariff differentiation is applied between different destinations at Amsterdam Schiphol, although they are at other airports (Paris Charles de Gaulle, Frankfurt, London Gatwick, London Heathrow, Madrid, and Munich). At Paris Charles de Gaulle, Frankfurt, the London airports, Madrid (partly) and Munich a 'domestic' category is also applied. With respect to noise, we conclude that various noise categorizations are applied at the various airports examined. Based on the noise categorization of Amsterdam Schiphol and the aircraft types from the Schiphol selection, Amsterdam Schiphol seems to have the most effective noise categorization. One must remember, however, that, if based on other traffic data and another noise categorization, the results would show a different picture. The final conclusion drawn from the analysis of the differentiations is that the London airports differentiate most sharply in favour of intercontinental and full freighter flights.

There has also been a focus on the revenues per aircraft type. Revenues per turnaround have been calculated for three different aircraft types, namely the Boeing 747-400MC (large), the Boeing 737-800 (medium), and the Fokker 70 (small). In all three cases London Heathrow is the most expensive, while the difference is (relatively) the smallest for the large aircraft type. Madrid is the cheapest for the medium and small aircraft types, while for the large type Brussels is the cheapest. Amsterdam Schiphol takes fifth position for the large and medium aircraft types and the fourth position for the small aircraft type.

Finally, from the questionnaires sent to contacts in all countries to obtain more insight into the background underlying the security charges and taxes, noise charges and taxes, terminal navigation charges, and other taxes, the most important conclusion to be drawn relates to security. Questionnaires related to security charges and taxes have been returned from Amsterdam Schiphol, Brussels, Madrid, and Zurich. No security questionnaires have been returned from Paris Charles de Gaulle, Frankfurt, the London airports or Munich. Of the four airports for which security information has been received, only at Amsterdam Schiphol are the security costs completely covered by the revenues from security charges.

Appendix A General assumptions

In consultation with the commissioner and some external consultants a number of assumptions have been made. These assumptions have been used for the modelling of the tariffs from the IATA airport & air navigation charges manual. Both the general assumptions and the airport-specific assumptions are summarized below.

General:

- All aircraft types from the Schiphol selection have been characterized as an aircraft type which mainly performs European (EUR) flights or as an aircraft type which mainly performs intercontinental (ICA) flights. However, when calculating the passenger charges the real shares of domestic, EU (Schengen), EU (non-Schengen), non-EU (Europe) and intercontinental destinations respectively have been used.
- For ICA flights the assumption is: 40% O/D passengers and 60% transfer passengers. On a European flight it is assumed that 60% of passengers are O/D and 40% transfer.
- For an ICA flight a parking time of three hours has been assumed, while for European flights a parking time of one hour has been assumed.
- The peak/off peak/night division for the different airports has been based on the real traffic data of Amsterdam Schiphol per aircraft type.
- Five different groups of destinations have been distinguished, namely: domestic, EU (Schengen), EU (non-Schengen), non-EU (Europe), intercontinental.
- As far as they have been put into effect the boarding bridge charges have been included in the parking charges.

Brussels:

- For the calculation of the terminal navigation charge, the unit rate mentioned in the IATA Airport & Air Navigation Charges Manual has been used. The unit rate mentioned in the airport charges regulation for Brussels Airport is based on a tariff increase that was never implemented.
- The unit rate of 2.05 which is used for the calculation of the landing charges includes a rate of 0.49 that is related to security matters.
- For the calculation of the day/night factor in the landing charges, night has been defined as 23:00 hours to 6.00 hours.

Paris Charles de Gaulle:

- For the calculation of the parking charges, a division of 70/30 has been used between docked and distant parking.
- 'Mixture of contact' has not been taken into account for the calculation of the parking charges.
- 'Remote area' has not been taken into account for the calculation of the parking charges.
- Divisions of 6/94 (EU) and 9/91 (ICA) have been used as the proportions of business class/economy class.

Frankfurt:

- The central ground handling charges have been included in the passenger charges.
- Both the new security charge and the baggage screening fee are included in the security charges.

London Gatwick and London Heathrow:

- In the air passenger tax, 'standard rate' is considered to be business class and 'lowest class of travel' considered to be economy class. The division quoted for the solidarity tax at Paris Charles de Gaulle has also been used for the calculation of the air passenger tax.
- No data is available for the BAE ATP concerning nox-emission. The emission of this aircraft type has therefore been equated to the emission of the Fokker 50, a similar aircraft type.
- The alternative tariff for passengers travelling to Ireland has not been taken into account for the calculation of the passenger charges.
- The 'remote stand rebate' (in the passenger charges) has been applied for an aircraft that has not been connected to a gate (disconnected handling).

