

GLOBAL QUANTITATIVE INDICATORS FOR EVALUATING THE DEGREE OF LIBERALIZATION¹

(ICAO Secretariat)

1. SUMMARY

1.1 As one of the tasks requested by the 36 Session of the Assembly, the Secretariat developed three types of global quantitative indicators for evaluating the degree of liberalization of international air transport services. The first and second indicators track the development of liberalization in terms of number/percentage of liberalized country-pair routes and scheduled passenger frequencies offered on such routes, respectively. The third indicator compares the opportunities created by liberalization with the actual utilization of such opportunities by airlines. The major findings from the analysis of these indicators are that there has been a steady development of air transport liberalization (with 32 per cent of country-pairs and 57 per cent of frequencies covered by liberalization in 2009); that the progress of liberalization varies widely amongst the regions, between intra- and inter-regional levels, as well as between high and low traffic routes; and that the opportunities created by liberalization might not necessarily match the commercial interests and business priorities of airlines, at least in the short term.

2. BACKGROUND

2.1 At the 36th Session of the Assembly, the Economic Commission, when discussing ICAO's role in facilitating liberalization, requested that ICAO "develop some kind of global quantitative indicators for evaluating the degree of liberalization, which could be useful for fostering and facilitating the air transport liberalization process".

2.2 At its first meeting of the 187th Session, the Air Transport Committee reviewed the work carried out by the Secretariat to develop global quantitative indicators, which had been referred to the Committee for consideration and report to the Council. The Committee provisionally agreed to the proposed indicators, with the understanding that the methodology and data used would be reviewed when undertaking future updates. Based on this recommendation, the Council endorsed the three types of indicators provisionally and approved their annual updating.

2.3 Sections 3 and 4 of this report, as well as Figures and Tables, are an updated version of the Council working paper C-WP/13336 on this subject.

3. METHODOLOGY USED TO DEVELOP INDICATORS

3.1 Air services agreements (ASAs) between and amongst States govern the operation of international air transport services. The liberalization of ASAs reflects changes in the economic regulatory environment. The indicators are designed to serve as a yardstick to measure the degree of liberalization by focussing on scheduled passenger services conducted under "liberalized ASAs".

¹ This paper is intended to supplement to A37-WP/5 EC/1 "Developments in International Air Transport Regulation and Liberalization" presented by the Council of ICAO.

3.2 The first step is to determine what constitutes “liberalized ASAs”. Over 70 per cent of the ASAs concluded/amended during the past decade contain one or more liberal elements, but in most instances, liberalization with respect to market access is limited to a specific city/airport-pair level. Liberalization encompassing a whole country-pair or much wider region has been achieved primarily through the adoption of an “open skies” agreement model and/or a group approach involving regional or sub-regional liberalization arrangements. Therefore, the following two types of agreements were selected as representative of liberalized ASAs:

- a) **Bilateral “open skies” ASAs.** Based on the information collected by the Secretariat, including the records contained in Doc 9511, *Database of the World’s Air Services Agreements* (WASA), a bilateral ASA was classified as “open skies” if it contains at least the following liberal elements: unrestricted traffic rights (at a minimum covering Third, Fourth and Fifth Freedoms), multiple airline designation with no route limitations, free determination of capacity, and dual disapproval (or country of origin) or free pricing tariff regime. The number of bilateral “open skies” ASAs has been reported every year in the Annual Report of the Council.
- b) **Regional/plurilateral liberal ASAs.** The Secretariat also compiled and published a list of regional and plurilateral air transport liberalization agreements or arrangements on the ICAO website: www.icao.int/icao/en/atb/epm/Ecp/EcpDatabase.htm. Those agreements/arrangements, which liberalize Third, Fourth and Fifth Freedoms in respect of scheduled passenger services amongst the parties to the agreement, were selected as “regional/plurilateral liberal ASAs”.

The selection of the above agreements as liberalized ASAs means that the indicators generally capture the highly liberal end of the spectrum of ASAs. It is recognized that the selected liberalized ASAs, especially the regional/plurilateral ones, have heterogeneities in terms of the degree of “openness” in their provisions, and effective/actual implementation in practice. However, quantifying such differences is difficult and unwarranted due to insufficient details available on some agreements, as well as the need to minimize an element of subjective judgements².

3.3 According to the relationships of the parties to the selected liberalized ASAs, a yearly list of country-pairs governed by liberalized ASAs (hereinafter called liberalized country-pair routes) was produced. For ease of comparison with traffic data and considering traffic directionality, “Country A–Country B” and “Country B–Country A” are counted as two country-pairs. For example, in 2009, there were a total of 4 412 liberalized country-pair routes in the world.

