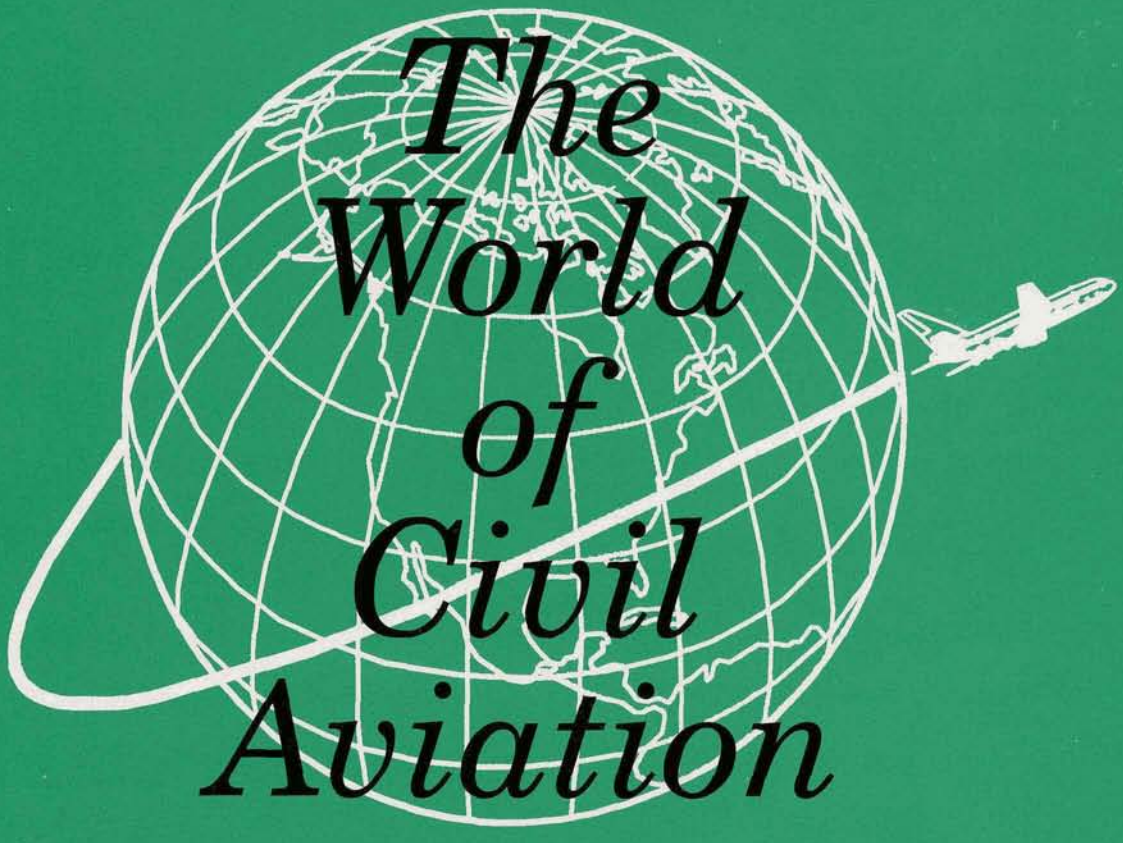
CIRCULAR 307-AT/129



The World of Civil Aviation

2003–2006

Approved by the Secretary General and published under his authority

INTERNATIONAL CIVIL AVIATION ORGANIZATION

Published in separate English, Arabic, French, Russian and Spanish editions by the International Civil Aviation Organization. All correspondence, except orders and subscriptions, should be addressed to the Secretary General.

Orders should be sent to one of the following addresses, together with the appropriate remittance (by bank draft, cheque or money order) in U.S. dollars or the currency of the country in which the order is placed. Credit card orders (American Express, MasterCard and Visa) are accepted at ICAO Headquarters.

International Civil Aviation Organization. Attention: Document Sales Unit, 999 University Street, Montréal, Quebec, Canada H3C 5H7
Telephone: +1 (514) 954-8022; Facsimile: +1 (514) 954-6769; Sitatex: YULCAYA; E-mail: sales@icao.int;
World Wide Web: http://www.icao.int

China. Glory Master International Limited, Room 434B, Hongshen Trade Centre, 428 Dong Fang Road, Pudong, Shanghai 200120
Telephone: +86 137 0177 4638; Facsimile: +86 21 5888 1629; E-mail: glorymaster@online.sh.cn

Egypt. ICAO Regional Director, Middle East Office, Egyptian Civil Aviation Complex, Cairo Airport Road, Heliopolis, Cairo 11776
Telephone: +20 (2) 267 4840; Facsimile: +20 (2) 267 4843; Sitatex: CAICAYA; E-mail: icao@idsc.net.eg

France. Directeur régional de l'OACI, Bureau Europe et Atlantique Nord, 3 bis, villa Émile-Bergerat, 92522 Neuilly-sur-Seine (Cedex)
Téléphone: +33 (1) 46 41 85 85; Fax: +33 (1) 46 41 85 00; Sitatex: PAREUYA; Courriel: icaoeurnat@paris.icao.int

Germany. UNO-Verlag GmbH, Am Hofgarten 10, D-53113 Bonn / Telephone: +49 (0) 2 28-9 49 0 20; Facsimile: +49 (0) 2 28-9 49 02 22;
E-mail: info@uno-verlag.de; World Wide Web: http://www.uno-verlag.de

India. Oxford Book and Stationery Co., Scindia House, New Delhi 110001 or 17 Park Street, Calcutta 700016
Telephone: +91 (11) 331-5896; Facsimile: +91 (11) 51514284

India. Sterling Book House – SBH, 181, Dr. D. N. Road, Fort, Bombay 400001
Telephone: +91 (22) 2261 2521, 2265 9599; Facsimile: +91 (22) 2262 3551; E-mail: sbh@vsnl.com

Japan. Japan Civil Aviation Promotion Foundation, 15-12, 1-chome, Toranomon, Minato-Ku, Tokyo
Telephone: +81 (3) 3503-2686; Facsimile: +81 (3) 3503-2689

Kenya. ICAO Regional Director, Eastern and Southern African Office, United Nations Accommodation, P.O. Box 46294, Nairobi
Telephone: +254 (20) 622 395; Facsimile: +254 (20) 623 028; Sitatex: NBOCAYA; E-mail: icao@icao.unon.org

Mexico. Director Regional de la OACI, Oficina Norteamérica, Centroamérica y Caribe, Av. Presidente Masaryk No. 29, 3er Piso,
Col. Chapultepec Morales, C.P. 11570, México D.F. / Teléfono: +52 (55) 52 50 32 11; Facsímile: +52 (55) 52 03 27 57;
Correo-e: icao_nacc@mexico.icao.int

Nigeria. Landover Company, P.O. Box 3165, Ikeja, Lagos
Telephone: +234 (1) 4979780; Facsimile: +234 (1) 4979788; Sitatex: LOSLORK; E-mail: aviation@landovercompany.com

Peru. Director Regional de la OACI, Oficina Sudamérica, Apartado 4127, Lima 100
Teléfono: +51 (1) 575 1646; Facsímile: +51 (1) 575 0974; Sitatex: LIMCAYA; Correo-e: mail@lima.icao.int

Russian Federation. Aviaizdat, 48, Ivan Franko Street, Moscow 121351 / Telephone: +7 (095) 417-0405; Facsimile: +7 (095) 417-0254

Senegal. Directeur régional de l'OACI, Bureau Afrique occidentale et centrale, Boîte postale 2356, Dakar
Téléphone: +221 839 9393; Fax: +221 823 6926; Sitatex: DKRCAYA; Courriel: icaodkr@icao.sn

Slovakia. Air Traffic Services of the Slovak Republic, Letové prevádzkové sluzby Slovenskej Republiky, State Enterprise,
Letisko M.R. Stefánika, 823 07 Bratislava 21 / Telephone: +421 (7) 4857 1111; Facsimile: +421 (7) 4857 2105

South Africa. Avex Air Training (Pty) Ltd., Private Bag X102, Halfway House, 1685, Johannesburg
Telephone: +27 (11) 315-0003/4; Facsimile: +27 (11) 805-3649; E-mail: avex@iafrica.com

Spain. A.E.N.A. — Aeropuertos Españoles y Navegación Aérea, Calle Juan Ignacio Luca de Tena, 14, Planta Tercera, Despacho 3. 11,
28027 Madrid / Teléfono: +34 (91) 321-3148; Facsímile: +34 (91) 321-3157; Correo-e: sscc.ventasoaci@aena.es

Switzerland. Adeco-Editions van Diermen, Attn: Mr. Martin Richard Van Diermen, Chemin du Lacuez 41, CH-1807 Blonay
Telephone: +41 021 943 2673; Facsimile: +41 021 943 3605; E-mail: mvandiermen@adeco.org

Thailand. ICAO Regional Director, Asia and Pacific Office, P.O. Box 11, Samyaek Ladprao, Bangkok 10901
Telephone: +66 (2) 537 8189; Facsimile: +66 (2) 537 8199; Sitatex: BKKCAYA; E-mail: icao_apac@bangkok.icao.int

United Kingdom. Airplan Flight Equipment Ltd. (AFE), 1a Ringway Trading Estate, Shadowmoss Road, Manchester M22 5LH
Telephone: +44 161 499 0023; Facsimile: +44 161 499 0298; E-mail: enquiries@afeonline.com; World Wide Web: http://www.afeonline.com

2/05

Foreword

Introduction

1. This circular, *The World of Civil Aviation — 2003 to 2006,* is the twelfth in an annual series of publications covering recent and future developments in civil aviation; the developments for the years 2002 to 2004 were published in Circular 299. Compared to recent editions, this one is re-structured and condensed. It focuses on the developments in air transport in 2003 and on medium-term traffic and financial forecasts through to the year 2006. In the present circular, Part 1 reviews air traffic and financial results in the year 2003 and presents the year's major developments in or affecting international civil aviation; Part 2 analyses trends in airline traffic and financial results along with factors underlying air traffic demand over the 1993-2003 period and presents global and regional forecasts of scheduled passenger traffic and basic global airline financial trends through to 2006.

Sources

2. Extensive aviation statistics may be found in the various ICAO Digests of Statistics and a dedicated ICAO aviation statistics Web site (www.icaodata.com). In addition to these, sources of information for *The World of Civil Aviation* include relevant and most recently available statistical publications of the United Nations (UN); BACK Aviation Solutions fleet and airline schedule databases; the Airports Council International (ACI); the Air Transport Association (ATA); the Association of Asia Pacific Airlines (AAPA); the Association of European Airlines (AEA); Avmark Inc.; the International Air Transport Association (IATA); the International Monetary Fund (IMF); the Organisation for Economic Co-operation and Development (OECD); the United States Department of Transportation (DOT); the World Bank (WB); and the WEFA Group (formerly known as Wharton Econometrics Forecasting Associates).

3. Another source of information used for *The World of Civil Aviation* is the large and constantly updated collection of research material on hand at ICAO, including completed ICAO studies, periodical and occasional publications of national administrations and international organizations, studies prepared by research agencies and individuals, and the aviation press. Finally, an information collection exercise specifically for *The World of Civil Aviation* was carried out through the seven ICAO Regional Offices.

4. A *Catalogue of ICAO Publications and Audio-visual Training Aids* is available on request from:

International Civil Aviation Organization
Attention: Document Sales Unit
999 University Street
Montréal, Quebec
Canada H3C 5H7
Telephone: (514) 954-8022 SITA: YULADYA
Facsimile: (514) 954-6769
E-mail: sales@icao.int

5. The statistical data for 2003 appearing in this circular are to be considered as preliminary: experience shows that the margin of error for world totals is probably less than 2 per cent, except in the case of operational results where it may be considerably higher.

6. Unless otherwise noted:

a) all statistical data are applicable to ICAO Contracting States (188 at the end of 2003);

b) regional breakdowns are by ICAO statistical region;

c) traffic statistics are for scheduled services of commercial air carriers;

d) total airline financial statistics relate to scheduled as well as non-scheduled operations of commercial air carriers;

e) the expression “tonne-kilometre” means metric tonne-kilometre;

f) the word "billion" means one thousand million; and

g) all references to monetary units made in this circular mean “United States (U.S.) cents” for “cents” and “U.S. dollars” for “$”.

Table of Contents

Page

Page

PART II — AIRLINE TRAFFIC AND FINANCIAL TRENDS AND FORECASTS

TABLES

Page

FIGURES

Page

PART I

CIVIL AVIATION IN THE YEAR 2003

This Part reviews developments in civil aviation for 2003. It covers airline traffic and finances on a global and regional basis and reviews major developments in the economic regulation of air transport services, airline ownership, alliances and cooperation, airline business models, fares and rates, product distribution, carriers' fleets, airports and air navigation services, aviation safety and security, and other relevant global and regional developments.

THIS PAGE INTENTIONALLY LEFT BLANK

Chapter 1
Air Carriers and their Fleets

AIRLINE TRAFFIC AND FINANCIAL RESULTS

Scheduled traffic: world

1.1 In 2003, the total (international and domestic) scheduled traffic carried by the airlines of the 188 Contracting States of ICAO amounted to approximately 1 657 million passengers and some 35 million tonnes of freight (Table 1-1). During the first half of the year, traffic growth was negatively affected by the outbreak of Severe Acute Respiratory Syndrome (SARS), which had a significant impact on passenger traffic to, from and within the affected areas, and by the war in Iraq. Reported monthly figures suggest that passenger traffic reached its lowest level in May after which it started a steady recovery. Data for the year as a whole indicate that in 2003 the overall passenger/freight/mail tonne-kilometres performed showed an increase of about 1.8 per cent over 2002[1]. In 2003, there was a small change in the overall capacity relative to changes in traffic. Hence average load factors on total scheduled services (domestic plus international) remained at 71 per cent for passenger traffic and decreased from 61 per cent in 2002 to 60 per cent for passenger/freight/mail traffic combined (weight load factor) in 2003.

1.2 Compared with the previous year, in 2003 international scheduled traffic showed little change in tonne-kilometres performed, with about a 2.9 per cent increase in passengers carried and about a 7.4 per cent increase in freight tonnes carried. International traffic accounted for some 58 per cent of total passenger-kilometres performed, 83 per cent of the freight tonne-kilometres performed and some 66 per cent of the total tonne-kilometres performed.

1.3 In 2003, domestic traffic is estimated at about 136.5 billion tonne-kilometres performed, an increase of about 5 per cent over 2002.

1. On 1 October 2002, the United States Department of Transportation (DOT) implemented new air traffic data reporting rules which, *inter alia*, have affected the reporting of domestic all-cargo operations. Consequently, compared with 2002, the reported data for the United States for 2003 show a significant shift of domestic freight traffic from non-scheduled operations to scheduled services with a corresponding impact on the world traffic shown above. It is estimated that if the traffic for United States carriers had been reported under the old rules, the increases for freight tonnes carried (9.9 per cent), freight tonne-kilometres (4.5 per cent) and total tonne-kilometres performed (1.8 per cent) would have been reduced to 4.6, 2.3 and 0.9 per cent, respectively.

Table 1-1. Scheduled services of airlines of ICAO Contracting States (2003/2002)

	Passengers carried (millions)	Passenger-km performed (millions)	Passenger load factor (%)	Freight tonnes carried (millions)	Freight tonne-km performed (millions)	Mail tonne-km performed (millions)	Total tonne-km performed (millions)	Weight load factor (%)
TOTAL (international plus domestic)								
2002	1 639	2 964 530	71	31.4	119 840	4 570	397 120	61
2003	1 657	2 991 620	71	34.5	125 240	4 620	404 310	60
Percentage change	1.1	0.9	0.0	9.9	4.5	1.1	1.8	-1.0
INTERNATIONAL								
2002	547	1 736 070	73	18.8	101 590	2 710	267 170	64
2003	563	1 734 370	72	20.2	103 730	2 780	267 790	63
Percentage change	2.9	-0.1	-1.0	7.4	2.1	2.6	0.2	-1.0
DOMESTIC								
2002	1 092	1 228 460	68	12.6	18 250	1 860	129 950	55
2003	1 094	1 257 250	71	14.3	21 510	1 840	136 520	55
Percentage change	0.2	2.3	3.0	13.5	17.9	-1.1	5.1	0.0

Source: ICAO Air Transport Reporting Form A.

1.4 In 2003, approximately 47 per cent of the total volume of scheduled passenger, freight and mail traffic was accounted for by the airlines of the United States, Germany, the United Kingdom and Japan (about 32, 5, 5 and 5 per cent, respectively). On international services, some 36 per cent of all traffic was carried by the airlines of the United States, Germany, the United Kingdom and Japan (about 16, 8, 7 and 5 per cent, respectively).

Scheduled traffic: regions of airline registration

1.5 Table 1-2 depicts total (international plus domestic) and international scheduled traffic levels by region of airline registration and each region's share of world traffic. From 2002 to 2003, developments in total and international scheduled traffic varied considerably among regions of carrier registration with respect to both passengers, and freight and mail (Table 1-3). In terms of passenger-kilometres performed, the change in traffic ranged from a decrease of some 4 per cent in total traffic for the airlines registered in Asia/Pacific to an increase of almost 11 per cent for airlines registered in the Middle East. Changes in the passenger-kilometres performed on international services ranged from a decrease of about 8 per cent each for airlines registered in North America and in Asia/Pacific to an increase of some 13 per cent for those registered in the Middle East. In terms of freight tonne-kilometres performed, increases ranged from some 3 per cent for carriers registered in Asia/Pacific, Europe and Latin America and the Caribbean to about 14 per cent for airlines registered in the Middle East. Changes in freight tonne-kilometres performed on international services ranged from a decrease of some 4 per cent for airlines registered in North America to an increase of about 14 per cent for airlines registered in the Middle East.

Table 1-2. Scheduled traffic by region of airline registration — 2003

By ICAO statistical region of airline registration	Aircraft km (millions)	Aircraft departures (thousands)	Passengers carried (thousands)	Passenger-km performed (millions)	Passenger load factor (%)	Tonne-km performed		Tonne-km available (millions)	Weight load factor (%)
						Freight (millions)	Total (millions)		
Total (international and domestic) services of airlines of ICAO Contracting States									
Europe	6 740	5 920	452 540	824 000	74	33 870	112 200	165 810	68
% of world traffic	26.2	28.0	27.3	27.5		27.0	27.8	24.8	
Africa	630	500	31 030	66 930	64	1 990	8 160	15 540	53
% of world traffic	2.5	2.4	1.9	2.2		1.6	2.0	2.3	
Middle East	760	450	52 480	117 550	70	6 370	17 250	29 310	59
% of world traffic	3.0	2.1	3.2	3.9		5.1	4.3	4.4	
Asia and Pacific	5 300	3 880	401 060	759 140	68	43 300	113 150	184 990	61
% of world traffic	20.6	18.4	24.2	25.4		34.6	28.0	27.6	
North America	10 780	8 810	623 520	1 086 760	74	35 640	136 800	243 590	56
% of world traffic	41.9	41.7	37.6	36.3		28.5	33.8	36.4	
Latin America/ Caribbean	1 490	1 570	95 900	137 250	65	4 080	16 750	30 340	55
% of world traffic	5.8	7.4	5.8	4.6		3.3	4.1	4.5	
TOTAL	25 720	21 130	1 656 540	2 991 620	71	125 240	404 310	669 590	60
International services of airlines of ICAO Contracting States									
Europe	5 340	3 510	290 140	695 000	74	32 990	99 480	145 180	69
% of world traffic	43.8	58.2	51.6	40.1		31.8	37.1	34.3	
Africa	470	210	17 500	56 830	64	1 900	7 150	13 690	52
% of world traffic	3.9	3.5	3.1	3.3		1.8	2.7	3.2	
Middle East	660	270	34 640	104 760	69	6 270	16 000	27 000	59
% of world traffic	5.4	4.5	6.2	6.0		6.0	6.0	6.4	
Asia and Pacific	2 850	800	116 890	497 310	69	39 390	86 720	136 960	63
% of world traffic	23.4	13.3	20.8	28.7		38.0	32.4	32.4	
North America	2 140	820	74 640	298 300	76	19 990	47 540	81 020	59
% of world traffic	17.5	13.6	13.3	17.2		19.3	17.8	19.2	
Latin America/ Caribbean	740	420	28 760	82 180	68	3 190	10 890	19 120	57
% of world traffic	6.1	7.0	5.1	4.7		3.1	4.1	4.5	
TOTAL	12 190	6 040	562 570	1 734 370	72	103 730	267 790	422 960	63

Note.— The sum of the individual regions may not match the totals due to rounding.

Source: ICAO Air Transport Reporting Form A.

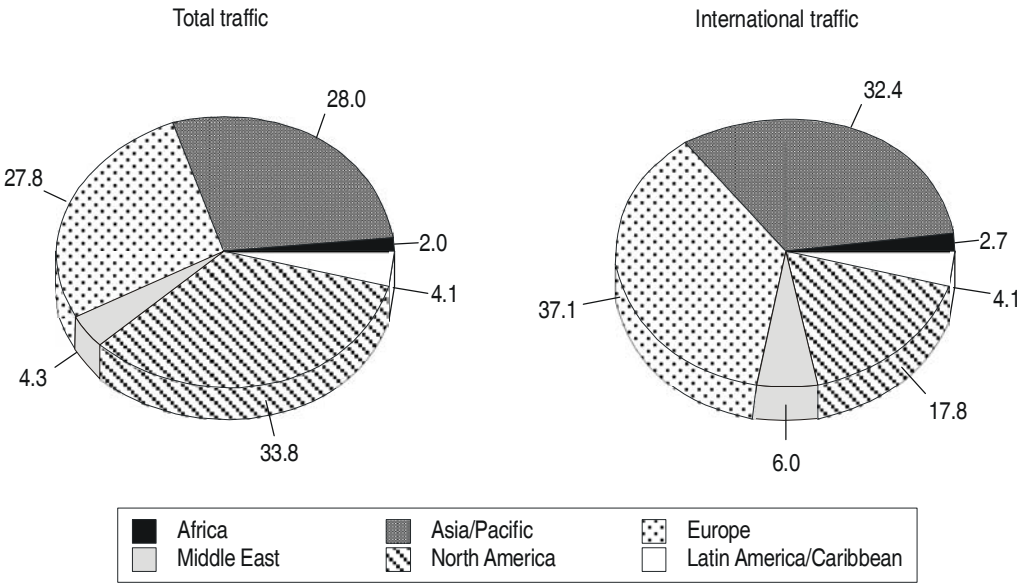
1.6 The differences in regional traffic development between 2002 and 2003 affected the distribution of this traffic. The regional distribution for total and for international scheduled traffic in 2003 is shown in Figure 1-1. In terms of total scheduled traffic in 2003, the airlines of North America carried some 34 per cent of world traffic. However, the largest share of international scheduled traffic (about 37 per cent) was carried by the airlines of the European region.

1.7 In 2003, airlines registered in Europe showed the highest average annual weight load factor on international scheduled services (about 69 per cent), while those in Africa showed the lowest average load factor (some 52 per cent). Compared with 2002, the average weight load factors for international scheduled services showed an increase in only one region: about 2 percentage points for European airlines. There was no change for those of North America and Latin America and the Caribbean, and decreases for those of Africa (1 percentage point), the Middle East (2 percentage points) and Asia/Pacific (4 percentage points).

Table 1-3. Growth of scheduled traffic by region of airline registration — World (2003/2002)
(annual percentage change)

Region	Passengers carried	Passenger-km performed	Freight tonne-km performed	Mail tonne-km performed	Total tonne-km performed
TOTAL (international plus domestic)					
Africa	2.7	1.6	9.9	4.7	3.6
Asia and Pacific	–1.3	–4.0	2.6	–0.4	–1.4
Europe	7.5	6.9	3.2	0.6	5.0
Middle East	5.1	10.6	13.5	15.6	11.8
North America	–1.5	–1.1	6.5	1.0	0.6
Latin America and Caribbean	–1.8	3.8	3.3	10.8	2.7
TOTAL	1.1	0.9	4.5	1.1	1.8
INTERNATIONAL					
Africa	–2.7	–0.5	9.8	0.0	2.3
Asia and Pacific	–10.2	–8.0	2.7	0.9	–3.4
Europe	10.1	7.7	3.1	0.9	5.3
Middle East	10.7	12.6	13.8	15.2	13.2
North America	–4.1	–7.8	–4.3	4.5	–6.4
Latin America and Caribbean	8.5	7.6	3.6	22.0	4.3
TOTAL	2.8	-0.1	2.1	2.7	0.4

Source: ICAO Air Transport Reporting Form A.



Source: ICAO Air Transport Reporting Form A.

Figure 1-1. Percentage distribution of scheduled traffic by region of airline registration — 2003 (total tonne-kilometres performed)

Non-scheduled traffic

1.8 It is estimated that in 2003 total international non-scheduled passenger-kilometres performed throughout the world decreased by some 5 per cent compared with 2002 (Table 1-4), with the share of such traffic in overall international air passenger traffic remaining at about 12 per cent. Non-scheduled traffic in Europe remains the largest single component of the world charter market. Domestic non-scheduled passenger traffic is estimated to represent some 5 per cent of total non-scheduled passenger traffic and about 1 per cent of total domestic passenger traffic worldwide. Non-scheduled cargo operations tend to be largely of an ad hoc nature and little information is available as to their volume.

Airline financial results: world

1.9 Preliminary estimates for 2003 indicate that the world's scheduled airlines as a whole experienced an operating loss of 0.9 per cent of total operating revenues, compared with the operating loss of 1.6 per cent incurred in 2002. Operating revenues of scheduled airlines are tentatively estimated at $312.9 billion in 2003, an increase of about 2 per cent over the $306 billion earned in 2002. This increase of $6.9 billion in operating revenues includes gains through traffic growth and fluctuations in currency exchange rates partly offset by declining real yields. It is estimated that traffic growth over 2002 positively impacted operating revenues for 2003 by $3.4 billion, while strengthening major currencies vis-à-vis the U.S. dollar added $14.7 billion; these gains were offset by a drop in real yields of $11.3 billion.

1.10 Operating revenues per tonne-kilometre performed increased marginally from 72.1 cents in 2002 to an estimated 72.9 cents in 2003. The operating expenses of scheduled airlines are tentatively estimated at $315.7 billion in 2003, an increase of about 1.5 per cent over the $310.9 billion incurred in 2002. This $4.8 billion increase reflects exchange rate losses, increases in fuel costs and a 1.6 per cent increase in capacity over 2002, partly offset by a decline in real unit costs. Operating expenses per tonne-kilometre available remained almost unchanged, declining from 44.63 cents in 2002 to an estimated 44.59 cents in 2003.

1.11 The estimated operating result for the world's scheduled airlines is the difference between operating revenues and expenses and is therefore subject to a relatively wide margin of error. For 2003, there was an operating loss estimated at about $2.8 billion, that is $2.1 billion less than in 2002. The improvement in operating loss in 2003 relative to the previous year was due to improvement in operating results of North American carriers diluted by a slow economic recovery, security concerns due to the events in the Middle East, and the impact of the SARS outbreak. A 2.4 per cent increase in capacity over 2002 was partly offset by a 1.8 per cent increase in traffic which saw the overall load factor decline marginally. The increase in yields over 2002, coupled with a marginal decline in unit costs, resulted in improvement in break-even load factors from 61.9 per cent in 2002 to 61.2 per cent in 2003.

1.12 The net result is derived from the operating result by taking into account non-operating items and taxes. Preliminary estimates suggest that in 2003 the world's scheduled airlines would end up with a net loss of $6.5 billion compared to $11.3 billion in 2002.

1.13 Available financial data from non-scheduled carriers do not allow for reliable estimates for 2003. In 2002 operating revenues of non-scheduled carriers, as a group, are tentatively estimated at $6.3 billion compared with $7.7 billion earned in 2001. In 2002 these carriers had an estimated operating profit of $447 million and a net result of some $475 million, after taking into account non-operating items and taxes.

Table 1-4. Estimated international non-scheduled revenue passenger traffic
(2002 and 2003)

Category	2002 Passenger-km performed (millions)	2002 Percentage of total traffic	2003 Passenger-km performed (millions)	2003 Percentage of total traffic	Annual change (%) 2003/02
Non-scheduled traffic[1]	244 930	12.4	232 520	11.8	–5.1
Scheduled traffic	1 734 130	87.6	1 732 310	88.2	–0.1
TOTAL TRAFFIC	1 979 060	100.0	1 964 830	100.0	–0.7

1. Total non-scheduled traffic of scheduled airlines and non-scheduled operators.

Source: ICAO Air Transport Reporting Form A.

World airline consolidated balance sheet

1.14 This section describes the consolidated balance sheet of the scheduled airlines registered in the 188 ICAO Contracting States at the end of 2002 (complete data were not available for the end of 2003 at the time of publication) and the long-term trends in the performance of balance sheet items.

1.15 At the end of 2002, the value of total assets stood at $439.3 billion, compared to $436.2 billion in 2001 (Table 1-5). They represent three categories: 22 per cent current assets, 59 per cent fixed assets and 19 per cent other assets.

1.16 At the end of 2002, the net value of the aircraft fleet (i.e. after depreciation charges), accounting for about 48 per cent of total assets, stood at $210.0 billion, a marginal decline of 0.1 per cent over the $210.1 billion at the end of 2001. Accumulated depreciation charges stood at about $153.7 billion, of which $115.9 billion were for retired aircraft, representing some 36 per cent of the gross fleet value. The remaining accumulated depreciation charges covered ground property and equipment and represented some 54 per cent of the gross value assets.

1.17 During the fiscal years 2001 and 2002, the value of stockholders' equity decreased by some 12 per cent from $86.4 billion to $76.4 billion, which represented in relative terms 17 per cent of total liabilities in 2002. During the same period, long-term debt increased from $149.5 billion to $152.4 billion and made up 35 per cent of total liabilities in 2002, compared to 34 per cent in 2001. At the end of the fiscal year 2002, current liabilities (including unearned transportation revenue) amounted to $120.8 billion or some 27 per cent of total liabilities. Unearned transportation revenue represented about 6 per cent of total liabilities and some 10 per cent of the total traffic revenue for 2002.

1.18 Long-term trends in the performance of balance sheet items may be discerned in Table 1-5 comparing 2002 with 1994 results. At the end of the 2002 fiscal year, total assets stood at $439.3 billion compared to $310.6 billion at the end of 1994. Relative to the totals, the most significant difference between 1994 and 2002 is the decrease in the proportion of current assets from 24 to 22 per cent of the total and fixed assets from 61 to 59 per cent of totals and the corresponding increase in other assets. The proportion of other assets increased from 15 per cent of total assets in 1994 to 19 per cent in 2002. However, there was a slight relative decrease in investments in affiliated companies from about 5 per cent of total assets in 1994 to 3 per cent in 2002, whereas the share of flight equipment increased and the share of ground property and equipment decreased.

1.19 With regard to liabilities, between 1994 and 2002 the share of current liabilities (including unearned transportation revenue) fell from 28 to 27 per cent of total liabilities and long-term debt from 37 to 35 per cent while the share of other medium/long-term liabilities rose from 17 to 20 per cent. In 2002, stockholders' equity was 17 per cent of total liabilities, the same level as in 1994. However, this reflects a gradual erosion in unappropriated retained earnings (i.e. cumulative profit) compared with fiscal year 2001.