Madrid:

- 'Operations outside normal hours' have been defined as between 23:00 hours and 7.00 hours.
- The proportion of transfer cargo has been set at 40%.
- With respect to cargo charges, it has been assumed that all loading and unloading operations exceed 35 minutes.

Zurich:

- The emission-related surcharge is based on the engine type. Should an aircraft type operate with different types of engines, the most frequently used engine type has been used as the basis for the calculation.
- The proportion of transfer cargo has been set at 40%, just as at Madrid.

Appendix B Tables of revenues for 2003 and 2006

Table B.1 Calculated revenues (x € 1,000,000) for the summer of 2003 for the Schiphol selection

	AMS03		BRU03		CDG03		FRA03		LGW03		LHR03		MAD03		MUC03		ZRH03	
Landing charges	177	29%	55	13%	118	17%	69	10%	71	14%	113	17%	154	41%	378	47%	123	18%
Parking charges					32	5%	28	4%	25	5%	58	9%	21	6%				
Passenger charges	182	30%	225	52%	172	25%	305	46%	197	38%	277	41%	107	29%	177	22%	217	32%
Cargo charges													14	4%			20	3%
Security charges	144	24%	90	21%			4	1%					25	7%			125	19%
Noise charges							24	4%							43	5%	101	15%
Airport charges	503	84%	371	86%	322	47%	430	65%	293	57%	448	67%	321	86%	597	75%	586	87%
Terminal navigation charges	66	11%	59	14%	68	10%	59	9%	29	6%	29	4%	52	14%	59	7%	89	13%
Security taxes					178	26%	168	26%							140	18%		
Noise taxes	33	6%			9	1%												
Other taxes					113	16%			196	38%	196	29%						
Governmental taxes	33	6%			301	44%	168	26%	196	38%	196	29%			140	18%		
Total revenues	603	100%	430	100%	691	100%	657	100%	518	100%	673	100%	373	100%	797	100%	675	100%

Table B.2 Calculated revenues (x € 1,000,000) for the summer of 2006 for the Schiphol selection

	AMS06		BRU06		CDG06		FRA06		LGW06		LHR06		MAD06		MUC06		ZRH06	
Landing charges	196	27%	60	11%	132	17%	71	9%	76	14%	142	18%	167	41%	160	25%	119	19%
Parking charges			2	0%	40	5%	28	3%	27	5%	38	5%	23	6%				
Passenger charges	203	28%	268	50%	193	26%	431	55%	224	40%	391	49%	116	29%	258	40%	210	33%
Cargo charges													14	3%			20	3%
Security charges	193	27%	142	27%			40	5%					27	7%	20	3%	121	19%
Noise charges							23	3%							34	5%	97	15%
Airport charges	593	83%	472	89%	365	49%	593	75%	327	58%	570	71%	346	86%	473	74%	566	88%
Terminal navigation charges	69	10%	60	11%	69	9%	38	5%	34	6%	34	4%	57	14%	38	6%	74	12%
Security taxes					188	25%	156	20%							133	21%		
Noise taxes	44	6%			13	2%												
Other taxes	10	1%			117	16%			199	36%	199	25%						
Governmental taxes	54	8%			318	42%	156	20%	199	36%	199	25%			133	21%		
Total revenues	716	100%	532	100%	752	100%	788	100%	560	100%	803	100%	403	100%	644	100%	640	100%

Appendix C Graphs of revenues in 2003 and 2006

Figure C.1 Calculated revenues per category (x € 1.000) for the summer of 2003 for the Schiphol selection

