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Regional Differences in International Airline Operating Economics: 2000 and 2001

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Chapter 1

INTRODUCTION

1.1 This circular has been prepared pursuant to ICAO Assembly Resolution A33-19, Appendix G, which requests the Council to instruct the Secretary General to issue periodically “a study on regional differences on the level of international air transport operating costs, analysing how differences in operations and input prices may affect their levels and the impact that changes in costs may have on air transport tariffs”. This study on *Regional Differences in International Airline Operating Economics: 2000 and 2001* succeeds one which covered the years 1998 and 1999 and was published in 2003 (Circular 293-AT/125) and one which covered the years 1992 to 1997 (Circular 280-AT/117 published in 2000). Prior to that, similar studies were published annually under the title *Regional Differences in Fares, Rates and Costs for International Air Transport*, which covered the years 1976 to 1992. The studies are now published biennially or every other year, although data have continued to be collected and analysed on an annual basis. The present circular focuses on the years 2000 and 2001.

1.2 For 17 international route groups, comprising all international routes, passenger, freight and mail revenue yield data are presented in Chapter 2 for scheduled services, along with passenger revenue yield data for non-scheduled operations. With reference to the same route groups, regional differences in the costs related to the scheduled service passenger yields are presented in Chapter 3. The major causes of regional differences in costs are identified in Chapter 4. In Chapters 2 and 3, the 2001 results are compared with those for 1999.

1.3 The sources of data used in the study are given in Appendix 1, together with information on the sample sizes on which revenue and cost data are based. The method of analysis used in the study is presented in Appendix 2, together with information on the margins of uncertainty, a factor which should be borne in mind when considering the results of studies of this nature. Facsimiles of the questionnaire and information on responses appear in Appendix 3.

1.4 Unless indicated otherwise, all references to “cents” in this circular mean “U.S. cents” and all references to “dollars” mean “U.S. dollars”.

Chapter 2

LEVELS OF UNIT REVENUES

Passenger traffic

2.1 Estimates of average unit passenger revenues in 2000 and 2001 by route group are presented in Table 2-1.

2.2 Column 1 of Table 2-1 shows the average revenue per passenger-kilometre for scheduled passenger traffic on each route group for 2000 and 2001. These data are considered representative of all airlines operating on the particular route group and also include estimates for non-reporting airlines. The data are presented without distinction to class of travel or fare type. Thus, they represent the overall weighted average for all individual routes on all route groups and for all fare types. The overall average revenue per passenger-kilometre (excluding incidental revenues) was estimated at 7.45 cents for 2000 and 7.24 cents for 2001. However, the route group averages vary from a high of 14.6 cents in local Europe to a low of 4.8 cents on routes across the Mid-Atlantic in 2000 and from a high of 14.0 cents in local Middle East to a low of 4.9 cents on routes across the Mid-Atlantic in 2001. Due to inadequate representation in reporting, two route groups — local Central America/Caribbean and local Africa — are not included in this analysis, although their estimates are included in the worldwide totals for both years.

2.3 Column 2 of Table 2-1 depicts the average revenue per passenger-kilometre for non-scheduled passenger traffic reported for each route group for 2000 and 2001. In this case, no attempt has been made to estimate the unit revenues for non-reporting air carriers. In addition, it should be borne in mind that the average unit revenues may not be for the same set of airlines for both years in each route group. The reason is that the availability of data is limited and dependent upon the reporting of air carriers whose composition may differ from year to year. The average revenue per passenger-kilometre for non-scheduled services ranges from a high of 18.9 cents for traffic between North America/Central America/Caribbean and South America to a low of 4.8 cents on routes within Europe in 2000 and from a high of 13.8 cents on routes within the Middle East to a low of 3.8 cents on routes across the Mid-Atlantic in 2001. Except for routes within Europe, where the bulk of non-scheduled operations is to be found, the non-scheduled traffic reported is limited in volume. It is estimated that non-scheduled traffic represented some 13 and 14 per cent of the total international passenger-kilometres performed in 2000 and 2001, respectively. Columns 3 and 4 of Table 2-1 show the average passenger load factor for scheduled services and non-scheduled services, respectively.

2.4 On a worldwide basis, the estimated average revenue per passenger-kilometre for scheduled services at 7.24 cents in 2001 showed a decrease of some 4 per cent from the level in 1999. Comparable data by route group between 1999 and 2001 are available for only 14 individual route groups. Out of these 14 route groups, 11 showed decreases, ranging from a reduction of some 11 per cent for routes between Europe and the Middle East to some 1 per cent for routes across the North and Mid-Pacific. The increases on the remaining 3 route groups range between 2 per cent for routes between North America/Central America/Caribbean and South America to 4 per cent for routes within North America (Figure 2-1).

2.5 The changes in yields experienced between 1999 and 2001 reflect the strengthening of the U.S. dollar against most of the other world currencies, especially the currencies of countries in Africa, Europe, Asia/Pacific and South America. The relative change between 1999 and 2001 would, in many cases, be significantly different if expressed in the national currencies of the airlines concerned. A brief evaluation of this effect is given in Chapter 3 (paragraphs 3.11 and 3.12).

Table 2-1. Estimated average unit passenger revenues by international route group¹ for 2000 and 2001

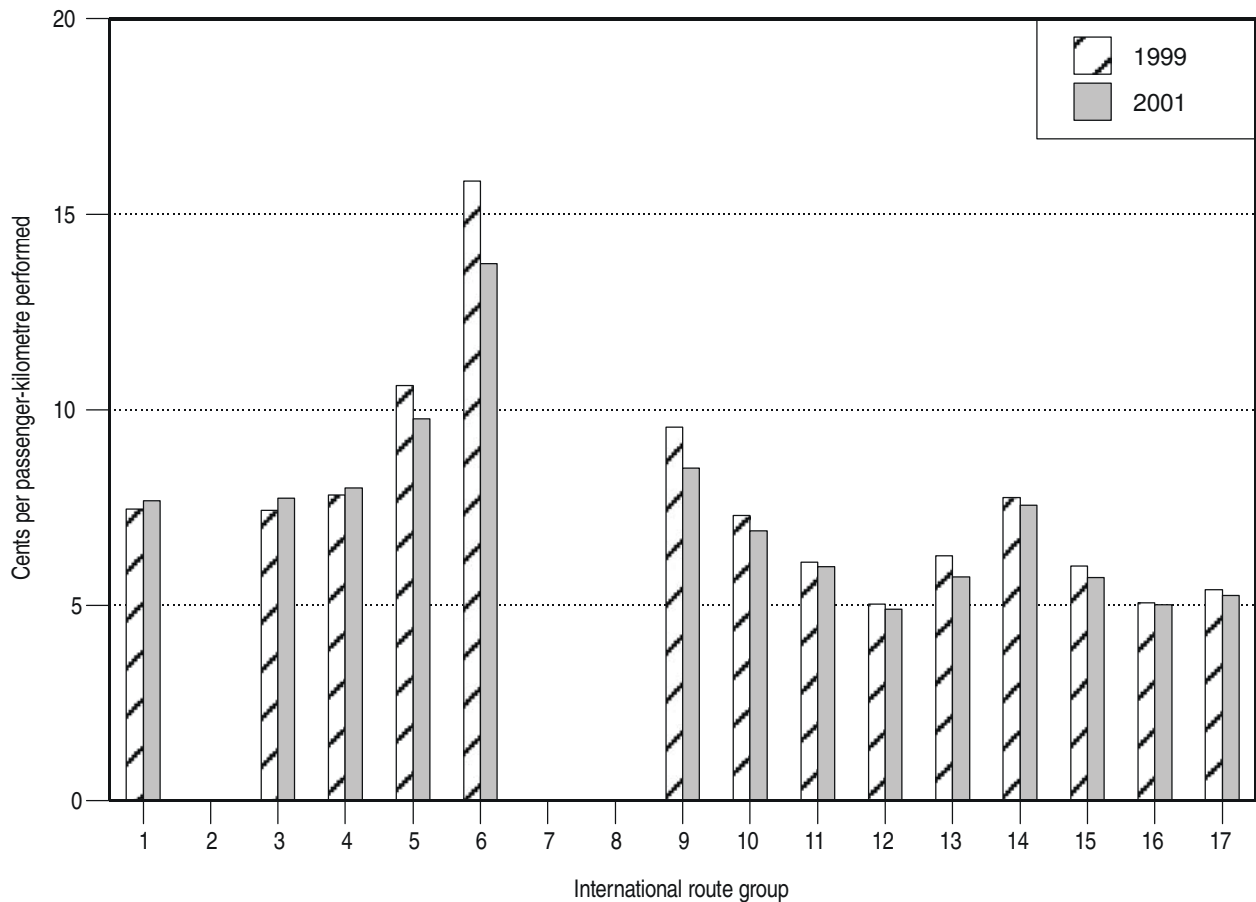
Route group ²	Revenue (cents) per passenger-kilometre				Load factors (percentage points)			
	Scheduled services ³		Non-scheduled flights All categories		Scheduled services		Non-scheduled flights All categories	
	(1)	(2)	(3)	(4)	(3)	(4)	(3)	(4)
	2000	2001	2000	2001	2000	2001	2000	2001
1. Between North America and Central America/Caribbean	7.8	7.7	11.3	—	71	71	85	—
2. Between and within Central America and Caribbean	—	—	—	—	—	—	—	—
3. Between Canada, Mexico and the United States	7.8	7.7	12.6	8.1	66	65	73	65
4. Between North America/Central America/Caribbean and South America	7.8	8.0	18.9	9.6	66	64	60	66
5. Local South America	10.4	9.8	9.7	6.9	62	60	61	73
6. Local Europe	14.6	13.7	4.8	5.9	64	65	82	77
7. Local Middle East	13.8	14.0	—	13.8	57	57	—	48
8. Local Africa	—	—	—	—	—	—	—	—
9. Between Europe and Middle East	8.9	8.5	5.3	4.8	67	65	85	80
10. Between Europe/Middle East and Africa	6.9	6.9	5.5	4.8	69	71	72	81
11. North Atlantic	6.2	6.0	5.6	4.5	78	74	80	82
12. Mid-Atlantic	4.8	4.9	—	3.8	78	77	—	85
13. South Atlantic	5.8	5.7	5.5	4.6	76	71	66	79
14. Local Asia/Pacific	8.0	7.6	8.3	6.6	72	69	59	65
15. Between Europe/Middle East/Africa and Asia/Pacific	5.9	5.7	12.5	5.6	76	74	65	69
16. North/Mid-Pacific	5.3	5.0	7.1	5.5	76	72	45	59
17. South Pacific	5.7	5.2	—	—	70	72	—	—

1. Data for scheduled services, where presented, are considered representative for all airlines operating in the route group concerned. Data for non-scheduled flights represent only carriers for which substantive information was available and are only presented where they include two or more carriers. The representative nature of the data for both scheduled services and non-scheduled services is described in Appendix 1, and the margins of uncertainty to be taken into account regarding the scheduled services are discussed in Appendix 2. For routes between and within Central America and Caribbean and in local Africa, the representation was inadequate to justify separate presentation, but the data have been included in the world averages.

2. More detailed definition of the route groups may be found in Appendix 3 on the reverse of the revenue questionnaire.

3. These figures do not generally include such incidental operating revenues as may be attributed to international passenger traffic. On individual route groups, incidental operating revenues not included may represent up to an additional 4 per cent in 2000 and 5 per cent in 2001 over the average revenue quoted.

2.6 The analyses in paragraphs 2.2 to 2.5 relate only to the average unit revenues for all airlines combined on each route group. There can be wide variations around these averages shown among individual airlines. In the case of scheduled services, the variation in yields for each route group for 2000 and 2001 is shown in Tables 2-2 and 2-3, respectively. For a few route groups, the unit revenues for individual airlines do not vary much from the route group average (for example, for routes across the Mid- and South Atlantic and North/Mid-Pacific). However, on most route groups, the unit revenues differ significantly among airlines, reflecting differing route structures and traffic mix among other factors.



- | | | |
|--------------------------|-----------------------|-------------------------|
| 1. North-Central America | 7. Middle East | 13. South Atlantic |
| 2. Central America | 8. Africa | 14. Asia/Pacific |
| 3. North America | 9. Europe-Middle East | 15. Europe-Asia/Pacific |
| 4. North-South America | 10. Europe-Africa | 16. North/Mid-Pacific |
| 5. South America | 11. North Atlantic | 17. South Pacific |
| 6. Europe | 12. Mid-Atlantic | |

Figure 2-1. Comparison of unit passenger revenues: 1999 and 2001

Table 2-2. Variation in scheduled passenger revenue yield among airlines: 2000

Route group (short title)	Average revenue (cents) per pass-km (all airlines from Table 2-1)	Number of airlines in this analysis	Revenue (cents) per passenger-kilometre for individual airlines																								
			2 to 3	3 to 4	4 to 5	5 to 6	6 to 7	7 to 8	8 to 9	9 to 10	10 to 11	11 to 12	12 to 13	13 to 14	14 to 15	15 to 16	16 to 17	17 to 18	18 to 19	19 to 20	20 to 21	21 to 22	22 to 23	23 to 24	24 to 25	25 and over	
			Number of airlines																								
1. North-Central America	7.8	7					3	2	0	2																	
2. Central America	—	—																									
3. North America	7.8	12						7	4	0	1																
4. North-South America	7.8	17			2	3	3	3	4	1	0	1															
5. South America	10.4	9				1	1	1	0	0	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1 ¹	
6. Europe	14.6	32				3	0	2	3	1	3	2	3	4	2	0	1	1	2	1	1	2	0	0	0	1 ¹	
7. Middle East	13.8	5								1	1	0	1	0	2												
8. Africa	—	—																									
9. Europe-Middle East	8.9	20			1	3	4	3	5	2	0	1	0	0	0	1											
10. Europe-Africa	6.9	22		1	2	4	3	5	2	0	2	0	0	1	0	0	2										
11. North Atlantic	6.2	32	1	3	13	10	3	1	1																		
12. Mid-Atlantic	4.8	8		1	5	2																					
13. South Atlantic	5.8	10		3	4	2	1																				
14. Asia/Pacific	8.0	20				4	3	2	3	3	2	1	0	1	0	0	1										
15. Europe-Asia/Pacific	5.9	33	1	5	12	8	4	2	0	1																	
16. North/Mid-Pacific	5.3	12		3	3	2	3	1																			
17. South Pacific	5.7	4			1	2	0	0	0	0	1																

1. In the range of (25–26).

Table 2-3. Variation in scheduled passenger revenue yield among airlines: 2001

Route group (short title)	Average revenue (cents) per pass-km (all airlines from Table 2-1)	Number of airlines in this analysis	Revenue (cents) per passenger-kilometre for individual airlines																								
			2 to 3	3 to 4	4 to 5	5 to 6	6 to 7	7 to 8	8 to 9	9 to 10	10 to 11	11 to 12	12 to 13	13 to 14	14 to 15	15 to 16	16 to 17	17 to 18	18 to 19	19 to 20	20 to 21	21 to 22	22 to 23	23 to 24	24 to 25	25 and over	
			Number of airlines																								
1. North-Central America	7.7	7				1	1	2	2	1																	
2. Central America	—	—																									
3. North America	7.7	10					1	4	5																		
4. North-South America	8.0	13			1	1	2	3	4	2																	
5. South America	9.8	8				1	0	0	1	5	0	0	0	0	1												
6. Europe	13.7	41			2	1	5	1	5	3	4	3	4	1	2	4	0	3	2	0	0	0	0	0	1		
7. Middle East	14.0	5									1	0	1	0	0	2	1										
8. Africa	—	—																									
9. Europe-Middle East	8.5	23		2	1	4	2	4	5	2	1	1	0	0	0	1											
10. Europe-Africa	6.9	22			2	5	2	2	4	1	2	0	1	1	1	0	0	1									
11. North Atlantic	6.0	29		5	10	10	1	3																			
12. Mid-Atlantic	4.9	6			2	2	2																				
13. South Atlantic	5.7	9		1	5	2	1																				
14. Asia/Pacific	7.6	24			1	5	2	0	6	2	1	0	4	2	1												
15. Europe-Asia/Pacific	5.7	34	1	6	10	8	2	4	1	2																	
16. North/Mid-Pacific	5.0	14		5	2	5	2																				
17. South Pacific	5.2	3			1	1	1																				

Table 2-4. Reported average unit freight and mail revenues by international route group, scheduled services: 2000 and 2001¹

Route group (short title)	Freight revenues (cents) per tonne-kilometre performed						Mail revenues (cents) per tonne-kilometre performed	
	Overall		Passenger and combination aircraft		All-freight aircraft		Overall	
	(1)		(2)		(3)		(4)	
	2000	2001	2000	2001	2000	2001	2000	2001
1. North-Central America	24.3	19.6	24.3	19.6	—	—	31.4	33.0
2. Central America	47.8	—	47.8	—	—	—	49.9	—
3. North America	35.2	24.4	20.6	24.4	42.2	—	36.9	48.3
4. North-South America	38.2	40.3	19.8	21.9	83.8	75.7	32.9	35.0
5. South America	33.4	37.4	33.4	37.4	—	—	42.8	33.0
6. Europe	54.7	54.0	55.7	55.6	46.1	39.8	48.7	43.1
7. Middle East	35.9	33.1	35.9	33.1	—	—	52.3	42.8
8. Africa	25.1	35.1	25.1	35.1	—	—	16.5	—
9. Europe-Middle East	20.3	20.7	22.9	22.4	14.2	15.0	35.6	37.1
10. Europe-Africa	22.7	21.9	22.7	21.8	—	27.9	34.5	37.1
11. North Atlantic	21.5	29.2	15.4	15.1	46.7	70.8	23.7	25.7
12. Mid-Atlantic	19.5	19.8	19.5	19.8	—	—	43.3	53.9
13. South Atlantic	23.6	26.7	23.6	26.7	—	—	32.8	29.0
14. Asia/Pacific	34.6	30.0	34.4	27.8	35.1	40.1	45.2	41.9
15. Europe-Asia/Pacific	20.4	19.4	21.9	20.9	18.7	17.1	25.3	23.3
16. North/Mid-Pacific	26.7	26.5	22.5	20.2	28.4	28.8	32.4	35.1
17. South Pacific	19.4	17.0	19.4	17.0	—	—	22.5	23.7

1. Data represent only carriers for which substantive information was available and are only presented where they include two or more carriers. The representative nature of the data is described in Appendix 1.