Table 1-5. Consolidated balance sheet[1]
Scheduled airlines of ICAO Contracting States
(end of fiscal years 1994, 2001 and 2002)

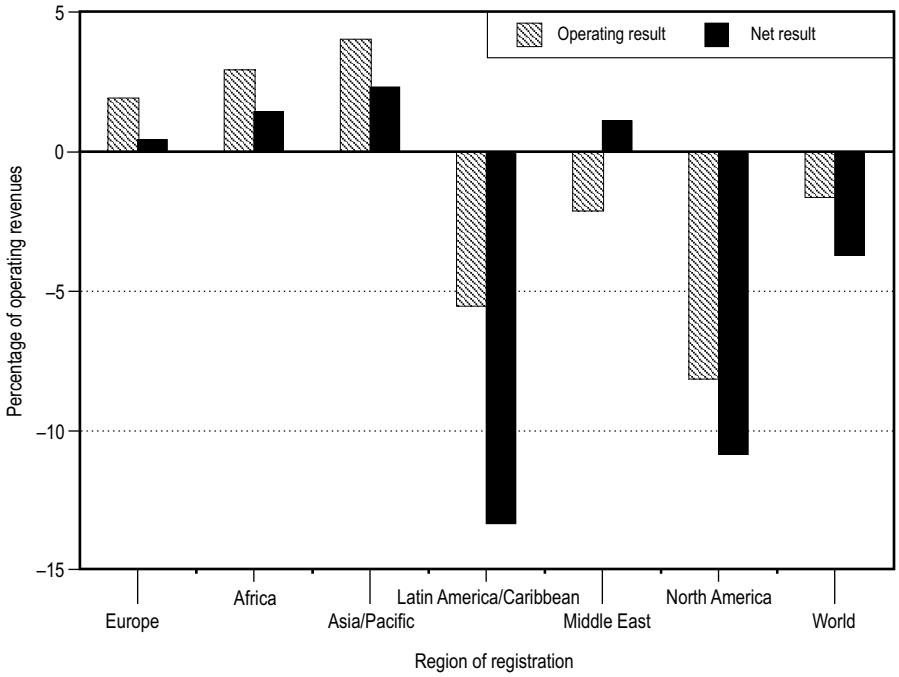
	1994		2001		2002	
	U.S.$ (million)	% of total	U.S.$ (million)	% of total	U.S.$ (million)	% of total
ASSETS						
Current assets	75 690	24	93 650	21	98 830	22
Fixed assets	188 270	61	261 060	60	258 720	59
Flight equipment	144 370	46	210 120	48	209 970	48
Ground property and equipment	27 160	9	33 640	8	32 500	7
Land	2 730	1	4 150	1	3 950	1
Investments in affiliated companies	14 010	5	13 150	3	12 300	3
Other assets	46 600	15	81 470	19	81 700	19
TOTAL ASSETS	310 560	100	436 180	100	439 250	100
LIABILITIES						
Current liabilities	88 500	28	117 760	27	120 790	27
Current liabilities	72 790	23	91 180	21	94 880	22
Unearned transportation revenues	15 710	5	26 580	6	25 910	6
Long/medium-term liabilities	170 340	55	232 020	53	242 020	55
Long-term debt	116 040	37	149 460	34	152 410	35
Other medium/long-term liabilities	54 300	17	82 560	19	89 610	20
Stockholders' equity	51 720	17	86 400	20	76 440	17
Share capital	23 710	8	24 140	6	22 400	5
Other capital	28 010	9	62 260	14	54 040	12
TOTAL LIABILITIES	310 560	100	436 180	100	439 250	100
ACCUMULATED DEPRECIATION						
Flight equipment	95 130	77	114 540	75	115 960	75
Ground property and equipment	28 440	23	38 790	25	37 780	25
TOTAL ACCUMULATED DEPRECIATION	123 570	100	153 330	100	153 740	100

1. Excludes Domestic Operations within the CIS for 1994.

Source: ICAO Air Transport Reporting Form EF.

Airline financial results: regions of airline registration

1.20 Estimated regional results for 2003 indicate that North American airlines accounted for about 37 per cent of total operating revenues and 38 per cent of total operating costs. Preliminary estimates indicate that operating losses of scheduled airlines registered in North America amounted to $3.0 billion in 2003 compared to $8.9 billion in 2002. Airlines of Europe, the Middle East and Africa collectively achieved an operating loss of approximately $1 billion in 2003 compared with an operating profit of $1.8 billion in 2002. Airlines registered in Asia/Pacific accrued an operating profit of $1.6 billion in 2003, compared to $2.9 billion in 2002. In contrast, airlines of Latin America/Caribbean accrued operating losses of about $300 million in 2003 compared to $700 million in 2002.



Source: ICAO Air Transport Reporting Form EF.

Figure 1-2. Financial results of scheduled airlines by region (2002)

1.21 The estimated cumulative results of the world's scheduled airlines do not portray the considerable differences in the financial performance of individual airlines. In 2002 (complete data were not available for 2003 at the time of publication) it is estimated that of these airlines, about 59 per cent achieved operating profits, while 41 per cent reported operating losses. On a regional basis, in all ICAO statistical regions, with the exception of Asia/Pacific, Europe and Africa, airlines experienced negative aggregated operating results in 2002. Operating results expressed as a percentage of operating revenues, ranged from a surplus of 4.0 per cent for the airlines of Asia/Pacific to a significant loss of 8.1 per cent for those of North America. Net results ranged from a loss of 13.3 per cent of operating revenues for the airlines registered in Latin America to a profit of 2.4 per cent for those registered in Asia/Pacific (Figure 1-2).

ECONOMIC REGULATION

Bilateral agreements and negotiations

1.22 Bilateral air services agreements are still the prevailing approach used by States in expanding international air transport services. During the year, a total of 66 bilateral air services agreements were reportedly concluded or amended by 64 parties. Of these parties, China, Hong Kong Special Administrative Region (SAR) of China, India, Japan, Qatar, Republic of Korea and Viet Nam each concluded or amended five or more agreements.

1.23 Continuing a trend, over 70 per cent of these agreements and amendments contained some form of liberalized regulatory arrangements. Moreover, two "open skies" agreements were concluded, one between Chile and Uruguay in February, and the other between Albania and the United States in September; these agreements provide for full market access without restrictions on designations, route rights, capacity, frequencies, codesharing and tariffs. Since 1992, 89 "open skies" bilateral agreements have been concluded, involving 74 parties, with the United States being one of the partners in 60 cases (see Table 1-6). These agreements involved not only developed countries but also an increasing number of developing countries (the latter in about 60 per cent of the agreements).

1.24 Some bilateral negotiations for liberalization have not been easy. For example, Australia and Singapore came close to an "open skies" agreement, but the Memorandum of Understanding (MOU) formally signed in September fell short of an "open skies" agreement because Australia turned down Singapore's request for fifth freedom rights over Australia to third countries, notably to the United States. The negotiations between the Philippines and the United States ended without an agreement in July. The United States, which sought an "open skies" agreement including "Seventh Freedom" rights for all-cargo, declined to accept the further deferment of the implementation of the provisions in the existing bilateral agreement originally signed in 1982, under which both States committed to removal, from October, of restrictions on frequency, capacity and destination on each other's carriers.

Regional regulatory developments

1.25 Some agreements negotiated in recent years have sought to liberalize air transport services on a regional or sub-regional basis or amongst a group of like-minded States. To date, there have been at least 11 such regional or plurilateral arrangements with several other potential arrangements in the pipeline (Table 1-7).

1.26 The year 2003 saw five noteworthy regional developments including some important developments regarding the European Union. First, the Pacific Islands Air Services Agreement (PIASA) was formally endorsed by Ministers of the Pacific Islands Forum in July and was signed by four of 16 member States in August. PIASA will come into force when six members have ratified it and will progressively create a single aviation market in the subregion. Second, Tonga deposited in September its instrument of accession to become a party to the Multilateral Agreement on the Liberalization of International Air Transportation (MALIAT) known as the "Kona" agreement, which had already been signed by seven States. In December Chile joined the Protocol to the MALIAT which provides for full seventh and eighth freedom services. Third, the CLMV States (Cambodia, Lao People's Democratic Republic, Myanmar and Viet Nam) signed in December a Multilateral Agreement on Air Services, which formalizes a liberalization arrangement for the CLMV States agreed to in 1998. Fourth, the Association of Caribbean States (ACS) finalized in July a draft Air Transport Agreement to create an ACS Common Aviation Area, which will be signed during 2004. Fifth, the European Commission started in March a consultation process about the revision of the Regulations of 1992 constituting the "third package" for liberalization of air transport within the European Union (EU).

Table 1-6. Bilateral "open skies" agreements (1992 to 2003)

1992 Netherlands - United States
1994 Luxembourg - Macao SAR of China
1995 Austria - United States
1995 Belgium - United States
1995 Czech Republic - United States (7C, T)
1995 Denmark - United States
1995 Finland - United States
1995 Iceland - United States (7C)
1995 Luxembourg - United States (7C)
1995 Norway - United States
1995 Sweden - United States
1995 Switzerland - United States
1996 Germany - United States (7C, FN)
1996 Jordan - United States
1997 Aruba - United States (7C)
1997 Brunei Darussalam - Singapore (S)
1997 Brunei Darussalam - United States (7C, S)
1997 Chile - United States (7C, S)
1997 Costa Rica - United States
1997 El Salvador - United States (7C)
1997 Guatemala - Panama
1997 Guatemala - United States (7C)
1997 Honduras - United States (7C)
1997 Kenya - Netherlands
1997 Malaysia - New Zealand (O, FF)
1997 Malaysia - United States (7C, T)
1997 Netherlands Antilles - United States (7C)
1997 New Zealand - Singapore (7C, FF, O, S)
1997 New Zealand - United States (7C, FN, S)
1997 Nicaragua - United States (7CC)
1997 Panama - United States (7C)
1997 Romania - United States (T)
1997 Singapore - United States (7SC, S)
1997 Taiwan, Province of China - United States
1998 Brunei Darussalam - New Zealand (7, 8, FF, O, S)
1998 Chile - New Zealand (7C, FF, O, R, S)
1998 Chile - Panama
1998 Denmark - New Zealand (FF)
1998 Ethiopia - United Arab Emirates
1998 Italy - United States
1998 New Zealand - Norway (FF)
1998 New Zealand - Sweden (FF)
1998 Peru - United States (7C, S, T)
1998 Republic of Korea - United States
1998 Turkmenistan - United Arab Emirates
1998 United Arab Emirates - Uganda
1998 Uzbekistan - United States (7C)
1999 Argentina - United States (7C, FN, SS, T)
1999 Bahrain - United States (7C)
1999 Chile - Costa Rica (R)
1999 Dominican Republic - United States (7C)
1999 Ireland - New Zealand (7, 8, R)
1999 New Zealand - Peru (7C, FF, S)
1999 New Zealand - Switzerland (O, R)
1999 Pakistan - United States (7C)
1999 Portugal - United States (7C, T)
1999 Qatar - United States (7C)
1999 United Republic of Tanzania - United States (7C, T)
1999 United Arab Emirates - United States (7C)
2000 Australia - New Zealand (7C, 8, FF, O)
2000 Benin - United States 7C)
2000 Burkina Faso - United States (7C)
2000 Cook Islands - New Zealand (O)
2000 Gambia - United States (7C, T)
2000 Ghana - United States (7C, T)
2000 Malta - United States (7C, T)
2000 Morocco - United States (7C, T)
2000 Namibia - United States (T)
2000 New Zealand - Samoa (O, S, T)
2000 Nigeria - United States (7C, T)
2000 Rwanda - United States (7C, FN, T)
2000 Senegal - United States (7C, FN, T)
2000 Slovakia - United States (7C, T)
2000 South Africa - Zimbabwe
2000 Turkey - United States (T)
2001 Cook Islands - Samoa
2001 France - United States (7C, FN)
2001 Oman - United States (7C, T)
2001 Poland - United States (7C, FN, T)
2001 Samoa - Tonga
2001 Sri Lanka - United States (T)
2002 Cape Verde - United States (7C, FN)
2002 Chile - Peru (T, S)
2002 Jamaica - United States (T)
2002 New Zealand - Tonga (7, FF, O)
2002 Singapore - United Arab Emirates (7)
2002 Uganda - United States (7C, FN)
2003 Albania - United States (7C)
2003 Chile - Uruguay (7, 8)

Notes.
— 7 denotes "Seventh Freedom" rights for all services;
— 7C, 7CC and 7SC denote "Seventh Freedom" rights for all-cargo, charter all-cargo and scheduled all-cargo services;
— 8 denotes "Eighth Freedom" rights for all services;
— FF denotes a free pricing scheme;
— FN denotes a double disapproval tariff scheme without tariff filing requirements;
— O denotes a liberal ownership provision;
— R denotes an existence of provisions less liberal than comparable ones in other "open skies" agreements;
— S denotes suspension due to entry into force of the "Kona" Agreement (and its Protocol in some cases);
— SS denotes suspension by one of the parties;
— T denotes an existence of a transition annex or the similar clause.

Source: ICAO Database of the World's Air Services Agreements and aviation press.

Table 1-7. Regional/plurilateral agreements and arrangements

Region / Agreement	Year	Member States
Regional		
European Union (EU)/ European Economic Area (EEA)	1987 (First package); 1990 (Second package); 1993 (Third package with full implementation in 1997)	Austria (joined in 1995), Belgium, Denmark, Finland (joined in 1995), France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden (joined in 1995) and the United Kingdom; Iceland, Liechtenstein and Norway belonging to the EEA (entry into force in 1994); Switzerland (bilateral agreement, entry into force in 2002); to be joined by 10 States in central, eastern and southern Europe in 2004
Andean Pact	1991	Bolivia, Colombia, Ecuador, Peru (suspended from 1992 to 1997) and Venezuela
Caribbean Community (CARICOM) Air Service Agreement	1996 (entry into force in 1998)	Antigua and Barbuda, Bahamas*, Barbados, Belize, Dominica, Grenada, Guyana, Haiti* (joined in 2002), Jamaica*, Monserrat*, St. Kitts and Nevis, St. Lucia, St. Vincent & Grenadines*, Suriname* and Trinidad and Tobago (States with * mark did not ratify the agreement)
Banjul Accord	1997	Cape Verde, Gambia, Ghana, Guinea-Bissau, Nigeria and Sierra Leone
Fortaleza Agreement	1997	Argentina, Bolivia, Brazil, Chile, Paraguay and Uruguay
CLMV Agreement	1998 (a formal agreement was signed in 2003)	Cambodia, Lao People's Democratic Republic, Myanmar and Viet Nam
Intra-Arab Freedoms of the Air Programme of Arab Civil Aviation Commission (ACAC)	1999	Bahrain, Egypt, Iraq, Jordan, Lebanon, Libyan Arab Jamahiriya, Morocco, Oman, Qatar, Saudi Arabia, Sudan, Syrian Arab Republic, Tunisia, United Arab Emirates and Yemen
Economic and Monetary Community of Central Africa (CEMAC)	1999	Cameroon, Central African Republic, Chad, Congo, Equatorial Guinea and Gabon
Common Market for Eastern and Southern Africa (COMESA)	1999	Angola, Burundi, Comoros, Congo (Democratic Republic), Djibouti, Egypt, Eritrea, Ethiopia, Kenya, Madagascar, Malawi, Mauritius, Namibia, Rwanda, Seychelles, Sudan, Swaziland, Uganda, United Republic of Tanzania (withdrew in 2000), Zambia and Zimbabwe
Yamoussoukro II Ministerial Decision	1999 (entry into force in 2000)	53 African Union (formerly OAU) States
Plurilateral		
Multilateral Agreement on the Liberalization of International Air Transportation (MALIAT, "Kona" agreement)	2001	Brunei Darussalam, Chile (signed in 2001, joined in 2002), New Zealand, Peru (joined in 2002), Samoa (joined in 2002), Singapore, Tonga (signed in 2003, to join in 2004) and the United States; Brunei Darussalam, New Zealand and Singapore were also the parties to the Protocol in 2001
Sub-regional		
IMT-Growth Triangle	1999	A part of regions in Indonesia, Malaysia and Thailand
BIMP-East ASEAN Growth Area	1999	A part of regions in Brunei Darussalam, Indonesia, Malaysia and Philippines

Source: Texts of the Agreements and aviation press.

1.27 A new negotiating dynamic involving air services agreements by third parties with the EU member States has been created, following the judgement of the European Court of Justice (ECJ) in November 2002, which ruled against certain provisions in some EU members' "open skies" agreements with the United States. In June, the Council of the EU conferred on the European Commission a mandate to negotiate air services agreements on behalf of all member States with the United States for the creation of an Open Aviation Area between the two territories, as well as to negotiate with third countries on the replacement of certain specific provisions in the existing agreements. The Council also reached a general approach on a draft Regulation on the negotiation and implementation of air services agreements between member States and third countries. In September, the European Parliament proposed the prioritization of countries for such negotiations (in the first stage, the Commission should negotiate with the United States and subsequently with third countries which likewise have or are seeking to achieve a liberalized market) and the reduction of member States' procedural obligations included in a draft Regulation. In October, the Council reached a political agreement on the text of a draft Regulation which addresses the Parliament's concerns. In the same month, the Commission started negotiations with the United States which were followed by the commencement of consultations with Australia, New Zealand and Singapore in December.

Trade in services developments

1.28 In 2003, the Council for Trade in Services (CTS) of the World Trade Organization (WTO-OMC) concluded a review of the Air Transport Annex which started in 2000. Following the fifth Ministerial Conference in Cancún in September, which took stock of progress in the Doha Round of trade negotiations, the CTS decided in October to end the mandatory first review process of the Annex as well as any further discussions on the expansion of the Annex. The result of this review was that the Air Transport Annex remains unchanged and continues to cover the existing three areas, namely aircraft repair and maintenance, selling and marketing of air transport, and computer reservation system (CRS) services. In accordance with paragraph 5 of the Annex, which requires that a review be conducted at least every five years, the CTS also decided that the second review of the Annex would commence at the last regular meeting of the CTS in December 2005.

National liberalization policies

1.29 Several States launched a review of their overall air transport policies, which was considered necessary in light of the global trend toward increased liberalization. Some of these policies seek to liberalize air transport services, in whole or in part, on a unilateral basis without requiring comparable rights from bilateral partners in return. Others aim at liberalizing domestic air transport markets and at permitting more carriers to fly international routes.

1.30 In 2003, major policy developments were reported as follows. In August, the Government of China announced an "open skies" policy for services to/from Hainan Province on a unilateral basis, which would allow foreign airlines to operate unlimited passenger and

cargo services to the province. In October, the Government of India announced a unilateral "open skies" policy for designated airlines of the Association of Southeast Asian Nations (ASEAN), enabling them to operate daily flights to the country's four major airports as well as 18 tourist destinations. India also expanded its "open skies" policy for a winter-operation season, allowing more access by all foreign carriers under certain conditions. In December, the Government of the Philippines introduced an "open skies" policy for cargo at the Diosdado Macapagal International Airport (Clark) and Subic Bay International Airport. Access to these airports can be made unilaterally without restrictions on capacity or type of aircraft.

Fair competition

1.31 As liberalization spreads, the question of how to maintain fair competition in international air transport is increasingly becoming an issue. In the regulatory area of competition law, there were two notable developments in the EU. First, the European Commission proposed to the Council of the EU in February to extend the scope of its competition law authority, which is currently limited to intra-EU air transport operations, to agreements between Community air carriers and third-country carriers, and also sought the power to grant certain individual and block exemptions to those agreements. A further consequence of the Commission's proposal is that it would open the door to the possibility, under Community rules, of private litigation on activities involving third countries. The Commission argued that the extension of its competition law authority to the external environment is justified by the need for a consistent internal and external approach to airline cooperation agreements which impact on competition, as well as the ECJ's 2002 decision in the "open skies" case. Second, the Council reached a political agreement in October on amended texts of a draft Regulation on protection of Community airlines against subsidization and unfair pricing practices from third-country airlines. This proposed regulation, which was originally submitted in March 2002, was amended by the Commission in May 2003 in response to the Parliament's adoption of amendments. Once entered into force, this would permit the Commission to impose duties on airlines benefitting from subsidies including non-commercial advantages.

1.32 Major competition cases in 2003 (except those related to mergers, alliances and State aids, which are covered separately) were as follows. In July, the U.S. Court of Appeals upheld a lower court's 2001 decision that the U.S. Department of Justice (DOJ) failed to show that American Airlines had engaged in predatory pricing on certain domestic routes. In the same month, the Canadian Competition Tribunal delivered a preliminary decision on an application filed by the Commissioner of Competition against Air Canada in 2001, finding that the airline operated or increased capacity at fares below its "avoidable costs" on certain routes contested by WestJet Airlines and CanJet Airlines. In August, the Indonesian Business Competition Control Commission fined Garuda for violating the anti-monopoly law, alleging that the carrier had given Abacus Indonesia an exclusive right to handle its domestic ticket bookings although international bookings were open to all CRS vendors. In November, the Australian Competition and Consumer Commission (ACCC) discontinued legal proceedings concerning allegations that Qantas misused its market power on the Brisbane-Adelaide route after Virgin Blue Airlines' entry in 2000. In December, the European Commission opened an investigation into pricing activities of major airlines that charge different prices for exactly the same ticket

depending on a customer's place of residence. Also in December, the Court of First Instance of the EU dismissed an appeal brought by British Airways against the Commission's 1999 decision that the performance reward schemes to calculate travel agents' commissions constitute an abuse of the carrier's dominant position for travel agency services.

State aid

1.33 As shown in Table 1-8, many States continued to provide State aid to their national airlines facing financial difficulties caused mainly by the economic slowdown, the impact of the events of 11 September 2001, the SARS outbreak and the war in Iraq. In addition, Chapter 11 of the U.S. Bankruptcy Code was invoked to provide relief to US Airways (bankruptcy protection from August 2002 to March 2003), United Airlines (from December 2002), Hawaiian Airlines (from March), Avianca (a part of Alianza Summa, from March). The Companies' Creditors Arrangement Act (CCAA) of Canada was also invoked to protect Air Canada in April. Despite these various aids and assistance, many carriers ceased operations. Aces (a part of Alianza Summa), Armenian Airlines, Midway Airlines and Nigeria Airways are a few examples of such liquidated carriers.

Consumer protection

1.34 With the continuing liberalization of air transport regulation, the protection and improvement of airline passenger rights have achieved greater importance, particularly, but not exclusively, in major markets. In Europe, discussions continued about the European Commission's proposed regulation establishing common rules on compensation and assistance to passengers when facing denied boarding, cancellation of their flight or a long delay. To resolve differences between the positions of the Council of the EU and the European Parliament as regards provisions on compensation for delayed flights, a conciliation committee was established in September. A conciliation agreement was reached in October, and the Parliament approved in December texts adopted by the conciliation committee. In Thailand, the Transport Ministry issued in December new consumer protection rules, which cover compensation for cancelled and delayed flights as well as in-flight injury and death. In the United States, the Department of Transportation (DOT) conducted an extensive investigation of airlines for possible violations of the Air Carrier Access Act (ACAA) in order to ensure nondiscrimination in air travel based on disability. During the year, 11 carriers were penalized a total of nearly $5.8 million for ACAA violations. In June, the DOT also published a final rule that requires U.S. and foreign airlines serving the United States to record complaints that they receive alleging inadequate accessibility or discrimination on the basis of disability and to submit a report annually to the DOT.

Airport access

1.35 In Europe, the reduction in traffic volume which took place after the events of 11 September 2001 had a significant impact on infrastructure congestion. According to the Association of European Airlines (AEA), delays of intra-European departures exceeding

Table 1-8. Examples of State aid in 2003

Argentina	A $1.2 million fuel subsidy to Southern Winds Airlines in accordance with an agreement with a new State-owned airline, Líneas Aereas Federales (LAFSA) (September).
Bahrain, Oman, Emirate of Abu Dhabi (UAE)	A further BHD 45 million capital injection into Gulf Air in addition to a previous BHD 30 million injection in accordance with a three-year recovery plan (December).
Colombia	Loans to nation's airlines to purchase fuel from the State-owned oil company (March).
France	Financial assistance to Air Austral and Air Caraibes to develop routes in the French overseas departments, which was authorized by the European Commission (December).
Hungary	A HUF 7 billion capital injection into Malev Hungarian Airlines with a further HUF 3 billion capital injection subject to a restructuring condition (December).
Jamaica	An assumption of a $300 million debt incurred by Air Jamaica in exchange for a 20 per cent stake in the carrier (April).
Japan	An emergency loan to Japan Airlines System and All Nippon Airways through the Development Bank of Japan (September).
Namibia	A further N$400 million aid package for Air Namibia (November).
Oman	An OMR 10 million capital injection into minority-owned Oman Air in the form of a soft loan (October).
South Africa	A debt guarantee of ZAR 3.5 billion to South African Airways (August).
Switzerland	Limited aids such as fuel tax exemption to Swiss International Air Lines (June).
Trinidad and Tobago	An $18.5 million bailout package for BWIA West Indies Airways with restructuring conditions (April); a $5.5 million emergency aid to rescue BWIA from the seizure of aircraft and a guarantee of a further debt payment (May); a bailout package for LIAT including monetary installment and interest-free loans together with four other Caribbean States (May).
Turkey	Various tax exemptions to Turkish Airlines on its future aircraft acquisition (July).
United States	A $3.1 billion aid package, which includes $ 2.4 billion to reimburse airlines for security charges and the cost of reinforcing cockpit doors (April); a federal loan guarantee under the Air Transportation Safety and System Stabilization Act to World Airways (a total of seven such applications have been approved since 2001).

Source: Aviation press.

15 minutes showed a successive reduction over a four-year period to 19.1 per cent of departures. In July, the Council of the EU adopted a temporary application of more flexible slot allocation rules proposed by the European Commission in order to ensure that the non-utilization of slots allocated for the 2003 summer season due to the war in Iraq and the SARS outbreak does not cause airliners to lose their entitlement for the winter 2003/04 and summer 2004 scheduling seasons. In December, the Council reached a political agreement on the Commission's proposal (originally issued in 2001 and amended in 2002) to amend the Council Regulation on common rules for the allocation of slots at Community airports, providing for

the strengthening of the independence of slot coordinators and coordination committees, and sanctions in cases where slots are used abusively. The Council's common position did not include the Commission's proposed prohibition of slot trading but called for more thorough revision of slot allocation rules in future.

OWNERSHIP, ALLIANCES AND COOPERATION

Privatization

1.36 In 2003, the trend towards partial or full privatization of State-owned airlines continued, but at a slower speed. As shown in Table 1-9, partial privatization was achieved by three carriers, namely El Al Israel Airlines, China Southern Airlines and Thai Airways International. In June, the Government of Israel sold about a 15 per cent stake in its wholly-owned El Al Israel Airlines to the public with an option to buy up to 50.5 per cent until 2004 and up to 100 per cent until 2007. In July, the State's shareholding in China Southern Airlines was reduced from 65.2 per cent to 50.3 per cent as a result of the issuance of new shares domestically. In November, the Government of Thailand sold 442.7 million shares in Thai Airways International to the public including foreign investors, thereby cutting its share in the carrier from 92.8 per cent to about 70 per cent. In addition, another 37 State-owned carriers were reported to be in various stages of preparation for partial or full privatization. However, achievement of privatization has not been easy. Many of the initial privatization plans had to be deferred or postponed because of the complexities encountered in the process or the economic condition of the airlines concerned, or local circumstances, though in most cases the intention to privatize remains.

National consolidation

1.37 The year 2003 saw only a few intra-State merger cases. In February, two major Brazilian airlines, Varig and TAM, started merger talks in an attempt to rescue their debt-ridden financial positions. In August, Pulkovo Airlines and Rossiya State Transport Company entered into merger negotiations to create the second largest carrier in the Russian Federation. However, merger talks between bmi British Midland and Virgin Atlantic Airways, and between Philippine Airlines and Air Philippines, were abandoned at an early stage.

Transnational ownership

1.38 At the end of 2003, about 65 airlines had shareholdings in foreign airlines while about 230 airlines had equity owned by foreign investors in various degrees.

1.39 The most significant development in 2003 was the proposed creation of a European airline group between Air France and KLM. The two carriers announced in September that they would create a single holding company named Air France-KLM through a share

Table 1-9. State-owned airlines targeted for partial or full privatization — 2003

Announced during 2003	Announced before 2003 and progress reported	Aim achieved during 2003
Ariana Afghan Airlines	Aer Lingus (delayed)	China Southern Airlines
Burgalian Air	Aeromexico/CINTRA (delayed)	El Al Israel Airlines
Omsk Airlines	Air Botswana	Thai Airways International
	Air China (delayed)	
	Air France	
	Air India (delayed)	
	Air Malawi (delayed)	
	Air Namibia	
	Air New Zealand	
	Alitalia	
	Biman Bangladesh Airlines	
	Domodedovo Airlines	
	Hemus Air	
	Indian Airlines (delayed)	
	JAT Yugoslav Airlines	
	KLM Royal Dutch Airlines	
	Lao Airlines	
	LOT Polish Airlines	
	Malaysian Airlines	
	Malev (delayed)	
	MEA Middle East Airlines (delayed)	
	Merpati Nusantara Airlines	
	Mexicana/CINTRA (delayed)	
	MIAT Mongolian Airlines	
	Olympic Airways (delayed)	
	Pakistan International Airlines	
	Philippine Airlines	
	Royal Nepal Airlines	
	Saudi Arabian Airlines	
	Siberia Airlines	
	Singapore Airlines	
	TAP Air Portugal	
	Turkish Airlines	
	UT Air (Tyumenaviatrans)	

Source: Aviation press.

exchange offer by Air France for KLM's shares, while maintaining two operating companies. Air France shareholders will own 81 per cent (including 44 per cent by the French Government) in a holding company and KLM shareholders the remainder. The combination is structured to protect specific interests of KLM (such as Schiphol Airport's hub development and preservation of the KLM brand) for a certain transitional period, and also to secure KLM's traffic rights under the bilateral air services agreements through the use of two Dutch foundations and the Dutch Government holding 51 per cent of voting interest in KLM for three years. In October, the two carriers signed a final transaction agreement and subsequently filed with the European Commission and the U.S. DOJ for competition clearance.

1.40 Other major transactions (except ones related to privatization) in 2003 were, inter alia, a swap of a 2 per cent stake in each other by Air France and Alitalia in February; an acquisition of a 49 per cent stake in Precision Airlines of Tanzania by Kenya Airways in March; an acquisition of a 20 per cent stake in Gol, a Brazilian low-cost carrier, by U.S. insurance company AIG in April; an increase of Lufthansa's stake in Air Dolomiti from 20.7 per cent to 51.9 per cent in March and further to 98.8 per cent in July; an acquisition of a 49 per cent stake in Estonian Air by SAS in September; and an increase of SAS's direct and indirect stake in Spanair from 73.9 per cent to 94.9 per cent in November.

Alliances and cooperation

1.41 There are over 600 commercial cooperative agreements in the world, which contain a variety of elements such as codesharing, blocked space, cooperation in marketing, pricing, inventory control and frequent flyer programmes (FFPs), coordination in scheduling, sharing of offices and airport facilities, joint ventures and franchising. Airline alliances are widespread but still evolving, with partnership relations becoming more intertwined and complex. For example, as shown in Table 1-10, the largest, Star Alliance, added the membership of Asiana Airlines in March, Spanair in April, and LOT Polish Airlines in October, and also accepted a membership application from US Airways in May. However, Mexicana announced in November that it will withdraw from Star Alliance in March 2004 due to the termination of an alliance agreement with United Airlines. The second largest alliance,

Table 1-10. Global alliances

Alliance	Date	Members
Star Alliance	May 1997	Founded by Air Canada, Lufthansa, SAS, Thai Airways International, and United Airlines; subsequently joined by Varig (October 1997), Ansett Australia (March 1999, but ceased operations in September 2001), Air New Zealand (March 1999), All Nippon Airways (October 1999), Austrian Airlines (with Lauda Air and Tyrolean Airways, March 2000), Singapore Airlines (April 2000), bmi British Midland (July 2000), Mexicana (July 2000, withdrew in March 2004), Asiana Airlines (March 2003), Spanair (April 2003), and LOT Polish Airlines (October 2003); to be joined by US Airways in 2004
oneworld	September 1998	Founded by American Airlines, British Airways, Canadian Airlines (withdrew in June 2000), Cathay Pacific and Qantas; subsequently joined by Iberia (September 1999), Finnair (September 1999), LanChile (June 2000), and Aer Lingus (June 2000); to be joined by Swiss International Air Lines in 2004
SkyTeam	June 2000	Founded by AeroMexico, Air France, Delta Air Lines and Korean Air; subsequently joined by CSA Czech Airlines (April 2001) and Alitalia (July 2001); to be joined by KLM after completion of merger with Air France
Wings	—	Founded by KLM and Northwest Airlines in 1989; subsequently joined by Continental Airlines and Alitalia in 1999, but Alitalia and KLM ended partnership in April 2000; Continental Airlines and Northwest Airlines started partnership with Delta Airlines in June 2003; KLM and Air France announced their merger plan under a single holding company in September 2003

Source: Aviation press.

oneworld, accepted a membership application from Swiss International Air Lines in September after the signing of an MOU between British Airways and Swiss International Air Lines to establish a wide-ranging commercial agreement. The third largest, SkyTeam, accepted an application for membership from KLM in September, following the announcement of a proposed merger between Air France and KLM under a single holding company. KLM's U.S. partners, Continental Airlines and Northwest Airlines, also strengthened ties with SkyTeam by starting a trilateral alliance agreement with Delta Airlines in June. The future existence of the "Wings" alliance is likely to be affected by these developments.