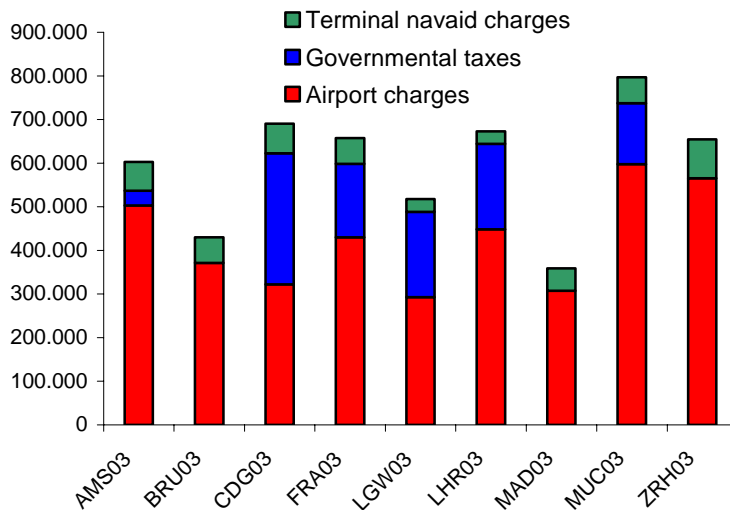
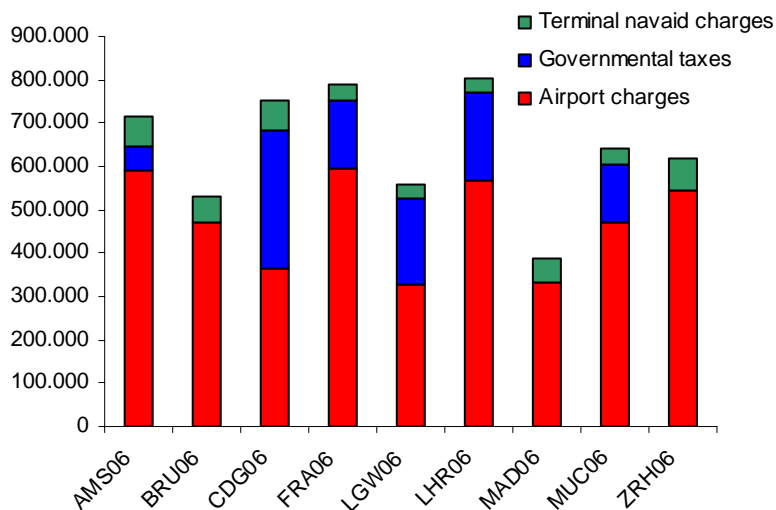


Figure C.2 Calculated revenues per category (x € 1,000) for the summer of 2006 for the Schiphol selection



Appendix D Security and noise

Figure D.1 Calculated revenues per category (x € 1,000) for the summer of 2007 for the Schiphol selection

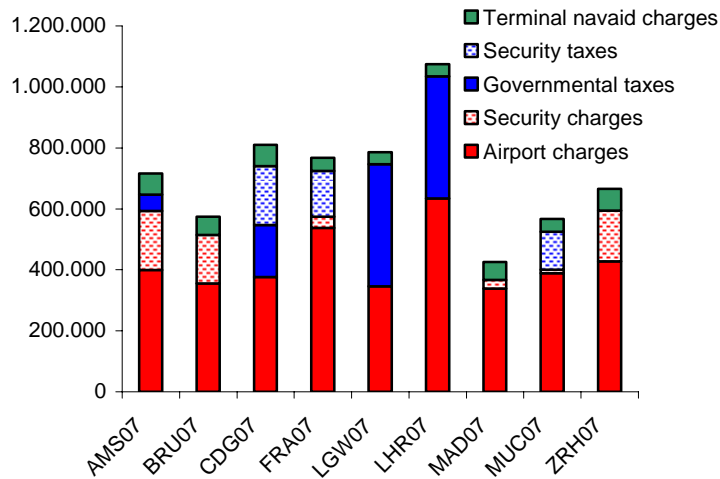
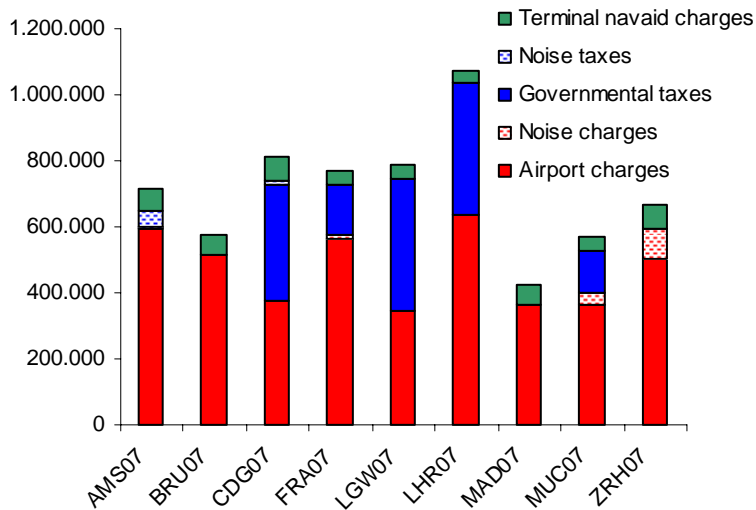