3.4 The next step is the aggregation of scheduled passenger traffic data at the country-pair level corresponding to the basic unit of ASAs. Since the coverage of “actual” scheduled passenger traffic data maintained in ICAO’s On-Flight Origin and Destination (OFOD) database is not yet sufficiently complete for this exercise, the OAG-BACK airline schedule database was used to obtain scheduled passenger frequencies from 1995 to 2009. OAG-BACK offers the most comprehensive set of airline “schedule” data (not “actual” traffic data) presently available although not all airlines report their schedules accurately (for example, scheduled operations of charter airlines). In 2009, there were a total of 5 455 directional country-pair routes having frequencies of direct flights (i.e. either non- or multi-stop flights or both), 4 986 of which have non-stop flights. Please note that direct flight data count a single flight with multi-stops twice or more according to the number of stops.

3.5 In order to look at the regional differences in the degree of liberalization, the country-pair data have been grouped based on the six ICAO statistical regions (Europe, Africa, Middle East,

² One of the attempts to quantify the level of “openness” of ASAs is the air liberalization indexes developed by the World Trade Organization (http://www.wto.org/english/tratop_e/serv_e/transport_e/review2_e.htm#quasar). The construction of such indexes involves the assignment of specific weights to each provision of ASAs. However, the choice of the weights is arbitrary and many options exist.

Asia/Pacific, North America and Latin America)³. They also cover the intra-regional level (i.e. within the same region) as well as the inter-regional level (i.e. between these regions). The data for each ICAO region consist of all the country-pair routes to/from and within the region concerned (i.e. including those which are either origin or destination or both). In other words, the inter-regional country-pair routes were double counted in the two ICAO regions (for example, routes “between Europe and North America” were included both in “Europe” and “North America”).

3.6 By matching ASAs’ data with traffic data, three types of indicators have been developed. The first and second indicators track the development of liberalization in terms of number/percentage of liberalized country-pair routes and frequencies offered on such routes, respectively (Figures 1 and 2). The third indicator compares the available opportunities created by liberalized ASAs with the actual utilization of such opportunities by airlines, i.e. actual services operated (Figure 3). The details of these three indicators are summarized in Tables 1 and 2.

4. MAJOR FINDINGS

4.1 For ease of usage and comprehension, the indicators that have been developed are simple descriptive statistics, and as such they are not designed to explain the impact of liberalizing air services on traffic. The causal relationship between the volume or growth of traffic and the liberalized ASAs could only be studied through the conduct of advanced econometric analysis (i.e. the identification and estimation of empirical equation models by using statistical techniques), which is beyond the scope of the present project.

4.2 Bearing in mind this statistical limitation, the major findings of the analysis of these indicators are summarized below:

- a) There has been a steady development of air transport liberalization since the mid-1990s. In 2009, about 32 per cent of the country-pairs with non-stop scheduled passenger services and about 57 per cent of the frequencies offered were between countries which have embraced liberalization (compared with about 8 and 38 per cent, respectively, a decade ago)⁴.
- b) The degree of liberalization varies widely among the regions. Africa, Europe and North America show a more liberal picture (because of the extensive coverage of regional/plurilateral ASAs in the first two regions) while Asia/Pacific remains at the rear of this trend.
- c) Liberalization achieved at the intra-regional level has moved ahead of the inter-regional level due to the expansion of regional/plurilateral ASAs (leading to big jumps in intra-regional numbers during the 2000-2001 and 2004-2005 periods).
- d) The consistently higher share of frequencies offered, relative to the number of liberalized country-pair routes, indicates that, in the aggregate (except for North America and Africa), liberalization of ASAs has been more advanced on high traffic country-pairs than on country-pairs with lower traffic volumes.

³ ICAO’s statistical regions were used in order to be consistent with ICAO’s traffic statistics and forecast. However, regional break-down may also be done in various other ways, for example, based on ICAO’s Regional Air Navigation Plans, the International Monetary Fund (IMF)’s economic outlooks classification, or the International Air Transport Association (IATA)’s Traffic Conference areas. Since the regional break-down is projected also for the proposed high-level indicators in the Organization’s Business Plan, the appropriateness of the use of ICAO’s statistical regions will be reviewed in this context.

⁴ Statistical tests suggest that the overall result or general trend is not significantly changed even if multi-stop flights are included. The same robustness applies to b), c) and d).

- e) About 60 per cent of liberalized country-pair routes do not have corresponding direct flights, indicating that the opportunities created by liberalized ASAs might not necessarily match the commercial interests and business priorities of the airlines, at least for the short term. However, this does not mean that the opportunities created by liberalized ASAs for such country-pairs are of no value because there sometimes exists codesharing, indirect and cargo operations, and a better utilization might be achieved in the longer term.