Freight and mail traffic

2.7 Average reported unit freight and mail revenues for the years 2000 and 2001 by international route group are presented in Table 2-4. It has to be borne in mind that the average unit revenues may not be for the same set of airlines for both years for each of the route groups. Again, the reason is that the availability of data is limited and dependent upon the reporting of air carriers whose composition may differ from year to year.

2.8 Column 1 of Table 2-4 shows the overall average revenue per tonne-kilometre performed for all scheduled freight traffic on each route group (whether carried on passenger, combination or all-freight aircraft). The variation among route group averages ranges from a high of 54.7 cents on routes within Europe to a low of 19.4 cents on routes across the South Pacific in 2000 and from a high of 54.0 cents to a low of 17.0 cents on the same route groups in 2001. Comparing the figures of 1999 and 2001, 10 of the 16 route groups, for which comparable data are available, experienced a decrease, ranging from some 50 per cent for routes within North America to just 1 per cent for routes within Asia/Pacific. For the remaining 6 route groups, routes across the North Atlantic showed an increase of almost 27 per cent while the freight yields between North America/Central America/Caribbean and South America grew by only 9 per cent.

2.9 Columns 2 and 3 of Table 2-4 show the average revenue per tonne-kilometre performed for scheduled freight traffic carried on passenger or combination aircraft and on all-freight aircraft. The unit revenue from all-freight aircraft on some route groups is lower than that of passenger and combination aircraft because the former are more likely to carry large shipments which are subject to quantity discount rates or low specific commodity rates. However, for some route groups where there is large cargo capacity offered at competitive rates on wide-body passenger and combination aircraft (for example, on routes across the North/Mid-Pacific), the difference in the revenue yields of passenger and combination aircraft and of all-freight aircraft may be less or even produce negative figures. This reflects the fact that, depending on the mix of traffic, the freight cost basis on combination aircraft may allow much lower rates to be offered than those on pure freight services. In the case of some routes involving North America, the higher freight revenue yield on all-cargo services reflects the data of major all-freight air carriers, which also include courier traffic and revenue in their figures.

2.10 Column 4 of Table 2-4 shows the average revenue per tonne-kilometre performed for airmail traffic on each route group (virtually all international mail is carried on scheduled services). The route group averages range from a high of 52.3 cents on routes within the Middle East to a low of 16.5 cents on those within Africa in 2000 and from a high of 53.9 cents for routes across the Mid-Atlantic to a low of 23.3 cents for routes between Europe/Middle East/Africa and Asia/Pacific in 2001. Between 1999 and 2001, unit mail revenues decreased on 7 out of 15 route groups for which there are comparable data available. The decreases range from some 27 per cent for routes within Europe to some 4 per cent for routes across the South Pacific. The remaining 8 route groups saw their mail yields increase, ranging from some 34 per cent for routes across the Mid-Atlantic to less than 1 per cent for routes across the North/Mid-Pacific. Unit mail revenues in general still remain somewhat higher than unit freight revenues on scheduled services except for routes between North America/Central America/Caribbean and South America, within South America, within Europe, within Africa and across the North Atlantic.

2.11 The variation among individual airlines in freight revenue per tonne-kilometre for scheduled services for each route group for 2000 and 2001 is shown in Tables 2-5 and 2-6, respectively. For a few route groups, the unit revenues for individual airlines do not vary much from the route group average (for example, on routes across the Mid- and South Atlantic and between North America and Central America/Caribbean). However, as with passenger traffic, the unit revenues on most route groups differ significantly among airlines.

Table 2-5. Variation in scheduled freight revenue yield among airlines: 2000

Route group (short title)	Average revenue (cents) per tonne-kilometre (all airlines from Table 2-4)	Number of airlines in this analysis	Revenue (cents) per tonne-kilometre for individual airlines																	
			0 to 10	10 to 20	20 to 30	30 to 40	40 to 50	50 to 60	60 to 70	70 to 80	80 to 90	90 to 100	100 to 110	110 to 120	120 to 130	130 to 140	140 to 150	150 to 160	160 and over	
			Number of airlines																	
1. North-Central America	24.3	6		2	3	0	0	1												
2. Central America	47.8	2				1	0	0	0	0	0	0	0	0	0	0	0	1		
3. North America	35.2	12		4	4	1	2	1												
4. North-South America	38.2	18	2	6	4	3	0	0	1	0	0	0	0	0	0	0	1	0	1 ¹	
5. South America	33.4	7	1	0	0	5	1													
6. Europe	54.7	25				4	4	2	4	4	2	1	2	0	1	0	0	0	0	1 ²
7. Middle East	35.9	5			2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1 ³
8. Africa	25.1	3			2	0	0	0	0	0	0	0	0	0	0	1				
9. Europe-Middle East	20.3	19		4	4	5	2	2	1	0	1									
10. Europe-Africa	22.7	20		5	8	3	1	0	0	1	0	2								
11. North Atlantic	21.5	34		23	7	2	1	1												
12. Mid-Atlantic	19.5	8		6	2															
13. South Atlantic	23.6	10		6	3	1														
14. Asia/Pacific	34.6	20		1	4	6	1	4	1	1	0	1	1							
15. Europe-Asia/Pacific	20.4	35		9	19	4	2	0	1											
16. North/Mid-Pacific	26.7	15		6	6	1	1	0	1											
17. South Pacific	19.4	4		1	2	0	0	0	0	0	0	0	1							

1. In the range of (190–200).

2. In the range of (260–270).

3. In the range of (210–220).

Table 2-6. Variation in scheduled freight revenue yield among airlines: 2001

Route group (short title)	Average revenue (cents) per tonne-kilometre (all airlines from Table 2-4)	Number of airlines in this analysis	Revenue (cents) per tonne-kilometre for individual airlines																		
			0 to 10	10 to 20	20 to 30	30 to 40	40 to 50	50 to 60	60 to 70	70 to 80	80 to 90	90 to 100	100 to 110	110 to 120	120 to 130	130 to 140	140 to 150	150 to 160	160 and over		
			Number of airlines																		
1. North-Central America	19.6	6	1	2	3																
2. Central America	—	—																			
3. North America	24.4	8	1	1	4	0	1	1													
4. North-South America	40.3	15	1	3	4	3	1	1	0	1	0	0	0	0	0	0	0	0	0	1 ¹	
5. South America	37.4	6			1	1	2	1	0	0	1										
6. Europe	54.0	29			3	5	3	1	5	5	1	0	3	1	0	0	2				
7. Middle East	33.1	4			1	2	1														
8. Africa	35.1	2			1	0	1														
9. Europe-Middle East	20.7	21		4	4	3	5	1	1	2	0	1									
10. Europe-Africa	21.9	19		5	8	5	1														
11. North Atlantic	29.2	32	1	21	3	3	1	0	1	1	0	0	0	0	0	0	0	0	0	0	1 ²
12. Mid-Atlantic	19.8	6	1	3	1	0	1														
13. South Atlantic	26.7	8			5	2	1														
14. Asia/Pacific	30.0	25	1	3	2	6	4	0	2	3	0	2	1	0	1						
15. Europe-Asia/Pacific	19.4	35		15	15	1	2	1	0	1											
16. North/Mid-Pacific	26.5	18		9	5	2	1	0	0	1											
17. South Pacific	17.0	3		2	0	1															

1. In the range of (160–170).
 2. In the range of (200–210).

Chapter 3

REGIONAL DIFFERENCES IN SCHEDULED PASSENGER UNIT REVENUES AND RELATED COSTS

Overall financial results by international route group

3.1 Selected operational data and estimated financial results for the years 2000 and 2001, overall and by route group, are presented in Table 3-1.

3.2 Column 1 of Table 3-1 shows that the number of scheduled airlines operating jet services in each route group ranged from a low of 18 on the South Pacific routes to a high of 206 serving routes in local Europe in 2000 and from a low of 17 to a high of 199 on the same route groups in 2001. It should be noted that the propeller aircraft operations of these airlines are excluded from the study, as are the operations of some 110 and 127 small international airlines which operated exclusively propeller-driven aircraft in 2000 and 2001, respectively. Together these operations with propeller aircraft represented about 0.7 per cent of world international seat-kilometres both in 2000 and 2001, with their highest representations in any single route group being some 32 and 34 per cent within Central America/Caribbean in 2000 and 2001, respectively, some 4 per cent within Europe and 3 per cent within Africa in 2000 and about 3 per cent on the same route groups in 2001.

3.3 The operational data included in columns 3 to 5 of Table 3-1 all have a significant effect on unit operating costs (see Chapter 4), and the world unit cost is also affected by the geographical traffic composition presented in column 2. There are considerable differences among route groups in the volume of traffic, the average length of flight stages, the average number of seats per aircraft and the average passenger load factor.

3.4 Financial results are presented in columns 6 to 8. It should be borne in mind that the revenue figures do not generally take into account the incidental operating revenues. Those incidental revenues (which may be directly attributed to passenger traffic) include revenues from passengers paying less than 25 per cent of the normal applicable fare, commissions received on sales of transportation on other carriers, "no-show" and cancellation fees (expenses incurred against these revenue items are however included in the cost figures shown in column 7). These incidental revenues also include, on a net basis, capacity equalization payments arising from pooled and/or joint services as well as from the sale of own capacity to other carriers. Revenues accruing from the provision of services other than for air transportation (such as service and maintenance sales or handling services for third parties) and the corresponding costs are excluded from all figures presented in this study. An analysis of incidental revenue data on this basis for 2000 and 2001 indicates that for international routes as a whole, relevant incidental revenues not included in Table 3-1 were about 0.14 cents per passenger-kilometre in 2000 and 0.19 cents in 2001. If these relevant incidental revenues had been added to the estimated worldwide unit revenue, they would have increased the estimated worldwide unit revenue by about 2 per cent from 7.45 cents and 7.24 cents to 7.59 cents and 7.43 cents per passenger-kilometre in 2000 and 2001, respectively. For individual route groups, the passenger-related incidental operating revenues may represent as much as an additional 4 and 5 per cent over the average revenue in 2000 and 2001, respectively.

3.5 The average operating cost per passenger-kilometre for all international routes was 7.78 cents and 7.92 cents (column 7) in 2000 and 2001, respectively. The figures for individual route groups

range from a high of 14.6 cents within Europe to a low of 5.6 cents on routes across the Mid-Atlantic in 2000 and from a high of 14.5 cents within the Middle East to a low of 5.9 cents on routes across the Mid-Atlantic in 2001. These estimated costs include such items as depreciation and sales commission paid (which are sometimes accounted for differently) but exclude costs attributable to the carriage of freight and mail.

3.6 The ratio of passenger revenues to passenger costs (column 8) for international routes as a whole is estimated at 0.96 for 2000 and 0.91 for 2001, with the ratios for individual route groups varying from 0.80 to 1.10 for 2000 and from 0.75 to 1.00 for 2001. Taking into account the relevant incidental revenues associated with international passenger traffic and the margins of uncertainty in estimated revenues and costs (discussed in Appendix 2), the revenue/cost ratio for all international passenger traffic is estimated to be between 0.94 and 1.03 in 2000 and between 0.90 and 0.98 in 2001, with a most likely value of 0.99 and 0.94 in 2000 and 2001, respectively.

3.7 The components of the total passenger costs are presented in Table 3-2. The primary breakdown is between "aircraft operating costs" (i.e. those directly attributable to the operation of aircraft on each route group) and "other operating costs". All the itemized data carry relatively wide margins of uncertainty and should be regarded as indicative only. Nevertheless, it appears that most of the individual items vary significantly among route groups.

3.8 The variations in revenue/cost ratios among airlines in 2000 and 2001 are shown in Table 3-3. On most route groups, the ratios vary significantly among the airlines, and the average revenue/cost ratios do not therefore adequately portray the economics of the operations. The revenue/cost ratios of individual carriers ranged from less than 0.7 to greater than 1.3 on 2 of the 15 route groups included in the analysis both in 2000 and 2001, while ratios ranging from 0.7 to 1.3 were observed on 9 and 8 route groups in 2000 and 2001, respectively.

Comparison of results for 2001 with those for 1999

3.9 An overall comparison between data for 2001 and corresponding data for 1999 shows a marginal increase of 0.5 per cent in the estimated passenger cost per available seat-kilometre, from 5.55 cents to 5.58 cents. Since the worldwide average load factor at 70 per cent showed virtually no change in 2001, as compared to 1999, the cost per passenger-kilometre shows almost the same increase of 0.4 per cent, from 7.89 cents to 7.92 cents (see column 7 of Table 3-1). Unit revenues (excluding incidental operating revenues) showed a decrease of 4.1 per cent, from 7.55 cents per passenger-kilometre to 7.24 cents in 2001 (see column 6 of Table 3-1). As a result, the overall revenue/cost ratio decreased from 0.96 in 1999 to 0.91 in 2001.

3.10 Between 1999 and 2001, 6 out of the 14 route groups for which comparable data were available showed decreases in costs per passenger-kilometre ranging from a reduction of some 10 per cent on routes between Europe/Middle East and Africa to some 1 per cent for those between Europe/Middle East/Africa and Asia/Pacific. One route group (within Asia/Pacific) showed no change, while the remaining 7 route groups showed some increases ranging from some 12 per cent on routes within North America to less than 1 per cent for the Mid-Atlantic (Figure 3-1).

3.11 As with the revenue figures discussed in Chapter 2, the comparison of unit costs between 1999 and 2001 has been affected in some cases by a change in the value of the United States dollar against other world currencies. Within the Americas, where most fares and rates are transacted in United States dollars, the changes in yields generally reflect market changes. Similarly, changes in unit costs in the Americas to a large extent reflect the general change in costs, as well as some operational changes, since the greater part of costs are generally borne in United States dollars.