1.42 The expansion and increased level of consolidation through alliances raised greater regulatory concerns in terms of a potential adverse impact on competition and consumers. Some proposed major alliances received close examination by relevant national and regional regulatory bodies (see Table 1-11) and, in some cases, certain regulatory measures were introduced to address the potential anti-competitive aspects of the arrangements. In practice, there has been no systematic regulatory treatment of these arrangements but decisions have been taken on an ad hoc basis within generic competition policy and often dictated by general aero-political considerations of the States concerned.

1.43 In the United States, the DOT approved and granted antitrust immunity to an alliance agreement between United Airlines and Asiana Airlines in May. Also in May, the DOT authorized a codesharing agreement between American Airlines and British Airways except for routes between London and the United States (their applications for antitrust immunity had been dismissed in 1999 and 2002). In addition, the DOT announced in January that it would allow an alliance agreement among Continental Airlines, Delta Air Lines and Northwest Airlines if they accepted six conditions that would address the DOT's competitive concerns. In response to this decision, three carriers notified the DOT that they would move forward with the alliance without complying with all of the DOT's conditions, while the DOT reaffirmed its intent to begin an enforcement proceeding. After informal consultations, the DOT allowed an alliance agreement in March subject to the three original and three revised conditions.

1.44 In Europe, the European Commission approved two intra-European alliance agreements of British Airways, one with SN Brussels Airlines in March and the other with Iberia in December, each for a six-year period, after the carriers agreed to undertakings such as the surrender of slots. In the Pacific region, both the ACCC and the New Zealand Commerce Commission (NZCC) rejected a proposed trans-Tasman alliance agreement between Qantas Airways and Air New Zealand in September and October, stating that it would damage competition and harm consumers. The two carriers lodged appeals with the Australian Competition Tribunal and the New Zealand High Court against the determinations by the ACCC and the NZCC. The ACCC granted in June an interim authorization for Qantas Airways and British Airways to continue a Europe-Australasia joint services agreement pending a final decision. The agreement was first authorized for a five-year period in 1995 with a further three-year extension in 2000.

Table 1-11. Regulatory actions on proposed alliances

Proposed alliances	Submission	Tentative decision	Final decision	Notes
The U.S. Department of Transportation (DOT)'s antitrust immunity cases				
Pan American Airways – Aeroflot	1988	1988[D]	1989[A]	Partnership ended in 1991
Northwest Airlines – KLM	1992	1992[A]	1993[A]	
Delta Air Lines – Austrian Airlines – Sabena – Swissair	1995	1996[A]	1996[A]	Partnership ended in 2000
American Airlines – Canadian Airlines	1995	1996[A]	1996[A]	Partnership ended in 2000
United Airlines – Lufthansa	1996	1996[A]	1996[A]	
United Airlines – Lufthansa – SAS	1996	–	1996[A]	
United Airlines – Air Canada	1996	1997[A]	1997[A]	
American Airlines – British Airways (I)	1997	–	1999[D]	
American Airlines – LanChile	1997	1999[A]	1999[A]	
Northwest Airlines – Alitalia – KLM	1999	1999[A]	1999[A]	Partnership ended in 2000
American Airlines – Sabena – Swissair	1999	2000[A]	2000[A]	Partnership ended in 2001-02
United Airlines – Air New Zealand	1999	2001[A]	2001[A]	
Northwest Airlines – Malaysia Airlines	2000	–	2000[A]	
Icelandair – SAS	2000	–	2000[A]	
United Airlines – Austrian Airlines – Lauda Air – Lufthansa – SAS	2000	–	2001[A]	
Continental Airlines – COPA	2000	–	2001[A]	
American Airlines – Grupo TACA	2000	Pending	Pending	Carriers requested DOT to dismiss the application in 2002
Delta Air Lines – Air France – Alitalia – CSA Czech Airlines	2001	2001[A]	2002[A]	
American Airlines – British Airways (II)	2001	2002[A]	2002[D]	Subject to the achievement of U.S. – U.K. "open skies" agreement within a specific period
United Airlines – Austrian Airlines – bmi British Midland – Lauda Air – Lufthansa –SAS	2001	2002[A]	2002[A]	Subject to the achievement of U.S. – U.K. "open skies" agreement within a specific period
American Airlines – Finnair	2002	–	2002[A]	
American Airlines – Swiss International Air Lines	2002	–	2002[A]	
Delta Air Lines – Air France – Alitalia – CSA Czech Airlines – Korean Air	2002	–	2002[A]	
United Airlines – Asiana Airlines	2003	–	2003[A]	
American Airlines – SN Brussels Airlines	2003	Pending	Pending	
The U.S. Department of Transportation (DOT)'s other cases				
Northwest Airlines – KLM	1989	–	1989[A]	Equity transactions; Conditions were amended in 1991
USAir – British Airways	1992	1992[#]	1993[A]	Equity transactions and related subsidiary agreements; Partnership terminated in 1996
Continental Airlines – Northwest Airlines	1998	–	2000[A]	Equity transactions; DOJ's antitrust lawsuit
United Airlines – US Airways	2002	–	2002[A]	Marketing agreement between U.S. airlines
Continental Airlines – Delta Air Lines – Northwest Airlines	2002	2003[A#]	2003[A]	Marketing agreement between U.S. airlines

Proposed alliances	Submission	Tentative decision	Final decision	Notes
The European Commission				
Air France – Sabena	1992	–	1992[A]	Approved under the merger regulation; Partnership ended in 1995
British Airways – USAir (US Airways)	1993	–	–	Partnership terminated in 1996, making investigation obsolete
Sabena – Swissair	1995	–	1995[A]	Approved under the merger regulation; Partnership ended in 2001
Lufthansa – SAS	1995	1995[A]	1996[A]	
Alitalia – KLM	1999	–	1999[A]	Approved under the merger regulation; Partnership ended in 2000
bmi British Midland – Lufthansa – SAS	2000	–	2001[A]	
Austrian Airlines – Lufthansa	1999	2000[#], 2001[D][A]	2002[A]	
Austrian Airlines – Sabena – Swissair – Delta Air Lines	1996*	–	–	Partnership terminated in 2000, making investigation obsolete
British Airways – American Airlines (I)	1996*	1998[A#]	–	The U.K. Department of Trade and Industry tentatively approved in 1996; Investigation was virtually closed in 1999 in light of DOT's dismissal
KLM – Northwest Airlines	1996*	2002[A]	2002[A]	
Lufthansa – SAS – United Airlines	1996*	1998[A#], 2002[A]	2002[A]	
Air France – Continental Airlines	1998*	–	–	Partnership terminated in 2001, making investigation obsolete
Air France – Delta Air Lines	1998*	Pending	Pending	The coverage was extended to SkyTeam in 2002
Austrian Airlines – SAS	1999	2000[#]	Pending	
Air France – Alitalia	2001	2002[#], 2003[A]	Pending	
bmi British Midland – United Airlines	2001	Pending	Pending	The U.K. Office of Fair Trading (OFT) approved in 2002
British Airways – American Airlines (II)	2001	–	–	Investigation was closed in 2002 after DOT's dismissal
British Airways – Iberia	2001	2003[A]	2003[A]	
British Airways – SN Brussels Airlines	2002	2002[A]	2003[A]	
British Airways – Finnair	2002	Pending	Pending	
Air France – KLM	2003	Pending	Pending	

Proposed alliances	Submission	Tentative decision	Final decision	Notes
The Australian Competition and Consumer Commission (ACCC)				
Qantas – British Airways (I)	1994	1994[D]	1995[A]	Authorization expired in 2000
Ansett – Air New Zealand – Singapore Airlines	1997	1998[A]	1998[A]	Partnership ended virtually in 2001-02
Qantas – British Airways (II)	1999	2000[A]	2000[A]	Authorization expired in 2003
Qantas – Air New Zealand	2002	2003[D]	2003[D]	The New Zealand Commerce Commission also rejected in 2003
Qantas – British Airways (III)	2003	2003[A]	Pending	Renewal

Notes.
[A] denotes approval with or without conditions, or intention to approve with conditions;
[D] denotes disapproval or intention to disapprove;
[#] denotes expression of concerns or doubts;
* denotes that Investigation was initiated without notification from the carriers.

Source: U.S. DOT, European Commission, ACCC and aviation press.

AIRLINE BUSINESS MODELS

Low-cost carriers

1.45 The rapid growth of successful low-cost carriers (LCCs) continued in 2003. For example, in April, Ryanair further expanded its network by completing a takeover of Buzz, a low-cost subsidiary of KLM. In August, India's Deccan Aviation launched a unit of low-cost operations named Air Deccan, which serves southern India. In September, Virgin Blue Airlines established its new international division, Pacific Blue Airlines, which will commence trans-Tasman services in January 2004. In October, Air Arabia started operations from Sharjah in the United Arab Emirates as the first LCC in the Middle East region. In November, Atlantic Coast Airlines, which has operated as United Express and Delta Connection under franchise agreements, established its own LCC named Independence Air, which will be based at Washington Dulles airport.

Network carriers

1.46 In 2003, more network carriers adopted the "airline-within-an-airline" strategy domestically. In April, Delta Air Lines started operations of Song, a separate low-fare air service linking U.S. Northeast areas with Florida and other major destinations, which competes directly with jetBlue Airways. In October, Qantas announced that it would launch Jetstar, a domestic LCC based in Melbourne, which will start operations in May 2004 to remain competitive with Virgin Blue Airlines. In November, United Airlines unveiled Ted, its separate low-fare air service, which will commence operations from a Denver hub in February 2004. The "airline-within-an-airline" formula has also taken on an international dimension.

For example, SAS established a low-fare business unit named Snowflake, which inaugurated operations in March from Scandinavia to leisure destinations in Europe and the Middle East. In August, Air Canada expanded its low-fare Tango brand, which was originally launched in October 2001 as a no-frills alternative in selected domestic markets, to most routes throughout the carrier's domestic network with a gradual expansion to its U.S. and international destinations. In October, Air New Zealand started operations of Tasman Express with low fares and full in-flight service between New Zealand and Australia. In December, Singapore Airlines announced that it would launch its own international LCC, Tiger Airways, with assistance from Ryanair.

FARES AND RATES

Tariff establishment

1.47 Since inter-carrier activities through the International Air Transport Association (IATA) traffic conferences (including tariff coordinating conferences) involve the cooperation of competitors, exemptions from competition laws have been granted, in some jurisdictions, recognizing the public benefit of the interline system. In recent years, however, more States have looked closely at the application of existing exemptions to such inter-carrier activities. For example, in Australia, the ACCC continued to investigate the IATA cargo agency programme (the passenger agency programme was authorized in 2002), and also started in April a formal investigation of other activities of IATA, i.e. scheduling conferences, prorate systems, passenger and cargo services conferences, clearing house, and passenger and cargo tariff coordinating systems. In Europe, the European Commission continued monitoring the extent and degree of interlining based on IATA fares under the existing block exemption, which will expire in June 2005. With respect to U.S. antitrust immunity for tariff coordination activities, the DOT continued to require airlines participating in one of the immunized alliance agreements to withdraw from IATA tariff coordination activities between the United States and countries of designated carriers that were granted antitrust immunity.

Tariff developments

1.48 It has been widely recognized that current fare-construction rules, governed either by place of sale and/or ticket issuance, have become unworkable in an environment of Internet and electronic ticketing that does not identify where the passenger is located and what is perceived as the place of sale of a ticket. Since 2000, IATA tariff coordinating members have tried to develop a so-called "Internet package" with the aim of establishing a single set of fare-construction rules that would cover all sales and ticketing media. Although IATA tariff coordinating members adopted the major amendments of fare construction rules contained in the "Internet package" such as the removal of the international sales indicators by a mail vote in 2002, the necessary government approvals have so far been outstanding. In July, the IATA Composite Tariff Conference revisited these issues and confirmed the implementation date for the package as six months after the declaration of approval but not before 1 April 2004.

1.49 In 2003, major carriers' fare levels and structures were changed drastically in response to market penetration by LCCs and to address exceptional cost increases worldwide. On the one hand, major carriers tried to further revamp and simplify their short-haul fare structures to remain competitive with LCCs' simple and less-restrictive low fares. Initiatives included the elimination of some traditional fare restrictions such as a Saturday night stay requirement, an advance purchase requirement and a non-refundable cancellation rule as well as general reduction in the levels of their cheaper fare types. Under the new fare structures, which usually consist of three or more tiers of fares (with different booking availability, but almost the same conditions regardless of the price differences), when the limited capacity devoted to the lower fares is filled, passengers are sold identical fares at a higher level. On the other hand, fares agreed within IATA for interlining purposes, which are generally more expensive, were increased in April by 3 per cent with some variations to cope with significant increases in fuel, insurance and security-related costs.

PRODUCT DISTRIBUTION

Computer reservation systems (CRS)

1.50 In 2003, there were two notable developments in the CRS industry. First, Worldspan, which had been owned jointly by American Airlines (26 per cent), Delta Air Lines (40 per cent) and Northwest Airlines (34 per cent), was sold in June to Travel Transaction Processing Corp., a company newly formed by Citigroup Venture Capital Equity Partners and Teachers' Merchant Bank. As a result, three of the four major CRSs are now completely independent from airline ownership with only Amadeus retaining majority ownership by airlines. Second, Amadeus announced in December that it will introduce a value-based pricing model which replaces the traditional uniform booking fee system in January 2004 in response to the airlines' diverse commercial strategies. In the new structure, a booking is valued as standard or premium, depending on the worth of the reservation to the airline and the value added by the CRS to the process. A lower standard booking fee is applied for domestic and intra-continental bookings made within an airline's home/prime market, while a higher premium booking fee is charged for inter-continental bookings and domestic and intra-continental bookings made outside an airline's home/prime market.

1.51 Although many of the original regulatory concerns with CRSs have diminished in recent years as sole ownership has moved away from air carriers, some other concerns have emerged with the rapid development of e-commerce. To address the changes in airline product distribution, the existing CRS rules or regulations have been under review and amended by several States. Transport Canada in October proposed amendments to its CRS regulations which would eliminate several provisions in the existing regulations. In Europe, the European Commission completed in October a study on amendments to its existing regulation on CRSs. In the United States, the DOT extended in March the effectiveness of the current CRS rules up to 31 January 2004 (the sixth extension since 1997), allowing additional time to complete a re-examination of the proposed final revisions to its CRS rules. In December, the DOT formally decided to eliminate most of its existing CRS rules as of 31 January 2004. Two

remaining rules, i.e. rules against display bias and ones prohibiting CRSs from imposing certain types of contract clause on participating airlines, will be phased out at the end of July 2004 to give the market adequate time to adjust. With respect to the ICAO CRS Code, at the end of 2003, 31 States either followed the Code or had CRS regulations which were consistent or compatible with it.

Electronic ticketing

1.52 Electronic ticketing (e-ticketing), a paperless method for documenting and distributing airline ticket coupons, has seen rapid expansion since it was first implemented for U.S. domestic travel in 1993. Although the use of e-tickets has been normally applied to single-carrier on-line itineraries, interline e-ticketing, i.e. the ability to use electronic tickets on flights involving more than one airline, has also been expanded since it was first introduced in 1999. At the end of 2003, about 25 airlines had concluded over 50 interline e-ticketing agreements. These agreements were concluded not only between U.S. carriers but also between U.S. carriers and non-U.S. carriers, or between non-U.S. carriers (about 17 agreements).

1.53 In 2003, several major carriers stopped issuing paper tickets for e-ticket eligible itineraries and increased the transaction fee for issuance of paper tickets by travel agents for e-ticket eligible itineraries to increase the incentive to use e-tickets. For example, American Airlines announced in May that it no longer issues paper tickets for e-ticket eligible domestic itineraries through its own reservation centres, ticket counters, or website, and increased its paper ticket fee for travel agents in the United States or Canada from $25 to $50 for e-ticket eligible domestic and international itineraries. In June, Air Canada stopped issuing paper tickets for e-ticket eligible travel throughout North America, as it had done within Canada in December 2002.

Travel agents

1.54 In 2003, the trend to reduce or eliminate commissions paid to travel agents proliferated in many regions. For example, AeroMexico and Mexicana reduced in February the commissions payment for Mexican travel agents from 5 per cent to 1 per cent. In August, Colombia's association of international airlines cut the commissions payment from 8 per cent to 6.5 per cent by concluding a 20-month-long agreement with the national society of travel agencies. In September, Finnair terminated the existing 5 to 7 per cent commissions completely for tickets issued in Finland. In December, British Airways reduced the commissions payment to 1 per cent for travel agents in the United Kingdom, replacing a flat-fee booking payment system depending on the sector flown. In December, Southwest Airlines, the last U.S. major airline paying base commissions to traditional travel agents, eliminated commissions on all its flights booked by them.

1.55 The reduction and elimination of commissions has forced travel agents to introduce some service fee schemes, whereby passengers pay a fee to the agent for booking and consultation. Reactions from travel agents to commission cuts by airlines included threats of

boycott and legal action, as well as a call for government intervention. For example, in response to a decision by two national carriers to cut commissions, the Mexican association of travel agents threatened to retaliate by not selling their ticket stock, and the Mexican Congress held public hearings in February on this subject. In July, a Spanish travel agents' federation expressed its intention to sue Iberia for Euro 800 million if the carrier pushes through plans to reduce commissions. In July, Lufthansa, one of 17 airline defendants, agreed to settle its part in the class-action suit brought by U.S. travel agents in 1999, proposing to create a performance-based incentive program and to make all of its Web fares available online for agent bookings.

Internet

1.56 In the area of business-to-consumer (B2C) developments, Expedia retained its lead, reporting a 36.6 per cent increase (including its parent company's other travel services) in gross bookings in 2003. In August, Expedia became a wholly-owned operating business of InterActive Corp (IAC, formerly USA Networks), which acquired all the Expedia shares it did not already own. The second largest, Travelocity (a wholly-owned subsidiary of Sabre Holdings) reported an increase of 11.6 per cent over 2002 in gross bookings. Some other on-line travel agents use non-traditional approaches. For example, Priceline allows consumers to bid for discounted tickets at fares they choose (a reverse auction system in discounted tickets). Hotwire, which was acquired by IAC in November from the Texas Pacific Group and six major U.S. airlines, adopts a bid-based system for deep discounted tickets. Cheap Tickets, owned by Cendant Corporation, also targeted discounted leisure travel products.

1.57 On-line booking facilities on airlines' own websites attracted more consumers, allowing airlines to increase their share of direct sales. LCCs tended to use Internet booking to a much greater extent than major carriers. For example, Ryanair reported that it sold 95 per cent of all seats through its website in 2003, compared to 91 per cent in 2002. Southwest Airlines reported that approximately 54 per cent, or over $3 billion, of its passenger revenue for 2003 was generated by on-line bookings via its website, compared to 49 per cent or $2.5 billion in 2002.

1.58 Another development in the B2C area was the rapid growth of websites jointly owned by groups of airlines. In the Asia and Pacific region, Zuji (founded by 15 airlines operating in the region and Travelocity) expanded its presence by starting its local site in Taiwan (Province of China) in March. In Europe, Opodo (founded by nine European airlines) announced in April that Amadeus became a 16.7 per cent shareholder of the company. In the United States, Orbitz (founded by five major U.S. airlines), became the third largest on-line travel site based on gross travel bookings, next to Expedia and Travelocity. As a result of the initial public offering in December, the founding airlines reduced their shareholdings to 66 from 70 per cent collectively in Orbitz.

1.59 In the business-to-business (B2B) area, several leading e-business solutions and technology providers continued to expand their operations. For example, Global Freight Exchange (GF-X), which provides an electronic B2B trading platform to facilitate the sale of air freight capacity between air freight forwarders and air cargo carriers, now has 15 airline

members. Aeroxchange (founded by 13 airlines and subsequently joined by 20 affiliated airlines), which enables airlines to purchase airframes, engines and avionics components, maintenance services, fuel and other goods and services from respective suppliers on-line, completed the integration of major participating airlines' legacy systems. By contrast, the similar B2B provider, Cordiem (formerly AirNewco, founded by nine airlines), closed down its entire operation in March due to the refusal of its airline partners to put any further investment into the company.

1.60 One of the primary issues regarding competition and the Internet is whether certain practices associated with the use of the Internet are likely to undermine competition and consumers' benefits. The particular regulatory focus has been on websites jointly owned by horizontal competitors holding dominant positions in the relevant markets, which are closely reviewed by relevant regulatory bodies. For example, after a two-year-long investigation, the U.S. DOJ announced in July the closing of the Orbitz investigation, concluding that neither the formation of Orbitz nor the most favoured nation (MFN) clause reduced competition or harmed airline consumers. Under the MFN clause, airlines have to agree to provide all fares, for instance, a) Internet-only fares that the airline posts on its website, and b) any fare available for sale to the public through any other distribution channel.

FLEETS

Orders and deliveries

1.61 In 2003, 861 turbojet aircraft were ordered, compared with 497 in 2002. The financial commitment in terms of jet aircraft orders placed with the major aircraft manufacturers in 2003 is estimated to be about $60 billion, up from about $40 billion in 2002. In 2003, 917 turbojet aircraft were delivered, compared with 999 in 2002. The backlog of unfilled orders at the end of 2003 was 3 272 aircraft, compared with 3 407 at the end of 2002. The number of turboprop aircraft ordered in 2003 was 66, with 54 aircraft delivered during the year. The backlog of turboprop aircraft ordered in 2003 was 97 at the end of the year.

1.62 The turbojet types shown in Table 1-12 were the most active in 2003 in terms of orders and deliveries for commercial air transport fleets, accounting for about 78 per cent of the orders, 74 per cent of the deliveries made, and 71 per cent of the backlog of unfilled orders.

Composition

1.63 Between 1994 and 2003, the reported number of commercial air transport fixed-wing aircraft with a maximum take-off mass of 9 000 kg and over increased by about 34 per cent, from 16 070 to 21 561, as shown in Table 1-13. Within these totals, turbojet aircraft numbers increased by about 33 per cent, from 13 033 to 17 355, and the number of turboprop aircraft increased by about 42 per cent, from 2 853 to 4 045. Turboprop aircraft manufactured in the Russian Federation and China are only included in the 2002 and 2003 data.

1.64 BACK Aviation Solutions reported that, as at the end of 2003, there were 1 151 western-built commercial jets in storage, compared with 1 182 jets at the end of the previous year. The number of wide-body aircraft in storage increased from 275 in 2002 to 354 in 2003, with Boeing 747s and 767s, Lockheed L-1011s, McDonnell Douglas DC-10s and Airbus 310s accounting for 82 per cent of aircraft in the group. Among narrow-body aircraft, Boeing 727s and 737s, and McDonnell Douglas DC-9s accounted for some 60 per cent of aircraft in the group. The number of western-built jets available for sale or lease decreased slightly, from 790 in December 2002 to about 761 in December 2003. Available wide-body aircraft were up by 15 to 248.

Table 1-12. Main aircraft types ordered and delivered (2003)

Aircraft	Orders	Deliveries	Backlog
Embraer Regional Jet	216	97	433
Boeing 737	182	166	831
Bombardier Canadair Regional Jet	124	224	271
Airbus A320	104	117	432
Airbus 319	43	76	361

Source: Aircraft manufacturers and BACK Aviation Solutions.

Table 1-13. Commercial aircraft fleet[1] in active service
(year end 1994, 2002, 2003[2])

	TURBOJET		TURBOPROP		PISTON ENGINE		TOTAL (aircraft all types)
Year	Number	Percentage	Number	Percentage	Number	Percentage	
1994	13 033	81.1	2 853	17.8	184	1.1	16 070
2002	16 711	79.8	4 057	19.4	163	0.8	20 931
2003	17 355	80.5	4 045	18.8	161	0.7	21 561

1. Aircraft with a maximum take-off mass of less than 9 000 kg (20 000 lb) are not included.
2. 2002 and 2003 data have a more comprehensive coverage of turbo-prop powered aircraft manufactured in China and the Russian Federation.

Source: BACK Aviation Solutions.

Chapter 2
Airports and Air Navigation Services

AIRPORTS

Management and organization of airports

2.1 The trend towards establishing autonomous entities to operate airports and private participation in airport operations, management and financing continued in 2003, although at a slower pace than in previous years. The interest shown over recent years by some global airport management companies in various airport privatization projects around the world also continued, although the recent downturn in traffic and the general economic situation have resulted in postponing some airport privatization projects.

2.2 Regarding airport alliances, a cooperative agreement was signed between Beijing Capital Airport Group and Los Angeles World Airports. Concerning privatization of airports, Swire Pacific, a Hong Kong-based investment company, reached an agreement with China Eastern Airlines to establish a joint venture to invest and manage airports in China. Plans are still underway to privatize Delhi and Mumbai airports in India and the two airports serving Tokyo (Japan). Curaçao Airport Partners (CAP), a consortium led by Alterra, took over the operation of Curaçao International Airport. Avinor, the air navigation services provider in Norway, has taken ownership of 45 airports in that country. A 30-year concession contract to manage and develop Montevideo Airport has been concluded by the Cerealsur consortium, including SEA Aeroporti di Milano. Plans are underway to privatize Saudi Arabia's airports, as well as Thailand's provincial airports.

Major airport projects

2.3 No new major airport projects were completed in 2003, although 18 new regional airports were opened to traffic, most of them in China. The construction of 29 new airports is underway, including major airports nearing completion in Bangkok (Thailand), Guangzhou (China), Chubu-Nagoya (Japan), and Durban (South Africa). Another 99 new airports are planned around the world, half of them in China.

2.4 Runway capacity was added at three major airports in 2003, namely Helsinki (Finland), Amsterdam (Netherlands) and Denver (United States). New runways are being constructed at Santiago (Chile), and Sialkot (Pakistan), while several other projects are being planned, half of them in Europe.

2.5 In Africa, one new terminal has been completed in Johannesburg (South Africa). In the Asia/Pacific region, eight new terminal and building extensions have been completed, notably in Chenmai (India) and Phnom Penh (Cambodia), while work is underway for construction of three terminals and seven new terminals are planned. In Europe, 16 new passenger and cargo terminals have been opened, notably in Frankfurt-Hahn and Munich (Germany), Milan-Malpensa (Italy) and Paris-Charles de Gaulle (France), six new terminals are under construction and eleven are planned. In the Middle East, two terminal expansions have been opened in Beirut (Lebanon) and Kuwait, two others are underway and there are plans for two new terminals. In North America, seven major new cargo and passenger terminal facilities have been completed, including Philadelphia (United States) and Ottawa (Canada), and a few more are under construction or planned. In Latin America, two terminals have been opened, notably in Sao Paulo-Viracopos (Brazil), and there are plans for four more new terminals.

2.6 City centre-airport rail links have been completed at some airports, for example in Shanghai-Pudong where the first high-speed magnetic link in the world was inaugurated, while some other projects are underway to link airports to the national rail network.

Airport traffic

2.7 The top 25 airports worldwide, in terms of total passenger throughput, reported traffic to have reached 1 026 million passengers in 2003, representing 1.4 per cent growth over 2002 (see Table 2-1). Their passenger traffic represents about 29 per cent of the world total (scheduled and non-scheduled) passenger throughput or an average per airport of some 112 000 passengers daily. There were 16 U.S.-based airports among the top 25. Compared with 2002, traffic among the top 25 airports in 2003 indicated that San Francisco showed the largest relative decline (6.4 per cent) whereas Rome-Fiumicino traffic registered the greatest increase (7.4 per cent). These 25 airports combined handled 11.2 million aircraft movements in 2003, corresponding to an average per airport of one take-off or landing every 71 seconds. Traffic, in terms of aircraft movements, increased by 0.4 per cent over 2002.

2.8 There are significant differences between airports when their 2003 traffic is ranked by either passenger throughput or by aircraft movements. For example, London-Heathrow ranks third in terms of passenger traffic but 12th in terms of aircraft movements; Tokyo-Haneda ranks fourth by passengers handled but 33rd by aircraft movements; London-Gatwick is 19th by passengers but 43rd by movements; and Bangkok is 22nd by passengers but 53rd by movements. These cases illustrate that a substantial part of air transport services at these airports has been carried on wide-body aircraft. Several U.S. airports, not ranking among the top-25 list by passengers and therefore excluded from Table 2-1, would qualify for a top-25 list by movements as follows: Cincinnati (9), Philadelphia (14), Charlotte (16), La Guardia (21), Seattle/Tacoma (22), Memphis (23), and Boston (24).

2.9 The number of passengers handled at these airports increased on average by 2.7 per cent per annum over the 1994-2003 period, while corresponding aircraft movements increased at a 1.4 per cent rate, again demonstrating a trend towards the use of larger aircraft. Substantial differences occur in the respective growth rates among individual airports.

Table 2-1. Total traffic at top-25 airports — World (2003 and 2002)

No.	AIRPORT[1] (ranked by TOTAL passengers)	PASSENGERS EMBARKED AND DISEMBARKED 2003[2] (thousands)	2002 (thousands)	Change 2003/2002 (%)	Average change per annum 2003/1994 (%)	AIRCRAFT MOVEMENTS 2003 (thousands)	2002 (thousands)	Change 2003/2002 (%)	Average change per annum 2003/1994 (%)
1	Atlanta-Hartsfield (2)	78 786	76 611	2.8	4.4	898.5	871.6	3.1	3.0
2	Chicago-O'Hare Int'l (1)	69 509	66 123	5.1	0.5	916.5	892.5	2.7	1.4
3	London-Heathrow (12)	63 208	63 035	0.3	2.3	457.1	460.3	–0.7	1.2
4	Tokyo-Haneda (33)	63 143	61 054	3.4	4.6	285.9	279.2	2.4	4.4
5	Los Angeles Int'l (4)	54 970	56 224	–2.2	0.8	604.6	626.8	–3.5	–0.5
6	Dallas-Ft.Worth (3)	53 242	52 829	0.8	0.1	758.7	752.8	0.8	–0.9
7	Frankfurt Int'l (13)	48 115	48 174	–0.1	3.8	450.8	450.3	0.1	2.9
8	Paris-Charles De Gaulle (5)	48 057	48 250	–0.4	6.0	506.6	501.5	1.0	5.3
9	Amsterdam-Schiphol (17)	39 809	40 588	–1.9	6.2	393.0	401.4	–2.1	4.1
10	Denver (6)	37 505	35 651	5.2	1.4	497.7	495.8	0.4	0.0
11	Phoenix (8)	37 412	35 547	5.2	4.3	484.6	489.4	–1.0	2.6
12	Las Vegas (15)	36 266	35 009	3.6	3.4	406.7	404.6	0.5	1.8
13	Madrid-Barajas (20)	35 359	33 677	5.0	7.6	379.3	363.7	4.3	7.7
14	Houston-G. Bush Intercont'l (11)	34 151	33 905	0.7	4.8	458.4	438.6	4.5	4.1
15	Minneapolis (10)	33 196	32 628	1.7	3.6	472.9	460.8	2.6	1.8
16	Detroit (7)	32 665	32 478	0.6	2.2	486.5	472.4	3.0	1.7
17	New York-JFK Int'l (36)	32 570	30 800	5.7	1.4	272.0	277.3	–1.9	–2.0
18	New York-Newark Int'l (18)	30 478	30 442	0.1	0.9	391.7	390.3	0.4	–0.7
19	London-Gatwick (43)	29 893	29 518	1.3	4.0	234.5	233.6	0.4	2.9
20	Miami Int'l (19)	29 596	30 060	–1.5	–0.2	380.8	391.0	–2.6	–2.5
21	San Francisco Int'l (28)	28 784	30 751	–6.4	–1.8	315.2	331.9	–5.0	–2.5
22	Bangkok Int'l (53)	28 637	30 485	–6.1	4.8	198.2	198.0	0.1	3.9
23	Orlando Int'l (35)	27 319	26 654	2.5	2.2	273.3	261.6	4.5	–1.0
24	Rome-Fiumicino (30)	26 795	24 956	7.4	3.4	294.2	277.8	5.9	4.4
25	Seattle-Tacoma Int'l (22)	26 756	26 691	0.2	2.7	350.9	360.6	–2.7	0.2
	TOTAL	1 026 221	1 012 140	1.4	2.7	11 168.6	11 083.8	0.4	1.4

1. Ranking by total commercial aircraft movements, given in brackets, is provisional.
2. For the year 2003, passenger and aircraft movement data are estimated for Paris-CDG and Tokyo-Haneda.