Figure D.2 Calculated revenues per category (x € 1,000) for the summer of 2007 for the Schiphol selection



Appendix E Tariff principles in the summer of 2007

Table E.1 Tariff principles for landing -, parking -, and passenger charges

	Landing charges	Parking charges	Passenger charges
Amsterdam Schiphol	<ul style="list-style-type: none"> - Per take-off and landing - MTOW - (dis)Connected - Freight/passenger - Noise production - Day/night 	<ul style="list-style-type: none"> - MTOW - First 6 hour and 15 minutes free 	<ul style="list-style-type: none"> - Distinction between O/D and transfer passengers
Brussels	<ul style="list-style-type: none"> - Per take-off and landing - Fixed unit rate - MTOW - Noise production - Day/night 	<ul style="list-style-type: none"> - MTOW - First 8 hours (full freighter) or first 5 hour (passenger) free - Boarding bridge charge: fixed charge per hour 	<ul style="list-style-type: none"> - Distinction between O/D and transfer passengers
Paris Charles de Gaulle	<ul style="list-style-type: none"> - Per landing - MTOW - Noise production - 14% discount for full freighters - Lightning charge: fixed charge per movement 	<ul style="list-style-type: none"> - MTOW - Day/night - From 7:00 till 23:00: first hour free 	<ul style="list-style-type: none"> - Distinction between O/D and transfer passengers - Distinction between destinations
Frankfurt	<ul style="list-style-type: none"> - Per take-off and landing - MTOW - Additional variable charge per passenger and per 100 kg cargo 	<ul style="list-style-type: none"> - Aircraft size - Day/night 	<ul style="list-style-type: none"> - Distinction between O/D and transfer passengers - Distinction between destinations
London Gatwick	<ul style="list-style-type: none"> - Per landing - MTOW - Peak/off-peak - Noise production - Emission 	<ul style="list-style-type: none"> - MTOW - Peak/off-peak 	<ul style="list-style-type: none"> - Distinction between destinations - Remote stand rebate
London Heathrow	<ul style="list-style-type: none"> - Per landing - MTOW - Peak/off-peak - Noise production - Emission 	<ul style="list-style-type: none"> - MTOW - Peak/off-peak 	<ul style="list-style-type: none"> - Distinction between destinations - Remote stand rebate

Madrid	- Per landing - MTOW - Day/night	- MTOW - First 3 hours free, from 22:00 till 2:00 first 6 hours free - Boarding bridge charge	- Distinction between destinations
Munich	- Per take-off and landing - MTOW - Day/night - Presence on bonus list - Noise production	- MTOW - First 4 hours free	- Distinction between O/D and transfer passengers - Distinction between destinations
Zurich	- Per landing - MTOW - Emission	- MTOW - First 5 hours free	- Distinction between O/D and transfer passengers

Table E.2 Tariff principles for freight, noise, and security charges

	Cargo charges	Noise charges	Security charges
Schiphol	- None	- None	- Distinction between O/D and transfer passengers
Brussels	- None	- None	- Distinction between O/D, transfer, and transit passengers
Paris CDG	- None	- None	- None
Frankfurt	- None	- Per take-off and landing - Surcharge for the night per take-off and landing - Noise production	- Distinction between departing passenger and 100 kg shipped cargo
London LGW	- None	- None	- None
London LHR	- None	- None	- None
Madrid	- Per kg shipped cargo	- None	- Distinction between destinations
Munich	- None	- Per take-off and landing - Noise production	- Distinction between departing passenger and 100 kg shipped cargo
Zurich	- Per kg shipped cargo - Distinction between destinations	- Per landing - Surcharge for the night (distinction between take-offs and landings) - Noise production	- Distinction between O/D and transfer passengers

Table E.3 Tariff principles for noise -, security -, and other taxes

	Noise tariffs	Security tariffs	Other tariffs
Schiphol	- Noise production	- None	* Governmental compensation levy - MTOW
Brussels	- None	- None	- None
Paris CDG	- Per take-off - Noise production	- Distinction between departing passenger en ton shipped cargo	* Civil aviation tax: - Distinction between destinations - Distinction between departing passenger en ton shipped cargo * Solidarity tax: - Distinction between destinations - Distinction between economy class and business class
Frankfurt	- None	- Per departing passenger	- None
London LGW	- None	- None	* Air passenger tax - Distinction between destinations - Distinction between economy class and business class
London LHR	- None	- None	* Air passenger tax - Distinction between destinations - Distinction between economy class and business class
Madrid	- None	- None	- None
Munich	- None	- Per departing passenger	- None
Zurich	- None	- None	- None