3.12 Outside the Americas, for those route groups where, between 1999 and 2001, the mix of national currencies generally weakened against the United States dollar (such as route groups involving

Table 3-1. Basic operational data and financial results for scheduled passenger services by international route groups: 2000 and 2001¹

Route group (short title)	Operational data										Financial results ²					
	Number of airlines		Percentage of world's international traffic (available seat-km)		Average length of flight stages (km)		Average number of seats per aircraft ³		Average passenger load factor (percentage points)		Average revenue (cents) per pass-km ⁴		Average passenger costs (cents) per pass-km		Ratio revenue/costs ^{4,5}	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	2000	2001	2000	2001	2000	2001	2000	2001	2000	2001	2000	2001	2000	2001	2000	2001
I. All world international routes	483	473	100.0	100.0	2 069	2 050	228	224	72	70	7.45	7.24	7.78	7.92	0.96	0.91
II. International route groups																
1. North-Central America	40	34	1.8	1.8	1 592	1 629	164	161	71	71	7.8	7.7	9.2	9.4	0.85	0.80
2. Central America	24	22	0.2	0.2	768	815	135	131	—	—	—	—	—	—	—	—
3. North America	67	60	4.0	3.8	1 376	1 378	129	126	66	65	7.8	7.7	10.1	10.5	0.80	0.75
4. North-South America	47	45	3.5	3.4	3 014	3 044	198	194	66	64	7.8	8.0	8.2	8.5	1.00	0.95
5. South America	34	32	0.7	0.7	1 173	1 198	143	141	62	60	10.4	9.8	11.8	11.6	0.90	0.85
6. Europe	206	199	12.5	12.9	981	983	132	131	64	65	14.6	13.7	14.6	14.0	1.00	1.00
7. Middle East	23	18	0.4	0.5	814	826	181	187	57	57	13.8	14.0	14.2	14.5	1.00	1.00
8. Africa	56	54	0.6	0.6	1 162	1 225	153	148	—	—	—	—	—	—	—	—
9. Europe-Middle East	73	66	2.7	2.7	2 747	2 789	210	212	67	65	8.9	8.5	8.9	9.1	1.00	0.95
10. Europe-Africa	108	105	5.5	5.4	2 736	2 729	240	241	69	71	6.9	6.9	7.3	6.9	0.95	1.00
11. North Atlantic	70	66	19.9	19.2	5 775	5 737	264	258	78	74	6.2	6.0	6.4	6.8	1.00	0.90
12. Mid-Atlantic	41	35	3.5	3.6	5 836	5 969	294	299	78	77	4.8	4.9	5.6	5.9	0.85	0.80
13. South Atlantic	22	20	2.3	2.4	6 507	6 724	273	265	76	71	5.8	5.7	6.5	6.5	0.90	0.90
14. Asia/Pacific	106	104	12.1	13.0	2 114	2 070	268	267	72	69	8.0	7.6	7.3	7.4	1.10	1.00
15. Europe-Asia/Pacific	128	124	16.6	16.5	4 943	5 029	304	303	76	74	5.9	5.7	6.3	6.2	0.90	0.90
16. North/Mid-Pacific	28	27	11.8	11.5	6 802	6 864	340	331	76	72	5.3	5.0	6.1	6.5	0.90	0.80
17. South Pacific	18	17	1.9	1.8	6 610	6 630	329	318	70	72	5.7	5.2	6.0	6.0	0.95	0.90

1. Excluding operational and financial data attributed to supersonic and propeller-driven aircraft.

2. The margins of uncertainty which should be considered in relation to these results are discussed in Appendix 2. For routes between and within Central America and Caribbean and within Africa, the representation was inadequate to justify separate presentation, but the data have been included in the world averages.

3. As defined by available seat-kilometres divided by aircraft-kilometres flown.

4. These figures do not generally include incidental operating revenues. For all international routes, that part of this additional revenue which may be directly attributed to international passenger traffic is about 0.14 and 0.19 cents per passenger-kilometre for 2000 and 2001, respectively. On individual route groups, it may represent up to an additional 4 and 5 per cent over the average passenger revenue quoted for 2000 and 2001, respectively.

5. Rounded to the nearest twentieth for individual route groups.

Table 3-2. Estimated passenger costs¹ per passenger-kilometre by cost item: 2000 and 2001

Route group (short title)	Aircraft operating costs						Other operating costs														
	Total operating costs (cf. Table 3-1) (sum of columns 1-9)		Aircraft operating costs excluding fuel and oil ²		Aircraft fuel and oil		Landing and associated airport charges		Air navigation charges		Station expenses		Passenger services		Commission		Ticketing, sales and promotion		General, administrative and miscellaneous		
			(1)	(2)			(3)	(4)	(5)	(6)	(7)	(8)	(9)								
	2000	2001	2000	2001	2000	2001	2000	2001	2000	2001	2000	2001	2000	2001	2000	2001	2000	2001	2000	2001	
I. All																					
Cents	7.78	7.92	2.26	2.42	1.17	1.16	0.32	0.32	0.25	0.25	0.77	0.80	1.19	1.21	0.66	0.58	0.55	0.55	0.62	0.63	
Percentage of total costs	100.0	100.0	29.0	30.6	15.0	14.6	4.1	4.0	3.2	3.2	9.9	10.1	15.3	15.3	8.5	7.3	7.1	6.9	8.0	8.0	
II. International route groups																					
1. North-Central America	9.2	9.4	3.0	3.1	1.3	1.2	0.2	0.2	0.1	0.1	1.5	1.5	1.3	1.3	0.6	0.5	0.5	0.5	0.8	0.8	
2. Central America	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
3. North America	10.1	10.5	3.6	3.9	1.4	1.4	0.2	0.2	0.1	0.1	1.6	1.7	1.3	1.4	0.6	0.5	0.5	0.6	0.7	0.8	
4. North-South America	8.2	8.5	2.5	2.6	1.2	1.2	0.2	0.2	0.2	0.2	0.7	0.8	1.1	1.2	0.9	0.9	0.5	0.6	0.9	0.9	
5. South America	11.8	11.6	3.5	3.6	1.6	1.5	0.4	0.5	0.4	0.4	0.9	1.1	1.1	1.1	2.0	1.9	0.8	0.9	1.0	0.7	
6. Europe	14.6	14.0	4.4	4.4	1.5	1.4	1.1	1.0	0.7	0.7	1.8	1.8	1.9	1.9	1.3	1.1	1.2	1.1	0.6	0.5	
7. Middle East	14.2	14.5	4.5	4.5	1.6	1.6	0.5	0.6	0.3	0.3	2.5	2.8	1.5	1.5	1.2	1.2	1.1	1.1	1.0	1.0	
8. Africa	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
9. Europe-Middle East	8.9	9.1	2.4	2.6	1.2	1.2	0.3	0.4	0.4	0.5	1.0	1.0	1.2	1.3	0.9	0.7	0.6	0.6	0.9	0.9	
10. Europe-Africa	7.3	6.9	2.1	2.1	1.2	1.1	0.3	0.3	0.4	0.4	0.6	0.6	1.1	1.1	0.5	0.5	0.4	0.4	0.6	0.5	
11. North Atlantic	6.4	6.8	1.8	2.0	1.0	1.0	0.2	0.2	0.2	0.2	0.6	0.7	1.1	1.1	0.5	0.4	0.4	0.4	0.7	0.8	
12. Mid-Atlantic	5.6	5.9	1.6	1.6	1.1	1.1	0.2	0.2	0.2	0.2	0.3	0.3	1.0	1.1	0.3	0.3	0.3	0.3	0.7	0.9	
13. South Atlantic	6.5	6.5	1.8	1.8	1.2	1.2	0.2	0.2	0.3	0.3	0.4	0.4	0.9	1.0	0.8	0.8	0.4	0.4	0.6	0.6	
14. Asia/Pacific	7.3	7.4	2.1	2.3	1.1	1.2	0.4	0.4	0.2	0.2	0.8	0.8	1.2	1.2	0.7	0.6	0.6	0.6	0.3	0.3	
15. Europe-Asia/Pacific	6.3	6.2	1.7	1.7	1.1	1.1	0.2	0.2	0.3	0.3	0.4	0.4	1.0	1.0	0.5	0.5	0.4	0.4	0.6	0.6	
16. North/Mid-Pacific	6.1	6.5	1.8	2.1	1.1	1.1	0.2	0.2	0.1	0.1	0.5	0.5	1.0	1.1	0.5	0.4	0.4	0.4	0.6	0.7	
17. South Pacific	6.0	6.0	1.7	1.8	1.1	1.0	0.1	0.1	0.1	0.1	0.4	0.4	1.0	0.9	0.7	0.7	0.5	0.5	0.5	0.5	

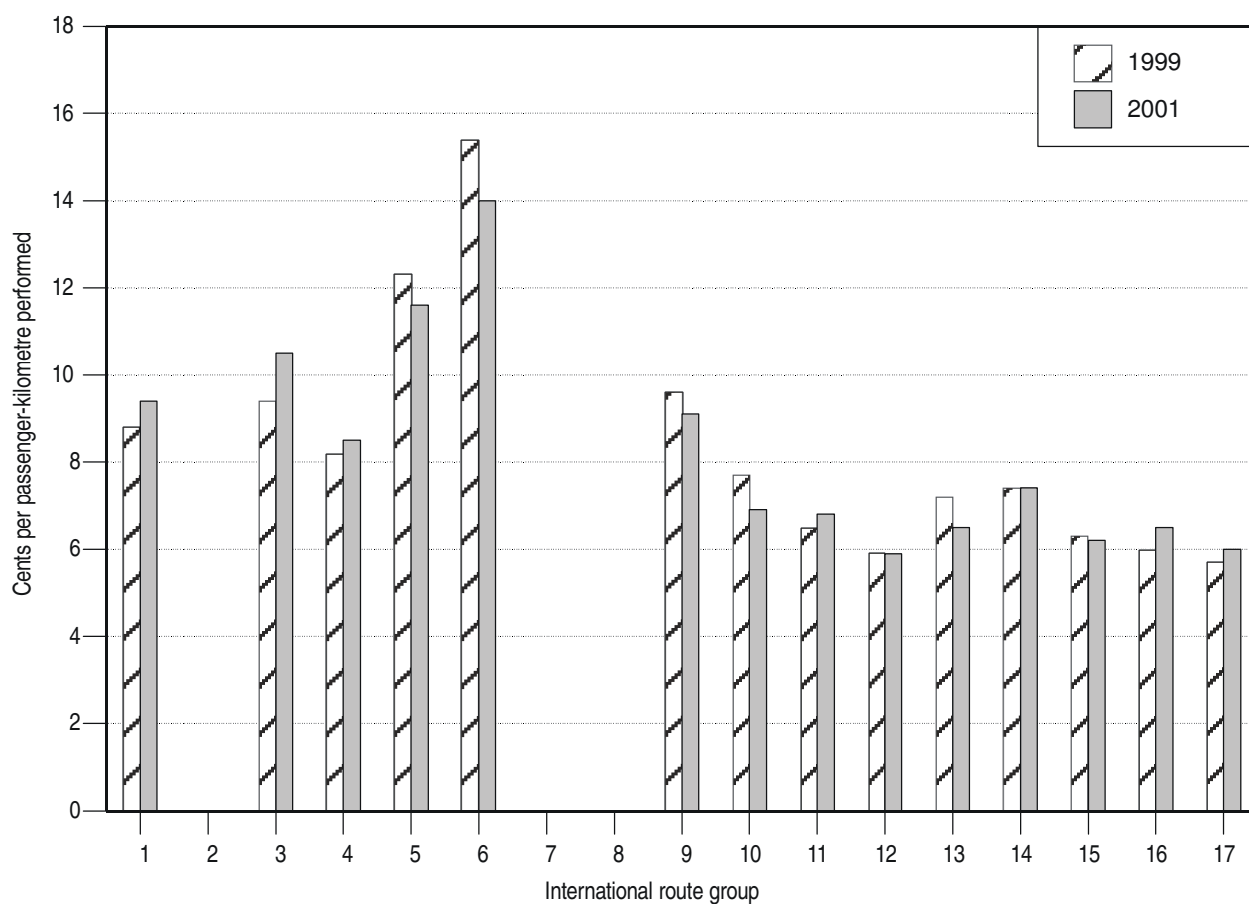
1. "Passenger costs" have been derived for each route group by taking into account the contribution made by the revenue earned for the carriage of freight and mail on passenger flights towards covering total costs for these flights. Due to the margins of uncertainty in the estimates of individual cost items, the figures should be regarded as indicative only.
2. This item includes flight operations expenses (cockpit crew salaries and expenses, rentals and insurance of flight equipment), aircraft maintenance and overhaul, and aircraft standing charges such as depreciation.

Table 3-3. Variation in revenue/cost ratios among airlines: 2000 and 2001

Route group (short title)	Average revenue/cost ratio (all airlines from Table 3-1)		Number of airlines in this analysis		Number of airlines									
					Less than 0.7		0.7 to 0.9		0.9 to 1.1		1.1 to 1.3		Greater than 1.3	
	2000	2001	2000	2001	2000	2001	2000	2001	2000	2001	2000	2001	2000	2001
I. All world international routes	0.96	0.91	61	67	7	4	18	22	30	32	5	8	1	1
II. International route groups														
1. North-Central America	0.85	0.80	6	6		2	2	2	4	2				
2. Central America	—	—												
3. North America	0.80	0.75	10	9		3	8	5	2	1				
4. North-South America	1.00	0.95	10	10	2		3	4	2	3	3	2		1
5. South America	0.90	0.85	5	6	1		1	2	3	4				
6. Europe	1.00	1.00	22	27	2	2	7	5	11	16	2	4		
7. Middle East	1.00	1.00	5	5			2	2	1	2	2	1		
8. Africa	—	—								1				1
9. Europe-Middle East	1.00	0.95	18	19	2	5	6	10	8	3	2			1
10. Europe-Africa	0.90	1.00	17	19	2	1	5	8	9	5	1	5		
11. North Atlantic	1.00	0.90	27	26	5	6	9	14	12	5	1	1		
12. Mid-Atlantic	0.85	0.80	7	5	2	1	4	2	1	2				
13. South Atlantic	0.90	0.90	8	8	2	2	3	4	2	2	1			
14. Asia/Pacific	1.10	1.00	14	15	1		2	1	6	5	2	6	3	3
15. Europe-Asia/Pacific	0.90	0.90	27	27	6	6	10	6	10	11		3	1	1
16. North/Mid-Pacific	0.90	0.80	10	13		5	4	3	4	4	2	1		
17. South Pacific	0.95	0.90	3	3	1	1	1		1	2				

Africa, Asia/Pacific and Europe), with some exceptions which caused local distortions, the changes shown in revenues and costs when expressed in U.S. dollars are effectively overstated. Hence, between 1999 and 2001, the yields and costs expressed in local currencies for some of the route groups involving airlines from these regions would have shown increases rather than decreases.

3.13 Of the 14 route groups analysed in this study for which comparable data were available, 12 showed a decrease in their respective revenue/cost ratios between 1999 and 2001, while the remaining two showed an increase (Figure 3-2). Contributions to these changes by different regional groups of airlines are discussed below.



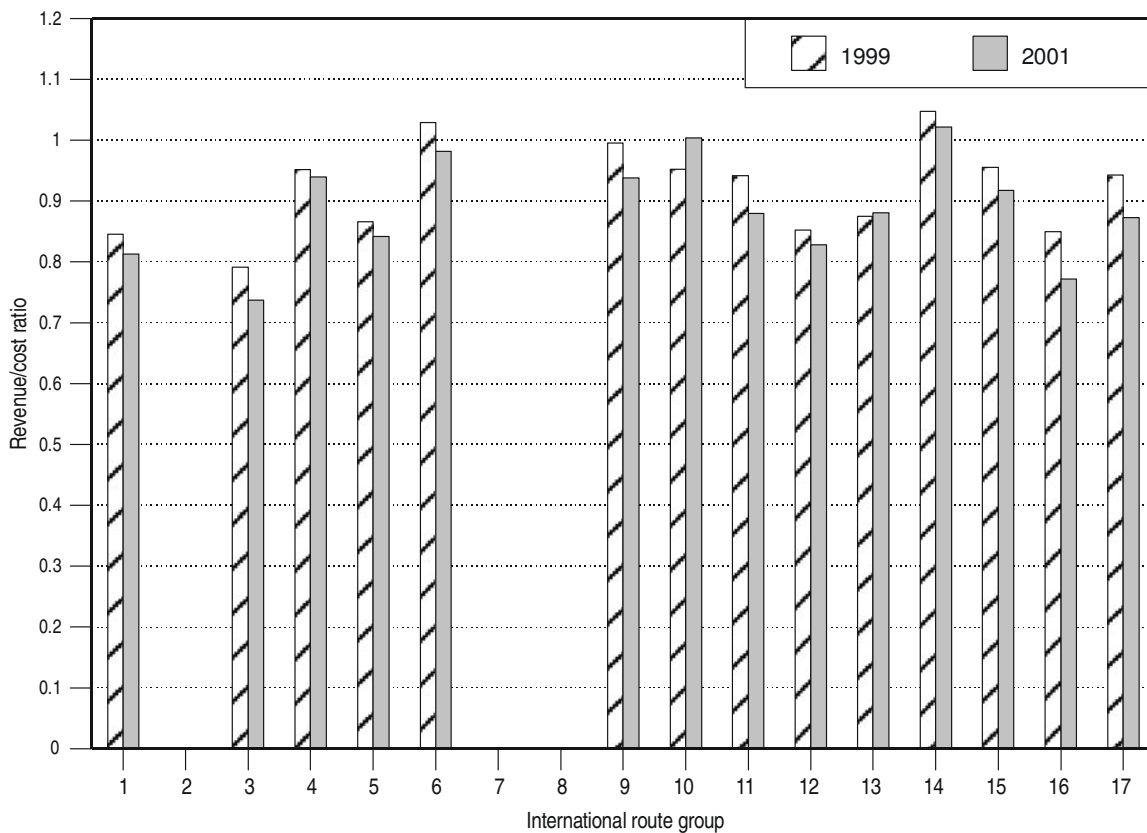
- | | | |
|--------------------------|-----------------------|-------------------------|
| 1. North-Central America | 7. Middle East | 13. South Atlantic |
| 2. Central America | 8. Africa | 14. Asia/Pacific |
| 3. North America | 9. Europe-Middle East | 15. Europe-Asia/Pacific |
| 4. North-South America | 10. Europe-Africa | 16. North/Mid-Pacific |
| 5. South America | 11. North Atlantic | 17. South Pacific |
| 6. Europe | 12. Mid-Atlantic | |

Figure 3-1. Comparison of total unit operating costs: 1999 and 2001

3.14 For most of the 12 route groups where there was a deterioration in revenue/cost ratios, in general, yields expressed in cents per passenger-kilometre showed a significant reduction, while unit costs expressed in terms of cents per seat-kilometre decreased less or showed increases. Some improvement in the passenger load factor on some of those route groups was insufficient to offset the decrease in yields. Two route groups which showed some improvement in revenue/cost ratio also showed a significant increase in their respective average passenger load factors between 1999 and 2001, which was a significant contributor to the improvement of the ratios.