Source: ICAO Air Transport Reporting Form I, ACI and airport Web sites.

2.10 Table 2-2 lists the top-25 airports worldwide in terms of international passengers handled. In marked contrast to the listing in Table 2-1, only three of the 25 airports are located in the U.S. These 25 airports represented about 2 per cent of all airports serving international operations. They handled about 550 million passengers in 2003 or 42 per cent of the world total (scheduled and non-scheduled) of international passengers. In 2003, total international passenger traffic at these 25 airports decreased by 1.6 per cent, while total international aircraft movements registered a growth of 0.8 per cent over 2002. Airports with a significant relative decline in international passenger traffic include Hong Kong (-20 per cent), Singapore (-15.5 per cent) and Tokyo-Narita (-8.6 per cent). Airports that registered a significant growth were London-Stansted (17.8 per cent), Dubai (15.3 per cent) and Rome-Fiumicino (9.2 per cent).

Table 2-2. International traffic at top-25 airports — World (2003 and 2002)

No.	AIRPORT[1] (ranked by INTERNATIONAL passengers)	INTERNATIONAL PASSENGERS EMBARKED AND DISEMBARKED				INTERNATIONAL AIRCRAFT MOVEMENTS			
		2003[2] (thousands)	2002 (thousands)	Change 2003/ 2002 (%)	Average change per annum 2003/1994 (%)	2003 (thousands)	2002 (thousands)	Change 2003/ 2002 (%)	Average change per annum 2003/1994 (%)
1	London-Heathrow (2)	56 554	56 361	0.3	2.8	398.1	399.4	–0.3	1.9
2	Paris-Charles de Gaulle (1)	43 207	43 380	–0.4	5.9	443.4	439.0	1.0	5.2
3	Frankfurt Int'l (4)	40 536	40 283	0.6	4.4	369.0	361.6	2.0	3.4
4	Amsterdam-Schiphol (3)	39 679	40 457	–1.9	6.3	385.0	393.9	–2.3	4.2
5	Hong Kong Int'l (11)	26 752	33 451	–20.0	0.6	187.6	206.8	–9.3	3.0
6	London-Gatwick (12)	25 989	26 091	–0.4	3.3	186.3	186.1	0.1	2.5
7	Singapore-Changi (18)	23 143	27 374	–15.5	1.5	154.3	174.8	–11.7	0.7
8	Tokyo-Narita (17)	22 626	24 760	–8.6	1.0	159.1	151.7	4.9	3.6
9	Bangkok Int'l (22)	21 252	23 181	–8.3	5.0	137.2	139.0	–1.3	3.3
10	Seoul-Incheon Int'l (26)	19 387	20 549	–5.7	5.6	126.6	122.5	3.3	7.0
11	Madrid-Barajas (10)	18 140	17 240	5.2	8.1	191.3	180.8	5.8	7.7
12	Dubai (16)	17 175	14 899	15.3	11.8	163.1	129.5	25.9	6.5
13	Manchester Int'l (23)	16 448	15 875	3.6	3.5	136.0	128.2	6.1	3.4
14	Zurich (5)	16 152	16 973	–4.8	2.3	237.9	230.3	3.3	3.1
15	Copenhagen (8)	16 064	16 428	–2.2	4.2	219.7	226.9	–3.2	3.2
16	London-Stansted (21)	16 013	13 588	17.8	21.5	139.8	124.3	12.5	14.1
17	Munich-F. J. Strauss (7)	15 430	14 684	5.1	7.2	224.9	211.3	6.4	8.2
18	New York-JFK Int'l (31)	15 231	15 273	–0.3	–0.5	103.5	104.0	–0.5	–0.2
19	Brussels-National (6)	15 117	14 298	5.7	3.4	231.2	237.4	–2.6	1.5
20	Dublin (20)	15 040	14 310	5.1	9.7	148.6	152.0	–2.2	5.7
21	Los Angeles Int'l (32)	14 624	14 845	–1.5	1.6	99.3	102.4	–3.0	4.0
22	Rome-Fiumicino (24)	13 945	12 768	9.2	2.6	139.4	123.7	12.7	2.9
23	Palma Mallorca (35)	13 860	13 113	5.7	3.0	90.9	84.1	8.1	3.4
24	Miami Int'l (14)	13 856	14 266	–2.9	0.7	176.6	180.3	–2.1	1.3
25	Toronto-L.B. Pearson (9)	13 718	14 658	–6.4	3.6	191.8	210.0	–8.7	5.2
	TOTAL	549 938	559 105	–1.6	4.0	5 040.6	5 000.0	0.8	3.8

1. Ranking by total commercial aircraft movements, given in brackets, is provisional.
2. For the year 2003, passenger and aircraft movement data are estimated for Paris-CDG, Amsterdam and Dublin.

Source: ICAO Air Transport Reporting Form I, ACI and airport Web sites.

2.11 Over the 1994-2003 period, the number of international passengers handled at these airports increased at a rate of 4.0 per cent per annum, whereas international aircraft movements increased at 3.8 per cent per annum. Over this period, London-Stansted recorded the highest annual growth rate of 21.5 per cent in terms of passenger traffic and 14.1 per cent in terms of international aircraft movements.

Financial situation of airports

2.12 In view of a downturn and stagnation of air travel worldwide triggered by the events of 11 September 2001, the SARS outbreak and the war in Iraq, many airports have been forced to re-examine their traditional relationship with airlines. Some of them now face

financial and legal issues as a result of failed or failing carriers and the changing needs of other carriers, particularly the new low-cost carriers. Also, large airline alliances bring market power to the consultation process between airports and airlines. The instability in membership of these alliances complicates the aircraft fleet mix resulting in an unpredictable planning process.

2.13 In these circumstances, many airports have responded by modifying their business plans in order to safeguard their revenues and have moved into new commercial activities (for example, the airport city concept) with a view to achieving increased self-reliance and financial independence. Airports often compete with other airports in the same region for freight, connecting passengers, aircraft technical stops and for the services of low-cost carriers. Airports have also entered into the business of managing certain commercial activities themselves in competition with local enterprises in such areas as hotels, convention centres and parking lots. Airports in Europe, and also in some other regions, are now becoming increasingly involved in inter-modal transport activities to offer travellers dedicated, fast and comfortable rail links. Several airports, mainly in Asia, offered lower landing charges and other incentives to airlines to boost traffic.

2.14 The development of non-aeronautical revenues has contributed to a decline in the share which landing and associated airport charges represent of total airline operating expenses (from 4.5 per cent in 1998 to 4.2 per cent in 2000 and 4.0 per cent in 2001 and 2002 – preliminary figure). However, other factors have also contributed to this decline, such as increases in other cost items, in particular aircraft fuel, oil and insurance premiums.

AIR NAVIGATION FACILITIES AND SERVICES

Management and organization

2.15 There has been increased progress in cooperation between neighbouring air navigation services providers around the world during 2003. In addition, there were several other industry-driven initiatives proposing global solutions for air traffic management.

2.16 In November 2002, major African air navigation services providers met in Dakar (Senegal) to set a basis for multilateral cooperative arrangements aimed at promoting safe, efficient, cost-effective and enhanced air navigation services in the African and Indian Ocean (AFI) region, to make common use of the expertise available in that region, including training, and to facilitate the exchange of personnel.

2.17 In Europe, the Single European Sky initiative is designed to provide the necessary incentives to drive air navigation service providers to seek increased efficiency through cross-border cooperation. This new institutional framework creates an environment in which proactive air navigation services providers can move forward. In recent years, several European air navigation services providers have taken steps towards an integrated service provision. Denmark's Naviair and Luftfartsverket (LFV) Sweden are joining forces in the Nordic Upper Airspace Project (NUAP). The United Kingdom National Air Traffic Services

(NATS) and the Irish Aviation Authority have concluded a cooperation agreement on the North Atlantic, this in addition to NATS' existing harmonization efforts with NavCanada. Belgocontrol (Belgium) and Air Traffic Control (ATC) in the Netherlands are also currently contemplating the establishment of a joint company. In the framework of the Central European Air Traffic Services (CEATS), the Central European States (Austria, Bosnia-Herzegovina, Croatia, Czech Republic, Hungary, Italy, Slovakia and Slovenia) have also entered into an agreement to cooperate in the provision of air navigation services. Elsewhere, bilateral agreements seeking similar results have been concluded between air navigation services providers.

2.18 In the South Pacific, Airservices Australia signed a new cooperation agreement with the Government of Nauru. Under this agreement, Airservices Australia will serve the upper airspace of Nauru from Brisbane Area Control Center (ACC), in the same way as the upper airspace services are provided for the Solomon Islands. The new cooperation with Nauru will extend the coverage of Brisbane ACC in the North Eastern direction, thus supporting increased flight efficiency on the Pacific routes.

Financial situation of air navigation services providers

2.19 During 2003, a number of air navigation services providers experienced similar effects as those of airports in terms of lost revenues from charges due to reductions in air traffic. The effects on air navigation services providers were particularly severe as fixed costs were extremely high and any possible cost reduction measures would most likely affect future capacity.

2.20 The urgent financial pressures have led providers to re-evaluate their business approaches and to seek new innovative cost-saving solutions. With less air traffic, providers of air navigation services tend to increase charges. In this context, it should be noted that when increases in charges are contemplated there should be, according to ICAO's principles on airport and air navigation services charges, a balance between the respective interests of airports and providers of air navigation services on one hand and of air carriers on the other, particularly during periods of economic difficulty.

2.21 In 2002, air navigation services charges represented 2.4 per cent of total airline operating expenses constituting a continuous decrease from 2.8 per cent in 2000 and 2.5 per cent in 2001. As mentioned above for airports, this decrease is explained by an increase in costs of items such as aircraft fuel, oil and insurance premiums.

Communications, navigation and surveillance (CNS)

2.22 The implementation of FANS-1/A data link for routine air-ground communications in oceanic and remote continental airspace continued. Moreover, projects have been initiated to deploy controller-pilot data link communications (CPDLC) over aeronautical telecommunication network (ATN) and very high frequency (VHF) digital link (VDL Mode 2) in the United States and the core part of Europe with the objective to gain operational

benefits. In this regard, two centres have already become operational (one in Miami and the other in Maastricht) and the equipage of aircraft with appropriate avionics is progressing.

2.23 Development of satellite-based augmentation systems (SBAS) continued in Europe, India, Japan and the United States. This form of augmentation has the potential to support the use of the global navigation satellite system (GNSS) for all phases of flight down to Category I precision approach. The initial operational capability of the wide area augmentation system (WAAS) in the United States, compliant with Annex 10 performance requirements for approach with vertical guidance (APV), started in July. An increasing number of States have approved the global positioning system (GPS) for supplemental or primary use for some operations and types of airspace.

2.24 Implementation of automatic dependent surveillance (ADS) and secondary surveillance radar (SSR) Mode S is gathering pace. Operational trials have also been conducted on ADS-B to provide surveillance capability in airspace not covered by radar. Programmes are under way to implement ADS-B in several ICAO regions.

Air traffic management (ATM)

2.25 Air traffic control systems around the world continued to be updated as part of the evolutionary process leading to a fully integrated ATM system. In most cases, supporting CNS/ATM systems were being implemented incrementally as part of systems upgrades, with a view to achieving early benefits as well as meeting long-term objectives.

2.26 Progress continued with implementation of required navigation performance (RNP) airspace and the introduction of reduced separation minima based on RNP. There are now extensive areas of RNP 10 airspace in the Asia/Pacific Region. The major routes between Europe and South America are also RNP 10, and the expansion of RNP 5 routes continued in the Middle East. Planning is underway for the introduction of RNP 4 airspace and RNP 4-based minima in parts of the Asia/Pacific Region by the end of 2004.

2.27 A reduced vertical separation minimum (RVSM) of 300 m (1 000 ft) above FL 290 has now been implemented in the North Atlantic, the Pacific, the Middle East, Western Europe, the major Europe-to-South America routes, the Western Atlantic route system and northern Canada. RVSM in the south of Canada, the domestic airspace of the United States, Mexico, Caribbean, Central and South America is planned for January 2005.

2.28 ICAO held its Eleventh Air Navigation Conference from 22 September to 3 October. The Conference endorsed a new operational concept and called on ICAO to establish a strategy for its implementation in the development of a seamless, global air traffic management system. Safety was reaffirmed as the most important element of the overall performance of ATM systems. Other expectations included efficiency, regularity, cost-effectiveness and protection of the environment. Accordingly, the Conference recommended the establishment of performance targets and guidelines for measurement and monitoring. In order to increase capacity of existing airspace, the Conference recommended greater harmonization of air navigation systems between regions, collaborative decision-making, and global balancing between demand and capacity.

Aerodromes

2.29 New generations of large aeroplanes entering commercial civil aviation have had an impact on airport infrastructure. Consequently, airports have evolved in a commensurate manner. To facilitate States in this regard, Annex 14 — Aerodromes, Volume I — Aerodrome Design and Operations is updated periodically to keep pace with aircraft development. An ICAO Circular on the impact of the new large aeroplanes, such as the Airbus A380, has been developed to assist States in their endeavours.

2.30 An ICAO study was completed on airport pavement design and evaluation procedures for analysing complex loading by new larger aeroplanes with six or more wheels per main gear strut (e.g. Boeing 777 and the future Airbus A380). The study was supported by two full-scale pavement testing projects in two States.

2.31 The new generation high passenger carrying capacity aeroplanes such as the Airbus A380 will require an improved approach to emergency planning and response. Since these aeroplanes are likely to have full-length upper decks, the adequacy of the quantities of extinguishing agents currently specified in Annex 14 — Aerodromes, Volume I, is being studied. Studies for identifying a suitable alternative to halons (halogenated hydrocarbons) as a complementary fire extinguishing agent continue.

2.32 Based on research and trials undertaken in States, studies are in progress to update ICAO specifications on visual aids for navigation to reflect current technology. The studies include evaluation of light-emitting diodes (LED) technology and the marking and lighting of wind mill farms.

2.33 While there is a growing trend towards autonomy of airports in many parts of the world, the obligations of States with regard to ensuring the safety of civil aviation in their sovereign territory remain unchanged. In this context, States will need to have appropriate legislation and regulations in place to be able to carry out safety inspections to ensure that airports continue to provide adequate and safe facilities and services. ICAO has introduced in Annex 14, Volume I, a new requirement for States to certify aerodromes in accordance with applicable specifications and national regulations. The *Manual on Certification of Aerodromes* was published to help States meet their obligations under the Convention. As the certification of aerodromes used for international operations became mandatory from November and the requirement of safety management systems will become mandatory from 2005, a new manual on safety management systems for aerodromes is being developed.

Aeronautical information and charts services

2.34 Many States have recognized that significant safety benefits can be provided by in-flight and ground-based applications that rely on electronic terrain and obstacle data and are accordingly making this electronic data available or planning for its availability. However, the performance of these applications, which often make use of multiple data sources, may be degraded by terrain and obstacle data of inconsistent or inappropriate specifications and

quality. Recently adopted Annex 15 Standards and Recommended Practices (SARPs) are designed to support States in the provision and exchange of consistent, functional and cost-effective electronic terrain and obstacle data.

Aeronautical meteorology

2.35 An increasing use by States of improved automatic meteorological observing systems has prompted requests for a review by ICAO of the role of these systems in the provision of observations for aviation. The use of meteorological information in the terminal area to support measures to increase airport capacity is being studied by States, in particular in the European region. In this context, the development of a new meteorological report is being examined. Renewed interest has been shown in a number of States in conducting research on improving the quality and timeliness of forecasts of icing and turbulence.

2.36 Progress continued in the computer preparation of global forecasts of significant weather (SIGWX) by the world area forecast centres (WAFCs). As a result, high-level SIGWX charts for global coverage were prepared by means of interactive computer workstations by the WAFCs. Very small aperture terminals installed in more than 140 States receive data and products from the three ICAO satellite broadcasts. These broadcasts provide global world area forecast system (WAFS) forecasts and operational meteorological (OPMET) information, such as METARs, TAFs and SIGMETs, directly to States and users. The implementation of the satellite broadcasts and the provision of SIGWX forecasts by the WAFCs have permitted the closure of all the 15 regional area forecast centres.

2.37 Work continued in States responsible for Volcanic Ash Advisory Centres to develop and issue graphical volcanic ash advisories for provision to area control centres and meteorological watch offices.

Search and rescue

2.38 The satellite-based Cospas-Sarsat[1] system continued to play an important role in detecting emergency locator transmitters and in locating aviation distress sites.

2.39 The system continued to expand its capability. As of 1 November 2003, there were eight low-altitude and four geostationary satellites (plus two in-orbit spares) in operation. At year's end, 37 local user terminals (LUTs) serviced the low-altitude satellites and eleven serviced the geostationary satellites. Twenty-five mission control centres (MCCs) were in operation. Although global coverage was already provided on 406 MHz, the growing number of LUTs and MCCs increased the real-time coverage of the system and reduced overall response time. The geostationary component of the system provided for almost instantaneous alert between approximately 70 North and 70 South. Over 314 000 distress beacons operating on ships, aircraft and as personal locator beacons at 406 MHz and 690 000 of the older generation 121.5 MHz beacons, operating mostly on aircraft and small vessels, were in service as of August 2003.

1. Cospas — Space system for search of vessels in distress;
Sarsat — Search and rescue satellite-aided tracking.

2.40 Since it began trial operations in September 1982, the Cospas-Sarsat system has contributed to the rescue of over 15 700 persons in approximately 4 500 aeronautical, maritime and terrestrial distress situations.

Airborne collision avoidance system (ACAS II) provisions and operational procedures

2.41 ICAO provisions relating to the operation of the Airborne Collision Avoidance System (ACAS II) were reviewed by the Air Navigation Commission in 2002 following the publication of an accident investigation report dated 12 July 2002 concerning a near mid-air collision over Japan on 31 January 2001. This accident involved two wide-bodied aircraft equipped with ACAS II and resulted in injuries to passengers and crew. At the time it was also noted that there was an ongoing accident investigation of a mid-air collision over Germany on 1 July 2002 which involved two aircraft equipped with ACAS II. Factors common to both accidents were that air traffic control had issued instructions which conflicted with an ACAS II resolution advisory (RA), and flight crews had manoeuvred their aircraft in the opposite sense to the RAs that had been issued.

2.42 For ACAS to function as intended, it is essential that flight crews follow the procedures contained in their aircraft operating manuals concerning responses to RAs. Accordingly, the ACAS II operating procedures in the *Procedures for Air Navigation Services — Aircraft Operations, Volume I — Flight Procedures* (Doc 8168, PANS-OPS) were strengthened and clarified by highlighting the importance of following an RA and not manoeuvring in a sense opposite to that of an RA. Also Annex 6, Part I was amended to include a new Standard in Appendix 2 concerning the content of an operations manual with regard to policy, instructions, procedures and training requirements for the avoidance of collisions and the use of ACAS II. These amendments became applicable as of 27 November 2003.

Controlled flight into terrain (CFIT)

2.43 The United States Federal Aviation Administration (FAA), through the Commercial Aviation Safety Team (CAST) programme and the European Joint Aviation Authorities, through the Joint Safety Strategy Initiative (JSSI) have worked on the identification of new risks and related safety enhancement measures. ICAO will continue to liaise with CAST and JSSI, and participate in other industry and government safety initiatives. Further, ICAO will examine current safety initiatives to determine their global perspective and likely impact on safety and decide whether they should be proposed for inclusion in the ICAO provisions in order to further reduce the number of approach and landing and CFIT accidents.

Instrument flight procedure design

2.44 The introduction of area navigation (RNAV) and, in particular, satellite navigation has had a great impact on air navigation and, therefore, on the way flight procedures are designed. Flight procedures are, in essence, the roads of the sky and are increasingly flexible

with the advent of modern navigation equipment. These "roads" can now be placed anywhere in the sky, and because of the performance measuring capabilities of current aircraft equipment, a reduction in the size of these "roads" can be achieved, thereby increasing the capacity of the airspace, reducing the cost of air travel, and contributing to the improvement of the world economy.

2.45 RNAV began with the development of aircraft avionics which use information from existing VOR/DME ground systems to compute the lateral position of an aircraft. Because of the limited accuracy attainable with these types of systems, as well as their dependence on ground infrastructure, increased research and development efforts have been focused on satellite-based RNAV. Early implementations were with stand alone GNSS, a comparatively accurate system laterally, but with relatively low integrity performance. To enhance the accuracy, integrity and availability of the existing GNSS systems, and to enhance vertical navigation capabilities, the United States, Europe and Japan have all proceeded with development of SBAS. These new augmented types of GNSS promise improved performance, in some cases near Category I precision approach capability. Efforts are well advanced to ensure that these systems are interoperable and provide seamless navigation services to the user. New flight procedures design criteria to take advantage of the improved capabilities of the latest navigation systems are being developed by ICAO. These include procedures for Basic GNSS, Baro-VNAV, SBAS and helicopter GNSS procedures. Other types of augmentation systems are planned for the future, such as ground-based augmentation systems (GBAS), which are based on differential GNSS, and aircraft-based augmentation systems (ABAS), which take into account the total aircraft system design to reduce navigation error and increase integrity. These next-generation systems are expected to be capable of supporting up to Category III precision approach operations. Procedure design criteria for GBAS Category I precision approaches are currently available.

2.46 These advances in air navigation technology have the potential to improve safety and efficiency for all phases of flight, from take-off through precision approach and landing. These developments in navigation require complex computations by computers, and diminishing human involvement and intervention. This, therefore, requires increasing attention to the quality of the instrument flight procedure design, and the integrity of navigation systems and the data that they use. These integrity requirements have a direct impact both on the criteria for instrument flight procedures for aircraft (the building blocks) and on the design and data quality process.

2.47 International initiatives aimed at enhancing the integrity and application of the criteria for the flight procedures include a complete review of the existing criteria, developing qualification and training requirements for procedure designers, and development of software tools.

2.48 Quality assurance will be the major area of attention in the procedure design process of the future, beginning with the highly accurate survey of terrain and obstacles, and continuing to the protection of that data throughout the procedure design, quality assurance checks, and publication process. A new key element in this procedure design process is that it does not solely entail publication of a paper chart for the pilot as an end product, but also requires that the information be provided in a form that can be translated in a consistent way by navigation database providers.

2.49 ICAO is currently in the process of taking all of these individual quality initiatives and building an instrument procedure quality system. This system will range from survey to aircraft navigation database coding aiding in the development of an all-encompassing quality system.

Personnel licensing

2.50 ICAO's Flight Crew Licensing and Training Panel has finalized a draft proposal on approval of training organizations and is continuing its work on a review of personnel licensing standards for flight crew.

Flight safety and Human Factors

2.51 The First Iberoamerican Conference on Safety and Training in Civil Aviation was held in Madrid, Spain, in July. The objectives of the conference were to provide a forum for aviation organizations in the Iberian Peninsula, Central and South America and the Caribbean to exchange information and discuss contemporary safety and training problems specific to the Iberoamerican context, as well as to identify viable solutions.

2.52 The first ICAO-IATA Line Operations Safety Audit (LOSA) and Threat and Error Management (TEM) Conference was held in Dublin, Ireland, in November with the objective of presenting state-of-the-art industry knowledge of TEM training.

Training

2.53 Since 2001, membership in the TRAINAIR Programme has continued to grow, bringing membership to a total of 40 Civil Aviation Training Centres in 36 ICAO Contracting States. The member Civil Aviation Training Centres' course development activities have also continued to expand. A total of 135 Standardized Training Packages (STPs) have been either completed or are under development by TRAINAIR members. At least 86 STPs have been shared among members.

2.54 The Ninth Global TRAINAIR Training Symposium and Conference (GTC/9) was held in Marrakech, Morocco, in September and focussed on issues related to the human component of safety and security, addressing challenges in the twenty-first century.

2.55 ICAO-endorsed training centres for Government Safety Inspectors continued to expand. As of December 2003 seven training centres within ICAO Regions have been endorsed and are conducting Government Safety Inspectors training courses on an international basis. An STP for officers, inspectors and doctors involved in personnel licensing has been developed and is in use.

Chapter 3
User and Public Interest

AVIATION SAFETY

Note.— The aircraft accidents covered under the heading "Safety" exclude incidents caused by acts of unlawful interference, which are shown under the section on Security.

Scheduled services

3.1 Preliminary information on aircraft accidents involving passenger fatalities in scheduled air services worldwide shows that in 2003 there were six aircraft accidents with passenger fatalities involving aircraft with a certificated maximum take-off mass of more than 2 250 kg. The number of passenger fatalities involved was 334. This compares with 14 fatal accidents and 791 passenger fatalities in 2002 (Table 3-1). Between 2002 and 2003, there was little change in traffic, hence the number of passenger fatalities per 100 million passenger-kilometres decreased to 0.01 from 0.03 in 2002. Similarly, the number of fatal aircraft accidents per 100 million aircraft-kilometres flown decreased to 0.02 from 0.06 in 2002, and the number of fatal aircraft accidents per 100 000 landings decreased to 0.03 from 0.07 in 2002 (Figures 3-1 to 3-3).

3.2 The safety levels are significantly different for the various types of aircraft operated on scheduled passenger services. For instance, in turbojet aircraft operations, which account for over 98 per cent of the total volume of scheduled traffic (in terms of passenger-kilometres performed), there were four accidents in 2003 with 313 passenger fatalities; in turboprop and piston-engined aircraft operations, which account for less than two per cent of the scheduled traffic volume, there were two accidents with 21 passenger fatalities. The fatality rate for turbojet aircraft operations was, therefore, far lower than for propeller-driven aircraft.

Non-scheduled services

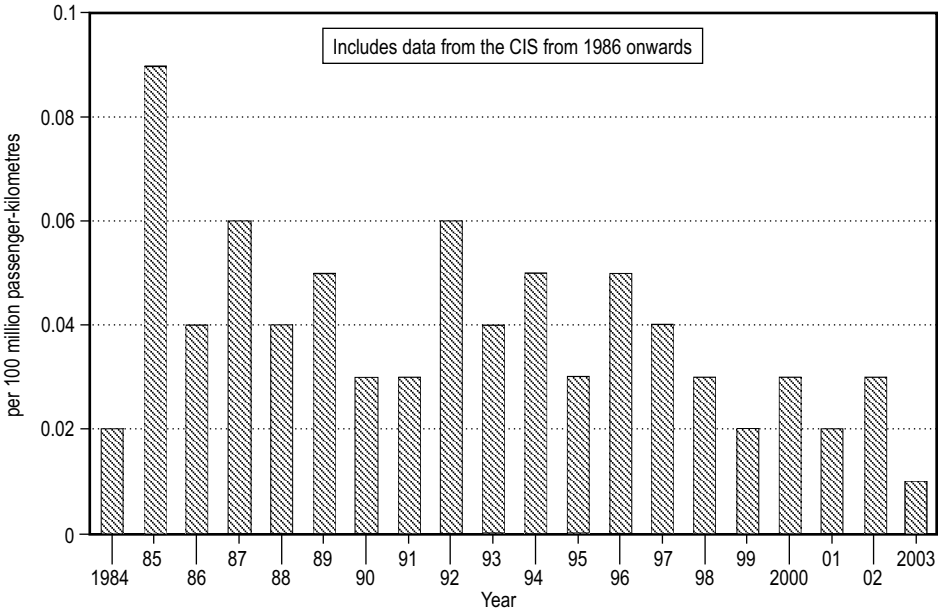
3.3 Non-scheduled commercial operations include both the non-scheduled flights of scheduled airlines and all air transport flights of non-scheduled commercial operators. Data available to ICAO on the safety of non-scheduled passenger operations show that there were 26 accidents involving passenger fatalities on aircraft with a maximum certificated take-off mass of more than 2 250 kg in 2003 (including one aircraft operating all-cargo services with passengers on board) compared with 19 in 2002. These accidents accounted for 349 passenger fatalities in 2003 compared with 201 in 2002.