Appendix F Noise categories

Table F.1 Noise categories per airport and per type of aeronautical charge or governmental tax in the summer of 2007

BRU (landing charges)				FRA (noise charges)							MUC (landing charges)		
1	2	3	4	1	2	3	4	5	6	7	Bonus	No bonus	
DC10	744MC	772	F70	Rest	772	MD11	744MC	742F			Rest	MD82	
742F	744P	MD11	CRJ100/200		764	A333	744P					MD87	
	763	A333	E145		762	A332	DC10					E170	
	762	A332	ATR425		763	MD82	744F					742F	
	A321	764	D8-400		A306	MD87							
	739	A306	E135			A343							
	738	752	Bae ATP			MD11F							
	A3201	738W	A343										
	A3202	737											
	A319	736											
	MD82	735											
	734	Bae146											
	MD87	F100											
	733	Bae146-2											
	E170	CRJ700											
	D328	F50											
	744F	CRJ900											
		MD11F											
MUC (noise charges)											AMS (landing charges)		
1	2	3	4	5	6	7	8	9	10	11	1	2	3
E135	CRJ100/200	Bae146	A3201	752	734	772	DC10	744MC	742F		744MC	Rest	F70
	E145	Bae146-2	A3202	A321		A333	764	744P			744P		CRJ100/200
	ATR425	F70	A319	738W		A332	763	MD11			DC10		E145
	D328	E170	F100	739		A306	MD87	744F			763		D328
	D8-400	CRJ700		738		762	A343	MD11F			A306		E135
		F50		737		MD87					762		Bae ATP
		Bae ATP		736							A321		A343
		CRJ900		733							MD82		
				735							734		
											MD87		
											733		
											735		
											744F		
											742F		
ZRH (noise charges)					LGW & LHR (landing charges)			CDG (landing charges and noise taxes)					
1	2	3	4	5	Minus	Base	High	1	2	3	4	5a	5b
742F	744MC	764	772	Rest	MD82	Rest	742F				DC10	Rest	
	744P	763	A333		F70						742F		
	MD11	A306	A332		CRJ700								
	DC10	762	MD87		CRJ100/200								
	MD82	A343			E145								
	744F				ATR425								
	MD11f				E135								
					CRJ900								

Appendix G Aircraft types in 2003 and 2006

Table G.1 Calculated revenues (in €) per turnaround for the summer of 2003

	AMS03	BRU03	CDG03	FRA03	LGW03	LHR03	MAD03	MUC03	ZRH03
Boeing 747-400MC									
Landing charges	4,507	664	2,698	1,286	335	573	3,750	6,261	2,571
Parking charges		0	875	300	571	996	332		
Passenger charges	1,599	2,055	2,234	3,732	2,185	2,989	1,368	1,755	1,933
Cargo charges							551		798
Security charges	1,175	904		42			251		1,201
Noise charges				536				312	1,506
Airport charges	7,281	3,622	5,807	5,896	3,091	4,558	6,252	8,328	8,009
Terminal navigation charges	515	708	1,205	633	395	395	916	633	1,248
Security taxes			1,795	1,693				1,413	
Noise taxes	518		64						
Other taxes			1,495		2,805	2,805			
Governmental taxes	518	0	3,354	1,693	2,805	2,805	0	1,413	0
Total revenues	7,799	3,622	9,162	7,589	5,896	7,364	6,252	9,741	8,009
Boeing 737-800									
Landing charges	624	279	423	248	350	600	482	1,471	455
Parking charges		0	141	171	62	231	101		
Passenger charges	1,063	1,295	860	1,601	1,185	1,624	555	985	1,264
Cargo charges							4		6
Security charges	865	498		22			137		704
Noise charges				80				194	450
Airport charges	2,552	2,072	1,425	2,121	1,597	2,455	1,280	2,649	2,879
Terminal navigation charges	386	298	274	278	138	138	208	278	394
Security taxes			979	925				772	
Noise taxes	139		46						
Other taxes			578		1,090	1,090			
Governmental taxes	139	0	1,603	925	1,090	1,090	0	772	0
Total revenues	3,077	2,371	3,301	3,324	2,825	3,684	1,488	3,699	3,273
Fokker 70									
Landing charges	213	99	212	123	287	396	198	892	213
Parking charges		0	2	32	29	107	3		
Passenger charges	493	601	372	809	308	512	235	455	587
Cargo charges							0		0
Security charges	398	231		10			64		327
Noise charges				42				179	189
Airport charges	1,105	931	585	1,016	624	1,015	500	1,525	1,316
Terminal navigation charges	175	105	146	196	69	69	111	196	242
Security taxes			454	430				358	
Noise taxes	96		36						
Other taxes			241		363	363			
Governmental taxes	96	0	731	430	363	363	0	358	0
Total revenues	1,376	1,037	1,462	1,642	1,055	1,446	611	2,079	1,558