Variations in revenue/cost ratios among airlines

3.15 Comparing the years 1999 and 2001, the airlines of the Asia/Pacific region, Europe, North America and South America, each as a group, showed declines in their respective overall operating ratios (airlines from Central America/Caribbean, Africa and the Middle East are excluded from this analysis because of their low representation in both or either of the years).



- | | | |
|--------------------------|-----------------------|-------------------------|
| 1. North-Central America | 7. Middle East | 13. South Atlantic |
| 2. Central America | 8. Africa | 14. Asia/Pacific |
| 3. North America | 9. Europe-Middle East | 15. Europe-Asia/Pacific |
| 4. North-South America | 10. Europe-Africa | 16. North/Mid-Pacific |
| 5. South America | 11. North Atlantic | 17. South Pacific |
| 6. Europe | 12. Mid-Atlantic | |

Figure 3-2. Comparison of revenue/cost ratios: 1999 and 2001

3.16 Compared to 1999, airlines registered in the Asia/Pacific region marginally improved their revenue/cost ratio on routes across the South Pacific. However, on the remaining route groups on which Asia/Pacific airlines operated, the ratios deteriorated in 2001 as compared to 1999. Average unit operating costs per seat-kilometre increased on all route groups, except for routes across the South Pacific, where they decreased marginally. Passenger yields fell on all route groups. The average increase of unit costs per seat-kilometre of some 2 per cent coupled with an average decline of yields of some 2 per cent and no change of load factor contributed to the decrease of the average revenue/cost ratio by some 4 per cent for all route groups on which the Asia/Pacific airlines operated.

3.17 Compared to 1999, airlines of the European region saw their average revenue/cost ratios deteriorate on route groups on which they operated. These airlines managed to decrease their unit operating costs per seat-kilometre on all route groups except for the Mid-Atlantic and between Europe/Middle East/Africa and Asia/Pacific. However, on only two route groups, i.e. between Europe/Middle East and Africa and across the South Atlantic, were the declines in yields smaller than these decreases in unit costs per passenger-kilometre, resulting in an improvement of the revenue/cost ratios. Despite the increases of load factors on some of the other route groups, these improvements were unable to decrease unit costs per passenger-kilometre sufficiently to offset the decreases in yields and consequently the revenue/cost ratios deteriorated.

3.18 Among the four groups of airlines for which comparable data were available, in 2001 airlines of the North America region suffered the biggest declines in revenue/cost ratios on all route groups on which they operated, as compared to 1999. The biggest decrease occurred on routes across the South Pacific, followed by the North/Mid-Pacific, North Atlantic, between North America/Central America/Caribbean and South America, within North America and between North America and Central America/Caribbean route groups. Unit operating costs per seat-kilometre increased significantly on all of the route groups on which the North American airlines operated and load factors decreased (for the latter with the exception of two route groups, namely, between North America and Central America/Caribbean and between North America/Central America/Caribbean and South America), resulting in even bigger increases in unit costs per passenger-kilometre. Although the North American airlines managed to increase their yields on the majority of the route groups on which they operated (except North Atlantic and South Pacific), these improvements were not sufficient to offset the increases in unit costs per passenger-kilometre, resulting in declines of revenue/cost ratios on all route groups operated by these airlines.

3.19 Compared to 1999, in 2001 the airlines of the South America region experienced the smallest declines in the average revenue/cost ratio for all route groups on which they operated, compared to other regional groupings of airlines. They managed to increase the ratio significantly on routes across the North/Mid- and South Pacific, mainly due to decreases in unit costs per seat-kilometre, while the ratios on the remaining route groups declined only marginally. The South American airlines saw their load factors increase on all route groups but one (South Pacific). Except for routes between North America/Central America/Caribbean and South America, unit operating costs per seat-kilometre decreased as compared to 1999. These decreases, coupled with improvements in load factors, resulted in even bigger declines of unit operating costs per passenger-kilometre. However, except for routes between North America/Central America/Caribbean and South America, the North/Mid- and South Pacific, yields on all route groups on which the South American airlines operated dropped more than unit costs per passenger-kilometre, resulting in the decline of the revenue/cost ratios on these route groups.

Chapter 4

FACTORS CAUSING REGIONAL DIFFERENCES IN COSTS

4.1 The financial analysis presented in Chapter 3 included estimates of the average cost per passenger-kilometre performed for each of the 15 international route groups for which adequate data were available for 2000 and 2001. This chapter is concerned with assessments of the factors which caused this average cost to vary among the route groups. Some main factors can be identified and their effects quantified, but a number of other factors do not lend themselves to individual assessment and are therefore dealt with in a summary manner, although their combined influence on cost differences is significant.

4.2 The factors which have been considered are:

- a) the effect on aircraft operating costs of differences among route groups in the aircraft equipment being used;
- b) the effect of differences among route groups in the average length of flight stages;
- c) the effect of varying fuel and oil prices in different parts of the world;
- d) the effect of different levels of airport user charges in different parts of the world;
- e) the effect of differences in the average load factor achieved on each route group; and
- f) other factors.

An examination of the influence exercised by each of the above on the operating costs for traffic in the route groups is made below, and the resulting variations in the costs per passenger-kilometre from the world average are subsequently presented in Table 4-5 and discussed in 4.22 and 4.23 of this chapter.

Aircraft mix and stage length

[factors a) and b)]

4.3 The volume of traffic on a route and the geographical characteristics of the route (in particular, the length of flight stages) determine the sizes of aircraft that are utilized in the route group, the number of seat-kilometres per departure and per flight hour that can be produced by these aircraft, and the possible utilization of the aircraft in terms of flight hours per year. For these reasons, the geographical characteristics of a route group strongly influence the operating costs per seat-kilometre that will be incurred on that route group. The effects on these costs of differences among the route groups in aircraft mix and average stage length are discussed below.

4.4 In general, the aircraft operating costs per aircraft-kilometre or per seat-kilometre on a long-haul flight are lower than on a short-haul flight, mainly because of the higher block speed that may be achieved on a long-haul flight and the generally higher aircraft daily utilization recorded. Similarly, large aircraft, which may be used where traffic density is high, have lower aircraft operating costs per seat-kilometre than small aircraft. The combined impact of these two factors may be illustrated by looking at the average aircraft operating costs incurred in international passenger service in 2000 and 2001 for different categories of aircraft. Table 4-1 presents the average aircraft operating costs per block hour and

**Table 4-1. Operational and cost data for aircraft categories: 2000 and 2001
(international scheduled passenger services)**

Grouping of subsonic aircraft	Primary jet types operated on international scheduled services ¹	Per cent of world's international traffic (available seat-km)		Average number of seats ²		Average length of flight stage operated (km)		Average utilization ³ (hours/day)		Aircraft operating costs ⁴			
										Dollars per block hour		Cents per available seat-km ⁵	
										(1)	(2)	(3)	(4)
		2000	2001	2000	2001	2000	2001	2000	2001	2000	2001	2000	2001
World		100.0	100.0	228	224	2 069	2 050	9.5	9.3	4 163	4 086	2.6	2.6
Narrow-body short-haul	A320 B737 DC9 MD80	17.9	18.9	124	124	1 059	1 067	8.1	7.8	2 526	2 486	3.6	3.6
Narrow-body medium-haul	B727 B757 TU154	5.7	5.4	172	171	1 836	1 885	8.2	7.9	3 170	3 286	2.8	2.9
Narrow-body long-haul		0.1	0.1	159	150	3 240	2 967	5.0	4.4	4 074	3 600	3.5	3.4
Wide-body medium-haul	A300 A310 A330 B767	13.8	13.2	234	236	2 829	2 818	9.1	8.9	4 463	4 521	2.5	2.6
Wide-body long-haul	A340 B747 B767ER B777 DC10 MD11	62.5	62.4	310	304	5 470	5 438	11.4	11.2	5 945	5 812	2.3	2.3

1. Only aircraft types providing more than 0.5 per cent of the world's international scheduled available seat-kilometres in 2000 and 2001 are listed in this column. The categorization of aircraft types is based on the average number of seats and length of flight stages in 2000 and 2001.
2. Available seat-kilometres divided by aircraft-kilometres flown.
3. Including domestic and non-scheduled operations of the international airlines concerned.
4. Data in these columns include flight operations expenses, aircraft fuel and oil (at the world average cost of 22.5 and 21.6 cents per litre for 2000 and 2001, respectively), aircraft maintenance and overhaul, and aircraft standing charges such as depreciation. If prevailing regional prices rather than the world average price were to be used for aircraft fuel and oil, there would be no change in the seat-kilometre cost data presented but small changes in some of the per block hour data.
5. Aircraft operating costs have been adjusted in this case to exclude costs attributable to freight and mail traffic.

per available seat-kilometre for 5 categories of aircraft, grouped according to their size and by the length of haul for which they were generally used in 2000 and 2001. The average hourly cost varied from \$2 526 for narrow-body short-haul aircraft to \$5 945 for wide-body long-haul aircraft in 2000 and from \$2 486 to \$5 812 for the same categories in 2001. However, primarily because of their greater productivity, the average aircraft operating cost per available seat-kilometre (adjusted to exclude costs attributable to freight and mail traffic) of the wide-body long-haul aircraft was, at 2.3 cents, the lowest for any category. At the other end of the spectrum, the narrow-body short-haul aircraft averaged 3.6 cents per seat-kilometre for both years, which is some 57 per cent higher than the figure for wide-body long-haul aircraft.

4.5 Aircraft operational data for each route group (excluding utilization effects) are shown in Table 4-2. The average block speed achieved is shown to be significantly higher on route groups with a long average stage length, such as transatlantic and transpacific routes, than on route groups with a short average stage length such as within Europe, within Central America/Caribbean and within the Middle East.

4.6 This relative economic advantage for the operations of long-haul routes is amplified by the fact that large wide-body aircraft accounted for a high proportion of the total capacity on long-haul routes but were being used less on the route groups with a short average stage length. The variation in average aircraft productivity resulting from variations in average block speed and average size of aircraft is very wide. For example, the seat-kilometres per aircraft block hour for routes within Central America/Caribbean, within North America and within Europe are in each case one-third or less of the seat-kilometres per block hour on the Mid-Atlantic, between Europe/Middle East/Africa and Asia/Pacific, North/Mid-Pacific and South Pacific route groups.

4.7 Differences in aircraft fleet composition among route groups contribute to the differences in both aircraft and other operating costs, but mainly to the aircraft costs. The contribution to regional differences in aircraft operating costs arising from differences in aircraft mix (excluding the effects of differences in stage length, fuel prices and load factors) has been estimated and is presented in 4.23.

4.8 Other operating costs as well as aircraft operating costs are, of course, also strongly influenced by the average length of flight stages operated in a route group. The reason is that certain important cost items, such as station expenses and landing charges, are primarily dependent upon the number of aircraft and passenger departures. Since the number of seat-kilometres (or passenger-kilometres) per departure increases proportionally with increasing stage length, the cost per seat-kilometre (or per passenger-kilometre) of station expenses and landing charges falls with increasing stage length. Estimated effects of differences in stage length on operating costs (both aircraft and other) are also presented in 4.23.

Prices for aircraft fuel and oil [factor c)]

4.9 The estimated total consumption of aircraft fuel and oil on international subsonic jet passenger routes in 2000 and 2001 was some 115 and 116 billion litres, respectively, and the total cost to the airlines was some \$25.8 billion for an average price per litre of 22.5 cents in 2000 and some \$25.0 billion for an average price per litre of 21.6 cents in 2001. Fuel represented some 15.0 and 14.6 per cent of the total passenger operating costs in 2000 and 2001, respectively, which was well above the 1999 level of 11.1 per cent.

4.10 Detailed estimates have been made of the average price of fuel purchased in the different regions of the world (Table 4-3) and of the average price of fuel consumed on the various route groups (Table 4-4). As shown in Table 4-3, on a regional basis, the price per litre of fuel in 2000 ranged from 20.1 cents in North America to 24.8 cents in Central America/Caribbean (some 23 per cent higher than the price paid in North America) and in 2001, from 19.5 cents to 23.7 cents for the same regions; fuel prices in 2001 were above the levels of 1999, worldwide by some 33 per cent, and on a regional basis ranging from some 16 per cent for Africa to 39 per cent for South America.

4.11 On a route group basis (Table 4-4), the estimated fuel prices range from a low of 19.5 cents per litre for routes across the South Pacific to a high of 25.1 cents per litre for routes within Asia/Pacific in 2000 and from a low of 19.3 cents to a high of 24.3 cents per litre for the same route groups in 2001.

Airport and associated charges [factor d)]

4.12 As shown in Table 3-2, airport charges represented some 4.1 and 4.0 per cent of the total costs for international passenger operations in 2000 and 2001, respectively. The basis on which these charges are levied varies from airport to airport, but aircraft mass is the predominant element. A broad and simple comparison of the levels of airport charges in different parts of the world can be based on dollars paid

Table 4-2. Aircraft operational data by route group: 2000 and 2001

Route group (short title)	Average length of flight stage (km)		Average block speed (km/h)		Percentage distribution				Average aircraft productivity: available seat-kilometres per block hour (thousands)	
	(1)		(2)		(3)		(4)		(5)	
	2000	2001	2000	2001	2000	2001	2000	2001	2000	2001
I. All world international routes	2 069	2 050	658	655	24	24	76	76	150	147
II. International route groups										
1. North-Central America	1 592	1 629	615	614	78	81	22	19	101	99
2. Central America	768	815	550	543	98	99	2	1	74	71
3. North America	1 376	1 378	577	573	92	93	8	7	75	72
4. North-South America	3 014	3 044	722	721	32	33	68	67	143	140
5. South America	1 173	1 198	595	598	74	80	26	20	85	85
6. Europe	981	983	520	518	91	92	9	8	69	68
7. Middle East	814	826	506	512	45	42	55	58	92	96
8. Africa	1 162	1 225	617	623	59	64	41	36	94	92
9. Europe-Middle East	2 747	2 789	674	676	31	28	69	72	141	143
10. Europe-Africa	2 736	2 729	701	698	18	18	82	82	168	168
11. North Atlantic	5 775	5 737	765	763	4	4	96	96	202	197
12. Mid-Atlantic	5 836	5 969	792	792	1	1	99	99	233	237
13. South Atlantic	6 507	6 724	798	801	0	0	100	100	218	212
14. Asia/Pacific	2 114	2 070	668	664	12	13	88	87	179	177
15. Europe-Asia/Pacific	4 943	5 029	754	756	4	4	96	96	229	229
16. North/Mid-Pacific	6 802	6 864	795	793	1	1	99	99	270	262
17. South Pacific	6 610	6 630	811	809	2	3	98	97	267	257

per tonne of aircraft maximum take-off mass. Using this measure, estimated average airport charges in different regions of the world are presented in Table 4-3. The table shows that the world average was \$10.6 and \$10.3 per tonne in 2000 and 2001, respectively; the average charges in regions ranged from \$4.9 in Central America/Caribbean to \$15.0 in Europe in 2000 and from \$4.9 to \$14.2, respectively in 2001. Air navigation charges are not generally included in these estimates because of the margin of uncertainty associated with their estimation on a regional basis.