Table 3-1. Accidents of aircraft with a certificated maximum take-off mass of more than 2 250 kg involving passenger fatalities on scheduled air services

Year	Aircraft accidents	Passengers killed	Passenger fatalities per 100 million: Passenger-km	Passenger fatalities per 100 million: Passenger-miles	Fatal accidents per 100 million: km flown	Fatal accidents per 100 million: miles flown	Fatal accidents per 100 000: aircraft hours	Fatal accidents per 100 000: aircraft landings
Excluding the USSR up to 1992 and the Commonwealth of Independent States thereafter								
1984	16	218	0.02	0.03	0.16	0.26	0.10	0.14
1985	25	1 037	0.09	0.14	0.24	0.39	0.15	0.21
1986	19	427	0.03	0.05	0.17	0.27	0.10	0.15
1987	23	889	0.06	0.10	0.19	0.31	0.12	0.18
1988	26	712	0.05	0.08	0.21	0.33	0.13	0.19
1989	29	879	0.06	0.09	0.22	0.36	0.13	0.21
1990	23	473	0.03	0.05	0.17	0.27	0.10	0.16
1991	24	518	0.03	0.05	0.17	0.28	0.11	0.17
1992	24	972	0.05	0.09	0.16	0.26	0.10	0.17
1993	31	806	0.04	0.07	0.20	0.32	0.13	0.21
1994	23	961	0.05	0.08	0.14	0.22	0.09	0.14
1995	20	541	0.02	0.04	0.11	0.18	0.07	0.12
1996	21	1 125	0.05	0.08	0.11	0.18	0.07	0.12
1997	24	859	0.03	0.05	0.12	0.19	0.07	0.13
1998	20	904	0.03	0.06	0.10	0.15	0.06	0.11
1999	20	498	0.02	0.03	0.09	0.15	0.06	0.10
2000	18	755	0.02	0.04	0.08	0.12	0.05	0.09
2001	11	439	0.01	0.02	0.05	0.07	0.03	0.05
2002	13	777	0.03	0.04	0.06	0.09	0.03	0.06
2003	6	334	0.01	0.02	0.03	0.04	0.02	0.03
Including the USSR up to 1992 and the Commonwealth of Independent States thereafter								
1986	24	641	0.04	0.07	na	na	na	na
1987	25	900	0.06	0.09	na	na	na	na
1988	29	742	0.04	0.07	na	na	na	na
1989	29	879	0.05	0.08	na	na	na	na
1990	27	544	0.03	0.05	na	na	na	na
1991	29	638	0.03	0.06	na	na	na	na
1992	28	1 070	0.06	0.09	na	na	na	na
1993	33	864	0.04	0.07	0.20	0.32	0.12	0.21
1994	27	1 170	0.05	0.09	0.15	0.25	0.10	0.16
1995	25	711	0.03	0.05	0.13	0.21	0.08	0.14
1996	24	1 146	0.05	0.07	0.12	0.19	0.08	0.13
1997	25	921	0.04	0.06	0.12	0.19	0.07	0.13
1998	20	904	0.03	0.05	0.09	0.15	0.06	0.10
1999	21	499	0.02	0.03	0.09	0.15	0.06	0.10
2000	18	757	0.03	0.04	0.07	0.12	0.05	0.08
2001	13	577	0.02	0.03	0.05	0.08	0.03	0.06
2002	14	791	0.03	0.04	0.06	0.09	0.04	0.07
2003	6	334	0.01	0.02	0.02	0.04	0.02	0.03

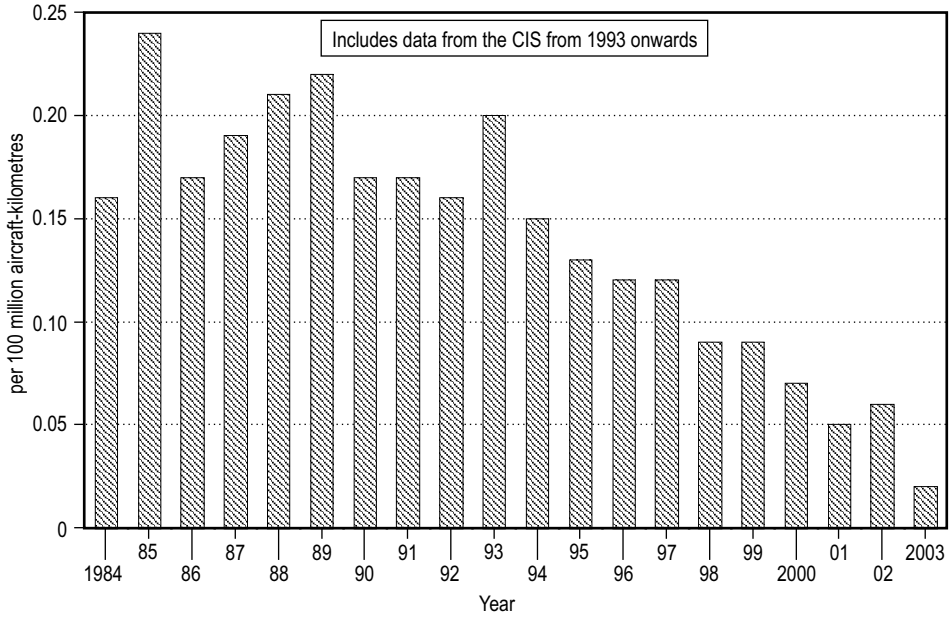
na not available

Source: ICAO accident/incident report programme (ADREP) and ICAO Air Transport Reporting Form A (Traffic).



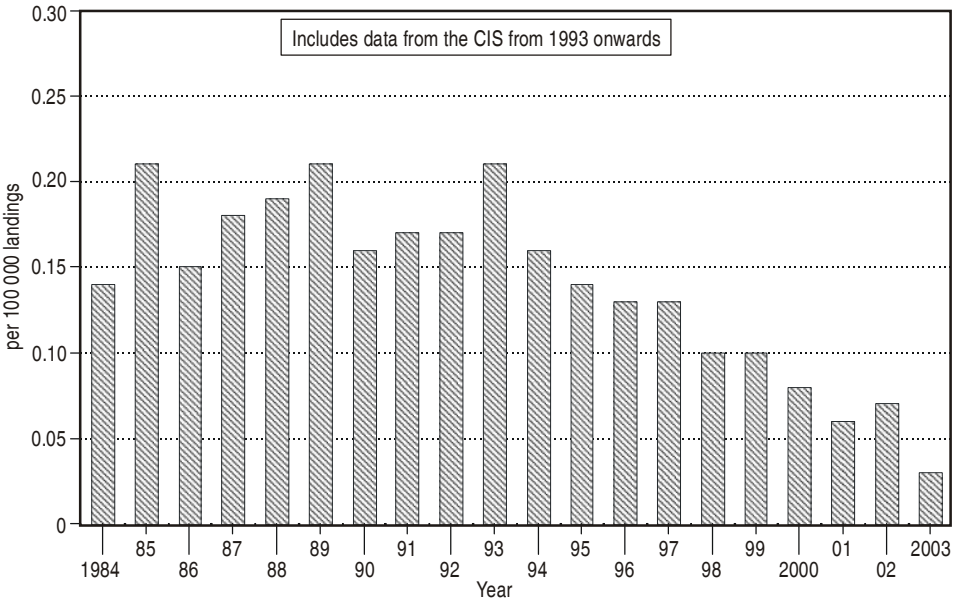
Source: ICAO Air Transport Reporting Form G and other reports.

Figure 3-1. Passenger fatalities per 100 million passenger-kilometres on scheduled services (1984 – 2003)



Source: ICAO Air Transport Reporting Form G and other reports.

Figure 3-2. Fatal accidents per 100 million aircraft-kilometres flown on scheduled services (1984 – 2003)



Source: ICAO Air Transport Reporting Form G and other reports.

Figure 3-3. Fatal accidents per 100 000 landings by aircraft on scheduled services (1984 – 2003)

3.4 In non-scheduled operations performed with aircraft of more than 9 000 kg take-off mass, whether by scheduled airlines or non-scheduled operators, there were seven accidents involving 196 passenger fatalities in 2003.

Safety oversight

3.5 The ICAO Universal Safety Oversight Audit Programme, established in 1999, continued its audit activities in 2003. By the end of the year, 181 Contracting States and five territories had been audited.

3.6 In accordance with Assembly Resolution A33-8, ICAO continued conducting audit follow-up missions, with 121 of them completed by the end of 2003. These missions are designed to validate the implementation of the corrective action plans submitted by audited States, to identify any problems encountered by States in such implementation, and to determine the need for external assistance to resolve specific safety concerns.

3.7 The analysis conducted through the Audit Findings and Differences Database (AFDD) has enabled the identification of safety oversight-related deficiencies and the prioritization of actions to resolve them at a global, regional, State or group-of-States level. Data gathered in the course of the follow-up missions are also entered in the AFDD in order to keep track of the status of implementation of States' corrective action plans and to update the information on the level of implementation of the critical elements of a State's safety oversight system.

3.8 Pursuant to Assembly Resolution A33-8, the ICAO Universal Safety Oversight Programme was to be expanded to cover Annex 11 — *Air Traffic Services*, Annex 13 — *Aircraft Accident and Incident Investigation*, and Annex 14 — *Aerodromes*, with audits starting in 2004. However, the Council agreed to present a proposal to the 35th Session of the Assembly regarding the implementation of a comprehensive systems approach in the conduct of safety oversight audits to cover the safety-related provisions contained in all safety-related Annexes, starting in 2005.

AVIATION SECURITY

3.9 In the year 2003, 34 acts of unlawful interference were recorded. These acts were three unlawful seizures, five attempted seizures, ten facility attacks, three in-flight attacks, four sabotages, one attempted sabotage and eight other acts of unlawful interference. Developments in acts of unlawful interference since 1984 are shown in Table 3-2 and in Figures 3-4 to 3-6.

3.10 Significant progress was achieved in implementing the ICAO Aviation Security Plan of Action, which was approved by the Council in June 2002. The Plan of Action continues to be very dependent on States' voluntary contributions.

3.11 As a central component of the Plan of Action, audits of Contracting States continue to take place under the ICAO Universal Security Audit Programme (USAP). The audit programme aims at identifying deficiencies in the aviation security systems of each State and providing recommendations for their resolution. By following standardized auditing principles and protocols, aviation security audits are conducted at both the national and airport levels. These audits address the organizational structure and procedures established by the appropriate State authority to ensure the sustainable implementation of its security system, as well as the effective implementation and enforcement of Annex 17. It is anticipated that a total of 60 audits will have been completed by the end of 2004 and that the pace of audits will continue at 40 audits per year.

3.12 Security concerns identified during ICAO audits are being addressed in the form of direct and immediate assistance under the Mechanism for effective implementation of Standards and Recommended Practices (SARPs) contained in Annex 17 (AVSEC Mechanism) on a case-by-case basis. Support is also provided for the development of longer-term projects under the auspices of the ICAO Technical Co-operation Bureau (TCB) to rectify deficiencies identified in the audits, including the development of project documents.

3.13 ICAO continues the development of the training programme for aviation security, designed for global application. To date, eight aviation security training packages (ASTPs), namely, Airline, STP123/Basic, Cargo, Crisis Management, Instructors, Management, Supervisors and Exercise as well as a Hostage Negotiation course, have been completed and are available for sale and distribution throughout the international civil aviation community. ICAO is in the process of developing training packages on Quality Control and Airport Design. The National Auditors Training Package is also being developed in order to assist in the implementation of the aviation security audit programme. In addition, to meet States'

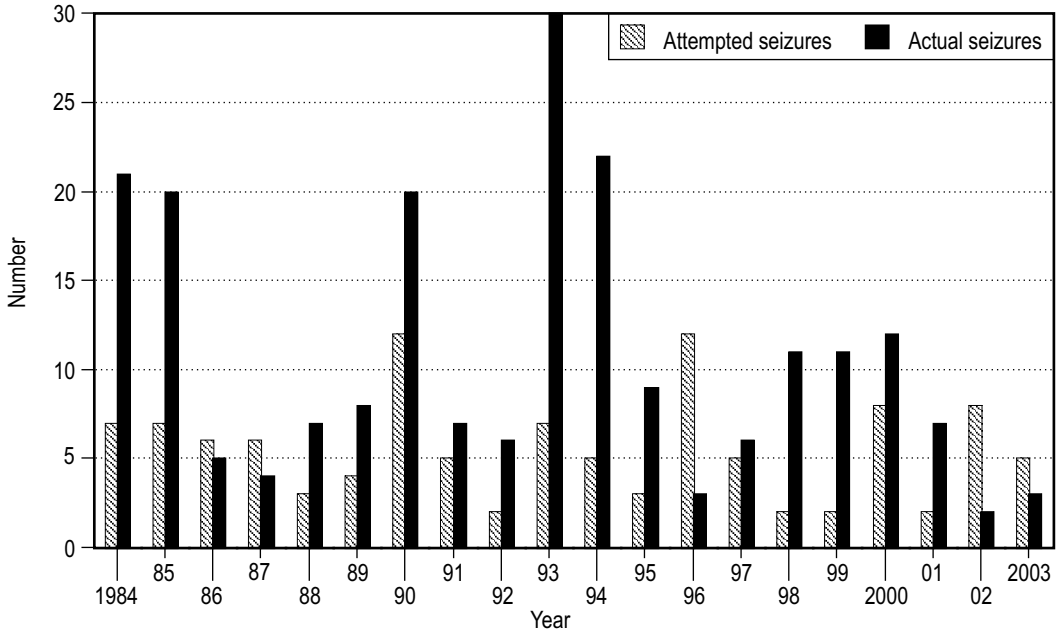
training requirements and to render assistance in the area of programme formulation, topic-focussed seminars/workshops have been developed and are being conducted in all regions at the ICAO regional aviation security training centres (ASTCs) in Amman, Brussels, Casablanca, Dakar, Kyiv, Moscow, Nairobi, Penang, Port of Spain and Quito, under the AVSEC Mechanism.

3.14 During the year there was an in-flight attack in which two missiles were fired at a commercial airliner on take-off, but did not hit the aircraft. The threat posed to civil aviation by terrorist use of man-portable air defence systems (MANPADS) presents a major challenge to aviation security practitioners throughout the world. ICAO is giving high priority to work on this subject and has developed guidance material to assist States in the development of countermeasures against MANPADS.

Table 3-2. Acts of unlawful interference (1984 to 2003)

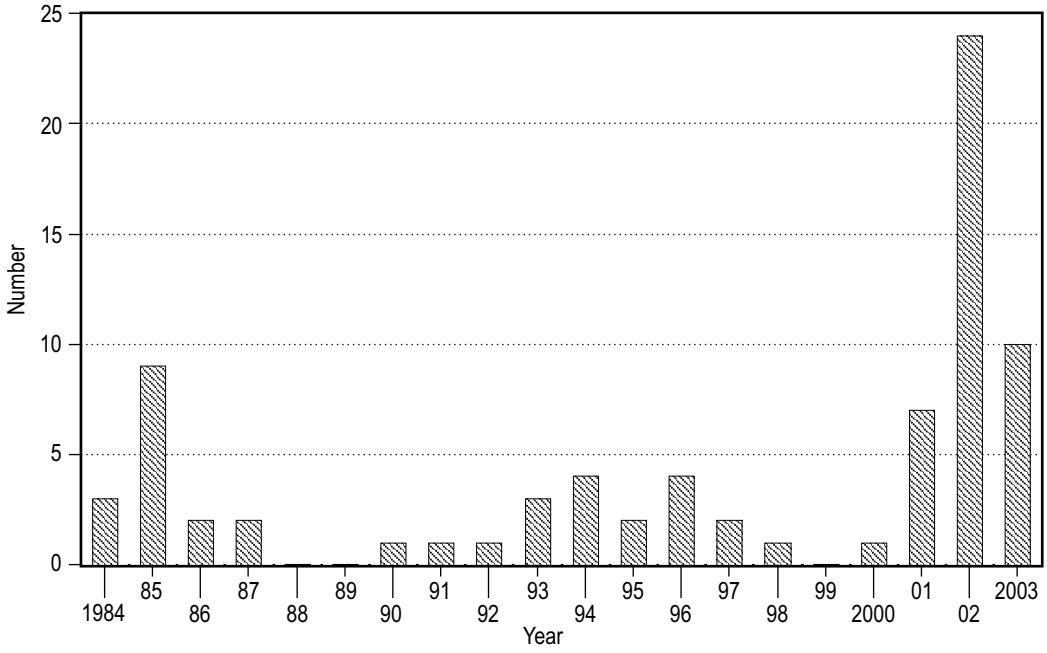
Year	Number of acts of unlawful interference	Number of acts of unlawful seizure		Number of acts of facility attacks			Other acts[1]	Number of persons injured or killed during acts of unlawful interference	
		Actual seizures	Attempted seizures	Actual facility attacks	Attempted facility attacks	Number of acts of sabotage		Injured	Killed
1984	44	21	7	3	0	13	—	249	68
1985	49	20	7	9	0	13	—	243	473
1986	16	5	6	2	0	3	—	235	112
1987	15	4	6	2	0	3	—	121	166
1988	12	7	3	0	0	2	—	21	300
1989	14	8	4	0	0	2	—	38	278
1990	36	20	12	1	0	1	2	145	137
1991	15	7	5	1	0	0	2	2	7
1992	10	6	2	1	0	0	1	123	10
1993	48	30	7	3	0	0	8	38	112
1994	43	22	5	4	0	2	10	57	51
1995	17	9	3	2	0	0	3	5	2
1996	22	3	12	4	0	0	3	159	134
1997	15	6	5	2	0	1	1	2	4
1998	17	11	2	1	0	0	3	1	41
1999	14	11	2	0	0	0	1	3	4
2000	30	12	8	1	0	0	9	50	58
2001	24 [2]	7	2	7	4	1	3	3 217	3 525
2002	40	2	8	24	2	2	2	14	186
2003	34	3	5	10	0	4	12	77	20

1. Includes in-flight attacks and other acts of unlawful interference.
2. Official reports on the events of 11 September 2001 in the United States did not include the number of deaths and injuries on the ground. Therefore, estimated totals were taken from media sources.



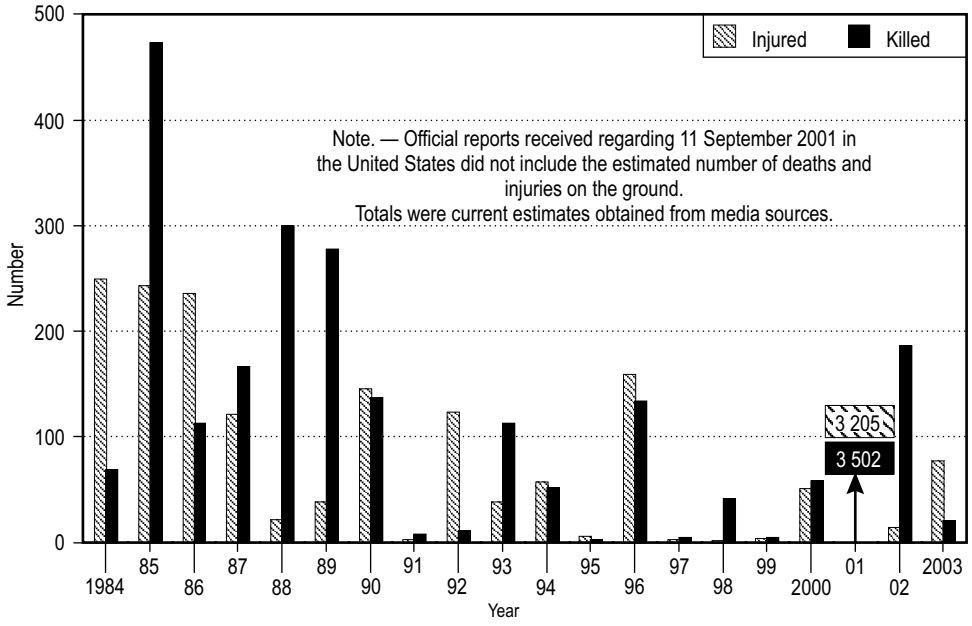
Source: ICAO database based on official reports from ICAO Contracting States.

Figure 3-4. Acts of unlawful seizure (1984 – 2003)



Source: ICAO database based on official reports from ICAO Contracting States.

Figure 3-5. Incidents of sabotage (1984 – 2003)



Source: ICAO database based on official reports from ICAO Contracting States.

Figure 3-6. Number of persons killed or injured in acts of unlawful interference (1984 – 2003)

3.15 Senior government officials from 21 member States of the Asia Pacific Economic Cooperation Forum (APEC) met in Bangkok to review the Secure Trade in the APEC Region initiative agreed at the APEC Leaders Summit in Mexico in October 2002. The initiative includes counter-terrorism measures such as the introduction of electronic customs systems, new security for containers, and enhanced safety at air and sea ports. The APEC leaders agreed to strengthen joint efforts to curb terrorist threats against mass transportation, including the threat posed by terrorists' acquisition and use of MANPADS. Two additional references were made to help combat the threat of weapons of mass destruction by adopting and enforcing export controls and by supporting the implementation of the Advance Passenger Information (API) System pathfinder initiative and efforts to explore development of a regional movement alert system to protect air travellers. Tighter controls will become operational in the air cargo sector through the implementation of the Secure Trade in the APEC Region system, while there will be increased surveillance of airline passengers, especially those travelling on trans-Pacific sectors.

AIR CARRIER LIABILITY

3.16 During 2003 work continued on the modernization of the *Convention on Damage Caused by Foreign Aircraft to Third Parties on the Surface*, signed at Rome on 7 October 1952. The ICAO Secretariat Study Group prepared a *Draft Convention on Damage Caused by Foreign Aircraft to Third Parties* to be considered by the ICAO Legal Committee in 2004.

3.17 The *Convention for the Unification of Certain Rules for International Carriage by Air*, done at Montreal on 28 May 1999, entered into force on 4 November 2003. By the end of 2003, the Convention had been ratified or otherwise accepted by 34 States.

3.18 In June 2003, the ICAO Council approved, on a contingency basis, the retention of "Globaltime", a global scheme for the provision of third-party war risk coverage. It is a condition for the setting up and operation of "Globaltime" that Contracting States representing 51 per cent of ICAO contribution rates declare their intention to participate. This 51 per cent threshold of intentions has thus far not been reached. Another condition is that there is a further failure of the commercial insurance market, as determined by the ICAO Council. Upon fulfilment of these two conditions, the Insurance Entity of Globaltime would be set up and commence its operations.

FACILITATION

Machine readable travel documents (MRTDs)

3.19 The deployment of biometric technology in passports and other travel documents for purposes of machine-assisted identity confirmation is one aspect of the ICAO strategy to improve border clearance processes with machine readable travel documents and associated technology. Passport integrity is a significant factor in the security of the global travel system, and confidence in the integrity of a State's travel documents on the part of border control authorities promotes facilitation of border control formalities. In ICAO, biometric identification is considered an important tool for States to use to strengthen the security of their documents and increase the level of confidence.

3.20 Hence, the adoption in 2003 of the ICAO biometric "blueprint" brought one step closer towards reality the incorporation of biometric technologies in travel documents and inspection systems for purposes of authentication of documents and confirmation of traveller identity.

3.21 The blueprint specifies the selection of facial recognition as the globally interoperable biometric technology for machine-assisted identity confirmation. At the same time, States may elect to add fingerprint and/or iris recognition to supplement facial

recognition to support machine-assisted verification and/or identification. The blueprint specifies that the chosen biometric(s) be stored on the document as images rather than templates in the interests of global interoperability.

3.22 The blueprint further specifies a high-capacity (minimum 32 kilobytes) contactless integrated circuit (IC) chip as the electronic data storage technology to be employed for the deployment of biometrics in MRTDs. Compressed images of one or more biometrics will require a high-capacity storage medium, and the contactless IC was chosen because its use in paper documents has recently been demonstrated to be feasible. Programming of the IC using the instructions set out in the logical data structure (LDS) is the third component of the blueprint. The fourth component is the use of a modified public key infrastructure (PKI) scheme for the implementation of digital signatures with MRTDs complying with the specifications contained in ICAO's *Machine Readable Travel Documents* (Doc 9303). Use of PKI technology and digital signatures is a means to secure the electronic data, marked in the MRTD, against unauthorized alteration.

3.23 The technical reports that elaborate on each of the four components of the blueprint are precursors to formal specifications.[1]

Other developments in facilitation

3.24 The New Zealand Government decided to introduce improved immigration systems to "screen out" risk travellers as part of its counter-terrorism package announced on 30 January 2002. The system introduced by New Zealand is called Advance Passenger Screening (APS) and comprises advance passenger information and advance passenger processing (APP) developed in Australia. Singapore's Immigration and Checkpoints Authority is working on plans for a new Singapore International Passport that will incorporate biometric information on an integrated circuit chip following accepted international standards. The Government of Sri Lanka adopted a new passport, the "N" series, which incorporates "Digital Security Features and Personalised Security features".

3.25 Changi Airport (Singapore) put in place SARS screening for all departing and arriving passengers in response to the SARS outbreak.

3.26 To ensure the optimum level of comfort and security of passengers, the Civil Aviation Authority of Nepal has developed a regulation on facilitation. Changi Airport (Singapore) has free 24-hour "Free Internet Corners" located at various parts of the passenger terminals for the convenience of departing passengers.

1. They can be downloaded on a new Web site that has been developed to promote the implementation of MRTDs (www.icao.int/mrtd).

ENVIRONMENTAL PROTECTION

3.27 In 2003, the aviation community continued to address the environmental problems associated with aircraft noise and with both the global and local impact of aircraft engine emissions.

Aircraft noise

3.28 The phasing out of operations by so-called Chapter 2 aircraft (subsonic jet aircraft that meet the noise certification levels in ICAO Annex 16, Volume I, Chapter 2, but exceed those in Chapter 3) continued in accordance with the policy framework established by the ICAO Assembly in 1990. In a number of States, the phase-out was completed on 1 April 2002.

3.29 Following the endorsement of the concept of a balanced approach to noise management by the ICAO Assembly in 2001 (Assembly Resolution A33-7), work continued in ICAO on the development of guidance material to assist States in implementing the balanced approach. This consists of four principal elements, namely, noise reduction at source (quieter aircraft), land-use planning and management around airports, noise abatement operational procedures, and operating restrictions.

Aircraft engine emissions

3.30 According to a special report on Aviation and the Global Atmosphere prepared by the Intergovernmental Panel on Climate Change in 1999 at ICAO's request, aircraft emit gases and particles which alter the atmospheric concentration of greenhouse gases, trigger the formation of condensation trails and may increase cirrus cloudiness, all of which contribute to climate change. Aircraft are estimated to contribute about 3.5 per cent of the total radiative forcing (a measure of change in climate) by all human activities. This percentage excludes the effects of possible changes in cirrus, and it is projected to grow primarily because of aviation's rapid rate of growth. Although improvements in aircraft and engine technology and in the efficiency of the air traffic system will bring environmental benefits, these are not expected to fully offset the effects of the increased emissions resulting from the projected growth in aviation.

3.31 Policy-making regarding aircraft engine emissions is being given increased attention by States following the adoption in December 1997 of the Kyoto Protocol to the United Nations Framework Convention on Climate Change (UNFCCC), which included a provision that developed countries, working through ICAO, shall pursue limitation or reduction of greenhouse gases from aviation bunker fuels. During the year, ICAO's work on emissions continued to address both global and local concerns, but with particular focus on developing policy options to limit or reduce greenhouse gas emissions so as to be able to provide advice as soon as possible to the Conference of the Parties to the UNFCCC. Special emphasis was placed on the use of technical solutions. These include monitoring advances in technology, exploring the further development of emissions standards (ICAO Annex 16, Volume II),

notably the permitted levels for oxides of nitrogen (NOx), and promoting operational measures aimed at reducing fuel burn and emissions. ICAO is also continuing to develop guidance for States on the application of market-based measures such as voluntary agreements, emissions trading and emissions-related levies (charges or taxes).

AVIATION MEDICINE

3.32 With the SARS outbreak early in 2003, ICAO took urgent action to assist airports and governmental authorities in the SARS-affected areas to prevent further spread of this contagious disease and to restore the confidence of the travelling public in the safety of air travel. In cooperation with the World Health Organization, eight anti-SARS protective measures were developed and recommended for implementation at airports in the affected areas. In July, an ICAO inspection team visited selected airports in the affected areas in Asia and found them all in full compliance with the recommended measures. The project, which was completed in November, contributed to a significant decrease and, in some instances, a total abatement of the socio-political and economic side effects caused by the SARS outbreak in the affected areas.

THIS PAGE INTENTIONALLY LEFT BLANK

PART II

AIRLINE TRAFFIC AND FINANCIAL TRENDS AND FORECASTS

This Part reviews historical trends in world and regional scheduled passenger traffic and financial results of scheduled airlines for the period 1993-2003; examines trends in factors underlying the demand for air travel; and presents global and regional scheduled passenger traffic forecasts and, to the extent possible, a global airline financial forecast, through to 2006.

THIS PAGE INTENTIONALLY LEFT BLANK

Chapter 4

Trends in Airline Traffic and Financial Results

Airline traffic: world

4.1 Total scheduled airline traffic, measured in terms of total tonne-kilometres performed (TKPs), grew at an average annual rate of 4.9 per cent between 1993 and 2003. Passenger-kilometres performed (PKPs) grew at an average rate of 4.4 per cent per annum and freight tonne-kilometres at 6.2 per cent per annum. Global airline traffic data for each year of the period 1993-2003 are given in Tables 4-1 (total traffic) and 4-2 (international traffic).

4.2 After a decline in 1991, scheduled passenger traffic (measured in terms of PKPs) recovered in 1992 due to a significant decline in yields. It continued to grow until 1997 as economic growth provided a solid foundation for traffic increase. In 1998 the world gross domestic product (GDP) grew at only 1.9 per cent, providing for simultaneous growth of scheduled passenger traffic of only 2.1 per cent. In 1999 and 2000, traffic increased by 6.5 and 8.6 per cent, respectively, supported by the strong performance of the world economy. The economic downturn and related decline in business and consumer confidence had a negative impact on traffic in late 2000 and in 2001, when the events of 11 September exacerbated an already difficult situation. As a result, traffic declined in 2001 by an estimated 2.9 per cent, the first decline since 1991 and only the second since 1945. In 2002, demand for air travel remained depressed and traffic grew at only 0.5 per cent. Following declines in the first part of the year due to the SARS outbreak and the war in Iraq, traffic rebounded in the second part of 2003 and increased by 0.9 per cent for the whole year.

4.3 The regional distribution of scheduled passenger traffic for the years 1993 and 2003 is illustrated in Figure 4-1. The airlines of the North American and European regions dominate, together contributing 67.3 per cent of total traffic in 1993, although this share had declined to 63.9 per cent by 2003. Passenger traffic performed by airlines registered in the Asia/Pacific region increased from 22.6 per cent of total world traffic in 1993 to about 25.4 per cent in 2003. The remaining regions contributed 10.1 per cent of the traffic in 1993 and 10.7 per cent in 2003.

Airline traffic: regions of airline registration

4.4 Over the 1993-2003 period, scheduled passenger traffic of the airlines of the **African region** increased at an average annual rate of 4.4 per cent. Traffic growth in recent years has

Table 4-1. Total international and domestic revenue traffic — World (1993 – 2003)
(scheduled services of airlines of ICAO Contracting States)

	Passengers carried		Passenger-km performed		Freight tonnes carried		Freight tonne-km performed		Mail tonne-km performed		Total tonne-km performed	
Year	Millions	Annual increase %	Millions	Annual increase %	Millions	Annual Increase %	Millions	Annual increase %	Millions	Annual increase %	Millions	Annual increase %
1993	1 142	–0.3	1 949 420	1.1	18.1	2.8	68 450	9.3	5 230	1.9	250 630	3.5
1994	1 233	8.0	2 099 940	7.7	20.5	13.3	77 220	12.8	5 410	3.4	273 420	9.1
1995	1 304	5.8	2 248 210	7.1	22.2	8.3	83 130	7.7	5 630	4.1	293 930	7.5
1996	1 391	6.7	2 431 690	8.2	23.2	4.5	89 200	7.3	5 800	3.0	317 150	7.9
1997	1 457	4.7	2 573 010	5.8	26.4	13.8	102 880	15.3	5 990	3.3	344 190	8.5
1998	1 471	1.0	2 628 120	2.1	26.5	0.4	101 820	–1.0	5 760	–3.8	348 600	1.3
1999	1 562	6.2	2 797 800	6.5	28.1	6.0	108 660	6.7	5 720	–0.7	370 420	6.3
2000	1 672	7.0	3 037 530	8.6	30.4	8.2	118 080	8.7	6 050	5.8	403 960	9.1
2001	1 640	–1.9	2 949 550	–2.9	28.8	–5.3	110 800	–6.2	5 310	–12.2	388 150	–3.9
2002	1 639	–0.1	2 964 530	0.5	31.4	9.0	119 840	8.2	4 570	–13.9	397 120	2.3
2003[1]	1 657	1.1	2 991 620	0.9	34.5	9.9	125 240	4.5	4 620	1.1	404 310	1.8

Source: ICAO Air Transport Reporting Form A.

Note 1.— On 1 October 2002, the United States Department of Transportation implemented new air traffic data reporting rules which, inter alia, have affected the reporting of domestic all-cargo operations. Consequently, compared with 2002, the reported data for the United States for 2003 show a significant shift of domestic freight traffic from non-scheduled operations to scheduled services with a corresponding impact on the world traffic shown above. It is estimated that if the traffic for United States carriers had been reported under the old rules, the increases for freight tonnes carried (9.9), freight tonne-kilometres (4.5) and total tonne-kilometres performed (1.8) would have been reduced to 4.6, 2.3 and 1.0 per cent, respectively.