— — — — —

Figure 1. Liberalized Country-Pair Routes with Non-Stop Flights

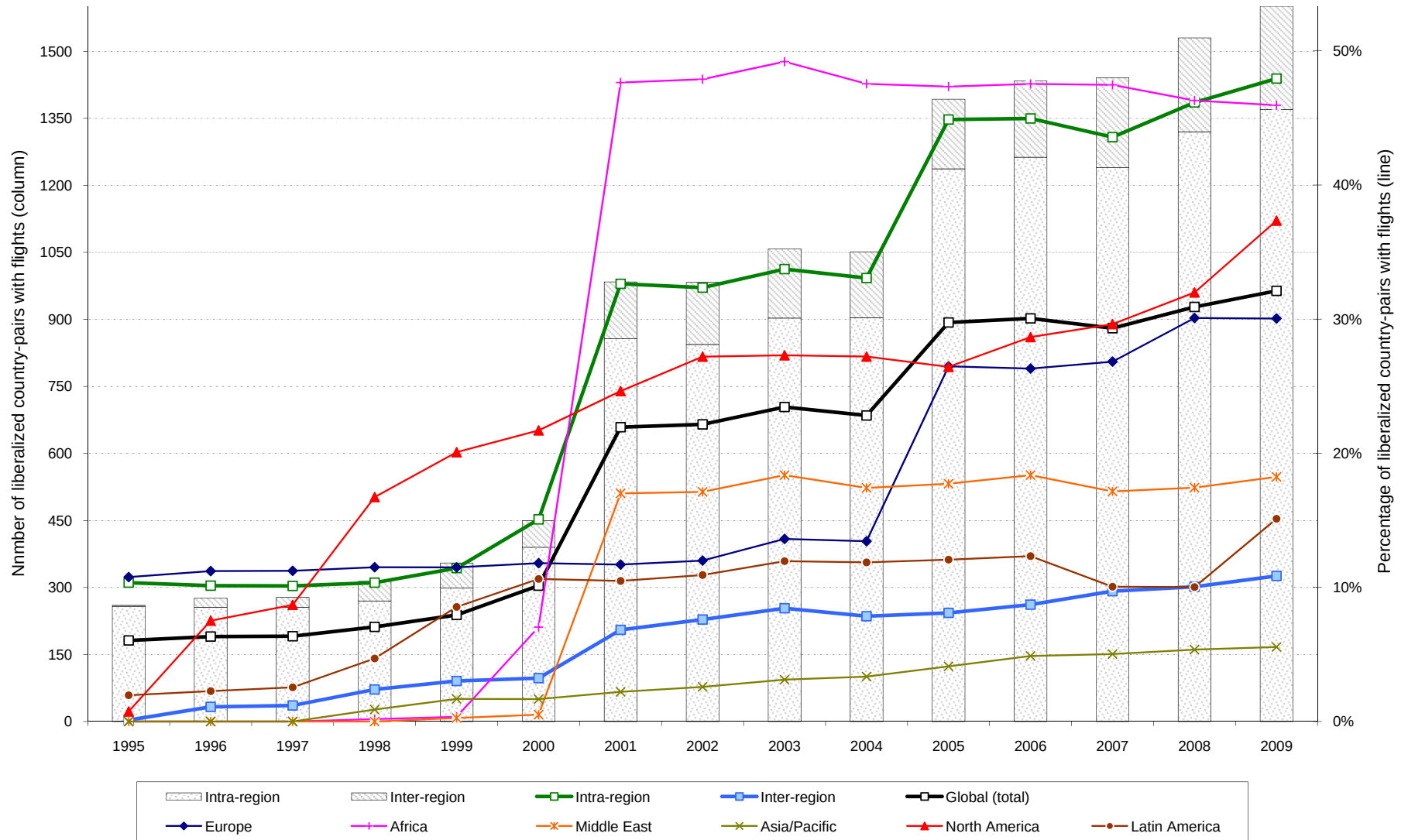


Figure 2. Non-Stop Flight Frequencies on