Table G.2 Calculated revenues (in €) per turnaround for the summer of 2006

	AMS06	BRU06	CDG06	FRA06	LGW06	LHR06	MAD06	MUC06	ZRH06
Boeing 747-400MC									
Landing charges	4,899	721	2,728	1,224	367	724	4,057	2,347	2,483
Parking charges		37	1,093	383	618	874	359		
Passenger charges	1,785	2,452	2,317	6,130	2,478	4,217	1,477	2,722	1,867
Cargo charges							551		771
Security charges	1,686	1,424		613			271		1,160
Noise charges				549				292	1,455
Airport charges	8,370	4,634	6,138	8,899	3,462	5,815	6,715	5,361	7,736
Terminal navigation charges									
	541	724	1,230	405	467	467	1,010	405	971
Security taxes			1,895	1,575				1,335	
Noise taxes	683		91						
Other taxes	198		1,582		2,846	2,846			
Governmental taxes	881	0	3,568	1,575	2,846	2,846	0	1,335	0
Total revenues	9,792	5,358	10,935	10,880	6,775	9,128	7,725	7,102	8,707
Boeing 737-800									
Landing charges	714	301	481	267	370	745	522	675	440
Parking charges		13	181	141	67	96	109		
Passenger charges	1,186	1,536	998	2,136	1,344	2,291	600	1,418	1,221
Cargo charges							4		6
Security charges	1,132	785		186			148		680
Noise charges				66				168	435
Airport charges	3,032	2,635	1,659	2,796	1,781	3,132	1,384	2,261	2,782
Terminal navigation charges									
	405	302	279	178	164	164	229	178	333
Security taxes			1,033	861				729	
Noise taxes	184		63						
Other taxes	38		592		1,106	1,106			
Governmental taxes	222	0	1,689	861	1,106	1,106	0	729	0
Total revenues	3,659	2,937	3,627	3,834	3,051	4,402	1,613	3,168	3,114
Fokker 70									
Landing charges	254	105	258	131	314	493	215	387	206
Parking charges		0	2	23	31	44	3		
Passenger charges	551	713	440	1,003	355	728	254	641	567
Cargo charges							0		0
Security charges	521	365		85			69		316
Noise charges				34				110	183
Airport charges	1,325	1,183	701	1,277	700	1,265	541	1,138	1,272
Terminal navigation charges									
	184	106	149	125	81	81	122	125	211
Security taxes			480	400				339	
Noise taxes	127		39						
Other taxes	19		244		368	368			
Governmental taxes	146	0	763	400	368	368	0	339	0
Total revenues	1,655	1,289	1,613	1,802	1,149	1,715	663	1,603	1,483