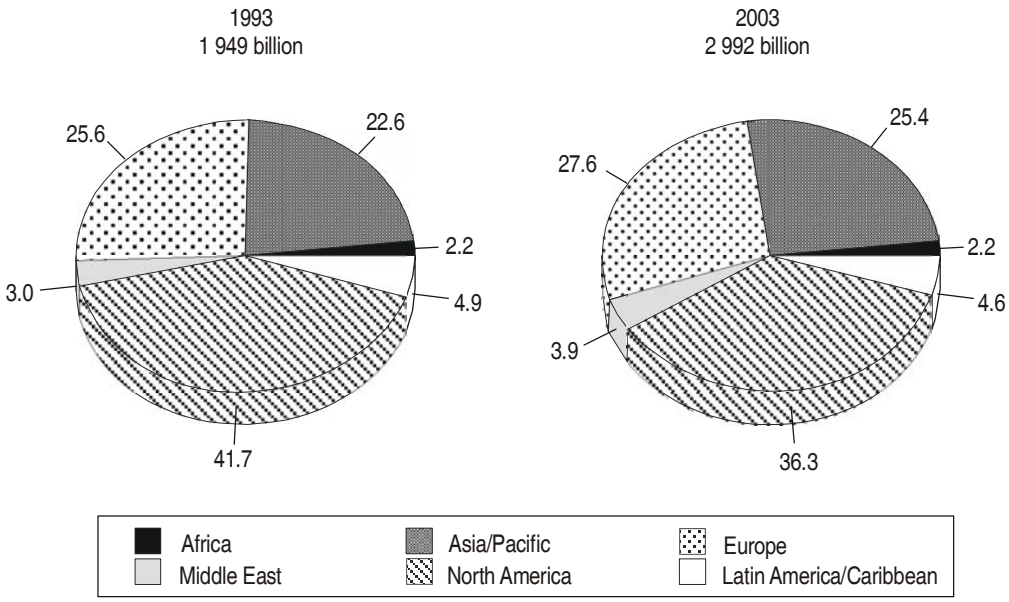
Table 4-2. International revenue traffic — World (1993 – 2003)
(scheduled services of airlines of ICAO Contracting States)

	Passengers carried		Passenger-km performed		Freight tonnes carried		Freight tonne-km performed		Mail tonne-km performed		Total tonne-km performed	
Year	Millions	Annual increase %	Millions	Annual increase %	Millions	Annual increase %	Millions	Annual increase %	Millions	Annual increase %	Millions	Annual increase %
1993	319	6.7	1 047 380	6.6	10.3	10.8	56 050	10.4	2 200	0.5	155 490	8.3
1994	347	8.8	1 143 180	9.1	11.8	14.6	64 700	15.4	2 240	1.8	173 080	11.3
1995	375	8.1	1 249 160	9.3	13.0	10.2	70 340	8.7	2 400	7.1	189 430	9.4
1996	412	9.9	1 380 680	10.5	13.6	4.6	75 510	7.4	2 450	2.1	206 870	9.2
1997	438	6.3	1 468 150	6.3	15.7	15.4	87 740	16.2	2 490	1.6	227 390	9.9
1998	458	4.6	1 512 040	3.0	15.8	0.6	87 050	–0.8	2 480	–0.4	231 440	1.8
1999	493	7.6	1 622 250	7.3	17.3	9.5	93 280	7.2	2 480	0.0	247 610	7.0
2000	542	9.9	1 790 370	10.4	18.8	8.7	101 560	8.9	2 670	7.7	273 090	10.3
2001	536	–1.1	1 726 580	–3.6	18.0	–4.3	95 950	–5.5	2 660	–0.4	261 030	–4.4
2002	547	2.1	1 736 070	0.5	18.8	4.4	101 590	5.9	2 710	1.9	267 170	2.4
2003	563	2.9	1 734 370	–0.1	20.2	7.4	103 730	2.1	2 780	2.6	267 790	0.2

Source: ICAO Air Transport Reporting Form A.

been significantly affected by the slowdown in the world economy and the subsequent global crisis in the airline industry. After achieving high growth rates in 1996 and 1997, traffic declined by 0.5 per cent in 1998 (compared to world average growth of 2.1 per cent), rebounded in 1999 to grow by almost 9 per cent, and continued to grow in 2000 at a 9.2 per cent rate. After slow growth of 2 per cent in 2001 and a decrease of 3 per cent in 2002, traffic grew by 1.6 per cent in 2003.

4.5 Scheduled passenger traffic of airlines of the **Asia/Pacific region** increased at the average annual rate of 5.6 per cent over the 1993-2003 period, significantly higher than the world's annual average of 4.4 per cent. In 1998 the airlines of the region experienced a decline in traffic of 2.8 per cent, dampening world traffic growth to 2.1 per cent. As a result of the speedy economic recovery in the Asian economies affected by the 1997/1998 recession, traffic increased by 6.9 and 10.5 per cent in 1999 and 2000, respectively, but dropped to 1.2 per cent growth in 2001. In 2002, traffic growth regained momentum and grew 6.2 per cent. In 2003, traffic declined by 4 per cent due mainly to the SARS outbreak.



Source: ICAO Air Transport Reporting Form A.

Figure 4-1. Regional distribution of total scheduled passenger traffic — World (1993 and 2003) (percentage of passenger-kilometres performed)

4.6 Scheduled passenger traffic of the airlines of the **European region** grew at an average annual rate of 5.2 per cent over the period 1993-2003, largely due to a generally impressive performance in Western Europe. Excluding airlines of the Commonwealth of Independent States (CIS), European traffic grew at 6.7 per cent per annum over the same period. Reported CIS traffic volumes dropped dramatically, with PKPs in 2003 at only slightly above 60 per cent of those in 1993.

4.7 Airlines of the **Middle East region** managed to increase their scheduled passenger traffic at an average annual rate of 7.2 per cent over the 1993-2003 period, substantially higher than the world average. After a slowdown in 2001, traffic rebounded and increased by 9.7 per cent in 2002 and by 10.6 per cent in 2003.

4.8 Airlines of the **North American region** experienced an average annual growth rate of scheduled passenger traffic of 2.9 per cent over the period 1993-2003. Traffic declines in 2001 and 2002 were the largest among ICAO regions and during 2003 traffic declined for the third consecutive year, by about 1.1 per cent.

4.9 Scheduled passenger traffic of airlines of the **Latin America and the Caribbean region** increased at an average annual rate of 3.7 per cent. In recent years, flag carrier privatization, intra-regional mergers and alliances along with extensive fleet and route rationalization were among the measures that enabled airlines of the region to capture a larger share of the United States-Latin America and Caribbean markets. After a drop in 1999 of 0.3 per cent, traffic rebounded in 2000 with 5.3 per cent growth. Following declines of 5.1 and 1.6 per cent in 2001 and 2002, airline traffic recovered and grew by 3.8 per cent in 2003.

Airline financial results: world

4.10 Although there has been neither an improvement nor a decline in the long-term trend in the financial performance of scheduled airlines as a whole, there have been relatively large changes in operating results from year to year. Table 4-3 shows the annual development since 1993 in operating revenues and expenses, the operating result (earnings before interest, other non-operating items and taxes) and the net result (earnings after interest, other non-operating items and taxes). In the early 1990s, demand weakened and the utilization of airline resources tended to decline. The emergence of excess capacity and consequent competitive pressures depressed yields. In 1993, the airline industry started to move towards a more appropriate balance of supply and demand and achieved a small operating surplus. Between 1994 and 2000, the industry continued to show positive operating and net results. In 2001 the trend reversed, as shrinking operating revenues, due to declining traffic combined with increasing fuel, security and insurance costs, led to an unprecedented operational loss of $11.8 billion and a net loss of $13 billion. This trend continued in 2002 but with a significantly lower operating loss of about $4.9 billion. Preliminary estimates for the year 2003 indicate a third consecutive year of operating loss for world airlines of about $2.8 billion. Over the period 1993-2003, operating revenues and expenses increased at an average annual rate of about 3.3 per cent and 3.5 per cent, respectively.

Table 4-3. Operating and net results[1] — World (1993 – 2003)
(scheduled airlines of ICAO Contracting States)[2]

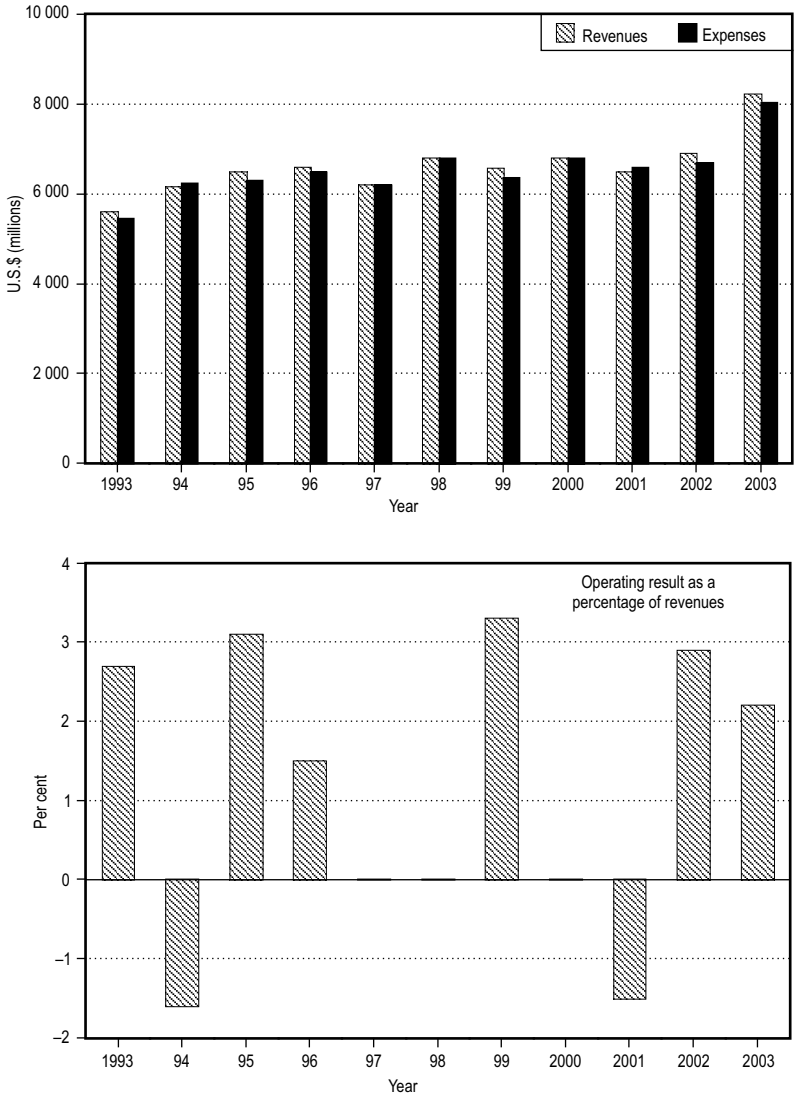
Year	Operating revenues U.S.$ (millions)	Operating expenses U.S.$ (millions)	Operating result		Net result[3]			
			Amount U.S.$ (millions)	Percentage of operating revenues	Amount U.S.$ (millions)	Percentage of operating revenues	Direct subsidies U.S.$ (millions)	Income taxes U.S.$ (millions)
1993	226 000	223 700	2 300	1.0	–4 400	–1.9	150	–270
1994	244 700	237 000	7 700	3.1	–200	–0.1	70	–1 300
1995	267 000	253 500	13 500	5.1	4 500	1.7	100	–2 170
1996	282 500	270 200	12 300	4.4	5 300	1.9	30	–2 500
1997	291 000	274 700	16 300	5.6	8 550	2.9	180	–4 200
1998	295 500	279 600	15 900	5.4	8 200	2.8	10	–4 800
1999	305 500	293 200	12 300	4.0	8 500	2.8	10	–4 300
2000	328 500	317 800	10 700	3.3	3 700	1.1	10	–2 510
2001	307 500	319 300	–11 800	–3.8	–13 000	–4.2	10	3 610
2002	306 000	310 900	–4 900	–1.6	–11 300	–3.7	10	2 300
2003[4]	312 900	315 700	–2 800	–0.9				

1. Revenues and expenses are estimated for non-reporting airlines.
2. Up to and including 1997, operations within the Commonwealth of Independent States are excluded.
3. The net result is derived from the operating result by adding (with plus or minus sign as appropriate) non-operating items (such as interest and direct subsidies) and income tax. The operating and net results quoted, particularly the net results, are the small differences between the estimates of large figures (revenues and expenses) and are therefore susceptible to substantial uncertainties.
4. Preliminary data — net results are not yet available.

Source: ICAO Air Transport Reporting Form EF.

Airline financial results: regions of airline registration

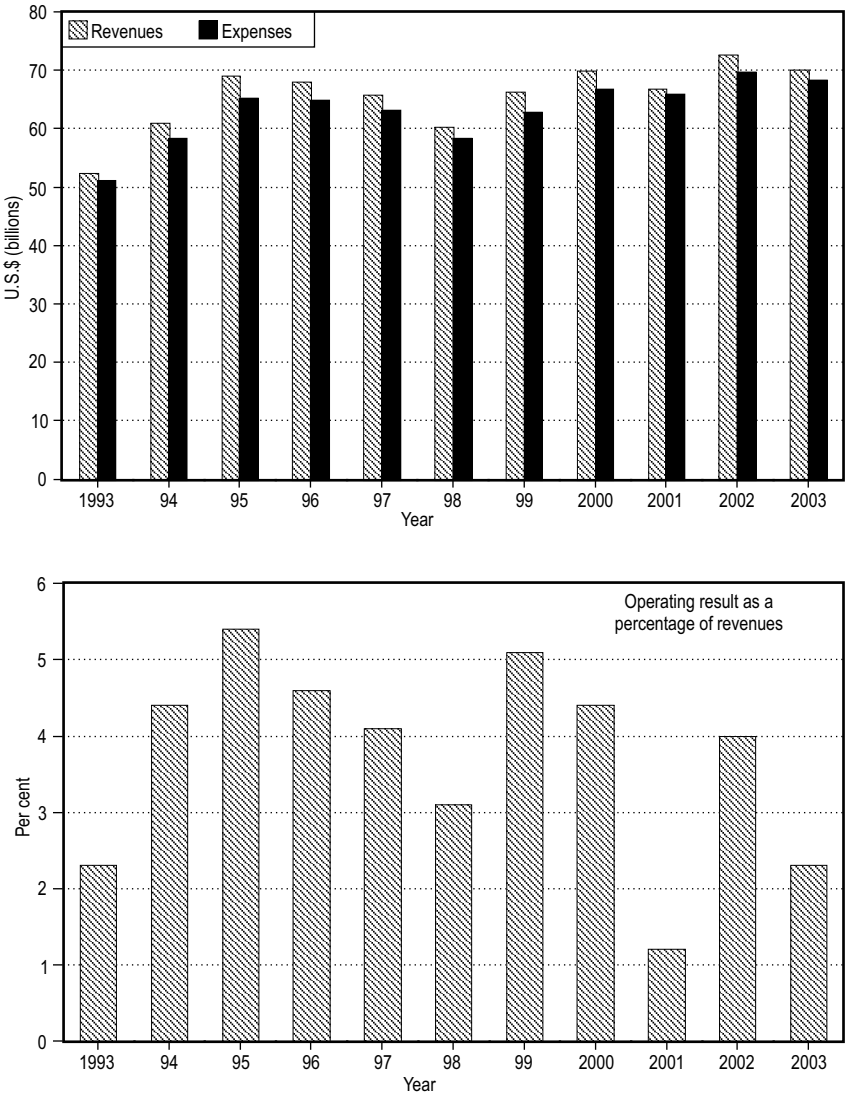
4.11 During the 1993-2003 period, operating revenues of the scheduled airlines of the **African region** increased at an average annual rate of 3.9 per cent. Operating expenses for the same period grew by 4.0 per cent per annum. These rates reflect the relatively low traffic growth experienced over most of the period, a steady decline in average yields, and efforts by African airlines to improve efficiency and financial performance. After experiencing operating losses in 2001, the airlines of the region posted an operating profit of about $204 million in 2002 and about $181 million in 2003, as illustrated in Figure 4-2.



Note.— 2003 figures are from estimated data.
Source: ICAO Air Transport Reporting Form EF.

Figure 4-2. Scheduled airline operating revenues and expenses — Africa (1993 – 2003)

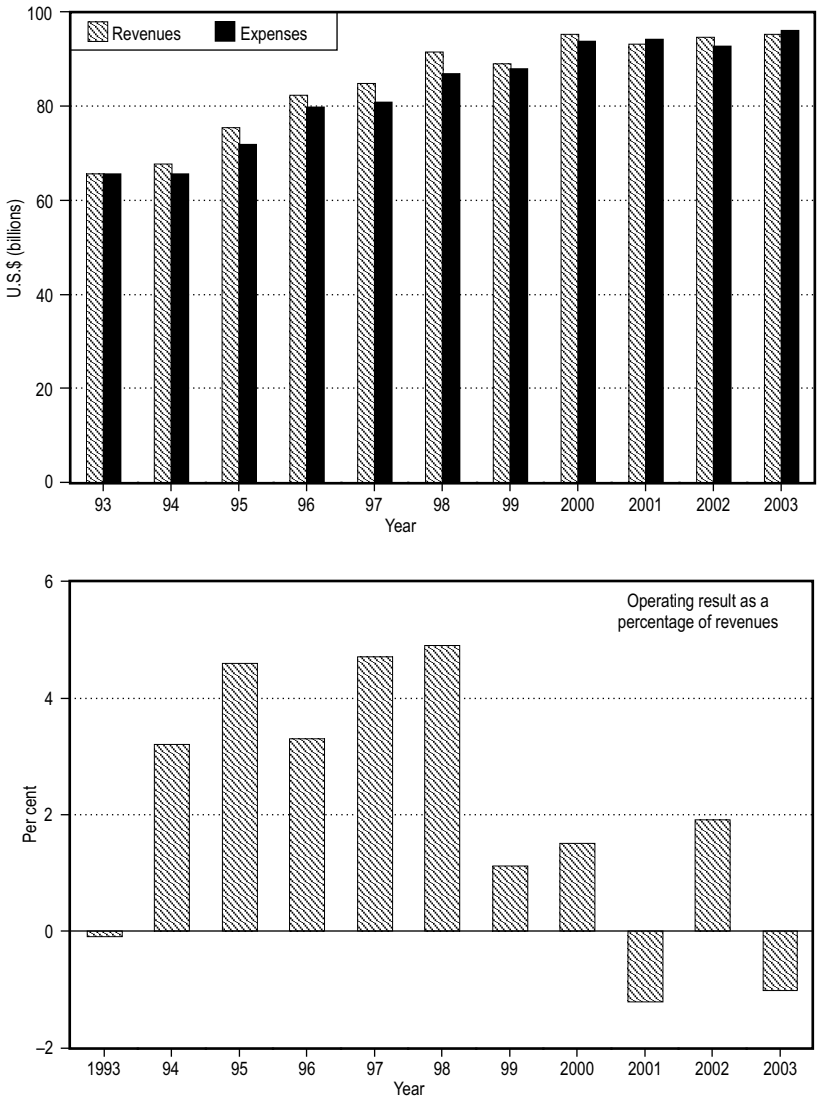
4.12 Both operating revenues and operating expenses of the scheduled airlines of the **Asia/Pacific region** increased at an average annual rate of 2.9 per cent over the period 1993-2003. Airlines of the region enjoyed positive operating results throughout the last decade as illustrated in Figure 4-3. In 2001, they achieved an aggregate operating profit of around $800 million. For 2002, the operating profit was $2.9 billion, the highest among ICAO regions. Preliminary estimates indicate that an operating profit of $1.6 billion was achieved in 2003.



Note.— 2003 figures are from estimated data.
Source: ICAO Air Transport Reporting Form EF.

Figure 4-3. Scheduled airline operating revenues and expenses — Asia/Pacific (1993 – 2003)

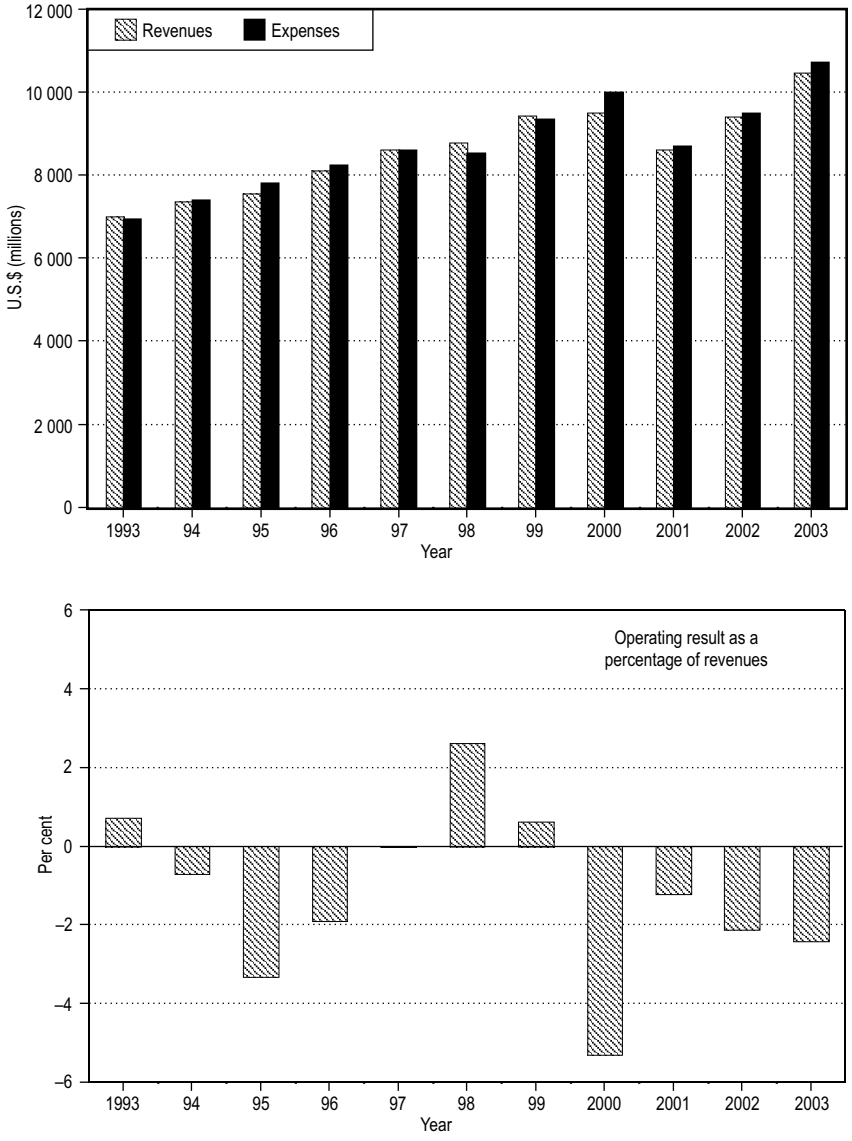
4.13 Operating revenues of the scheduled airlines of the **European region** (excluding operations within the CIS) increased at an average annual rate of 3.8 per cent and operating expenses increased by 3.9 per cent per annum. As illustrated in Figure 4-4, positive operating results were achieved during the period except for the years 1993, 2001 and 2003.



Note.— 2003 figures are from estimated data.
Source: ICAO Air Transport Reporting Form EF.

Figure 4-4. Scheduled airline operating revenues and expenses — Europe (1993 – 2003)

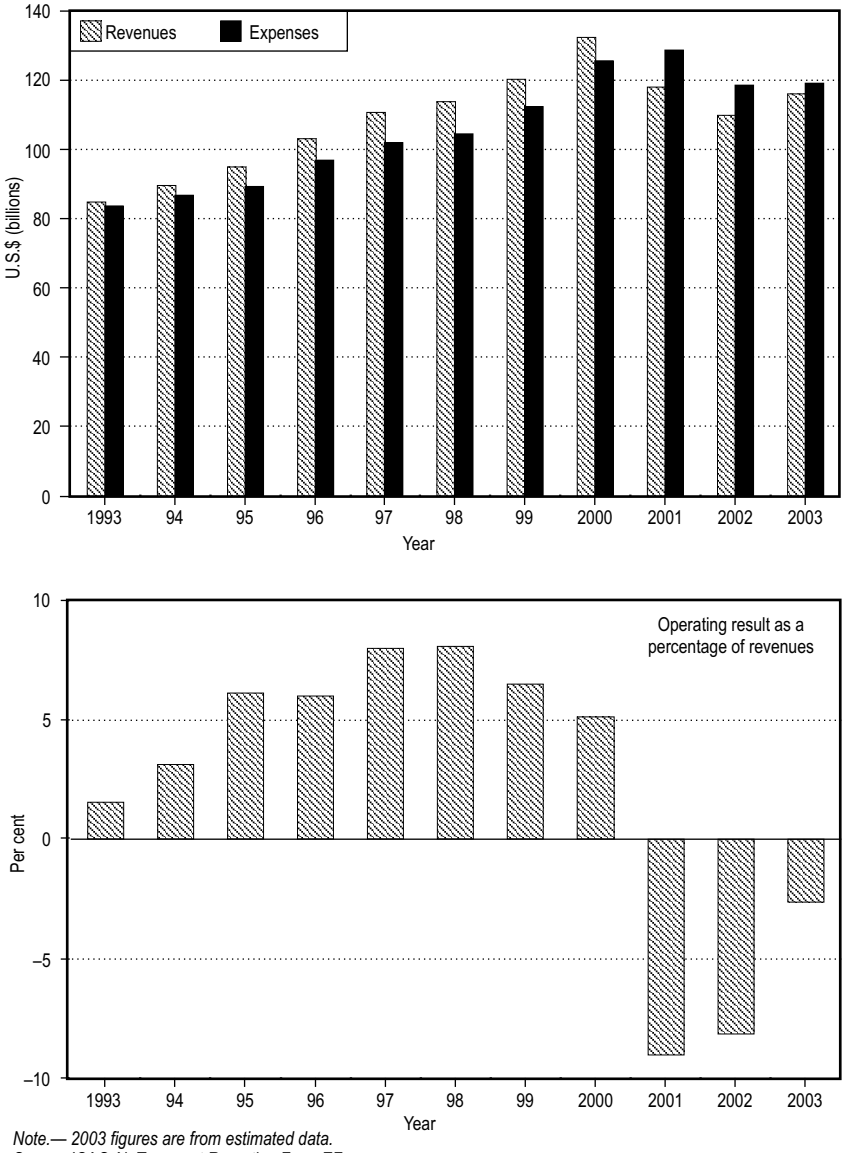
4.14 Operating revenues of the scheduled airlines of the **Middle East region** increased at an average annual rate of 4.1 per cent over the 1993-2003 period. Operating expenses for the same period increased by 4.4 per cent per annum. As shown in Figure 4-5, since 1994 the airlines of the region have experienced a string of operating losses, except for 1998 and 1999.



Note.— 2003 figures are from estimated data.
Source: ICAO Air Transport Reporting Form EF.

Figure 4-5. Scheduled airline operating revenues and expenses — Middle East (1993 – 2003)

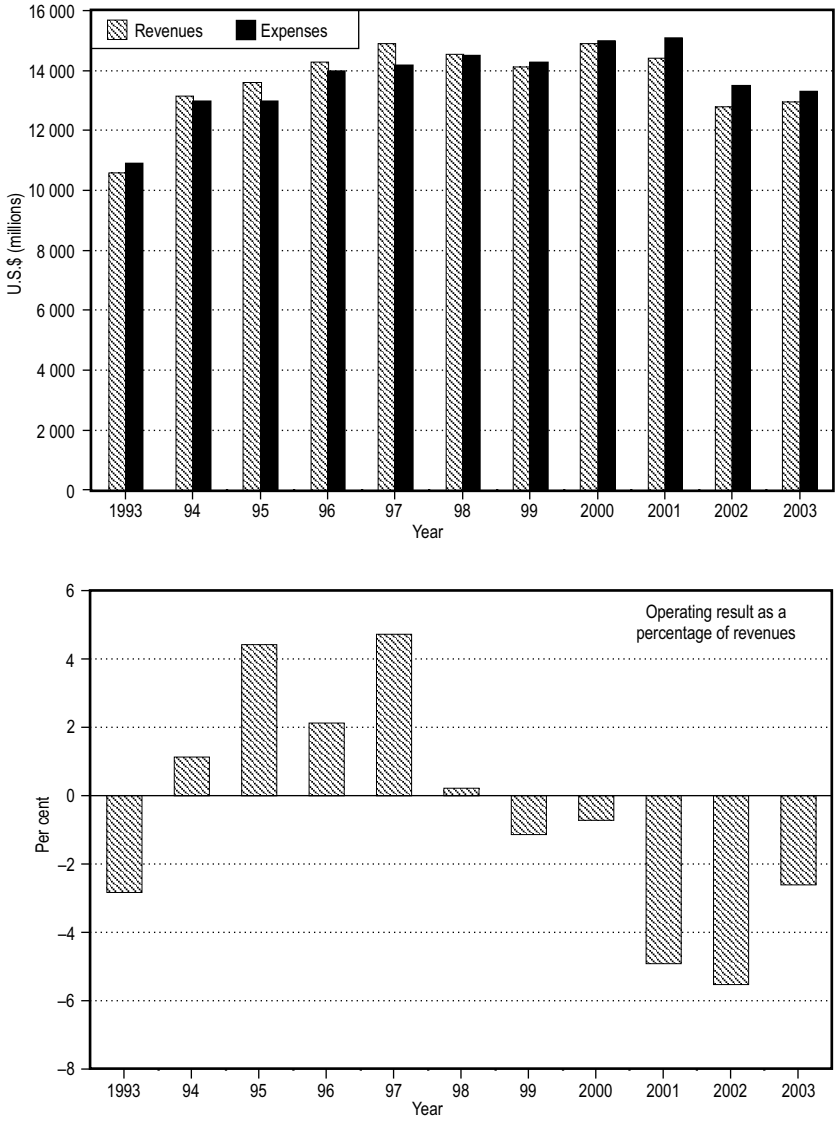
4.15 Operating revenues of the scheduled airlines of the **North American region** increased at an average annual rate of 3.2 per cent and operating expenses increased by 3.6 per cent per annum. Following a three-year period of deficits, an operating surplus was achieved in 1993 and continued for seven consecutive years, as illustrated in Figure 4-6. Being the ICAO region most affected by the ramifications of the events of 11 September 2001 and the economic slowdown, the North American region posted heavy operating losses during the years 2001 and 2002. For the year 2003, it is estimated that the airlines of the region would again post a loss of about $3 billion.



Note.— 2003 figures are from estimated data.
Source: ICAO Air Transport Reporting Form EF.

Figure 4-6. Scheduled airline operating revenues and expenses — North America (1993 – 2003)

4.16 Both operating revenues and operating expenses of the scheduled airlines of the **Latin American and Caribbean region** increased at an average annual rate of 2.0 per cent. As illustrated in Figure 4-7, the overall financial performance of the airlines of the region has been poor over the whole period. A concerted effort of drastic cost-cutting, airline industry restructuring and demand recovery brought positive operating results for five consecutive years (1994-1998). The trend, however, reversed in 1999 and the airlines of the region have since been continuously experiencing operating losses. After an operating loss of $700 million in 2001 and 2002, it is estimated that in 2003 the airlines of Latin America and the Caribbean again incurred an operating loss (about $338 million).



Note.— 2003 figures are from estimated data.
Source: ICAO Air Transport Reporting Form EF.