Liberalized Country-Pair Routes

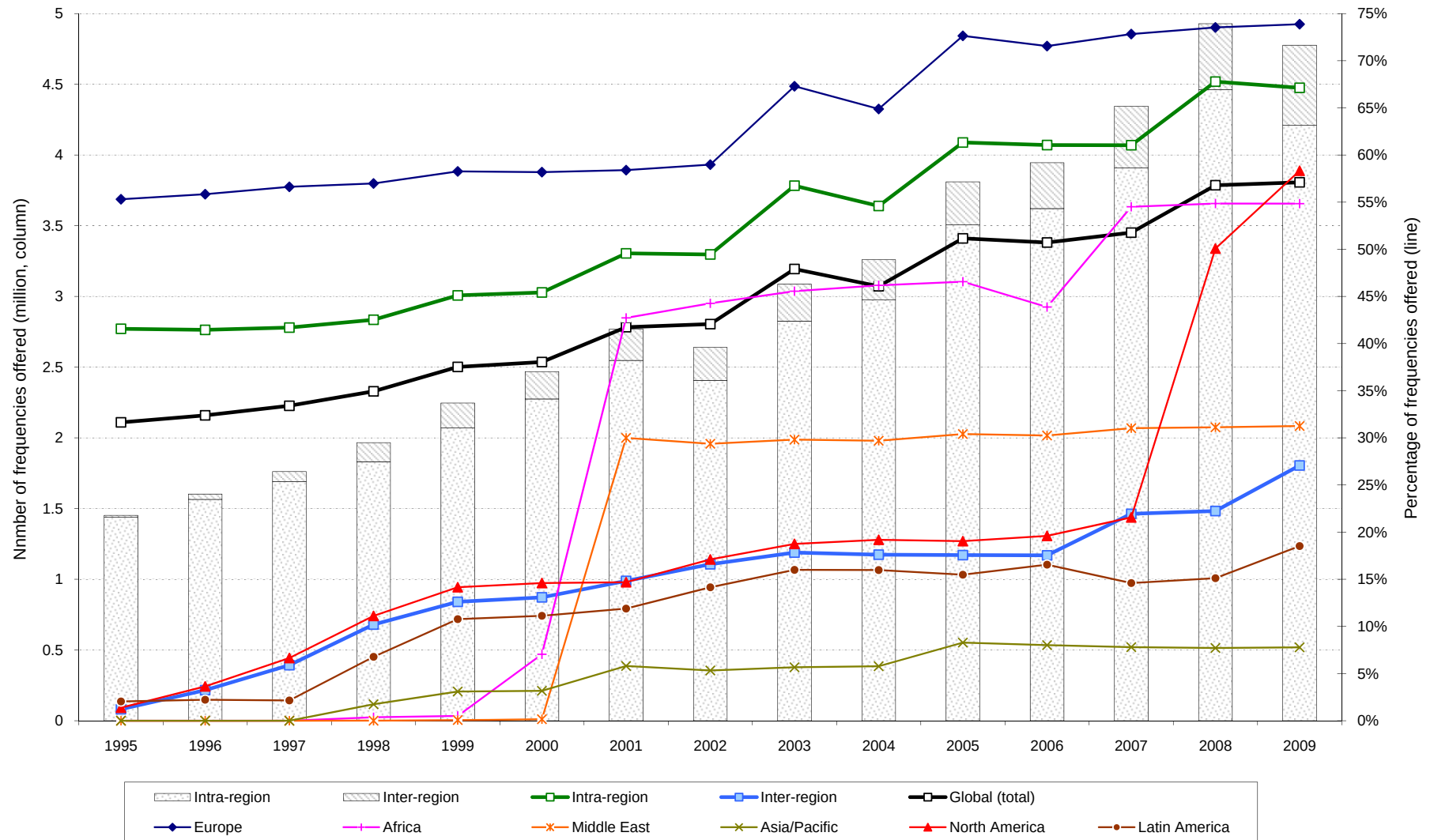


Figure 3. Regulatory Network of Liberalization vs. Actual Network Operated by Airlines