4.13 Estimates of landing and associated airport charges have also been made on a route group basis and are shown in Table 4-4. The range of these estimates for route groups is from \$3.8 per tonne for traffic within North America to \$15.6 for traffic within Europe in 2000 and from \$4.4 to \$14.4 for the same route groups in 2001. One of the reasons that airport charges in Europe appear high is because the airport passenger service charge is generally paid by the air carrier. This approach is also applied by the majority of States in the Caribbean and a significant proportion of States in Africa and the Middle East. But in most States in other regions of the world, the airport passenger service charges are collected from the passenger either at the point of embarkation or are added onto the ticket as a separate charge when the ticket is issued.

Load factor

[factor e)]

4.14 A large part of the total costs of operating a flight on a scheduled air service is independent of, or only moderately affected by, the number of passengers actually carried on the flight. Since, as shown in Table 3-1, the passenger load factors achieved in 2000 and 2001 varied significantly among route groups, from a low of 57 per cent on routes within the Middle East to a high of 78 per cent on routes across the North and Mid-Atlantic in 2000 and from a low of 57 per cent on routes within the Middle East to a high of

**Table 4-3. Estimated unit fuel prices and airport charges by region:
2000 and 2001 (international scheduled services)**

Area ¹	Aircraft fuel and oil prices (cents/litre)		Landing and associated airport charges (dollars/departed tonne) ²	
	2000	2001	2000	2001
World	22.5	21.6	10.6	10.3
North America	20.1	19.5	6.2	7.0
Central America/Caribbean	24.8	23.7	4.9	4.9
South America	23.2	22.6	6.9	6.9
Europe	22.5	21.6	15.0	14.2
Middle East	23.1	22.2	5.5	5.7
Africa	24.2	22.9	8.4	7.6
Asia/Pacific	23.8	22.7	10.1	9.4

1. More detailed descriptions of areas and route groups may be found in Appendix 3 on the reverse of the cost questionnaire.

2. Tonnes of aircraft maximum take-off mass.

77 per cent on routes across the Mid-Atlantic in 2001, they had a significant influence on the differences in total operating costs per passenger-kilometre. Estimated effects of differences in load factor on operating costs for each route group are presented in 4.23.

Other causes of regional differences in costs

4.15 Among the factors that led to regional differences in the total cost of passenger operations in 2000 and 2001, the varying aircraft operating costs, including the effect of varying prices of fuel, have been discussed above. The effect of varying stage lengths and load factors has been assessed for both aircraft operating costs and other cost items, but with the exception of variations in airport charges, other effects of differences in non-aircraft cost items have not been analysed. The remaining cost items include *station expenses; passenger services; commission; ticketing, sales and promotion; and general, administrative and miscellaneous*. Table 3-2 shows that together, they accounted for some 49 and 48 per cent of the total costs for international passenger operations in 2000 and 2001, respectively (compared with

Table 4-4. Estimated unit fuel prices and airport charges by route group: 2000 and 2001 (international scheduled services)

Route group (short title)	Aircraft fuel and oil prices (cents/litre)		Landing and associated airport charges (dollars/departed tonne) ¹	
	2000	2001	2000	2001
I. All world international routes	22.5	21.6	10.6	10.3
II. International route groups				
1. North-Central America	22.1	22.0	4.4	4.8
2. Central America	—	—	—	—
3. North America	22.3	20.9	3.8	4.4
4. North-South America	22.1	21.2	6.6	6.7
5. South America	23.9	22.6	6.6	7.1
6. Europe	23.3	22.5	15.6	14.4
7. Middle East	21.7	21.3	4.2	4.5
8. Africa	—	—	—	—
9. Europe-Middle East	23.5	21.6	10.6	10.8
10. Europe-Africa	22.8	21.6	9.7	8.9
11. North Atlantic	20.7	20.0	10.2	10.7
12. Mid-Atlantic	22.8	23.3	9.8	9.9
13. South Atlantic	22.4	21.4	9.4	9.7
14. Asia/Pacific	25.1	24.3	9.9	9.2
15. Europe-Asia/Pacific	23.0	21.9	10.0	9.7
16. North/Mid-Pacific	21.3	19.9	10.3	10.2
17. South Pacific	19.5	19.3	8.7	9.2

1. Tonnes of aircraft maximum take-off mass.

51 per cent in 1999). Some of these cost items for passenger operations show significant differences among route groups even after extraction of any stage length and load factor effects. A general commentary concerning these items and their variation is given below.

4.16 **Station expenses** (column 5 of Table 3-2) relate mainly to the servicing of aircraft and passengers at airports. While they vary greatly among route groups, from 0.3 cents to 2.5 cents per passenger-kilometre in 2000 and from 0.3 cents to 2.8 cents per passenger-kilometre in 2001, some of the variations are due to the effects of differences in stage length.

4.17 **Passenger services** (column 6 of Table 3-2) relate primarily to cabin services provided in flight. Both in 2000 and 2001, passenger service costs represented some 15.3 per cent of total passenger operating costs. The differences in their level among the route groups, from 0.9 cents to 1.9 cents per passenger-kilometre both in 2000 and 2001, primarily reflect the differences in salary, service levels and utilization of cabin crew.

4.18 **Commission** (column 7 of Table 3-2) is paid by each airline to travel agents and other airlines for the sale of passenger tickets. Commission is dependent on the extent to which airline sales are handled by agents in different parts of the world and also reflect the intensity of competition and traditions in the product distribution methods on different regional markets. However, because the commission is usually a certain percentage of the price of the ticket, the variation in this cost item, from 0.3 cents to 2.0 cents per passenger-kilometre in 2000 and from 0.3 cents to 1.9 cents in 2001, is also related to the variation in average revenue per passenger-kilometre. In 2000 and 2001, commission expenses accounted for about 8.5 and 7.3 per cent of the world's scheduled international airline costs, respectively.

4.19 **Ticketing, sales and promotion** (column 8 of Table 3-2) is a cost item whose level is largely determined by decision-making within individual airlines. In 2000 and 2001, this item represented about 7.1 and 6.9 per cent of passenger costs, respectively. The variation among the route groups, from 0.3 cents to 1.2 cents per passenger-kilometre in 2000 and from 0.3 cents to 1.1 cents in 2001, reflects differing competitive situations and the extent to which airlines handle their own sales in the various route groups.

4.20 Commission, ticketing, sales and promotion together reflect the overall cost of selling passenger tickets. Depending on the route group, between 14 and 27 per cent and between 12 and 28 per cent of total passenger revenues were used in 2000 and 2001, respectively, to defray this overall cost, with the world average of some 16 per cent in both years.

4.21 **General, administrative and miscellaneous expenses** (column 9 of Table 3-2) vary from 0.3 cents to 1.0 cents per passenger-kilometre in both 2000 and 2001. This partly reflects variations in the organizational structure and the accounting practices of airlines in different parts of the world, as well as variations in salary levels and the staff productivity among regions. Additionally, economies of scale may be an important factor affecting variations in this cost item since large airlines, which tend to have lower administrative overheads per passenger-kilometre performed than smaller airlines, play a greater role on some route groups than on others. In recent years, those expenses, which include gains or losses due to changes in exchange rates, have been heavily influenced by fluctuations in exchange rates.

Summary of the causes of regional differences in costs

4.22 The effects of the factors described in 4.3 to 4.21 on the cost levels for route groups are shown in Table 4-5. Column 1 of that table shows against each route group the world average cost per passenger-kilometre in 2000 and 2001, which was 7.8 cents and 7.9 cents, respectively. Columns 2 through 6 show the deviations from this world average that may be attributed to each of the individually assessed factors described in 4.3 to 4.14, and column 8 shows the aggregate effect of the other factors (some other factors were described in summary form in 4.15 to 4.21). Column 9 shows the resulting actual total costs per passenger-kilometre for each route group.

Table 4-5. Contributions to differences in costs among route groups: 2000 and 2001

Route group (short title)	World average total passenger operating costs		Effect of aircraft mix on direct operating costs		Effect of stage length and average block speed		Effect of aircraft fuel and oil prices		Effect of landing and associated airport charges		Effect of load factor		Sum of effects in columns 2-6		Effect of other factors		Actual total passenger operating costs: columns 1+7+8		
	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)		(9)		
	2000	2001	2000	2001	2000	2001	2000	2001	2000	2001	2000	2001	2000	2001	2000	2001	2000	2001	
	(cents per passenger-kilometre)																		
I. All world international routes	7.8	7.9	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	7.8	7.9
II. International route groups																			
1. North-Central America	7.8	7.9	0.7	0.8	0.6	0.5	0.0	0.0	-0.3	-0.3	0.1	0.0	1.1	1.0	0.3	0.5	9.2	9.4	
2. Central America	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
3. North America	7.8	7.9	1.0	1.1	1.1	1.1	0.0	0.0	-0.1	-0.2	0.6	0.8	2.6	2.8	-0.3	-0.2	10.1	10.5	
4. North-South America	7.8	7.9	0.0	0.0	-0.7	-0.7	0.0	0.0	-0.2	-0.1	0.5	0.8	-0.4	0.0	0.8	0.6	8.2	8.5	
5. South America	7.8	7.9	0.8	0.9	1.2	1.2	0.1	0.1	-0.1	-0.1	1.3	1.7	3.3	3.8	0.7	-0.1	11.8	11.6	
6. Europe	7.8	7.9	1.1	1.2	2.2	2.2	0.0	0.0	-0.1	0.1	1.2	1.1	4.4	4.6	2.4	1.5	14.6	14.0	
7. Middle East	7.8	7.9	0.4	0.4	2.8	2.7	0.0	0.0	0.2	-0.2	2.3	2.7	5.7	5.6	0.7	1.0	14.2	14.5	
8. Africa	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
9. Europe-Middle East	7.8	7.9	0.1	0.2	-0.4	-0.4	0.1	0.0	0.0	0.0	0.4	0.8	0.2	0.6	0.9	0.6	8.9	9.1	
10. Europe-Africa	7.8	7.9	-0.1	-0.1	-0.5	-0.5	0.0	0.0	0.1	0.0	0.3	0.0	-0.2	-0.6	-0.3	-0.4	7.3	6.9	
11. North Atlantic	7.8	7.9	-0.3	-0.3	-1.2	-1.3	-0.1	-0.1	0.0	0.0	-0.3	-0.3	-1.9	-2.0	0.5	0.9	6.4	6.8	
12. Mid-Atlantic	7.8	7.9	-0.3	-0.4	-1.3	-1.4	0.0	0.1	0.1	0.0	-0.3	-0.6	-1.8	-2.3	-0.4	0.3	5.6	5.9	
13. South Atlantic	7.8	7.9	-0.4	-0.4	-1.4	-1.5	0.0	0.0	0.0	0.0	-0.2	-0.1	-2.0	-2.0	0.7	0.6	6.5	6.5	
14. Asia/Pacific	7.8	7.9	-0.1	-0.1	-0.1	-0.1	0.1	0.1	0.0	0.0	0.1	0.2	0.0	0.1	-0.5	-0.6	7.3	7.4	
15. Europe-Asia/Pacific	7.8	7.9	-0.3	-0.4	-1.1	-1.2	0.0	0.0	0.0	0.0	-0.2	-0.3	-1.6	-1.9	0.1	0.2	6.3	6.2	
16. North/Mid-Pacific	7.8	7.9	-0.4	-0.4	-1.4	-1.5	-0.1	-0.1	0.0	0.0	-0.2	-0.1	-2.1	-2.1	0.4	0.7	6.1	6.5	
17. South Pacific	7.8	7.9	-0.4	-0.4	-1.4	-1.5	-0.2	-0.1	0.1	0.0	0.1	-0.2	-1.8	-2.2	0.0	0.3	6.0	6.0	

4.23 Table 4-5 enables comparison of the various factors which contributed to differences from the world average cost per passenger-kilometre for the 15 route groups included in the analysis for 2000 and 2001. Focussing on columns 2 to 6, *stage length and average block speed* was the most important factor for 11 and 8 route groups in 2000 and 2001, respectively. Other factors making significant contributions included *load factor*, which was the most important single factor for 4 route groups in 2001, and *aircraft mix*, which was the most important factor for 2 route groups in 2000, while *fuel and oil prices* and *landing and associated airport charges* were less important. In addition, as may be seen by comparing column 7 (the sum of the effects in columns 2 to 6) with column 8, an important proportion of the differences in route group costs from the world average cost was due to the other factors which do not lend themselves to precise analysis.

Appendix 1

DATA SOURCES AND COVERAGE

Sources

1. The primary sources of information for this study were two sets of questionnaires which were dispatched (under cover of State letters EC 2/20.3.2-01/76 of 10 August 2001 and EC 2/20.3.2-02/64 of 26 July 2002) to all Contracting States, to be filled out with respect to their international carriers. One questionnaire each year sought information on scheduled and non-scheduled passenger, freight, mail and incidental revenues for each route group, together with corresponding volumes of traffic and capacity. Replies to this questionnaire were received with respect to 58 and 62 States for 2000 and 2001, respectively. The second questionnaire sought information on costs for international scheduled passenger airlines, and replies were received with respect to 57 and 60 States for the years 2000 and 2001, respectively. Facsimiles of the two questionnaires and a list of States from which replies were received are given in Appendix 3.

2. As far as scheduled operations were concerned, another important source of information was a computer analysis carried out by the ICAO Secretariat of airline schedules obtained from the *Back Associates/Lundkvist*. The data obtained from this analysis were the number of departures, aircraft block hours and distance flown for each and every airline, and aircraft type operating in each of the route groups. In addition, research was carried out on the operating characteristics of aircraft types and sub-types, generating data on average number of seats (combination aircraft), fuel consumption per block hour (as a function of stage length), maximum take-off mass, payload, and volumetric capacity. This information was related to the basic data used to provide a bank of operating statistics for each route group and for each geographical area of operation within each route group, as well as aggregate statistics for each area and for the world as a whole.

3. A wide range of supplementary information sources was used. In particular, they include data on airline traffic, traffic by flight stage, on-flight origin and destination traffic, fleet and personnel, and airline financial data regularly filed by Contracting States on Air Transport Reporting Forms and published in the ICAO *Digests of Statistics*.

Coverage

4. For scheduled services, traffic, capacity and other operational data were derived both from the questionnaires and from the timetable material, supplemented by material from the regular statistical reports to ICAO, and may be considered as fully comprehensive of all international operations. Revenue and cost data originated essentially from the questionnaires, supplemented by national publications or other suitable sources of financial data where available. In the case of passenger traffic, available revenue and cost data were adapted according to operational data to render them representative of all international operations (see Appendix 2). In the case of non-scheduled traffic, the sole source of both operational and financial data was the responses to the questionnaires, and the results shown in this study represent only these responses.

5. The study was based on revenue data obtained from 91 and 101 scheduled airlines (including 4 and 7 all-cargo airlines) and 11 and 16 other carriers for 2000 and 2001, respectively, and on cost data from 61 and 67 scheduled passenger airlines for 2000 and 2001, respectively.

6. The number of airlines and the coverage of international scheduled passenger traffic represented by revenue and cost data by region of airline registration are shown in Table A1-1 for the year 2000 and in Table A1-2 for the year 2001. The overall representation in terms of available seat-kilometres is 64 and 58 per cent for revenue data for 2000 and 2001, respectively, and 60 and 56 per cent for cost data for 2000 and 2001, respectively. In 2000, representation of Africa at 34 per cent was the lowest and that of North America at 85 per cent was significantly higher than that for the other regions. In 2001, representation of the Central America/Caribbean region at 25 per cent was the lowest and that of North America at 85 per cent the highest among the regions.

7. For each route group, the number of airlines and the percentage of traffic represented by these airlines are shown in Table A1-3 for the year 2000 and in Table A1-4 for the year 2001. The differences in the overall representation between Tables A1-1 and A1-3 as well as between Tables A1-2 and A1-4 occur partly because of some differences in the ICAO Statistical Programme definitions on what constitutes a domestic or international service. Another reason is the different databases used for these tables; Tables A1-1 and A1-2 contain reported traffic, whereas Tables A1-3 and A1-4 include traffic volume according to published timetables.