Figure 4-7. Scheduled airline operating revenues and expenses — Latin America and the Caribbean (1993 – 2003)

Chapter 5

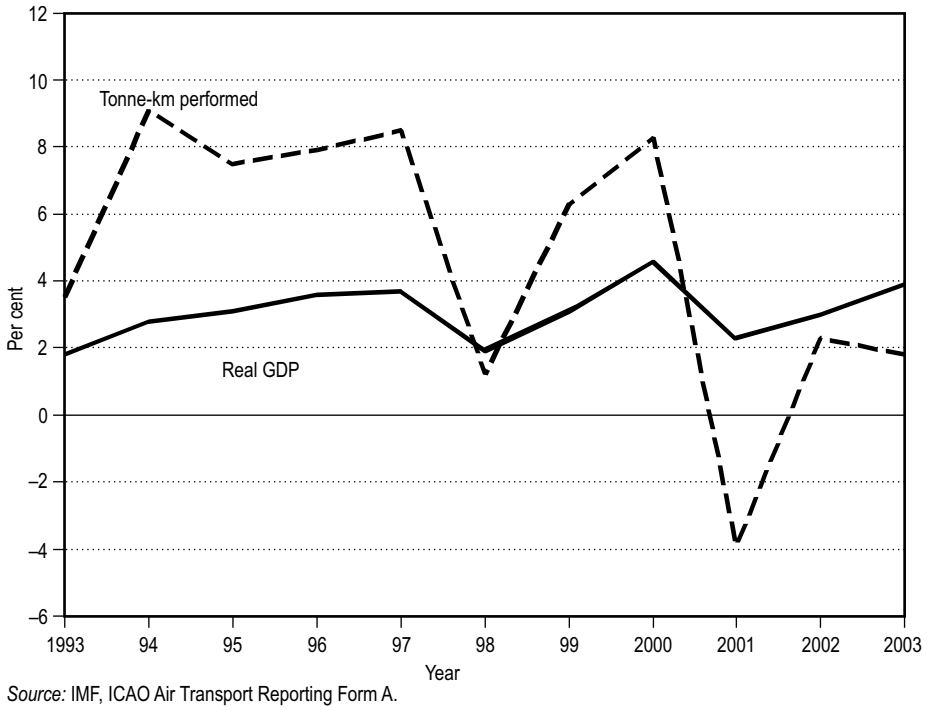
Trends in Factors Underlying Air Traffic Demand

5.1 It has been found that the demand for air passenger travel is primarily determined by socio-economic factors such as income levels, demographics and the cost of air travel. World energy demand, supply and prices are critically important both to economic progress and to the cost of travel. As a result, the airline industry is highly vulnerable to economic cycles and fluctuations in fuel prices.

GLOBAL AND REGIONAL ECONOMIC AND DEMOGRAPHIC TRENDS

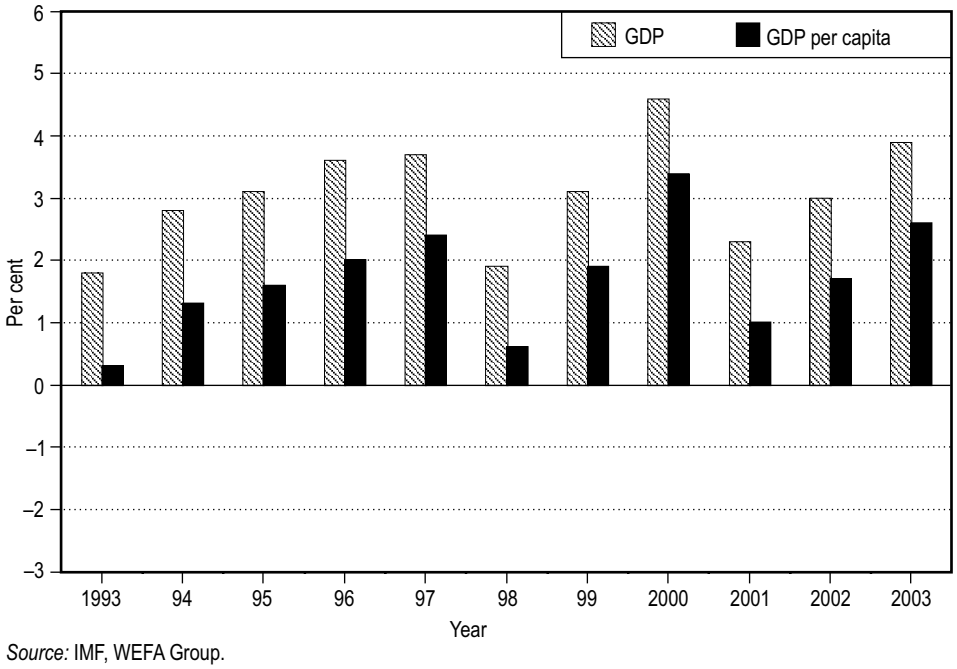
5.2 In broad terms, the pattern of traffic growth over the 1993-2003 period was a reflection of economic conditions experienced over this period, as depicted in Figure 5-1. During that period, the aggregate world economy measured in terms of GDP grew at an average annual rate of 3.2 per cent in real terms. The world population increased between 1993 and 2003 at an average annual rate of 1.4 per cent. Hence, the world's GDP per capita increased during the same period at an average annual rate of 1.8 per cent, significantly lower than the growth of GDP itself, as indicated in Figure 5-2. The following paragraphs provide some highlights of world and regional GDP trends over the 1993-2003 period.

5.3 Following a recession in 1991, recovery commenced in North America in 1992, but it was not until 1994 that it took hold in most of Western Europe. In 1998 the world economy experienced some slowdown resulting from the financial crisis in several Asian countries, but in 1999 it rebounded and posted 3.1 per cent growth. The economy continued to grow in 2000, by 4.7 per cent, but experienced a slowdown in growth in 2001 in almost all major regions. This slowdown was accompanied by a marked decline in trade growth, significantly lower commodity prices, and deteriorating financing conditions in emerging markets. The events of 11 September 2001 amplified the impact on consumer and business confidence, demand and activity, particularly in the United States. Consequently, the global economy grew by only 2.3 per cent in 2001. In 2002, with trade and industrial production improving across all regions, the world economy recovered to grow at a rate of 3 per cent. Supported by increasing consumer confidence and demand, the world GDP registered a growth of 3.9 per cent in 2003, the highest growth experienced since 2000.



Source: IMF, ICAO Air Transport Reporting Form A.

Figure 5-1. GDP and scheduled traffic growth — World (1993 – 2003)



Source: IMF, WEFA Group.

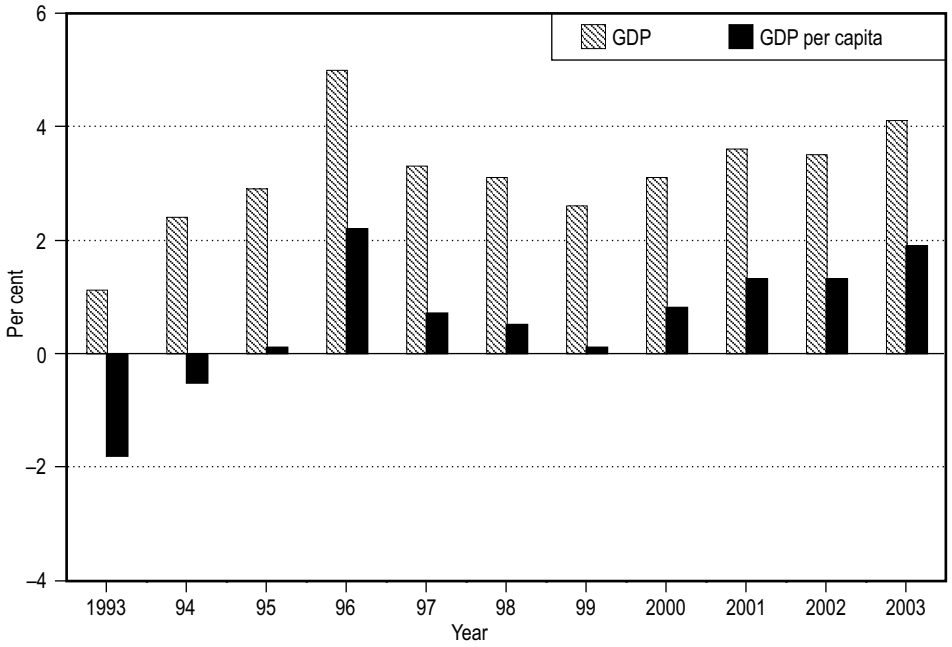
Figure 5-2. Annual change in real GDP and GDP per capita — World (1993 – 2003)

5.4 Over the 1993–2003 period, the aggregate economy of the **African region** grew at an average annual rate of 3.4 per cent, while GDP per capita increased at a rate of 0.9 per cent per annum in real terms. Figure 5-3 illustrates the year-to-year changes in the region's GDP and GDP per capita. Factors such as greater macroeconomic stability, modest progress in liberalizing markets and privatizing state enterprises helped the region's improved economic performance significantly in the second part of the 1990s. Favourable external conditions such as the rapid growth in world trade, surging private capital flows and a mini-boom in commodity prices (1994–1995) also helped. However, the rate of growth decreased somewhat in the latter part of the period concerned, particularly in sub-Saharan Africa. This can be attributed to recent increases in oil prices, the resurgence of civil conflict, and to losses from terms of trade resulting from weak commodity prices. The aggregate African economy is estimated to have grown at 4.1 per cent in 2003 compared to 3.5 per cent in 2002.

5.5 Over the 1993–2003 period, the aggregate economy of the **Asia/Pacific region** grew at an average annual rate of 4.2 per cent in real terms, and GDP per capita increased at 2.8 per cent per annum. Asia/Pacific has achieved the largest share in the world economy and has also been the fastest growing region despite a slowdown and recession when GDP growth dropped from 3.9 per cent in 1997 to –0.3 per cent in 1998. Following a financial crisis, the region regained its economic strength and GDP continued to grow well above the world average even in 2001 (3.9 per cent) despite a global slowdown that year. In 2002, the region's economy grew by about 4.6 per cent. Despite the adverse effects of the SARS outbreak in the first half of 2003, the economy bounced back in the second half of the year with a surge in domestic demand coupled with export growth boosted by increased global activity, the upturn in demand for high technology goods, favorable exchange rates, higher consumer confidence and a boost in tourism. It is estimated that the region's GDP grew at 6.0 per cent in 2003, the highest growth rate among ICAO regions. The year-to-year changes in the region's GDP and GDP per capita are illustrated in Figure 5-4.

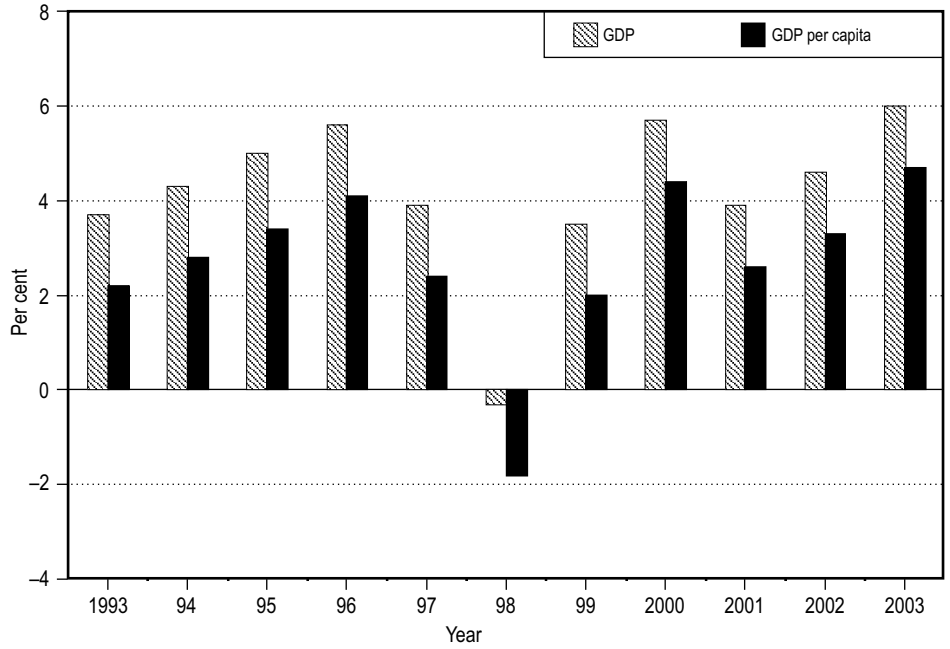
5.6 The aggregate economy of the **European region** went into decline starting in 1990, the primary reason being the serious contractions of the economies of Eastern Europe and the Commonwealth of Independent States (CIS). By 1997, total output was back to where it had been in 1989, but masked a persistent divergence between countries in Western and Eastern Europe. Over the 1993–2003 period, the GDP for the entire region (including the CIS), grew at an average annual rate of 2.0 per cent in real terms while the aggregate GDP per capita grew at a rate of about 1.6 per cent. It is estimated that the European economy grew by 1.3 per cent in 2003, to which the European Community (EC) contributed 0.4 per cent. Economies of Central and Eastern European countries grew in the aggregate at around 4.4 per cent while those of the CIS grew faster, at 7.6 per cent. Figure 5-5 illustrates the annual changes in GDP and GDP per capita for the region over the 1993-2003 period.

5.7 The economy of the **Middle East region** has been characterized by some pronounced cycles over the past decade, as illustrated in Figure 5-6, which presents the year-to-year changes in the region's GDP and GDP per capita in real terms. With political and economic stability in the region, GDP growth was strong in 1993, and growth, varying in strength, was sustained for the following seven years. In 2003, the economy achieved a rate of 5.4 per cent in real GDP growth, more than one percentage point higher than the previous year, benefitting from higher oil prices. Political instability and tensions continued to have a



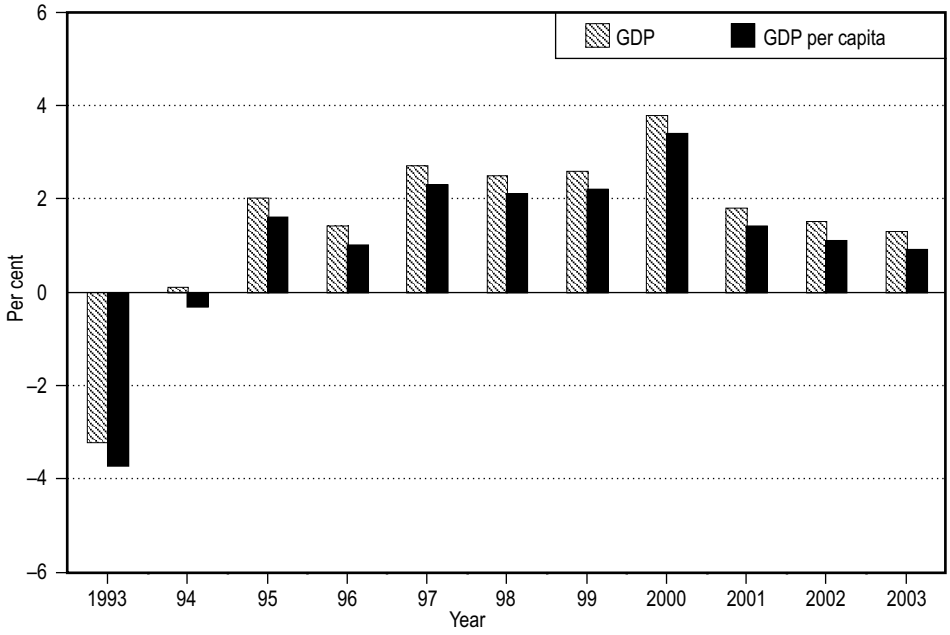
Source: IMF, WEFA Group.

Figure 5-3. Annual change in real GDP and GDP per capita — Africa (1993 – 2003)



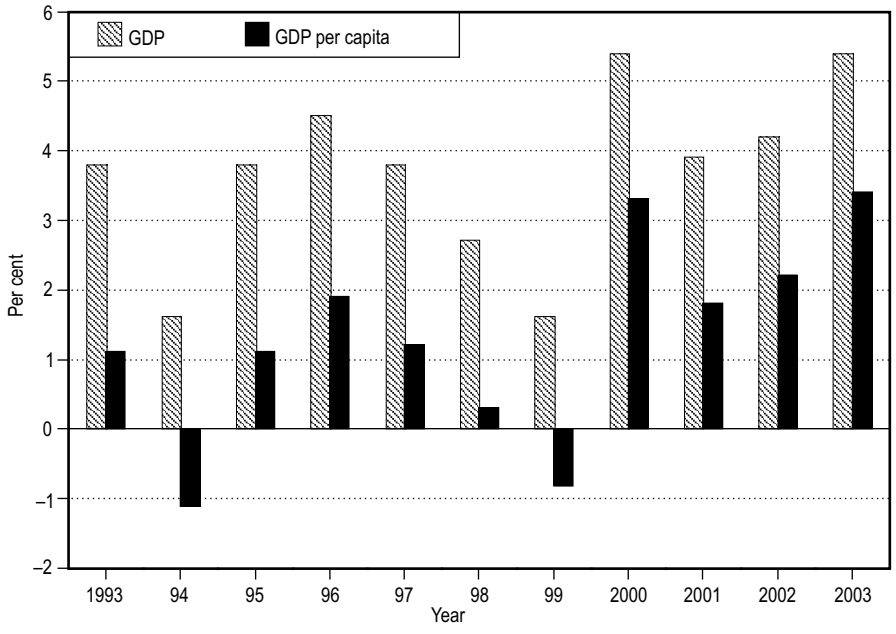
Source: IMF, WEFA Group.

Figure 5-4. Annual change in real GDP and GDP per capita — Asia/Pacific (1993 – 2003)



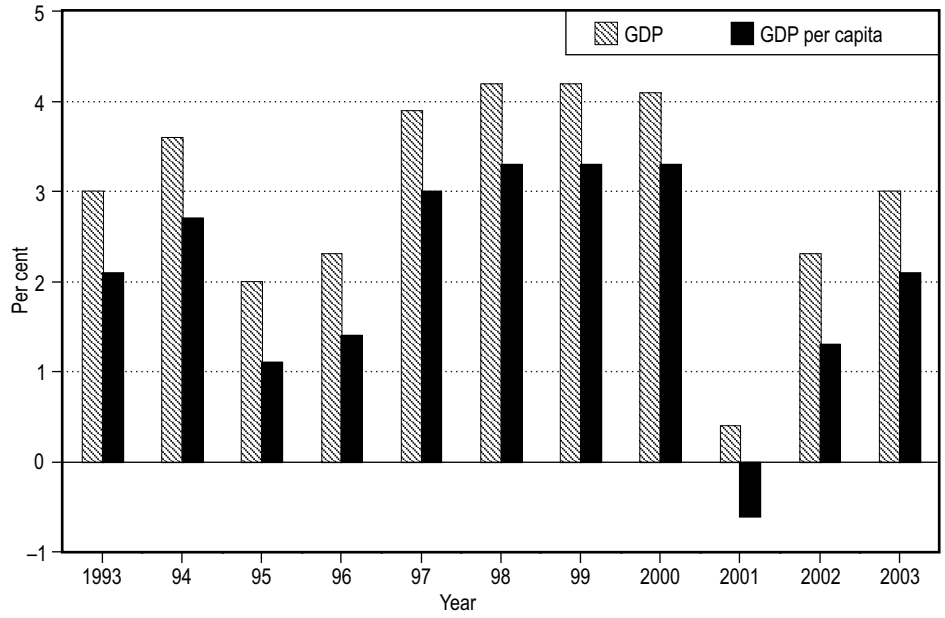
Source: IMF, WEFA Group.

Figure 5-5. Annual change in real GDP and GDP per capita — Europe (1993 – 2003)



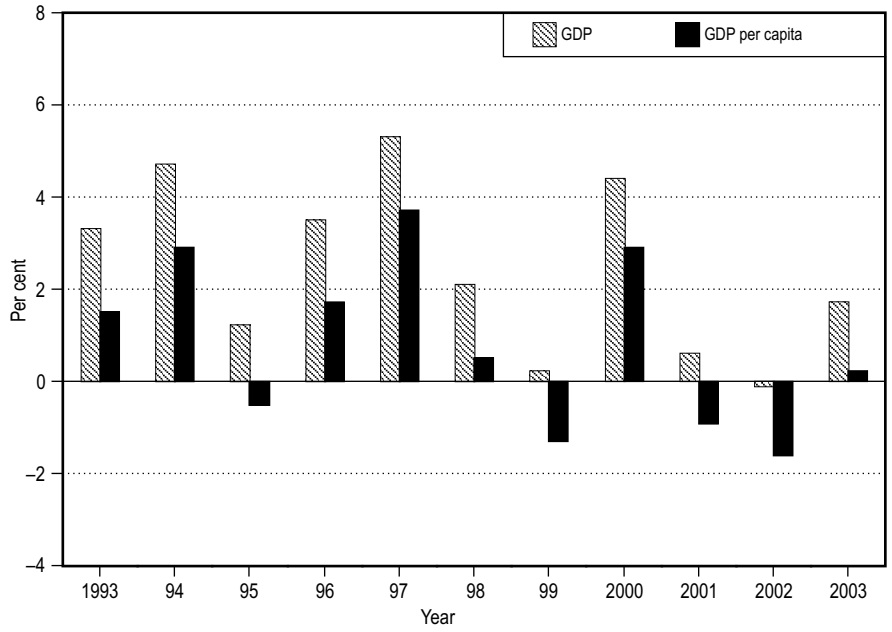
Source: IMF, WEFA Group.

Figure 5-6. Annual change in real GDP and GDP per capita — Middle East (1993 – 2003)



Source: IMF, WEFA Group.

Figure 5-7. Annual change in real GDP and GDP per capita — North America (1993 – 2003)



Source: IMF, WEFA Group.

Figure 5-8. Annual change in real GDP and GDP per capita — Latin America and the Caribbean (1993 – 2003)

marked negative influence on tourism and air travel to and from the region. Over the period concerned, the aggregate GDP for the Middle East grew at an average annual rate of 3.7 per cent in real terms, while GDP per capita averaged a 1.3 per cent growth rate per annum.

5.8 Over the 1993–2003 period, the economy of the **North American region** grew at an average annual rate of 3.1 per cent in real terms and GDP per capita increased at 2.1 per cent. The U.S. economic expansion, which began in 1991, has been the longest since 1945. By the end of 2000, though, an economic slowdown had affected economic activities with a worsening impact after the events of 11 September 2001. As a result, the year 2001 saw GDP growth of 0.4 per cent only. In the years 2002 and 2003 the region's economic growth was steadily recovering and grew by 2.3 and 3.0 per cent, respectively. The year-to-year changes in the region's GDP and GDP per capita are illustrated in Figure 5-7.

5.9 Over the 1993–2003 period, the aggregate economy of the **Latin American and Caribbean region** grew at an average annual rate of 2.4 per cent in real terms, whereas GDP per capita grew at 0.7 per cent. After record 5.3 per cent growth in GDP in 1997, the regional economy declined to 2 per cent growth in 1998 and further to 0.2 per cent growth in 1999. It managed to rebound in 2000 and grew by 4.4 per cent, in part as a result of the implementation of strong adjustment measures in many countries, but slumped again towards stagnancy in 2001 (0.6 per cent growth) and 2002 (-0.1 per cent). In 2003, GDP rebounded and it is estimated to have increased by about 1.7 per cent. The year-to-year changes in the region's GDP and GDP per capita are illustrated in Figure 5-8.

AIRLINE PRODUCTIVITY, INPUT PRICES, FINANCIAL PERFORMANCE AND AIRLINE PASSENGER YIELDS

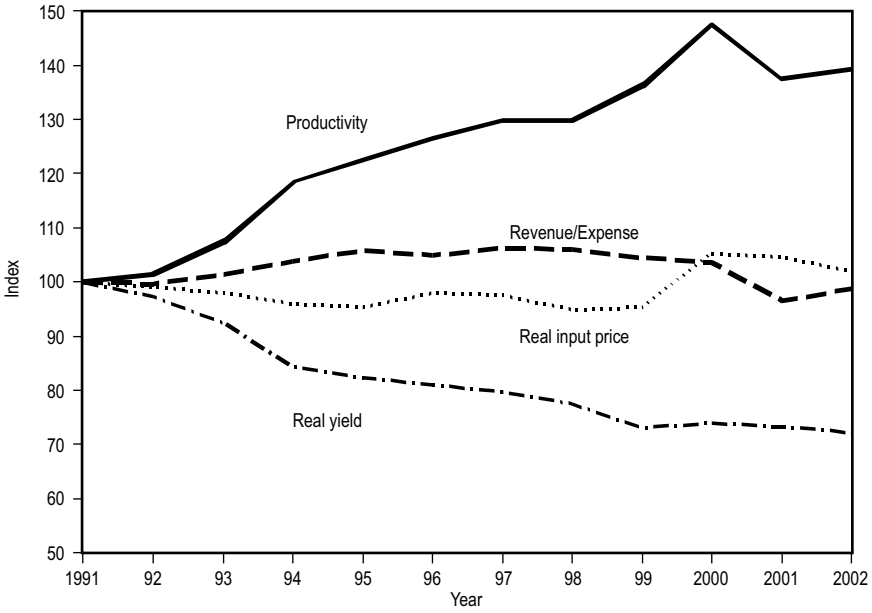
5.10 The scheduled airline industry has a long history of improving productivity. As a result, the growth in output (traffic volumes measured by tonne-kilometres performed or TKP) has been greater than the growth in the various inputs used by the industry (mainly labour, fuel and aircraft). For the purposes of the present forecasts, separate partial productivity measures for labour (TKP per employee), fuel (TKP per tonne of fuel consumed) and aircraft (TKP per tonne of fleet payload) have been developed. The trend in total productivity, which is a combination of the partial productivities, is shown in Figure 5-9. The average annual growth in productivity since 1993 has been about 2.9 per cent. The progressive absorption of new technology aircraft into airline fleets has been a major reason for the improvement in productivity. In particular, the new aircraft are more fuel- and labour-efficient. Improved aircraft utilization and load factors have also made important contributions. Although productivity declined in 2001, caused by a sudden output (TKP) contraction, flight cancellations, and personnel and fleet reductions, the total productivity index showed positive growth in 2002 (about 0.6 per cent), signalling an increase in overall demand and other factors which contribute to airline productivity growth.

5.11 Improvements in productivity can, in principle, be used either to reduce the real fares and rates paid by passengers and shippers, to pay for increases in real input prices (e.g.

wage rates, fuel prices), or to provide airlines with improved financial results. The trends in airline yields (revenue per tonne-kilometre performed) and input prices, deflated by the Consumer Price Index of industrial countries, are presented in Figure 5-9, together with the trend in the revenue/expense ratio representing the financial performance of the scheduled airline industry. Expenses are defined here as operating expenses, excluding taxes and interest on debt. It is clear that, over the past decade, airline customers have benefited from lower real yields made possible by the combined impact of productivity growth and declines in the index of real input prices. Real yields declined in 2001 even though the real input prices increased marginally. The 2001 decline in productivity translated into significant operational losses for the airlines. During 2002, the real yields continued to decline moderately while the input prices remained almost steady, creating some incentive to accelerate demand. Productivity increased slightly but the airlines still suffered minor losses. Preliminary estimates for 2003 indicate that the global yields in real terms have declined slightly as demand has shown signs of progressive improvement during the year.

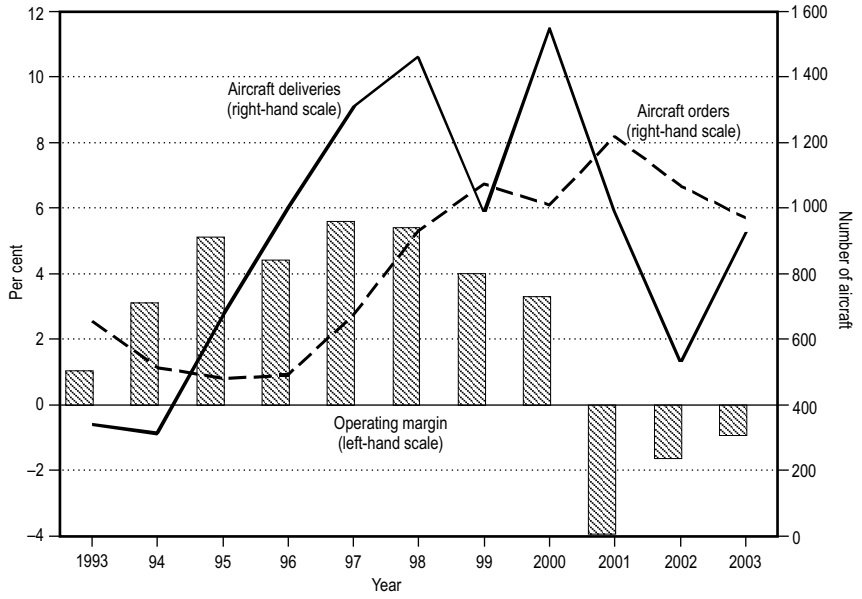
5.12 The high rate of aircraft deliveries in the early 1990s resulted from very high volumes of aircraft orders in earlier years, which were generated by strong economic growth and a ready availability of financing. Because of the lag between orders and deliveries, the buoyant market conditions which existed at the time of peak order levels had changed by the time the peak deliveries were made, which exacerbated the mismatch between supply and demand in the industry. With aircraft orders at low levels after 1990, aircraft deliveries returned to moderate levels in 1994 and 1995. Together with improved demand, this helped to reduce excess capacity in the industry. Aircraft orders started to increase again from 1996, surpassing aircraft deliveries for the first time since 1990. In 1999, orders dropped almost to the level of deliveries, but rebounded significantly in 2000 and 2001. In 2002, they again dropped below the level of deliveries, primarily due to airlines deferring their deliveries as a result of the traffic decline, as illustrated in Figure 5-10. Preliminary estimates for 2003 indicate that aircraft deliveries continued to drop while orders increased, almost reaching the level of deliveries.

5.13 The variations in the annual operating result, measured as a percentage of airline revenue, are illustrated graphically for the period 1993-2003 in Figure 5-11, which also shows the fluctuations in traffic growth over the same period. There is a positive correlation between this measure of financial return and the growth in traffic. In 1993 and 1994, yields became somewhat more stable compared to previous years and cost efficiency increased progressively, resulting in successive improvements in financial performance. Financial performance continued to improve in 1995 but was hampered slightly in 1996 by the increase in fuel prices. Financial performance improved further in 1997 and 1998 due to increases in average passenger load factors in 1997 and declines in fuel prices in both years. In 1999 it was less buoyant than in preceding years and in 2000 it deteriorated further, mainly due to substantial increases in fuel prices. The unprecedented traffic decline in 2001, combined with high fuel prices in the early part of the year and increasing security and insurance costs in the latter part led to a significant deterioration in airline financial performance. Subsequent to the events of 11 September 2001, during both years 2002 and 2003 airline financial results remained negative.



Source: IMF, ICAO Air Transport Reporting Forms A and EF.

Figure 5-9. Trends in performance of scheduled airline industry (1991 – 2002)

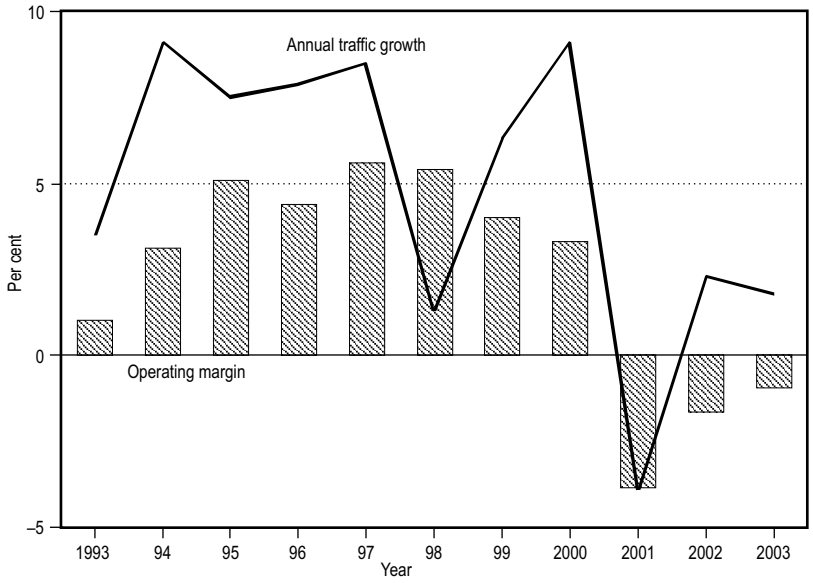


Source: ICAO Air Transport Reporting Form EF and aircraft manufacturers.