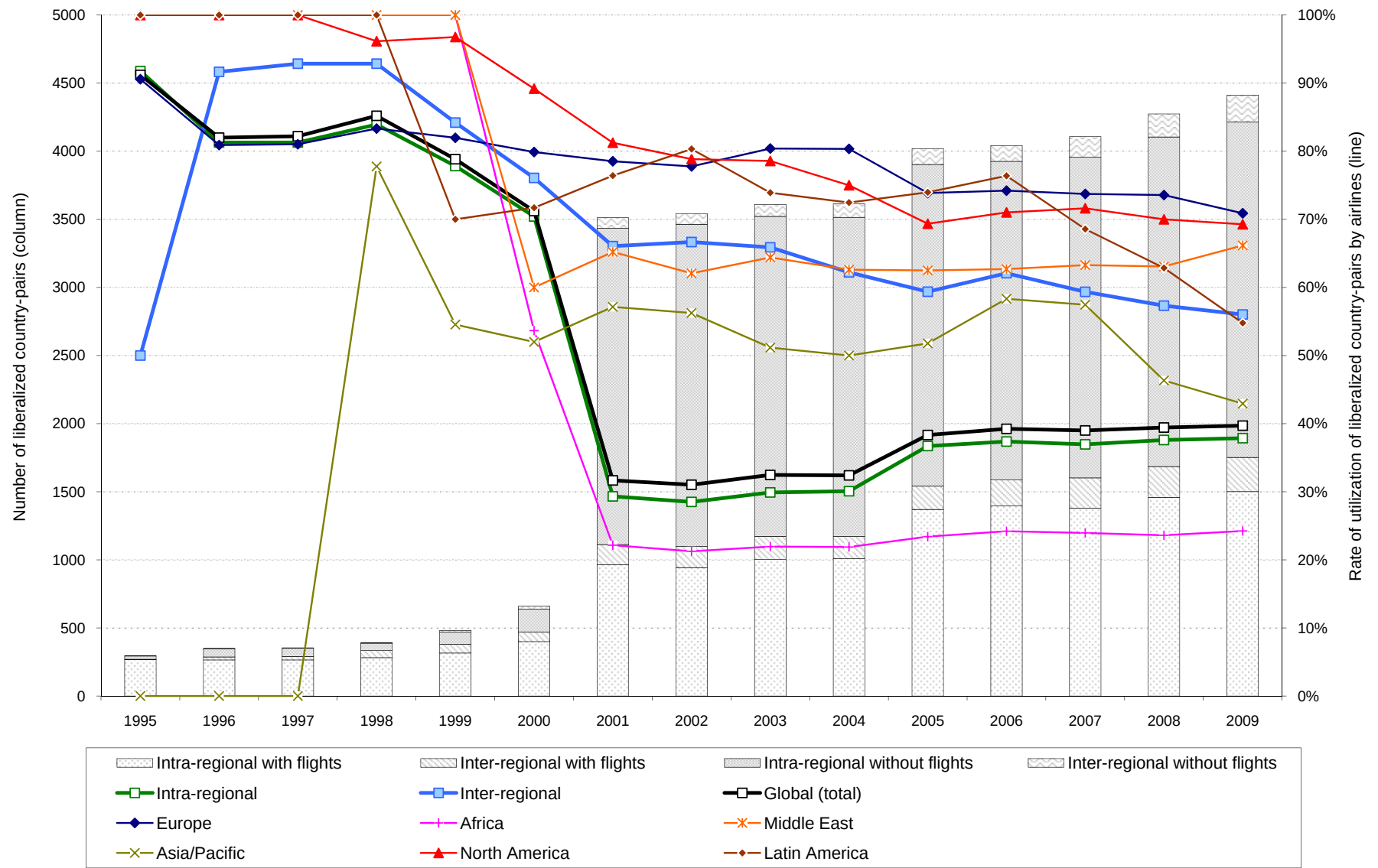


TABLE 1. SUMMARY OF INDICATOR DATA (in numbers)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
A. Liberalized country-pair routes with non-stop flights [Figures 1]															
Europe	246	260	260	270	274	278	278	278	318	323	648	656	692	790	789
Africa	0	0	0	2	4	80	535	533	551	533	542	560	562	545	567
Middle East	0	0	0	0	2	4	132	131	142	135	142	151	152	158	170
Asia/Pacific	0	0	0	10	18	18	24	28	34	38	48	58	62	66	68
North America	2	20	22	42	52	56	68	74	80	80	78	88	96	103	121
Latin America	14	16	18	34	61	74	74	78	88	89	91	92	78	78	117
Inter-regional	2	20	22	44	56	60	127	139	155	147	156	171	201	210	231
Intra-regional	258	256	256	270	299	390	857	844	903	904	1,237	1,263	1,240	1,320	1,370
Global (total)	260	276	278	314	355	450	984	983	1,058	1,051	1,393	1,434	1,441	1,530	1,601
B. Liberalized country-pair routes without non-stop flights															
Europe	30	70	72	66	70	70	76	82	80	79	232	236	256	292	331
Africa	0	0	0	0	0	84	2,359	2,361	2,347	2,365	2,256	2,242	2,294	2,319	2,301
Middle East	0	0	2	2	2	6	98	101	94	103	106	101	104	102	96
Asia/Pacific	2	2	2	8	26	32	32	36	52	50	64	62	72	98	116
North America	0	2	4	10	10	18	28	30	32	32	46	50	52	57	71
Latin America	6	4	2	4	39	32	32	44	50	49	55	52	62	62	113
Inter-regional	2	4	6	12	20	32	97	95	103	115	132	135	173	186	217
Intra-regional	34	70	70	66	107	178	2,431	2,464	2,449	2,448	2,495	2,473	2,494	2,558	2,594