8. As shown in Tables A1-3 and A1-4, in terms of available seat-kilometres, representation of either revenue or cost data is 60 per cent or above for 9 route groups in 2000 and for 8 route groups in 2001. Representation of some route groups on the cost side, however, is substantially lower than on the revenue side. In both 2000 and 2001, for routes within Central America/Caribbean, within North America (2001 only), within Europe, within the Middle East, within Africa, between Europe and the Middle East, between Europe/Middle East and Africa, across the Mid-Atlantic and between Europe/Middle East/Africa and Asia/Pacific, representation is below 60 per cent; hence cost and revenue figures must be interpreted with a certain degree of caution. For routes within Central America/Caribbean and within Africa, the representation is so low (less than 25 per cent) as to cast significant doubt on the validity of the results for those route groups; hence figures for these route groups are not presented in this study, although their estimates are included in the worldwide totals.

9. The coverage of revenue data for non-scheduled passenger operations is shown in Tables A1-5 and A1-6 for 2000 and 2001, respectively, and the coverage of revenue data for scheduled freight and mail services is shown in Tables A1-7 and A1-8 for 2000 and 2001, respectively.

Table A1-1. Representation by ICAO region of airline registration: 2000

Region	International scheduled available seat-kilometres (millions)	Revenue data represent			Cost data represent		
		Number of airlines	Available seat-kilometres		Number of airlines	Available seat-kilometres	
			Number (millions)	Per cent of total		Number (millions)	Per cent of total
All	2 461 504	87	1 571 933	64	61	1 465 073	60
Africa	91 943	4	46 429	50	2	31 580	34
Asia/Pacific	710 336	19	469 123	66	14	450 982	63
Europe	939 475	32	486 713	52	22	450 877	48
Middle East	121 068	7	57 679	48	6	57 676	48
North America	472 065	11	423 269	90	9	401 070	85
Central America/ Caribbean	50 926	4	30 893	61	3	27 584	54
South America	75 691	10	57 827	76	5	45 304	60

Source: ICAO Air Transport Reporting Form A.

Table A1-2. Representation by ICAO region of airline registration: 2001

Region	International scheduled available seat-kilometres (millions)	Revenue data represent			Cost data represent		
		Number of airlines	Available seat-kilometres		Number of airlines	Available seat-kilometres	
			Number (millions)	Per cent of total		Number (millions)	Per cent of total
All	2 453 289	94	1 425 380	58	67	1 368 784	56
Africa	91 124	3	37 184	41	3	37 184	41
Asia/Pacific	729 652	23	486 101	67	14	472 667	65
Europe	923 535	40	394 553	43	27	359 569	39
Middle East	126 115	7	55 400	44	6	54 093	43
North America	457 249	10	388 315	85	9	388 156	85
Central America/ Caribbean	49 910	2	12 514	25	2	12 514	25
South America	75 704	9	51 313	68	6	44 601	59

Source: ICAO Air Transport Reporting Form A.

Table A1-3. Representation by international route group: 2000

Route group (short title)	Revenue data represent		Cost data represent	
	Number of airlines	Per cent of total scheduled seat-kilometres	Number of airlines	Per cent of total scheduled seat-kilometres
I. All world international groups	87	60	61	56
II. International route groups				
1. North-Central America	7	72	6	70
2. Central America	3	24	2	20
3. North America	12	72	10	67
4. North-South America	17	80	10	68
5. South America	9	72	5	58
6. Europe	32	43	22	38
7. Middle East	6	41	5	41
8. Africa	3	12	1	3
9. Europe-Middle East	20	52	18	51
10. Europe-Africa	22	46	17	39
11. North Atlantic	32	69	27	67
12. Mid-Atlantic	8	45	7	44
13. South Atlantic	10	69	8	66
14. Asia/Pacific	20	62	14	59
15. Europe-Asia/Pacific	33	58	27	55
16. North/Mid-Pacific	12	64	10	60
17. South Pacific	4	67	3	66

Table A1-4. Representation by international route group: 2001

Route group (short title)	Revenue data represent		Cost data represent	
	Number of airlines	Per cent of total scheduled seat-kilometres	Number of airlines	Per cent of total scheduled seat-kilometres
I. All world international groups	94	55	67	53
II. International route groups				
1. North-Central America	7	64	6	63
2. Central America	1	3	1	3
3. North America	10	55	9	55
4. North-South America	13	80	10	77
5. South America	8	69	6	61
6. Europe	41	46	27	39
7. Middle East	5	41	5	41
8. Africa	2	11	2	11
9. Europe-Middle East	23	45	19	43
10. Europe-Africa	22	31	19	30
11. North Atlantic	29	62	26	61
12. Mid-Atlantic	6	25	5	25
13. South Atlantic	9	62	8	58
14. Asia/Pacific	24	64	15	61
15. Europe-Asia/Pacific	34	51	27	48
16. North/Mid-Pacific	14	67	13	67
17. South Pacific	3	62	3	62

Table A1-5. Representative nature of revenue data for non-scheduled passenger operations by ICAO region of registration: 2000

Region	International non-scheduled passenger-kilometres performed (millions)			Revenue data represent								
				All carriers			International scheduled airlines			Other carriers		
	By all carriers	By international scheduled airlines	By other carriers	Number of carriers	Pass-km performed		Number of carriers	Pass-km performed		Number of carriers	Pass-km performed	
				Number (millions)	Per cent of total		Number (millions)	Per cent of total		Number (millions)	Per cent of total	
All	265 454	139 054	126 400	61	30 321	11	50	17 103	12	11	13 218	10
Africa	5 335	3 724	1 611	1	34	1	1	34	1	0	0	0
Asia/Pacific	7 824	7 823	1	15	1 906	24	15	1 906	24	0	0	0
Europe	232 324	114 194	118 130	28	21 991	9	17	8 773	8	11	13 218	11
Middle East	5 762	5 587	175	3	3 356	58	3	3 356	60	0	0	0
North America	10 183	6 189	3 994	7	2 400	24	7	2 400	39	0	0	0
Central America/ Caribbean	2 788	469	2 319	2	407	15	2	407	87	0	0	0
South America	1 238	1 068	170	5	227	18	5	227	21	0	0	0

Source: ICAO Air Transport Reporting Form A.

Table A1-6. Representative nature of revenue data for non-scheduled passenger operations by ICAO region of registration: 2001

Region	International non-scheduled passenger-kilometres performed (millions)			Revenue data represent								
				All carriers			International scheduled airlines			Other carriers		
	By all carriers	By international scheduled airlines	By other carriers	Number of carriers	Pass-km performed		Number of carriers	Pass-km performed		Number of carriers	Pass-km performed	
				Number (millions)	Per cent of total		Number (millions)	Per cent of total		Number (millions)	Per cent of total	
All	272 789	154 414	118 375	68	31 039	11	52	13 908	9	16	17 131	14
Africa	5 200	3 575	1 625	2	40	1	2	40	1	0	0	0
Asia/Pacific	7 376	7 376	*	15	1 158	16	15	1 158	16	0	0	0
Europe	236 136	125 617	110 519	36	25 990	11	22	8 902	7	14	17 088	15
Middle East	5 073	4 916	157	3	681	13	3	681	14	0	0	0
North America	16 327	10 974	5 353	6	2 967	18	6	2 967	27	0	0	0
Central America/ Caribbean	1 517	856	661	2	97	6	1	77	9	1	20	3
South America	1 160	1 100	60	4	106	9	3	83	8	1	23	38

* Less than 0.5 million.

Source: ICAO Air Transport Reporting Form A.

Table A1-7. Representative nature of revenue data for scheduled freight and mail services by ICAO region of airline registration: 2000

Region	International scheduled freight tonne-km performed (millions)	Freight revenue data represent			International scheduled mail tonne-km performed (millions)	Mail revenue data represent		
		Number of airlines	Tonne-km performed			Number of airlines	Tonne-km performed	
			Number (millions)	Per cent of total			Number (millions)	Per cent of total
All	101 520	80	62 329	61	2 672	59	1 849	69
Africa	2 031	4	1 124	55	24	3	14	58
Asia/Pacific	36 777	20	24 732	67	793	13	649	82
Europe	34 037	25	14 381	42	905	21	334	37
Middle East	4 509	6	1 961	43	78	5	46	59
North America	20 427	12	17 347	85	829	11	771	93
Central America/ Caribbean	442	4	203	46	4	2	1	25
South America	3 297	9	2 581	78	39	4	34	87

Source: ICAO Air Transport Reporting Form A.

Table A1-8. Representative nature of revenue data for scheduled freight and mail services by ICAO region of airline registration: 2001

Region	International scheduled freight tonne-km performed (millions)	Freight revenue data represent			International scheduled mail tonne-km performed (millions)	Mail revenue data represent		
		Number of airlines	Tonne-km performed			Number of airlines	Tonne-km performed	
			Number (millions)	Per cent of total			Number (millions)	Per cent of total
All	96 513	85	53 674	56	2 656	63	1 560	59
Africa	1 974	3	942	48	31	3	12	39
Asia/Pacific	35 021	23	24 035	69	844	16	573	68
Europe	31 702	32	8 611	27	910	24	211	23
Middle East	4 434	5	1 711	39	82	5	44	54
North America	19 865	12	16 075	81	750	10	690	92
Central America/ Caribbean	421	2	82	19	3	1	1	33
South America	3 096	8	2 218	72	36	4	29	81

Source: ICAO Air Transport Reporting Form A.

Appendix 2

METHOD OF ANALYSIS AND MARGINS OF UNCERTAINTY

Method of analysis

1. **General.** Data sources in general are discussed in Appendix 1. All airline financial data were initially adjusted where necessary to represent the calendar years 2000 and 2001 and converted where necessary from local currency to United States dollars. For currency conversions, the exchange rates provided by States in their reply to the questionnaires were used. In cases where an exchange rate was not supplied, the rate used was the average *IATA Clearing House Five-Day Monthly Rate* for 2000 and 2001.

2. Prior to detailed analysis, all financial and operational data were verified: (a) as to the mutual consistency and consistency with data from previous years; (b) with information provided on statistical reporting forms regularly submitted to ICAO; and (c) with data obtained from a computer analysis of published timetable material (see Appendix 1).

3. **Analysis of available revenue data.** Scheduled and/or non-scheduled passenger, freight and mail revenues for each international route group, together with corresponding volumes of traffic and capacity, as well as incidental revenues attributable directly to international scheduled services were obtained for individual carriers from the revenue questionnaires designed for this purpose (facsimiles of the revenue and the cost questionnaires are included in Appendix 3). This information for individual carriers was aggregated for each route group in order to obtain weighted average revenues per passenger-kilometre and per seat-kilometre (for passenger traffic) or per tonne-kilometre performed (for freight and mail traffic). In the case of scheduled operations, the data for individual airlines, and hence the average unit revenues, include allowance for discounts, pro-rates, etc., but generally exclude deductions for commission payments.

4. **Analysis of available cost data.** Cost data are obtained and analysed only for international scheduled passenger airlines. While most scheduled (and non-scheduled) carriers maintain revenue and traffic data on a route by route and/or route group basis, far fewer maintain cost data in a correspondingly disaggregated form. Hence, in order to present data which are generally representative of scheduled passenger airline operations in each region of the world and, at the same time, minimize the reporting burden on States and their airlines, the questionnaire was designed so that the requirement for disaggregation of system-wide operating costs was both sparing and in line with practices followed by a majority of airlines. The cost data obtained for individual airlines through this questionnaire were subsequently allocated by the Secretariat among route groups as necessary (that is, where an airline operated on more than one route group), using the analysis of published timetable material.

5. The cost data obtained for an individual airline, and the procedures used for allocating these costs among the route groups on which the airline operated, may be divided into three broad categories as shown in Table A2-1:

Category (A) — operating costs which for a given airline and a given aircraft type may, for this purpose, be considered as independent of where the aircraft is flying;

Category (B) — operating costs which are significantly related both to aircraft type and to geographical area of operation; and

Category (C) — operating costs and pertinent non-operating items which may be related only in part to aircraft type or to the region in which they are incurred, but which are related significantly to the volume of traffic or the volume of capacity in each route group.

6. Costs in the *first category (A)* were extracted from the data of each airline as an average system-wide cost per aircraft block hour for each aircraft type used in international scheduled service. The costs for each route group were calculated according to the number of block hours flown by each aircraft type operated by the airline on that route group.

7. Costs in the *second category (B)* were recorded for each airline according to route group or to geographical area. Where recorded by area, data were adapted to obtain corresponding data according to route group by using appropriate operational criteria (such as consumption in the case of “aircraft fuel and oil”). The relationships between route groups and geographical areas in terms of operational data were available from the computer analysis of timetable material.

8. Costs in the *third category (C)* were recorded as system-wide totals for the operations of each airline. These costs were disaggregated into route group costs by using a suitable allocation parameter for each cost item. The allocation parameter devised for each item bears a direct or indirect relationship with the volume of traffic or capacity in each route group. In the case of “Commission payments” and “Other ticketing, sales and promotion costs”, the allocation parameter used is the total revenue earned from each route group, thereby including effects from both traffic and regional differences in revenue yields (and hence regional differences in ticketing, sales and promotion costs).

9. For some airlines, cost data reported in the three categories were related to domestic operations and/or international non-scheduled operations as well as to international scheduled operations. Such costs associated with domestic and non-scheduled operations were subtracted by using the same allocation procedures that were used to distribute costs among route groups.

10. As far as data for individual airlines were concerned, the total costs for the scheduled international passenger flights in each route group were estimated by adding all the itemized costs allocated to the route group. Finally, costs allocable to the carriage of freight and mail on passenger flights were deducted from these total costs in order to obtain the passenger costs. For this purpose, it was assumed that the cost of the carriage of freight and mail on passenger and combination aircraft on a route group was equal to the freight and mail revenue from operations of these aircraft.

11. ***Estimates of revenues and costs for airlines for which financial data were not available.*** For all those carriers whose basic financial data were available, the procedures described in paragraphs 1 to 10 produced the total revenues and (for international scheduled passenger traffic) total costs on each route group according to the airline’s region of registration. In most cases, this financial database did not include all carrier operations. However, for scheduled passenger traffic, estimated revenues and costs presented in this study were formulated to cover all airlines operating on each route group.

12. In the case of revenues, the reported average revenue yield per passenger-kilometre for airlines registered in the same region within each route group has been applied to the total revenue passenger-kilometre for all airlines registered in that region operating on the route group.

13. In the case of costs, the estimates for non-reported airlines have been based on cost data for reported airlines from the same region of registration for the route group, and the estimates also take into account the differences in the operating characteristics of the two groups of airlines concerned (including differences in load factors). With respect to the costs in Category A (see Table A2-1), the average costs per block hour for the aircraft of airlines whose cost data were available were applied to the hours flown by the same aircraft types by non-reported airlines from the same region of registration, thus taking into account the differences in the aircraft fleet, in block speed and in seating configuration. Costs in Categories B and C were similarly estimated on the basis of criteria parallel to those used in allocating costs of individual airlines among route groups.

Table A2-1. Procedures used to allocate individual airline costs among route groups

<i>Category of costs</i>	<i>Cost item (see note)</i>	<i>Airline data input to study</i>	<i>Cost allocation criteria</i>
A. Costs related primarily to aircraft type	I.1 Flight operation expenses, excluding fuel and oil costs	System-wide costs and system-wide block hours flown for each aircraft type operated	I.1 Number of block hours flown by each aircraft type on each route group
	I.2 Aircraft maintenance and overhaul expenses		I.3
	I.3 Aircraft depreciation and amortization costs		
B. Costs related significantly to both aircraft type and geographical area of operation	II.1 Aircraft fuel and oil costs	Either: a) costs by geographical area of operation, or b) costs by route group (no allocation to route group necessary)	II.1 Fuel consumption by each aircraft type in each area of operation
	II.2 Landing and associated airport charges		II.2 Maximum take-off mass times number of departures for each aircraft type in each area of operation
	II.3 En-route facility charges		II.3 Maximum take-off mass times number of block hours flown for each aircraft type in each area of operation
	II.4 Other station expenses		II.4 Maximum payload times number of departures for each aircraft type in each area of operation
C. Costs related significantly to volume of traffic or volume of capacity	III.1 Passenger service costs	System-wide costs	III.1 Number of seat-hours on each route group
	III.2 Commission payments		III.2 Passenger and freight revenue earned on scheduled services from each route group
	III.3 Other ticketing, sales and promotion costs		III.3 Total revenue earned from each route group
	III.4 General and administrative expenses		III.4 Number of tonne-to kilometres performed in each route group
	III.5 Miscellaneous operating costs		IV.1
	IV.1 Balance of miscellaneous non-operating items (excluding payments from public funds and balance of income from affiliated companies)		

Note.— Cost item references are those used in the cost questionnaire (see Appendix 3). The items themselves are described in the Reporting Guidelines on the reverse of the cost questionnaire.

14. For some route groups where airlines of a particular region had a very low representation, the grossing-up process for revenues and costs was adjusted to take into account the revenues and costs of major non-reported airlines based on data provided for previous studies as well as on data regularly collected for the ICAO *Digests of Statistics*.