Appendix H Aircraft specifications and - assumptions

Aircraft type	MTOW	Capacity	EUR/ICA	Movements	Load factor	Passengers (x 1,000)	Freight		Percentage O/D	Handling	
							Imported	Exported		Connected	Disconnected
Boeing 747-400MC	397	278	ICA	8.742	0.8	1,945	121,939	118,833	0.40	1.00	0.00
Boeing 747-400P	391	417	ICA	5.280	0.8	1,760	29,415	24,699	0.40	0.98	0.02
Boeing 777-200	293	330	ICA	10.495	0.8	2,768	61,699	54,064	0.40	1.00	0.00
MD11	282	302	ICA	7.025	0.8	1,699	77,227	72,042	0.40	0.78	0.22
DC10-30P	262	273	ICA	1.968	0.8	430	3,536	4,727	0.40	0.98	0.02
Airbus 330-300	233	298	ICA	4.707	0.8	1,123	10,104	16,022	0.40	1.00	0.00
Airbus 330-200	228	273	ICA	4.520	0.8	987	11,942	17,075	0.40	0.99	0.01
Boeing 767-400	205	238	ICA	1.422	0.8	271	4,952	6,807	0.40	1.00	0.00
Boeing 767-300	184	239	ICA	13.311	0.8	2,541	25,248	29,126	0.40	0.98	0.02
Airbus A300-6P	171	311	EUR	1.004	0.7	219	572	919	0.60	0.88	0.12
Boeing 767-200	167	198	ICA	1.294	0.8	205	2,375	2,552	0.40	0.96	0.04
Boeing 757-200P	109	191	ICA	1.956	0.8	299	162	398	0.40	0.89	0.11
Airbus A321	86	193	EUR	6.863	0.7	926	1,197	1,115	0.60	0.98	0.02
Boeing 737-800 WING	79	189	EUR	16.766	0.7	2,214	63	28	0.60	0.96	0.04
Boeing 737-900	77	178	EUR	7.992	0.7	996	789	708	0.60	0.99	0.01
Boeing 737-800	76	174	EUR	30.580	0.7	3,717	3,885	2,616	0.60	0.98	0.02
Airbus A320-2	73	162	EUR	26990	0.7	3,063	2,292	3,186	0.60	0.98	0.02
Airbus A320-1	72	158	EUR	2.521	0.7	278	182	360	0.60	0.98	0.02
Boeing 737-700	67	147	EUR	21.604	0.7	2,220	265	299	0.60	0.72	0.28
Airbus A319	66	138	EUR	24,845	0.7	2,400	1,281	1,595	0.60	0.64	0.36
MD82	65	142	EUR	2,880	0.7	286	264	163	0.60	0.93	0.07
Boeing 737-400	64	142	EUR	28,145	0.7	2,804	1,542	2,232	0.60	0.98	0.02
MD87	63	119	EUR	1,176	0.7	98	60	85	0.60	0.76	0.24
Boeing 737-600	60	105	EUR	3,664	0.7	270	174	378	0.60	0.99	0.01
Boeing 737-300	58	129	EUR	36,734	0.7	3,319	1,618	1,754	0.60	0.77	0.23
Boeing 737-500	55	119	EUR	11,169	0.7	927	233	734	0.60	0.69	0.31
BAE146	46	97	EUR	2,890	0.7	196	177	109	0.60	0.91	0.09
Fokker 100	42	102	EUR	29,018	0.7	2,078	394	460	0.60	0.06	0.94
BAE 146-200P	41	85	EUR	954	0.7	56	15	10	0.60	0.96	0.04
Fokker 70	38	80	EUR	42,744	0.7	2,391	132	221	0.60	0.02	0.98
Embraer 170	36	70	EUR	1,230	0.7	60	18	76	0.60	1.00	0.00
CRJ700	34	69	EUR	1,198	0.7	58	1	2	0.60	0.74	0.26
CRJ100/200ER	24	50	EUR	4,386	0.7	153	16	39	0.60	0.64	0.36
Fokker 50	21	50	EUR	25,153	0.7	886	3	14	0.60	0.14	0.86
Embraer 145	20	50	EUR	3,081	0.7	107	4	4	0.60	0.24	0.76
ATR 42-500	19	46	EUR	1,472	0.7	48	0	0	0.60	0.00	1.00
Dornier 328-100	14	31	EUR	2,117	0.7	46	0	0	0.60	0.00	1.00
Dash 8-400	29	73	EUR	921	0.7	47	6	3	0.60	0.25	0.75
Embraer 135	21	37	EUR	842	0.7	22	0	1	0.60	0.00	1.00
BAE ATP	23	64	EUR	829	0.7	37	1,144	1,407	0.60	0.00	1.00
Airbus A340-313	267	295	ICA	738	0.8	174	3,404	3,250	0.40	1.00	0.00
CRJ900	37	86	EUR	720	0.7	43	1,499	2,631	0.60	1.00	0.00
Boeing 747-400F	401		ICA	6,364	0.8		216,976	163,471		0.00	1.00
Boeing 747-200F	375		ICA	3697	0.8		104,856	92,693		0.00	1.00
MD11F	286		ICA	1,362	0.8		42,684	42,534		0.00	1.00