Global (total)	36	74	76	78	127	210	2,528	2,559	2,552	2,563	2,627	2,608	2,667	2,744	2,811
C. Liberalized country-pair routes with direct flights [Figures 3]															
Europe	250	267	269	280	282	278	278	280	320	323	650	662	699	796	794
Africa	0	0	0	2	4	88	641	615	636	634	655	678	684	676	695
Middle East	0	0	2	2	4	6	150	144	152	149	155	158	162	164	176
Asia/Pacific	0	0	0	14	24	26	32	36	44	44	58	70	77	76	79
North America	2	22	26	50	60	66	78	82	88	84	86	98	106	112	133
Latin America	20	20	20	38	70	76	81	98	102	100	108	110	96	88	126
Inter-regional	2	22	26	52	64	70	148	156	170	163	171	190	222	227	251
Intra-regional	268	265	265	282	316	400	964	943	1,002	1,008	1,370	1,396	1,380	1,458	1,501
Global (total)	270	287	291	334	380	470	1,112	1,099	1,172	1,171	1,541	1,586	1,602	1,685	1,752
D. Liberalized country-pair routes without direct flights [Figure 3]															
Europe	26	63	63	56	62	70	76	80	78	79	230	230	249	286	326
Africa	0	0	0	0	0	76	2,253	2,279	2,262	2,264	2,143	2,124	2,172	2,188	2,173
Middle East	0	0	0	0	0	4	80	88	84	89	93	94	94	96	90
Asia/Pacific	2	2	2	4	20	24	24	28	42	44	54	50	57	88	105
North America	0	0	0	2	2	8	18	22	24	28	38	40	42	48	59
Latin America	0	0	0	0	30	30	25	24	36	38	38	34	44	52	104
Inter-regional	2	2	2	4	12	22	76	78	88	99	117	116	152	169	197
Intra-regional	24	61	61	54	90	168	2,324	2,365	2,350	2,344	2,362	2,340	2,354	2,420	2,463
Global (total)	26	63	63	58	102	190	2,400	2,443	2,438	2,443	2,479	2,456	2,506	2,589	2,660