Margins of uncertainty

15. **General.** It is important to recognize that the revenue and cost data presented in this circular are not perfectly defined quantities but involve margins of uncertainty. Such margins of uncertainty are inherent in any presentation of airline financial data which covers a multiplicity of currencies, involves disaggregation of system-wide revenues and costs, or has an incomplete database. Hence, an important feature of the method used in this series of studies has been to identify and evaluate the various sources of uncertainty for the purpose of establishing the degree of precision in the published data as well as the constraints on drawing conclusions from these data. The evaluations concerned were carried out by means of statistical analysis of detailed airline data and by means of tests to determine the sensitivity of the published data to the procedures used in the study. The resulting assessments of margins of uncertainty in average unit revenues, average unit costs and average revenue/cost ratios published in this study for scheduled passenger traffic in 2000 and 2001 are presented in paragraphs 16 to 21.

16. **Estimates of unit revenues.** The margin of uncertainty in the estimated unit revenues for a route group arises from limitations on the quality of reported data, from exchange rate fluctuations and, in the case of scheduled passenger traffic, from the assumption that the average yield for non-reported airlines is the same as that for reported airlines on the same route group. An analysis was carried out to evaluate each of these sources of uncertainty and their cumulative effect, leading to composite margins of uncertainty for the various route groups. The conclusion was that the estimated scheduled passenger revenue per passenger-kilometre can be relied on for up to ± 5 per cent (with the exception of routes within the Middle East and between Europe and the Middle East) for 2000 and ± 6 per cent (with the exception of the same route groups) for 2001. Caution should be also exercised when interpreting the revenue data for routes within North America, within Europe, between Europe/Middle East and Africa, across the Mid-Atlantic and between Europe/Middle East/Africa and Asia/Pacific for both years, due to the relatively low representation in these route groups. For routes within Central America/Caribbean and within Africa, the representation was so low as to cast some doubt on the validity of the results for those route groups; hence revenue (and cost) figures for these routes are not presented in this study, although their estimates are included in the worldwide totals. A margin of uncertainty that is significantly narrower than ± 5 per cent for 2000 and ± 6 per cent for 2001 applies for those route groups where the representation was relatively high (see Appendix 1). On a global basis, taking into account all route groups as a whole, the margin of uncertainty is reduced by compensatory effects and by scale and is thus estimated at ± 4 per cent for 2000 and ± 4.5 for 2001.

17. **Estimates of unit costs.** The estimated unit passenger costs for a route group contain similar elements of uncertainty as those for passenger revenues. In addition, further elements of uncertainty arise from the need to allocate costs among route groups according to standardized procedures. These additional sources of uncertainty arise because:

- a) the generic nature of some cost items (for example, general administrative costs) makes their allocation among route groups a matter of convention; and
- b) even for those cost items which are region- or route-specific, the standardized allocation procedures do not take into account the detailed conditions under which individual airlines operate.

18. As for the revenue data, a composite margin of uncertainty was developed with respect to the average unit costs for each route group and for all route groups combined. The margin of uncertainty in the estimated scheduled passenger costs per passenger-kilometre for all route groups presented is

considered to be within ± 9 per cent for 2000 (except for routes within the Middle East) and ± 10 per cent for 2001 (except for routes within the Middle East, across the South Atlantic and across the South Pacific). On the cost side, there were more route groups with lower representation, which increases the degree of uncertainty (see Appendix 1, paragraph 8). On a global basis, taking into account all route groups as a whole, the margin of uncertainty in the average costs per passenger-kilometre is estimated at ± 8 per cent for both years.

19. Much of the uncertainty arising from the generic nature of certain costs is inherent and cannot be influenced (see paragraph 17), and little can be done to reduce the uncertainty arising from fluctuations in currency exchange rates. A major factor in these studies therefore is getting as much coverage of financial data as possible, while at the same time, making efforts to improve the quality of reported data.

20. All the estimates of uncertainty cited in paragraphs 16 to 19 apply only to the overall average cost data (as presented in Chapter 3, Table 3-1). Estimates of individual elements making up the overall cost are, in a number of cases, subject to wider margins of uncertainty.

21. **Estimates of revenue/cost ratios.** The estimated ratios of revenues to costs have margins of uncertainty which vary from route group to route group, depending on the margins of uncertainty in the estimated revenue and cost data. It should be noted, however, that the uncertainties in the revenue and the cost figures for a route group are to some extent interdependent. In other words, if the revenue on a route group is overestimated, the cost figure is also probably overestimated. This circumstance reduces the margin of uncertainty in the revenue/cost ratios when compared with the margins of uncertainty for either the revenue data alone or the cost data alone. The composite margin of uncertainty in the revenue/cost ratio for the individual route groups in this study is estimated at between ± 4.5 and ± 5.5 per cent for both years, and for all the route groups combined, it is estimated at ± 4.0 and ± 4.5 per cent for 2000 and 2001, respectively.

Appendix 3
QUESTIONNAIRES RELATING TO
REVENUES AND COSTS

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I. Facsimiles of questionnaires and attachments

QUESTIONNAIRE ON COSTS INCURRED BY INTERNATIONAL SCHEDULED AIR PASSENGER CARRIERS (Reporting guidelines and geographical descriptions on page A-2)

Carrier name:	Calendar period: 12 months from to									
Reporting currency (U.S.\$ or national)	TOTAL AMOUNTS FOR CALENDAR PERIOD									
Exchange rate between national currency and U.S.\$ during period: 1 U.S.\$ =										
SECTION I – Expenses by aircraft type and operating data by aircraft type and by route group¹	AIRCRAFT TYPE (please specify)									
Check boxes if cost data in this Section include:										
Domestic <input type="checkbox"/> Non-scheduled <input type="checkbox"/>										
I.1	Flight operations expenses, <i>excluding fuel and oil costs</i>									
I.2	Maintenance and overhaul expenses									
I.3	Depreciation and amortization costs									
I.4	Block hours (use additional sheets as required)									
a)	operated on international scheduled services	Total								
	By route group	RG								
	(Please specify, e.g. 11 NA)	RG								
		RG								
		RG								
b)	operated on international non-scheduled services	Total								
	By route group	RG								
	(Please specify, e.g. 11 NA)	RG								
		RG								
c)	operated on domestic services	Total								
d)	all services (a + b + c)	Total								
SECTION II – Operating expenses by geographical area or route group¹	AREA OR ROUTE GROUP (Please specify e.g. 11 NA)	North America	Central America/ Caribbean	South America	Europe	Middle East	Africa	Asia/Pacific	Domestic services	
Check box if data in this Section include:										
Non-scheduled <input type="checkbox"/>										
II.1	Aircraft fuel and oil									
II.2	Landing and associated airport charges									
II.3	Air navigation charges									
II.4	Station expenses									
SECTION III – Other operating expenses	All international route groups or areas	Domestic services	Name and title of person completing questionnaire:							
Check box if data in this Section include:										
Non-scheduled <input type="checkbox"/>										
III.1	Passenger services (including cabin crew salaries and expenses)			Telephone no.:						
III.2	Commission payments			Fax no.:						
III.3	Other ticketing, sales and promotion			E-mail:						
III.4	General and administrative			Remarks: (include description of any deviations from the reporting guidelines and geographical descriptions on page A-2)						
III.5	Miscellaneous operating expenses									
SECTION IV – Balance of non-operating items										
IV.1	Total (international and domestic services) (Note: + = revenue, - = expenses)			Note 1. Route group descriptions are on page B-4 of questionnaire on revenues. Route groups specified should be the same as those for which data are entered in the revenue questionnaire.						
TOTAL – SECTIONS I TO IV										

REPORTING GUIDELINES AND GEOGRAPHICAL DESCRIPTIONS

REPORTING GUIDELINES

General

- a) This questionnaire is to be returned completed by ICAO Contracting States for each of their airlines that provide international scheduled air passenger services. The material provided will not be made public in such a way as to permit identification of individual operators. Information provided should be the total amount for a 12-month period as close as possible to the calendar year specified in the covering State Letter, with the period being identified in the space provided. It is recognized that, in order for your reply to reach ICAO by the date indicated in the State Letter, final audited financial data may not be available, but preliminary data are acceptable. Similarly, if full information is not available for any Section of the questionnaire, partial and/or aggregated data would be appreciated.
- b) Data referring to domestic legs of international services should be included as international. Indicate any exceptions. It would be preferable if data on expenses for domestic services under Sections II, III and IV are filled in. Should it be troublesome, please provide the data for international services only.
- c) Financial data may be provided either in terms of national currency or in terms of U.S. dollars. In either case the weighted average annual exchange rate used or to be applied to convert national currency into U.S. dollars should be specified in the space provided.
- d) All expense and operating data relating to freight and mail, including those for all-cargo aircraft operations, should be *included* where relevant in the questionnaire. Expenses incurred for the provision of services to other airlines such as maintenance, handling and catering should be *excluded*.
- e) Expenses and operational data should be reported in the case of:
- (1) pooled services – by each participating carrier for its own services,
 - (2) operations with leased aircraft (under operating lease arrangements) – by the operating carrier; the aircraft expenses should be reported under I.1 flight operating expenses,
 - (3) in the case of code-shared, blocked space, joint services and other commercial arrangements – by the operating carrier only.
- The costs should be reported for all cost items as specified in the questionnaire except for aircraft expenses under (2) above.
- f) A brief description of each data item is given below. More detailed definitions of financial data items are given in the Instructions for completion of ICAO Air Transport Reporting Form EF (as revised recently), for airline Financial Data.

SECTION I – Expenses by aircraft type and operating data by aircraft type and route group

- Report for all aircraft types used, whether combination or all-cargo, using model designation (e.g. A300-B4, DC10-30CF, Boeing 747-200F).
- I.1 Flight operation expenses, *excluding fuel and oil costs*. This item comprises flight crew salaries and expenses, flight equipment insurance, rental of flight equipment (excluding any payments made under aircraft capital or finance lease arrangements), flight crew training, and other flight expenses excluding those covered by Items I.2, I.3 and II.1.
- I.2 Maintenance and overhaul expenses. *Include* here all expenses incurred for the repair, overhaul and maintenance of flight equipment, including payments to outside contractors and manufacturers. *Exclude* expenses incurred for the provision of maintenance and overhaul services to other airlines.

- I.3 Depreciation and amortization costs. Incorporate all such costs relating to flight equipment, including depreciation charges for aircraft acquired through capital or finance lease arrangements. Depreciation of ground property and equipment should be included if possible under the appropriate headings or in Item III.5.
- I.4 Block hours. Provide data by aircraft type **and route group** wherever possible, even where disaggregated cost data for this Section are not available.

SECTION II – Operating expenses by geographical area

Geographical Areas are described below. Data for this Section may alternatively be reported by route group in accordance with the descriptions appearing in the associated questionnaire on revenues (in which case please specify each route group).

- II.1 Aircraft fuel and oil. Include through-put charges, non-refundable duties and taxes.
- II.2 Landing and associated airport charges. Include all charges and fees related to air traffic operations which are levied against the airline for services provided at the airport for landing charges, passenger and cargo fees, security, parking and hangar charges.
- II.3 Air navigation charges. Include all fees levied against the airline for the provision of route facilities and services. Where a single charge is levied for both airport and route facilities, the amount should be reported under Item II.2.
- II.4 Station expenses. *Include* all expenses incurred (passenger and/or cargo) for traffic handling and aircraft loading and servicing, including payments to outside contractors. *Exclude* expenses incurred for sales staff at airports (to be included under Item III.3) and for the handling and servicing of traffic and aircraft of other airlines.

SECTION III – Other operating expenses

- III.1 Passenger services. *Include* all expenses incurred for the provision of passenger services (including pay, allowances and expenses of cabin attendants and other passenger service personnel); premiums for passenger liability and accident insurance paid by the airline; expenses of handling passengers incurred because of cancelled and delayed flights. *Exclude* expenses incurred for the provision of passenger services to other airlines.
- III.2 Commission payments. Include commissions payable to third parties for the sale of transportation on the airline's services, preferably on a *gross* basis (specify where different).
- III.3 Other ticketing, sales and promotion. Include all expenses related to these three functions, including staff, accommodation, reservations, and advertising/publicity.
- III.4 General and administrative. Include all expenses incurred in performing the general and administrative functions of the airline. Overhead costs directly related to specific functions should preferably be allocated elsewhere under the appropriate heading.
- III.5 Miscellaneous operating expenses. Include all operating expenses which could not be assigned elsewhere in Sections I to III.

SECTION IV – Balance of non-operating items

Include profits and losses from retirement of property and equipment, foreign exchange transactions, gross interest charges on loans for the purchase of flight equipment, including the interest element of aircraft financing leases, net interest charges on loans and overdrafts not related to the purchase of flight equipment, and miscellaneous non-operating items. *Exclude* payments from public funds and balance of income from affiliated companies.

DESCRIPTIONS OF GEOGRAPHICAL AREAS

North America

Bermuda, Canada, St. Pierre et Miquelon, United States including Alaska and Hawaii, but excluding Puerto Rico and the Virgin Islands.

Central America/Caribbean

Anguilla, Antigua and Barbuda, Aruba, Bahamas, Barbados, Belize, British Virgin Islands, Cayman Islands, Costa Rica, Cuba, Dominica, Dominican Republic, El Salvador, Grenada, Guadeloupe, Guatemala, Haiti, Honduras, Jamaica, Martinique, Mexico, Montserrat, Netherlands Antilles, Nicaragua, Panama, Puerto Rico, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Trinidad and Tobago, Turks and Caicos Islands and Virgin Islands of the United States.

South America

Argentina, Bolivia, Brazil, Chile, Colombia (including San Andres Islands), Ecuador, Falkland Islands (Malvinas), French Guiana, Guyana, Paraguay, Peru, Suriname, Uruguay and Venezuela.

Middle East

Bahrain, Iran (Islamic Republic of), Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Syrian Arab Republic, United Arab Emirates and Yemen.

Europe

Geographical Europe and Azores, Canary Islands, Cyprus, Greenland, Iceland, Madeira, Malta, Russian Federation (west of Urals) and Turkey.

Africa

The continent of Africa (including Algeria, Egypt, Morocco, Sudan and Tunisia) and offshore islands, but excluding Azores, Canary Islands, Madeira and Malta.

Asia/Pacific

Afghanistan, Australia, Bangladesh, Bhutan, Brunei Darussalam, Cambodia, China, Democratic People's Republic of Korea, Hong Kong S.A.R., India, Indonesia, Japan, Kazakhstan, Kyrgyzstan, Lao People's Democratic Republic, Macau, Malaysia, Maldives, Mongolia, Myanmar, Nepal, New Zealand, Pakistan, Papua New Guinea and all other islands of the Pacific (including American Samoa, Christmas Islands, Cocos (Keeling) Islands, Cook Islands, Fiji, French Polynesia, Guam, Kiribati, Marshall Islands, Micronesia, Nauru, New Caledonia, Niue, Norfolk Island, Northern Mariana Islands, Palau, Pitcairn, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu, United States Minor Outlying Islands, Vanuatu, Wallis and Futuna Islands), Philippines, Republic of Korea, Russian Federation (East of Urals), Singapore, Sri Lanka, Taiwan (Province of China), Tajikistan, Thailand, Turkmenistan, Uzbekistan and Viet Nam.