Aircraft type	Destination					Parking hours	Number of engines	Noise certification (EPNdB)		
	Domestic	EU (Schengen)	EU (non-Schengen)	Non-EU (Europe)	Intercontinental			Take-off	Side line	Landing
Boeing 747-400MC	0.00	0.00	0.00	0.00	1.00	3	4	102	100	105
Boeing 747-400P	0.00	0.00	0.01	0.00	0.99	3	4	102	100	105
Boeing 777-200	0.00	0.00	0.00	0.00	1.00	3	2	94	97	100
MD11	0.00	0.03	0.01	0.01	0.95	3	3	94	96	104
DC10-30P	0.00	0.00	0.00	0.00	1.00	3	3	102	98	106
Airbus 330-300	0.00	0.00	0.00	0.00	1.00	3	2	95	97	99
Airbus 330-200	0.00	0.01	0.07	0.02	0.90	3	2	93	97	99
Boeing 767-400	0.00	0.00	0.00	0.00	1.00	3	2	91	97	99
Boeing 767-300	0.00	0.12	0.04	0.02	0.82	3	2	93	97	100
Airbus A300-6P	0.00	0.02	0.01	0.65	0.32	1	2	90	98	100
Boeing 767-200	0.00	0.01	0.01	0.00	0.99	3	2	95	96	103
Boeing 757-200P	0.00	0.07	0.03	0.30	0.60	3	2	88	94	100
Airbus A321	0.00	0.38	0.34	0.25	0.04	1	2	90	98	97
Boeing 737-800 WING	0.01	0.75	0.02	0.13	0.09	1	2	88	92	96
Boeing 737-900	0.00	0.50	0.22	0.22	0.06	1	2	87	95	96
Boeing 737-800	0.00	0.53	0.16	0.24	0.06	1	2	89	92	97
Airbus A320-2	0.00	0.55	0.29	0.10	0.06	1	2	88	94	96
Airbus A320-1	0.00	0.91	0.04	0.03	0.01	1	2	90	94	97
Boeing 737-700	0.00	0.59	0.34	0.05	0.02	1	2	85	95	96
Airbus A319	0.00	0.35	0.52	0.13	0.00	1	2	88	93	95
MD82	0.00	0.97	0.00	0.03	0.00	1	2	91	95	93
Boeing 737-400	0.00	0.42	0.35	0.22	0.01	1	2	89	90	100
MD87	0.00	0.91	0.09	0.00	0.00	1	2	87	97	93
Boeing 737-600	0.00	0.35	0.19	0.39	0.07	1	2	81	93	96
Boeing 737-300	0.00	0.36	0.42	0.21	0.01	1	2	83	92	100
Boeing 737-500	0.00	0.25	0.64	0.08	0.04	1	2	83	91	99
BAE146	0.00	0.07	0.02	0.91	0.00	1	4	86	88	98
Fokker 100	0.00	0.53	0.39	0.08	0.00	1	2	82	92	93
BAE 146-200P	0.00	0.96	0.04	0.01	0.00	1	4	85	87	96
Fokker 70	0.00	0.51	0.36	0.13	0.00	1	2	77	90	88
Embraer 170	0.00	0.01	0.99	0.00	0.00	1	2	83	94	98
CRJ700	0.00	1.00	0.00	0.00	0.00	1	2	83	89	93
CRJ100/200ER	0.00	0.86	0.14	0.00	0.00	1	2	80	82	92
Fokker 50	0.09	0.58	0.33	0.00	0.00	1	2	81	85	97
Embraer 145	0.00	0.38	0.57	0.05	0.00	1	2	84	84	93
ATR 42-500	0.00	1.00	0.00	0.00	0.00	1	2	76	81	93
Dornier 328-100	0.00	0.01	0.99	0.00	0.00	1	2	82	94	94
Dash 8-400	0.00	0.27	0.73	0.00	0.00	1	2	78	84	94
Embraer 135	0.00	0.70	0.30	0.00	0.00	1	2	80	85	92
BAE ATP	0.00	0.53	0.47	0.00	0.00	1	2	80	83	97
Airbus A340-313	0.00	0.00	0.00	0.01	0.99	3	4	94	96	97
CRJ900	0.00	1.00	0.00	0.00	0.00	1	2	83	89	93
Boeing 747-400F	0.00	0.01	0.01	0.00	0.98	3	4	102	100	105
Boeing 747-200F	0.00	0.02	0.02	0.02	0.94	3	4	103	104	107
MD11F	0.00	0.01	0.03	0.01	0.96	3	3	94	96	104



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