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
E. Liberalized country-pair routes (= A + B or C + D) [Figure 3]															
Europe	276	330	332	336	344	348	354	360	398	402	880	892	948	1,082	1,120
Africa	0	0	0	2	4	164	2,894	2,894	2,898	2,898	2,798	2,802	2,856	2,864	2,868
Middle East	0	0	2	2	4	10	230	232	236	238	248	252	256	260	266
Asia/Pacific	2	2	2	18	44	50	56	64	86	88	112	120	134	164	184
North America	2	22	26	52	62	74	96	104	112	112	124	138	148	160	192
Latin America	20	20	20	38	100	106	106	122	138	138	146	144	140	140	230
Inter-regional	4	24	28	56	76	92	224	234	258	262	288	306	374	396	448
Intra-regional	292	326	326	336	406	568	3,288	3,308	3,352	3,352	3,732	3,736	3,734	3,878	3,964
Global (total)	296	350	354	392	482	660	3,512	3,542	3,610	3,614	4,020	4,042	4,108	4,274	4,412
F. Country-pair routes with non-stop flights															
Europe	2,284	2,318	2,314	2,347	2,384	2,354	2,376	2,317	2,336	2,403	2,447	2,493	2,579	2,626	2,626
Africa	1,092	1,073	1,083	1,116	1,143	1,136	1,123	1,113	1,120	1,121	1,145	1,178	1,184	1,177	1,234
Middle East	733	736	746	737	753	776	776	765	773	775	801	822	886	906	932
Asia/Pacific	1,020	1,087	1,106	1,118	1,067	1,077	1,085	1,084	1,089	1,135	1,166	1,187	1,233	1,231	1,224
North America	267	266	253	251	259	258	276	272	293	294	295	307	324	322	324
Latin America	714	705	706	723	714	696	706	714	736	750	754	746	776	778	774
Inter-regional	1,809	1,829	1,838	1,842	1,853	1,855	1,858	1,828	1,835	1,872	1,926	1,962	2,068	2,090	2,128
Intra-regional	2,492	2,527	2,532	2,608	2,614	2,587	2,626	2,609	2,677	2,734	2,756	2,809	2,846	2,860	2,858
Global (total)	4,301	4,356	4,370	4,450	4,467	4,442	4,484	4,437	4,512	4,606	4,682	4,771	4,914	4,950	4,986
G. Country-pair routes with direct flights															
Europe	2,798	2,801	2,766	2,773	2,759	2,690	2,653	2,538	2,551	2,597	2,594	2,622	2,710	2,747	2,761
Africa	1,446	1,397	1,410	1,445	1,420	1,395	1,356	1,293	1,286	1,302	1,337	1,365	1,372	1,382	1,446
Middle East	872	887	887	889	881	900	881	869	868	864	874	898	950	950	981
Asia/Pacific	1,389	1,431	1,437	1,435	1,371	1,374	1,339	1,331	1,332	1,365	1,350	1,377	1,405	1,381	1,356
North America	339	330	318	315	326	321	330	326	340	339	331	341	349	348	354
Latin America	1,022	1,037	978	992	941	901	918	895	903	909	931	906	954	936	915
Inter-regional	2,501	2,498	2,460	2,448	2,393	2,354	2,289	2,204	2,189	2,207	2,193	2,213	2,299	2,303	2,358
Intra-regional	2,864	2,887	2,876	2,953	2,912	2,873	2,899	2,844	2,902	2,962	3,031	3,083	3,142	3,138	3,097
Global (total)	5,365	5,385	5,336	5,401	5,305	5,227	5,188	5,048	5,091	5,169	5,224	5,296	5,441	5,441	5,455
H. Non-stop flight frequencies offered on liberalized country-pair routes [Figure 2]															
Europe	1,435,065	1,583,434	1,743,032	1,886,437	2,113,466	2,298,940	2,361,020	2,219,219	2,619,256	2,718,058	3,219,516	3,325,938	3,706,839	3,831,587	3,625,491
Africa	0	0	0	1,030	1,597	23,996	148,956	156,198	171,506	191,691	212,656	211,437	292,640	320,512	338,756
Middle East	0	0	0	0	221	544	104,386	98,155	108,334	126,420	141,479	159,802	182,587	211,603	243,064
Asia/Pacific	0	0	0	15,990	28,363	30,810	60,090	56,124	59,739	73,106	114,361	118,853	125,514	132,316	132,408
North America	13,745	38,066	71,977	133,675	174,630	191,967	193,141	205,698	229,547	249,423	257,828	271,168	311,483	727,676	804,511
Latin America	17,275	19,364	18,861	63,999	104,622	116,223	123,770	138,686	159,541	169,976	168,994	182,568	162,936	170,744	198,901
Inter-region	13,745	38,066	71,977	134,705	176,227	193,709	221,684	234,075	261,040	285,366	304,079	324,089	436,777	465,706	566,593
Intra-region	1,438,595	1,564,732	1,689,916	1,831,721	2,070,445	2,275,062	2,547,995	2,405,930	2,825,843	2,957,942	3,506,676	3,621,588	3,908,445	4,463,026	4,209,945
Global (total)	1,452,340	1,602,798	1,761,893	1,966,426	2,246,672	2,468,771	2,769,679	2,640,005	3,086,883	3,243,308	3,810,755	3,945,677	4,345,222	4,928,732	4,776,538