QUESTIONNAIRE ON REVENUES OF INTERNATIONAL SCHEDULED AND NON-SCHEDULED AIR CARRIERS
 (Page 1 of 2 – Reporting Guidelines overleaf and Route Group Descriptions on back of page 2)

Carrier Name:	ALL Total Services (DOMESTIC plus INTERNATIONAL)	Total DOMESTIC Services	Total INTERNATIONAL Services (Total for route groups 1 to 17)	INTERNATIONAL SERVICES BY ROUTE GROUP						
				1	2	3	4	5	6	
				Between North America and Central America/ Caribbean (NC)	Between and within Central America and the Caribbean (LC)	Between Bermuda, Canada, Mexico and the United States (LNM)	Between North America, Central America/ Caribbean and South America (NCS)	Local South America (LS)	Local Europe (LE)	
CALENDAR PERIOD 12 Months from										
Reporting Currency (U.S.\$ or National):										
Exchange Rates between National Currency and U.S. Dollar during period:										
1 U.S.\$ =										
SECTION I – Scheduled Services										
I.1 Revenue										
a) Passenger traffic (including excess baggage) . . .										
b) Freight traffic										
c) Mail traffic										
d) Other										
I.2 Corresponding Volume of Traffic and Capacity										
a) Passenger-kilometres (millions)										
b) Seat-kilometres (millions)										
c) Freight tonne-kilometres performed (millions) . . .										
d) Mail tonne-kilometres performed (thousands) . . .										
e) Available tonne-kilometres (millions)										
I.3 All-Cargo Services Only (included in I.1 and I.2 above)										
a) Revenue (total)										
b) Tonne-kilometres performed (millions)										
SECTION II – Non-Scheduled Operations										
II.1 Revenue										
a) Passenger traffic										
b) Freight traffic										
II.2 Corresponding Volume of Traffic and Capacity										
a) Passenger-kilometres (millions)										
b) Seat-kilometres (millions)										
c) Freight tonne-kilometres performed (millions) . . .										
d) Available tonne-kilometres (millions)										
Name and title of person completing questionnaire:				Telephone No.:				Fax No.:		
								E-mail:		
Remarks:										

QUESTIONNAIRE ON REVENUES OF INTERNATIONAL SCHEDULED AND NON-SCHEDULED AIR CARRIERS
 (Page 2 of 2 - Reporting Guidelines on back of page 1 and Route Group Descriptions overleaf)

Carrier Name:	INTERNATIONAL SERVICES BY ROUTE GROUP										
	7	8	9	10	11	12	13	14	15	16	17
CALENDAR PERIOD 12 Months from											
Reporting Currency (U.S.\$ or National):											
Exchange Rates between National Currency and U.S. Dollar during period:											
1 U.S.\$ =											
	Local Middle East (LM)	Local Africa (LA)	Between Europe and Middle East (EM)	Between Europe/Middle East and Africa (EMA)	North Atlantic (NA)	Mid Atlantic (MA)	South Atlantic (SA)	Local Asia/Pacific (LAP)	Between Europe/Middle East/Africa and Asia/ Pacific (EMAAP)	North and Mid Pacific (PN)	South Pacific (PS)
SECTION I – Scheduled Services											
I.1 Revenue											
a) Passenger traffic (including excess baggage)											
b) Freight traffic											
c) Mail traffic											
d) Other											
I.2 Corresponding Volume of Traffic and Capacity											
a) Passenger-kilometres (millions)											
b) Seat-kilometres (millions)											
c) Freight tonne-kilometres performed (millions) ..											
d) Mail tonne-kilometres performed (thousands) ...											
e) Available tonne-kilometres (millions)											
I.3 All-Cargo Services Only (included in I.1 and I.2 above)											
a) Revenue (total)											
b) Tonne-kilometres performed (millions)											
SECTION II – Non-Scheduled Operations											
II.1 Revenue											
a) Passenger traffic											
b) Freight traffic											
II.2 Corresponding Volume of Traffic and Capacity											
a) Passenger-kilometres (millions)											
b) Seat-kilometres (millions)											
c) Freight tonne-kilometres performed (millions)											
d) Available tonne-kilometres (millions)											
Remarks:											

GENERAL

- a) This questionnaire is to be returned completed by ICAO Contracting States for each of their major international scheduled and non-scheduled air carriers (including any all-cargo carriers). *The material provided will not be made public in such a way as to permit identification of individual operators.* Information provided should be the total amount for a 12-month period as close as possible to the calendar year specified in the covering State Letter, with the period being identified in the space provided. It is recognized that, in order for your reply to reach ICAO by the date indicated in the State Letter, final audited financial data may not be available, but preliminary data are acceptable.
- b) Data for all-cargo aircraft operations should be included in the relevant sections of the questionnaire. Data for scheduled services with such aircraft should be included in Items I.1 and I.2, and specified under I.3 if possible.
- c) Financial data may be provided either in terms of national currency or in terms of U.S. dollars. In either case the weighted average annual exchange rate used or to be applied to convert national currency into U.S. dollars should be specified in the space provided.
- d) A brief description of each financial data item is given below; for more detailed definitions see the Instructions for completion of ICAO Air Transport Reporting Form EF (as revised recently), for airline Financial Data. The traffic and capacity data should be reported by the operating carrier only. In this context the term "operating carrier" refers to that carrier whose flight number is being used for air traffic control purposes. For definitions of traffic and capacity data items see ICAO Air Transport Reporting Form A for airline Traffic data.
- e) Descriptions of the route groups are also given below, along with guidelines on allocating data amongst them.

SECTION I – SCHEDULED SERVICES

For Items I.1 a) to I.1 c) and I.3 a) report *gross* revenues related to scheduled flights before capacity equalization payments arising from pooled services, payments arising from the services operated under commercial arrangements (e.g. code-share, blocked space etc.) and from the operations with leased or interchanged aircraft. Those revenues should be reported by the operating carrier.

For Item I.1 d) *Other air transport related revenue* is intended to *include* on a *net* basis capacity equalization payments arising from pooled services, payments arising from the services operated under commercial arrangements (e.g. code-share, blocked space etc.) and from the operations with leased or interchanged aircraft; and on a *gross* basis (with related expenses reported under the relevant expense item, indicate where different) incidental revenues accruing from air transportation services such as revenues from passengers paying less than 25% of the normal applicable fare; commissions received on sales of transportation on other carriers; "no-show" and cancellation fees. *Exclude* revenue accruing from the provision of services other than for air transportation, such as for surface transportation; food services; service and maintenance sales; handling services for third parties; and property.

SECTION II – NON-SCHEDULED OPERATIONS

Include revenue derived from all non-scheduled flights performed for remuneration, including empty flights related thereto, when the responsibility for the performance of transportation is that of the carrier reported.

ALLOCATION TO ROUTE GROUPS

All data referring to domestic legs of international operations should be included as international in data for the route group concerned. Any service with a single flight number should be allocated to the route group which covers travel from the point of origin to the point of destination. For example, a flight Zurich-Geneva-Abidjan-Dakar should be reported as a Europe/Middle East-Africa flight (in route group 10) and not split between domestic, Europe-Africa and Local Africa. Specify all reporting differences.

Also specify any services which fall into more than one route group, including the criterion used for allocating data amongst the route groups concerned.

DESCRIPTIONS OF ROUTE GROUPS

1. Between North America and Central America/Caribbean (NC)

Includes routes between on the one hand Canada and/or the United States (including Alaska and Hawaii) and/or Bermuda and/or St. Pierre et Miquelon and on the other hand Central America and the Caribbean. Routes between the United States and Puerto Rico/U.S. Virgin Islands are considered domestic and are excluded. Central America/Caribbean is defined as the geographical area covered by route group 2 below but *excluding* Mexico.

2. Between and within Central America and the Caribbean (LC)

Includes routes between or among: Anguilla, Antigua and Barbuda, Aruba, Bahamas, Barbados, Belize, British Virgin Islands, Cayman Islands, Costa Rica, Cuba, Dominica, Dominican Republic, El Salvador, Grenada, Guadeloupe, Guatemala, Haiti, Honduras, Jamaica, Martinique, Mexico, Montserrat, Netherlands Antilles, Nicaragua, Panama, Puerto Rico, St. Christopher-Nevis, Saint Lucia, Saint Vincent and the Grenadines, Trinidad and Tobago, Turks and Caicos Islands and Virgin Islands of the United States.

3. Between Bermuda, Canada, Mexico and the United States (LNM)

Includes routes between or among the above States. The United States includes Alaska and Hawaii but excludes Puerto Rico and the Virgin Islands.

4. Between North America/Central America/Caribbean and South America (NCS)

Includes routes between the geographical areas defined on the one hand by route group 1 and/or Mexico and on the other hand by route group 5 (Local South America).

5. Local South America (LS)

Includes routes between or among: Argentina, Bolivia, Brazil, Chile, Colombia (including San Andres Islands), Ecuador, Falkland Islands (Malvinas), French Guiana, Guyana, Paraguay, Peru, Suriname, Uruguay and Venezuela.

6. Local Europe (LE)

Includes routes between or among the States of geographical Europe, Azores, Canary Islands, Cyprus, Greenland, Iceland, Madeira, Malta, Russian Federation (west of Urals) and Turkey.

7. Local Middle East (LM)

Includes routes between or among: Bahrain, Iran (Islamic Republic of), Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Syrian Arab Republic, United Arab Emirates and Yemen.

8. Local Africa (LA)

Includes routes between or among the States of continental Africa (including Algeria, Egypt, Morocco, Sudan and Tunisia) and offshore islands but excluding Azores, Canary Islands, Madeira and Malta.

9. Between Europe and Middle East (EM)

Includes routes between the two geographical areas defined by route group 6 (Local Europe) and route group 7 (Local Middle East) respectively.

10. Between Europe/Middle East and Africa (EMA)

Includes routes between on the one hand the geographical areas defined by route group 6 (Local Europe), and/or route group 7 (Local Middle East) and on the other hand the geographical area defined by route group 8 (Local Africa).

11. North Atlantic (NA)

Includes routes between on the one hand Bermuda, Canada, St. Pierre et Miquelon and/or the United States (including Alaska and Hawaii but excluding Puerto Rico and Virgin Islands) and on the other hand the geographical areas defined by route groups 6, 7 and 8 (Europe/Middle East/Africa).

12. Mid Atlantic (MA)

Includes routes between on the one hand gateway points in the geographical areas defined by route group 2 (Central America and the Caribbean) and/or in the following South American States: Bolivia, Colombia (including the San Andres Islands), Ecuador, French Guiana, Guyana, Peru, Suriname and Venezuela and on the other hand the geographical areas defined by route groups 6, 7, and 8 (Europe/Middle East/Africa).

13. South Atlantic (SA)

Includes routes between on the one hand gateway points in the following South American States: Argentina, Brazil, Chile, Falkland Islands (Malvinas), Paraguay and Uruguay and on the other hand the geographical areas defined by route groups 6, 7 and 8 (Europe/ Middle East/Africa).

14. Local Asia/Pacific (LAP)

Includes routes between or among:

Asia: Afghanistan, Bangladesh, Bhutan, Brunei Darussalam, Cambodia, China, Democratic People's Republic of Korea, Hong Kong S.A.R., India, Indonesia, Japan, Kazakhstan, Kyrgyzstan, Lao People's Democratic Republic, Macau, Malaysia, Maldives, Mongolia, Myanmar, Nepal, Pakistan, Philippines, Republic of Korea, Russian Federation (East of Urals), Singapore, Sri Lanka, Taiwan (Province of China), Tajikistan, Thailand, Turkmenistan, Uzbekistan and Viet Nam

Southwest Pacific: Australia, New Zealand, Papua New Guinea and all other islands of the Pacific including American Samoa, Christmas Islands, Cocos (Keeling) Islands, Cook Islands, Fiji, French Polynesia, Guam, Kiribati, Marshall Islands, Micronesia, Nauru, New Caledonia, Niue, Norfolk Island, Northern Mariana Islands, Palau, Pitcairn, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu, United States Minor Outlying Islands, Vanuatu, Wallis and Futuna Islands.

15. Between Europe/Middle East/Africa and Asia/Pacific (EMAAP)

Includes routes between on the one hand the geographical areas defined by route groups 6, 7 and 8 (Europe/Middle East/Africa) and on the other hand that defined by route group 14 (Local Asia/Pacific).

16. North and Mid Pacific (PN)

Includes routes via the North and Central Pacific Ocean between on the one hand points in the Americas as defined in route group 2 (Central America and the Caribbean), 3 (Bermuda, Canada and the United States) and 5 (Local South America) and on the other hand geographical area defined by route group 14 (Local Asia/Pacific) *except* Southwest Pacific.

17. South Pacific (PS)

Includes routes via the South Pacific Ocean between on the one hand points in the Americas as defined in route group 2 (Central America and the Caribbean), 3 (Bermuda, Canada and the United States) and 5 (Local South America) and on the other hand the area defined as Southwest Pacific in route group 14 (Local Asia/Pacific).

II. Respondents to questionnaires

Covering the year 2000

Contracting States or groups of States that provided replies to the air carrier revenue and cost questionnaires issued under the cover of State Letter EC 2/20.3.2-01/76 of 10 August 2001.

Argentina, Armenia, Australia, Austria, Botswana, Brazil, Canada, Chile, China, Colombia, Costa Rica, Czech Republic, Ecuador, Egypt, Ethiopia, Finland, France, Greece, Gulf States¹, Hungary, Iceland, India, Iran, Israel, Italy, Jamaica, Japan, Jordan, Kuwait, Latvia, Lithuania, Luxembourg², Madagascar, Malaysia, Mauritius, Mexico, Mongolia, New Zealand, Norway, Oman, Paraguay, Poland, Portugal, Romania, Russian Federation, Scandinavia³, Serbia and Montenegro, Singapore, Slovakia, Spain, Sri Lanka, Sweden, Thailand, The former Yugoslav Republic of Macedonia, Turkey, Ukraine, United Kingdom and United States.

Covering the year 2001

Contracting States or groups of States that provided replies to the air carrier revenue and cost questionnaires issued under the cover of State Letter EC 2/20.3.2-02/64 of 26 July 2002.

Australia, Austria, Azerbaijan, Barbados², Belgium, Bhutan, Bolivia, Brazil, Chile, China, Colombia, Costa Rica, Cuba², Cyprus, Czech Republic, Denmark, Ecuador, Estonia, Ethiopia, Finland, France, Greece, Gulf States¹, Hungary, India, Ireland, Israel, Italy, Jamaica, Japan, Jordan, Kuwait, Lebanon, Lithuania, Malaysia, Mauritius, Mexico, Norway, Oman, Pakistan, Paraguay, Peru, Philippines, Poland, Portugal, Romania, Russian Federation, Saudi Arabia, Scandinavia³, Serbia and Montenegro, Singapore, Slovenia, Spain, Sweden, Thailand, The former Yugoslav Republic of Macedonia, Togo, Turkey, Ukraine, United Kingdom, United States and Uruguay.

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1. Reply for Gulf Air, which is the international scheduled airline of Bahrain, Oman, Qatar and United Arab Emirates.
 2. Revenue data only, cost data not required for non-scheduled and/or cargo carriers.
 3. Reply for SAS, which is the international scheduled airline of Denmark, Norway and Sweden.

— END —

ICAO PUBLICATIONS AND RELATED PRODUCTS IN THE AIR TRANSPORT FIELD

The following summarizes the various publications and related products in the air transport field issued by the International Civil Aviation Organization:

- *International Standards and Recommended Practices (SARPs)* adopted by the Council in accordance with Articles 37, 54 and 90 of the Convention on International Civil Aviation and designated, for convenience, as Annexes to the Convention. Annex 9 — *Facilitation* — contains SARPs dealing with customs, health, immigration and health matters concerned with international air navigation. Annex 17 — *Security* — is composed of SARPs on all matters related to safeguarding civil aviation against acts of unlawful interference. Any differences between the national regulations and practices of a State and what is prescribed by an International Standard must be notified to the Council in accordance with Article 38 of the Convention. The Council has also invited Contracting States to notify differences from the provisions of the Recommended Practices.
 - *ICAO's policies* on the regulation of international air transport, charges for airports and air navigation services, and taxation in the field of international air transport.
 - *Technical specifications* on machine readable travel documents (MRTDs).
 - *Tariffs* for airports and air navigation services, including charges applied towards users in more than 180 States.
 - *Manuals* providing information or guidance to Contracting States on such issues as regulation of international air transport, financial management of airports and air navigation services, air traffic forecasting methods, and compliance with Annex 17 provisions.
 - *Circulars* providing specialized information of interest to Contracting States. They include studies on medium- and long-term trends in the air transport industry at a global and regional level and specialized studies of a worldwide nature covering issues such as the economic and financial aspects of CNS/ATM systems implementation, regional differences in airline operating economics, economic contribution of civil aviation, privatization of airports and air navigation services, and regulatory implications of slot allocation.
 - *Aviation Security Training Packages (ASTPs) and courses* on a range of subjects designed to assist security professionals, managers and staff in developing a more comprehensive understanding of SARPs, as well as to offer specialized practical expertise in the implementation and monitoring of measures and provisions in accordance with local programmes. For further information, please contact avsec@icao.int or visit the training page on the ICAO AVSEC website at www.icao.int/avsec.
 - *Publications in electronic form*, in database and interactive forms, such as the world's air services agreements and the ICAO template air services agreements. *Civil aviation statistics* can be accessed by purchasing an annual subscription to one or more of the data series distributed by ICAO through its commercial website at www.icaodata.com. Questions regarding ICAO statistics or special orders for statistical data should be sent to sta@icao.int.
 - *Reports of meetings in the air transport field*, including reports on the Facilitation and Statistics divisional-type meetings and those related to conferences on aviation security, regulation of international air transport, and economics of airports and air navigation services.
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