Figure 5-10. Financial return and aircraft supply — World (1993 – 2003)

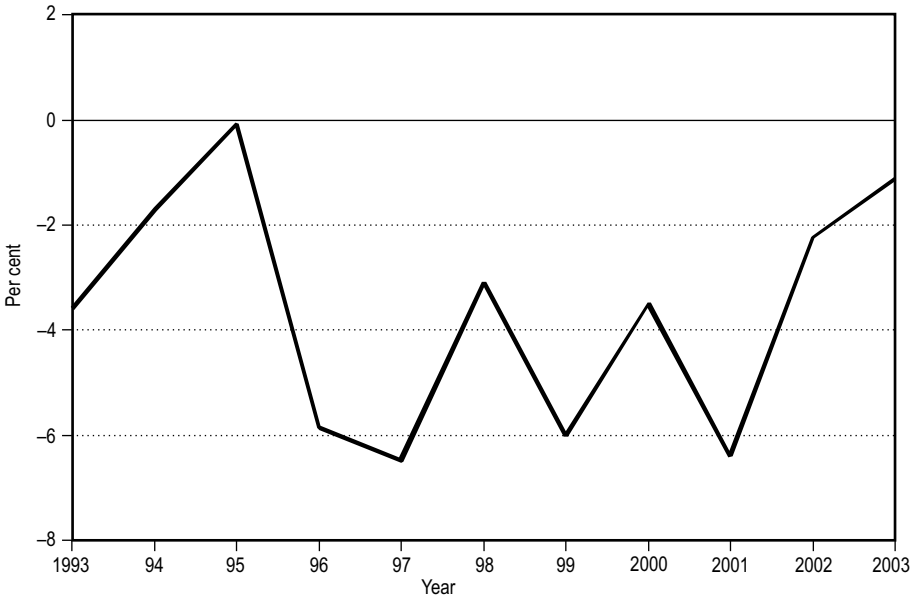
5.14 Changes in fuel prices have had important effects on costs and hence on both financial returns and airline yields at certain times in the past. In recent years, fuel price volatility has been short term, with limited impact on year-average price levels and airline yields. However, after soaring in 1999 and 2000 and moderate declines in 2001 and 2002, fuel prices increased again in 2003.

5.15 Airline yields are dependent on a number of factors such as productivity gains, operational expenses and level of competition. Major developments related to these factors include efficiencies achieved in fuel and labour costs as well as the continued introduction of new, more efficient aircraft types. As a result, over the period 1993-2003 world average scheduled passenger yields, expressed in real terms and measured in cents per passenger kilometre, declined at a 3.3 per cent average annual rate, contributing significantly to traffic growth. The annual changes ranged from -0.1 per cent to -6.5 per cent, as illustrated in Figure 5-12. For the regions, the average annual declines ranged from 5.4 per cent for the Middle East region to 2.1 per cent for the European region during the same period.



Source: ICAO Air Transport Reporting Forms A and EF.

Figure 5-11. Financial return and traffic growth of scheduled airline industry — World (1993 – 2003)



Source: ICAO Air Transport Reporting Forms A and EF.

Figure 5-12. World average scheduled passenger yields (1993 – 2003)

Chapter 6

Forecast Methodology and Main Assumptions

6.1 As a basis for the passenger traffic forecasts in this circular, econometric analyses were carried out to determine the historical relationship between airline passenger traffic, economic cycles and airline yield levels. These analyses were used to translate the expectations of future global economic development and yield levels into annual projections of traffic demand for the years 2004, 2005 and 2006 using the methodology described in the Appendix. These forecasts were then reviewed in light of the activities which could not be quantified by the econometric model.

6.2 Even though at the global level the model seems to be reliable, it has been less than adequate at the micro or regional level because of the influences of unique factors and uncertainties in the air transport industry in recent years. Therefore, annual projections of traffic demand for the years 2004, 2005 and 2006 on this occasion included a combination of both the econometric analyses and somewhat subjective inputs based on expectation of future development of economic and demographic factors as well as other factors. Due consideration was also given to the recorded activity in the first five months of 2004.

6.3 The projections for global and regional economic growth that have been used as a basis for ICAO's air traffic forecasts over the period to 2006 are presented in Table 6-1. These regional and global assessments of the economic outlook take into account the most recent forecasts from the IMF, OECD and the World Bank as well as the views of other organizations in both the governmental and private sectors. According to these projections, the world economy is expected to grow by 4.6, 4.4 and 4.2 per cent in 2004, 2005 and 2006, respectively.

6.4 The reasonably positive economic outlook augurs well for global traffic demand over the forecast period. The prospects for airline yields are closely related to cost developments and market conditions in the airline industry. It is expected that productivity improvement will continue to produce cost savings, but these savings will probably be used partly to offset the accumulated losses, and their effect on air fares will therefore be limited. Despite airline efforts at "hedging" fuel prices, airline fuel expenses are expected to stay volatile during the forecast period. Salaries and wages represent the largest airline expense item. Labour costs declined somewhat since 2001 mainly due to personnel reductions and concessions by airline staff but increased in 2002, promoting a slight increase in productivity. It is expected that cost pressures may increase over the next few years. These various cost pressures will provide a benchmark for airline yields, with revenues needing to be sufficient to cover costs over the

long term. However, in the short term, movements in yields will be influenced by competitive conditions in airline markets. It is assumed that the effects of the "fear and hassle" factors will eventually disappear.

6.5 Among the ICAO regions, economic growth in Asia/Pacific is expected to remain solid in 2004, in spite of a repeatedly weak economic performance by Japan since 2001, and to maintain momentum through to 2006. Having shown some resilience to geopolitical tensions and conflicts, the Middle East economy is expected to improve and maintain higher than world average growth through to the end of the forecast period. The African economy is also projected to improve in 2004 and particularly in 2005 and 2006. Having shown positive growth in 2002 after a recession in the two previous years, the economy of the Latin America and the Caribbean region is also expected to improve substantially in 2004 and then remain stable through 2005 and 2006. It is anticipated that the economy of the United States will show a robust growth in 2004, bringing the average growth rate for the North American region 1.5 percentage points higher than the previous year. The growth rates for the region for 2005 and 2006 are projected to be somewhat lower than for 2004. A weakness in internal demand, a tight fiscal policy and the appreciation of the Euro currency are anticipated to lead to lower than world average growth rates in the European region, although during the years 2005 and 2006 economic growth is expected to be higher than in the past decade.

Table 6-1. Economic growth (GDP) by region
(real average annual growth rates, per cent)

Region	Average annual growth (%) 1993-2003	Estimated 2003	Forecast 2004	Forecast 2005	Forecast 2006
Africa	3.4	4.1	4.2	5.4	4.8
Asia/Pacific	4.2	6.0	6.1	5.5	5.3
Europe	2.0	1.3	2.1	2.8	2.6
Middle East	3.7	5.4	4.1	5.0	5.0
North America	3.1	3.0	4.5	3.6	3.7
Latin America/Caribbean	2.4	1.7	3.9	3.7	3.7
World	3.2	3.9	4.6	4.4	4.2

Source: ICAO estimates based on data from the World Bank, International Monetary Fund (IMF) and other economic sources.

Chapter 7
Airline Traffic and Financial Forecasts

AIRLINE TRAFFIC FORECASTS

Global

7.1 The global and regional scheduled passenger traffic forecasts for 2004, 2005 and 2006, based on economic assumptions and other considerations, are presented in Table 7-1 and Figure 7-1. Global passenger traffic in terms of passenger-kilometres performed is expected to show a remarkable recovery and grow at 6.2 per cent in 2004. During 2005 and 2006 traffic is forecast to grow at 5.4 and 5.2 per cent, respectively.

7.2 Traffic growth will vary by geographic region because of the impact of specific local or regional factors. For the period 2003 – 2006 it is anticipated that the traffic of the airlines of the Asia/Pacific region will show the highest average annual growth rate of about 7.2 per cent (8.5 per cent for 2004 and over 6 per cent for both 2005 and 2006). The markets for the European and North American airlines will rebound in 2004 and will grow at over 5 per cent as a result of the economic recovery. The growth rates for 2005 and 2006 are projected to remain somewhat lower (except for the year 2005 for the European region) than for 2004. The airlines of the Middle East are expected to experience fairly strong traffic growth rates throughout the forecast period, well above the world average. Traffic of the airlines of Latin America and the Caribbean as well as Africa is expected to remain stable and grow somewhat below the world average during the forecast period.

Regions of airline registration

7.3 As depicted in Figure 7-2, scheduled passenger traffic of the airlines of the **African region** is expected to grow by 4.0, 5.0 and 4.3 per cent for the years 2004, 2005 and 2006, respectively, compared to world growth rates of 6.2, 5.4 and 5.2 per cent.

7.4 Scheduled passenger traffic of the airlines of the **Asia/Pacific region** is expected to grow above the world average during the whole forecast period. The traffic is forecast to grow at 8.5, 6.8 and 6.4 per cent during the years 2004, 2005 and 2006, respectively, compared to world airline traffic growth of 6.2, 5.4 and 5.2 per cent over the same period, as illustrated in Figure 7-3.

Table 7-1. ICAO scheduled passenger traffic forecasts — World and regions (2004 – 2006)
(passenger-kilometres performed)

Region of Airline Registration	1993 (billions)	2003 (billions)	Average Annual Growth (%) 1993-2003	FORECAST 2004 (billions)	2004 Growth (%)	2005 (billions)	2005 Growth (%)	2006 (billions)	2006 Growth (%)
Africa	43.3	66.9	4.4	69.6	4.0	73.1	5.0	76.2	4.3
Asia/Pacific	440.1	759.1	5.6	823.6	8.5	879.6	6.8	935.9	6.4
Europe	498.1	824.0	5.2	866.0	5.1	911.9	5.3	956.6	4.9
Middle East	58.4	117.5	7.2	125.4	6.7	134.0	6.9	143.3	6.9
North America	813.8	1 086.8	2.9	1 147.7	5.6	1 199.3	4.5	1 252.1	4.4
Latin America/ Caribbean	95.7	137.3	3.7	143.5	4.5	149.5	4.2	155.8	4.2
World	1 949.4	2 991.6	4.4	3 175.7	6.2	3 347.4	5.4	3 519.9	5.2

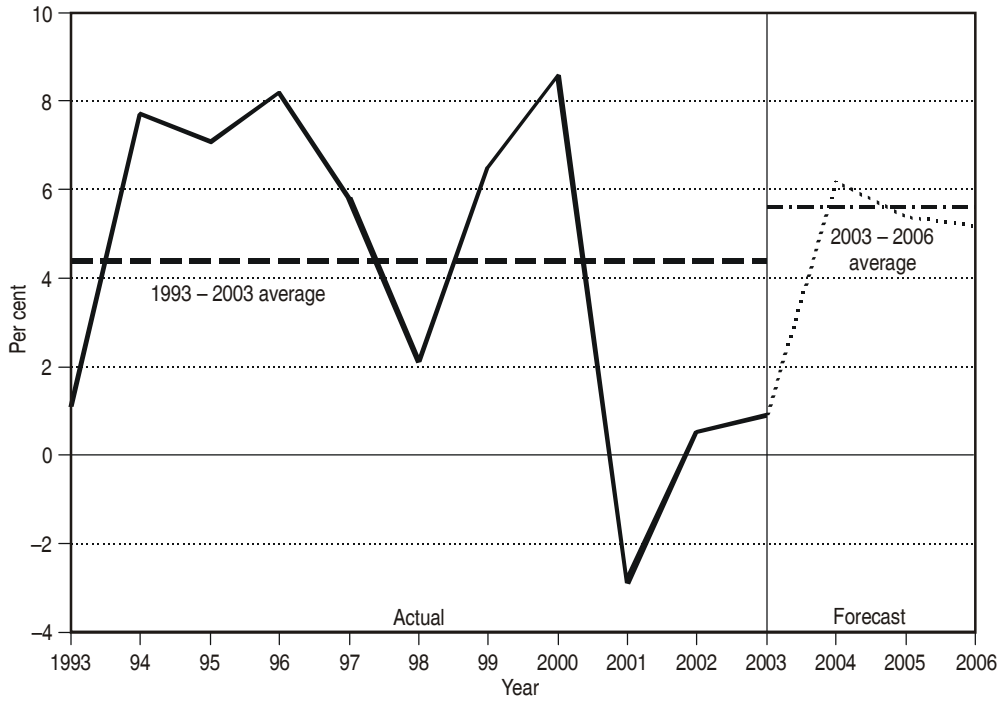


Figure 7-1. Scheduled passenger traffic growth (PKPs) — World (1993 – 2006)

7.5 Scheduled passenger traffic for the **European region** as a whole is expected to grow by 5.1 per cent in 2004, 5.3 per cent in 2005 and about 4.9 per cent in 2006 (compared to world growth rates of 6.2, 5.4 and 5.2 per cent), as depicted in Figure 7-4. The airlines of Western Europe are expected to follow this pattern over the forecast period, while traffic volumes for the CIS airlines are expected to grow steadily but at somewhat higher rates than those for Western Europe.

7.6 Scheduled passenger traffic for the airlines of the **Middle East region** is expected to grow by 6.7 per cent in 2004 and 6.9 per cent in both 2005 and 2006, well above the world growth rates, as depicted in Figure 7-5. These rates reflect expectations of a good economic performance in the region.

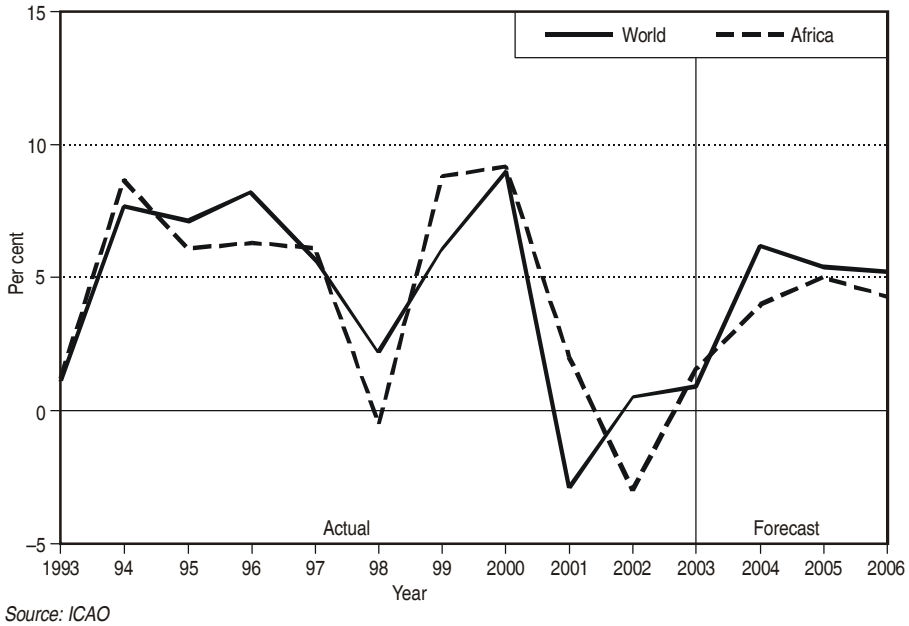
7.7 As shown in Figure 7-6, scheduled passenger traffic of the airlines of the **North American region** is expected to do well in 2004 and show 5.6 per cent growth, while in 2005 and in 2006 it is anticipated to increase by 4.5 and 4.4 per cent, respectively. Although the forecast growth rates for the region are below the expected growth pattern for the world as a whole, they represent impressive absolute growth considering the traffic volume of the region.

7.8 Scheduled passenger traffic of the airlines of the **Latin America and Caribbean region** is expected to resume a stable growth pattern over the forecast period along with economic activity. As illustrated in Figure 7-7, traffic of the airlines of the region is expected to grow by 4.5 per cent in 2004 and 4.2 per cent in both 2005 and 2006, somewhat below the world average growth rates for the same period.

GLOBAL AIRLINE FINANCIAL FORECAST

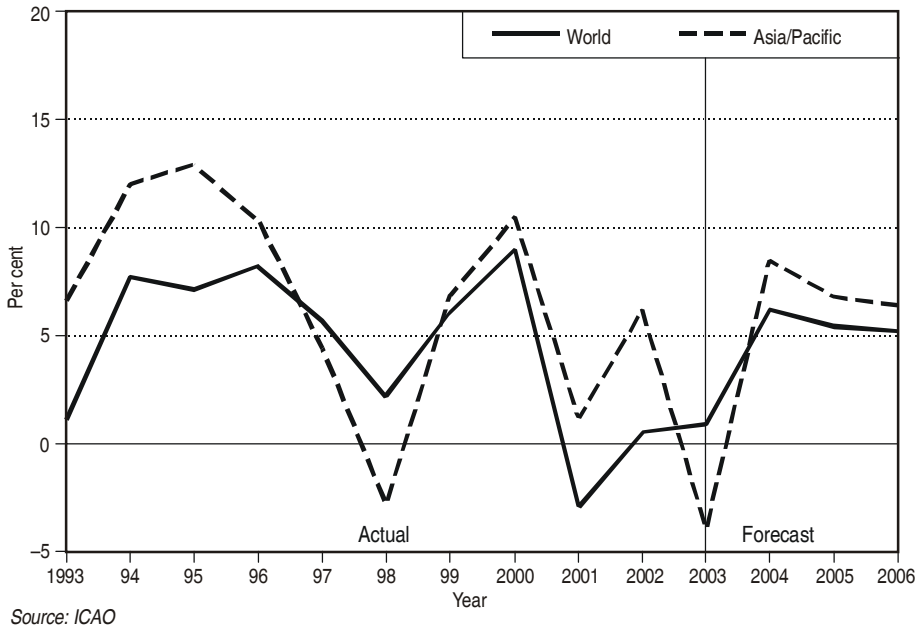
7.9 Financial trends in the airline industry are difficult to forecast because airlines are able to adjust capacity over time and manage yields through fare adjustments at relatively short notice to respond to (or to create) changes in demand. In addition, fluctuations in the value of the U.S. dollar complicate the interpretation and forecasting of global financial results which are presented in U.S. dollar terms. Also, as ICAO receives airline financial data on an annual basis only, the period between transaction and reporting is much greater than for traffic data, and there are significant gaps in reporting. Because of these considerations, the forecasts in this circular are restricted to indicative global trends in financial results.

7.10 The forecast for total revenues for scheduled airlines is based on assumptions for passenger yields and on the passenger forecasts presented above, together with further assumptions for the trend in the share of airline revenue from sources other than scheduled passengers (i.e. freight, mail, non-scheduled operations and incidental). On this basis, total revenues in current U.S. dollars are expected to increase substantially by about 7.5 per cent in 2004, and to slow down slightly to grow by 6.0 and 5.7 per cent in the years 2005 and 2006, respectively.



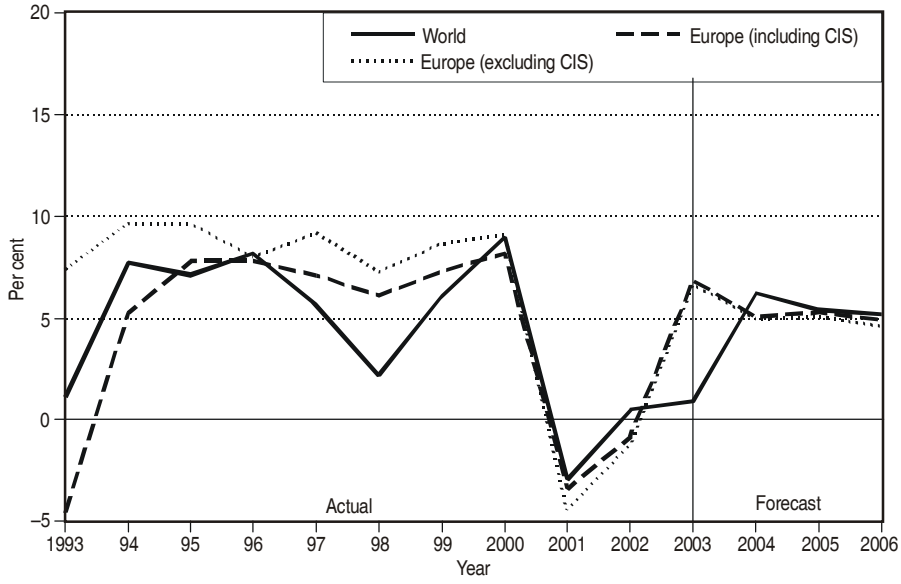
Source: ICAO

Figure 7-2. Scheduled passenger traffic growth (PKPs) — Africa and World (1993 – 2006)



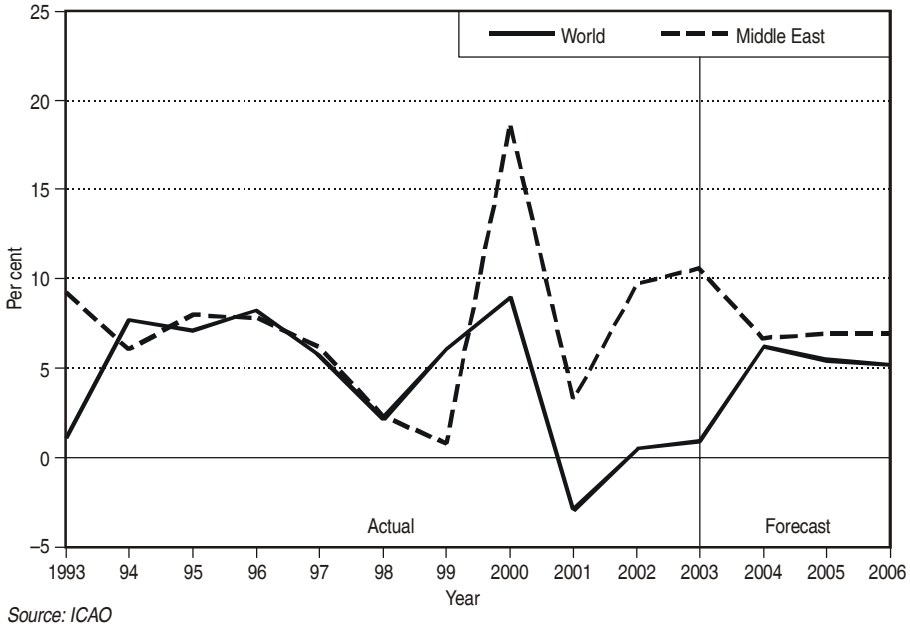
Source: ICAO

Figure 7-3. Scheduled passenger traffic growth (PKPs) — Asia/Pacific and World (1993 – 2006)



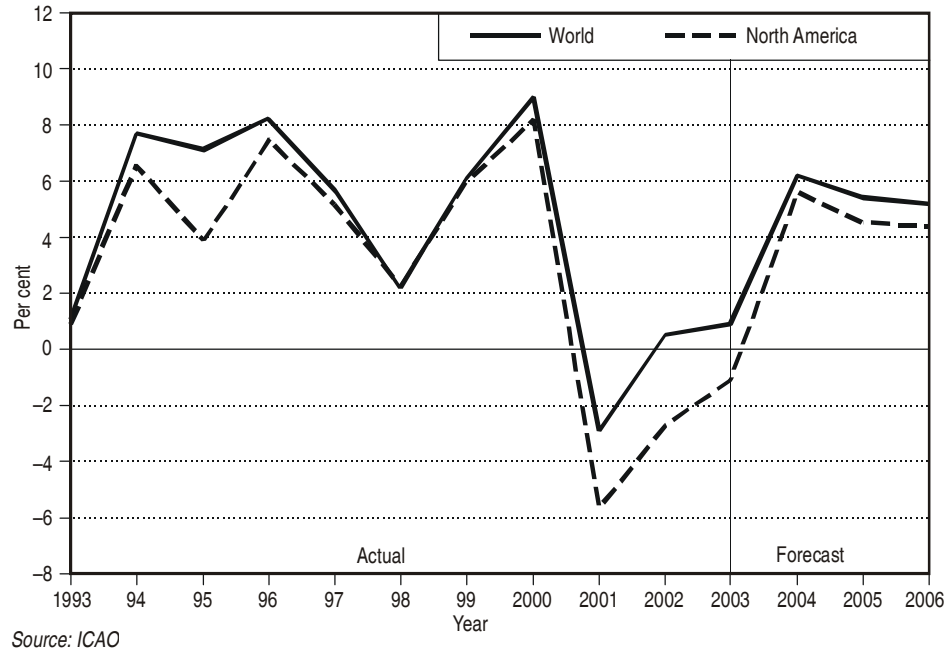
Source: ICAO

Figure 7-4. Scheduled passenger traffic growth (PKPs) — Europe and World (1993 – 2006)



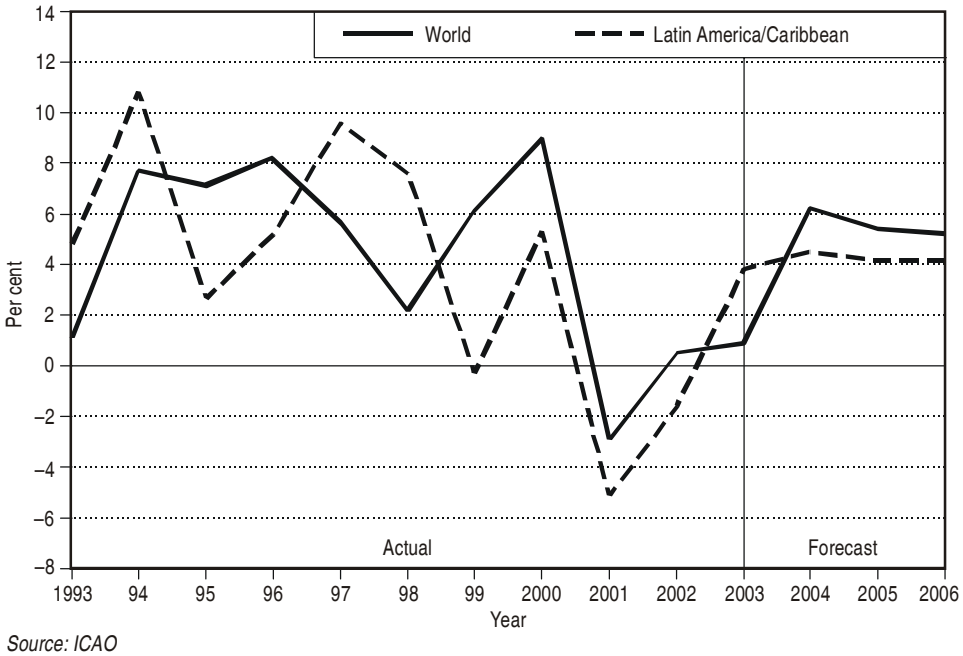
Source: ICAO

Figure 7-5. Scheduled passenger traffic growth (PKPs) — Middle East and World (1993 – 2006)



Source: ICAO

Figure 7-6. Scheduled passenger traffic growth (PKPs) — North America and World (1993 – 2006)



Source: ICAO

Figure 7-7. Scheduled passenger traffic growth (PKPs) — Latin America and the Caribbean and World (1993 – 2006)

7.11 The forecast for airline expenses is based on assumptions for the expected trends in quantity of inputs (labour, fuel and aircraft capacity) and the prices of those inputs, the latter being primarily determined by the outlook for general inflation. Airlines are taking steps to trim employment levels and generally improve productivity in order to contain costs. In the light of these considerations, airline expenses in current U.S. dollars are expected to increase at the rate of about 5.3 per cent in 2004 and grow by 5.2 and 5.1 per cent in the years 2005 and 2006, respectively.

7.12 The operating result for the world's scheduled airlines is the difference between operating revenues and expenses, the forecasts of which have been made independently; both are subject to significant margins of error. It is therefore not possible to forecast the operating result with any reasonable degree of certainty. Nevertheless, the above forecasts of operating revenues and expenses imply that the operating result as a percentage of operating revenues will improve to show an operating profit of about 1 per cent in 2004. This result improves progressively to about 1.9 per cent in 2005 and 2.5 per cent in 2006. These estimates suggest a gradual improvement in the financial outlook for the global airline industry during the forecast period, in line with expectations for traffic growth and general economic development, barring any unforeseen events of significance.

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX

THIS PAGE INTENTIONALLY LEFT BLANK

Appendix
Methodology for Traffic Forecasts

1. Short- or medium-term air transport forecasting methods depend heavily on careful analysis of recent trends in the aviation industry and of the operating environment as well as economic and demographic factors affecting air travel and the cost of air travel itself.

2. As a basis for the development of traffic forecasts, econometric analyses were carried out which established a relationship between passenger traffic demand, GDP and airline yields. Several econometric models were developed at global and regional levels. While at a global level these models appear to provide reliable results, they have been less adequate at the regional level.

3. Based on forecasts of economic developments and expectations of yield, traffic forecasts for the years 2004, 2005 and 2006 were estimated using the econometric model referred to in 6 below. The forecast traffic growth rates were then reviewed in the light of recent trends in the airline operating environment and prospective changes in other factors which could not be accommodated in the econometric analyses.

4. The basic model form used for the global analysis is described below:

$$y = a \bullet x_1^{b_1} \bullet x_2^{b_2}$$

where:

y = passenger-kilometres performed (PKP)

x_1 = gross domestic product in real terms (GDP)

x_2 = passenger revenue per passenger-kilometre in real terms (PYIELD)

5. The a, b_1 and b_2 are constant coefficients whose values were obtained by statistical estimation procedures using econometric analysis; b_1 and b_2 are equal to the elasticities of demand with respect to corresponding x_1 (GDP) and x_2 (PYIELD), i.e. elasticities of income and price. A "Dummy" variable has been introduced to capture the impact of recent changes in the world economy and traffic trends.

6. Using logarithmics, the above relationship was transformed into the equivalent linear relationship $ln\ y = a + b_1 lnx_1 + b_2 lnx_2$. Annual data covering a period of 24 years were

used in the subsequent econometric (least squares regression) analysis, with the following results at the global level:

$$\begin{array}{lcccc} ln\ \text{PKP} = & 5.374 + 1.29\ ln\ \text{GDP} & -\ 0.65\ ln\ \text{PYIELD} & -\ 0.08\ (\text{Dummy}) & R^2 = 0.974 \\ & (-2.6\ ) & (-1.8) & (-\ 2.3) & \text{S.E.} = 0.06 \end{array}$$

R^2 = coefficient of correlation
S.E = standard error of the estimate
( ) = "t" values of the corresponding coefficient estimates.

7. The figures in brackets are the "t" values of the corresponding coefficient estimates. The "t" value corresponding to a particular coefficient estimate is a statistical measure of the confidence that can be normally placed in the estimate. It should be noted that the "t" value corresponding to the yield in the estimated passenger model is less than 2. In general, the larger the magnitude of the "t" value, the greater the statistical significance that can be placed upon that value. However, a low "t" value does not necessarily imply that the model is not suitable for forecasting purposes, as in the case here. The values of the coefficients derived from the econometric analysis are relative and not absolute as bias and variance among coefficients always exist because explanatory variables are not always mutually independent. The R^2 value of 0.974 for the estimated passenger model indicates that the major part of the variation of the dependent variable, in this case PKP, has been accounted for and explained by the model. In addition, in order to measure the effectiveness of the forecasting application, the actual historical results were compared with those that were predicted from the model and found to be satisfactory.

— 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.

ISSN 1727-0154
3/05, E/P1/1200

Order No. CIR307
Printed in ICAO

ISBN 92-9194-499-8