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
I. Direct flight frequencies offered on liberalized country-pair routes															
Europe	1,604,258	1,795,894	1,995,801	2,076,573	2,281,909	2,449,530	2,484,900	2,340,104	2,731,959	2,809,549	3,304,915	3,409,184	3,802,684	3,922,716	3,731,027
Africa	0	0	0	1,030	1,872	28,129	187,025	193,178	214,146	245,428	272,224	265,620	348,762	378,124	394,161
Middle East	0	0	847	897	1,318	1,954	122,509	113,073	123,034	140,467	155,554	173,493	196,929	224,989	256,512
Asia/Pacific	0	0	0	34,091	52,206	57,057	87,176	80,329	82,555	98,381	141,751	155,766	159,342	164,214	163,052
North America	20,647	72,573	149,023	220,939	271,060	292,646	287,345	291,996	314,595	327,584	335,206	357,893	407,937	872,654	974,971
Latin America	30,870	33,102	33,175	118,876	178,559	195,329	195,305	222,371	244,669	252,606	250,638	260,623	215,873	219,638	252,087
Inter-region	20,647	72,573	149,023	221,969	272,932	294,906	321,407	325,311	352,548	370,093	388,780	419,015	544,486	570,476	688,861
Intra-region	1,614,481	1,756,423	1,880,800	2,008,468	2,241,060	2,434,833	2,721,446	2,590,429	3,005,862	3,133,829	3,682,728	3,784,549	4,042,555	4,641,383	4,394,088
Global (total)	1,635,128	1,828,996	2,029,823	2,230,437	2,513,992	2,729,739	3,042,853	2,915,740	3,358,410	3,503,922	4,071,508	4,203,564	4,587,041	5,211,859	5,082,949
J. Non-stop flight frequencies															
Europe	2,594,672	2,835,392	3,078,120	3,310,708	3,627,596	3,951,024	4,043,068	3,762,676	3,892,291	4,189,246	4,432,141	4,648,171	5,089,800	5,210,608	4,907,605
Africa	229,827	243,061	261,622	284,131	313,695	340,554	348,665	352,845	376,472	415,130	456,696	481,885	536,837	584,300	617,702
Middle East	256,961	267,645	277,999	293,404	321,498	346,189	348,038	334,205	363,403	425,780	465,335	528,255	588,466	679,916	777,674
Asia/Pacific	791,416	859,471	917,592	914,435	917,241	972,988	1,034,936	1,053,685	1,053,340	1,265,358	1,380,432	1,482,599	1,608,644	1,714,870	1,701,729
North America	998,576	1,047,206	1,082,715	1,202,932	1,233,619	1,314,645	1,315,248	1,202,715	1,224,067	1,299,898	1,353,932	1,383,247	1,444,477	1,453,103	1,379,151
Latin America	846,794	870,282	878,457	944,153	971,134	1,044,290	1,040,627	980,099	997,210	1,063,768	1,091,270	1,103,052	1,116,062	1,129,289	1,073,787
Inter-region	1,128,644	1,174,264	1,221,849	1,321,133	1,397,548	1,480,465	1,495,169	1,410,494	1,463,567	1,620,552	1,730,984	1,847,825	1,990,469	2,093,916	2,092,953
Intra-region	3,460,958	3,774,529	4,052,807	4,307,497	4,589,687	5,008,760	5,140,244	4,865,237	4,979,649	5,418,076	5,717,838	5,931,559	6,403,348	6,584,254	6,271,742
Global (total)	4,589,602	4,948,793	5,274,656	5,628,630	5,987,235	6,489,225	6,635,413	6,275,731	6,443,216	7,038,628	7,448,822	7,779,384	8,393,817	8,678,170	8,364,695
K. Direct flight frequencies															
Europe	3,245,534	3,556,064	3,661,102	3,768,356	4,034,309	4,323,809	4,373,629	4,056,886	4,171,511	4,447,362	4,659,026	4,865,720	5,308,631	5,421,806	5,100,345
Africa	326,570	333,363	348,919	372,543	401,136	429,890	432,197	428,710	457,986	506,603	553,685	571,542	625,942	677,266	707,455
Middle East	350,383	358,893	364,881	377,757	410,209	436,203	434,174	416,083	449,567	519,590	557,969	618,025	673,090	762,636	859,616
Asia/Pacific	1,115,548	1,177,060	1,229,331	1,200,155	1,178,001	1,232,838	1,291,962	1,283,750	1,274,305	1,510,753	1,629,728	1,726,336	1,837,977	1,939,374	1,918,991
North America	1,823,958	1,866,415	1,750,663	1,760,226	1,732,429	1,790,686	1,781,537	1,598,837	1,608,366	1,677,004	1,739,399	1,767,755	1,802,260	1,775,753	1,677,473
Latin America	1,464,379	1,446,934	1,466,645	1,529,163	1,486,319	1,535,270	1,498,243	1,408,983	1,416,656	1,490,300	1,502,130	1,482,968	1,428,535	1,411,105	1,312,725
Inter-region	2,069,339	2,118,955	2,024,020	2,005,243	2,020,615	2,086,358	2,082,536	1,929,354	1,970,853	2,127,207	2,226,858	2,326,505	2,443,733	2,514,596	2,476,677
Intra-region	4,187,694	4,500,819	4,773,501	4,997,714	5,201,173	5,575,980	5,646,670	5,334,541	5,436,685	5,897,198	6,188,221	6,379,336	6,788,969	6,958,748	6,623,251
Global (total)	6,257,033	6,619,774	6,797,521	7,002,957	7,221,788	7,662,338	7,729,206	7,263,895	7,407,538	8,024,405	8,415,079	8,705,841	9,232,702	9,473,344	9,099,928

Note: All the data are international scheduled passenger services.

Sources: ICAO Air Transport Bureau and OAG-BACK airline schedule database

TABLE 2. SUMMARY OF INDICATOR DATA (in percentages)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
L. Liberalized country-pair routes with non-stop flights (= A / F) [Figure 1]															
Europe	10.77%	11.22%	11.24%	11.50%	11.49%	11.81%	11.70%	12.00%	13.61%	13.44%	26.48%	26.31%	26.83%	30.08%	30.05%
Africa	0.00%	0.00%	0.00%	0.18%	0.35%	7.04%	47.64%	47.89%	49.20%	47.55%	47.34%	47.54%	47.47%	46.30%	45.95%
Middle East	0.00%	0.00%	0.00%	0.00%	0.27%	0.52%	17.01%	17.12%	18.37%	17.42%	17.73%	18.37%	17.16%	17.44%	18.24%
Asia/Pacific	0.00%	0.00%	0.00%	0.89%	1.69%	1.67%	2.21%	2.58%	3.12%	3.35%	4.12%	4.89%	5.03%	5.36%	5.56%
North America	0.75%	7.52%	8.70%	16.73%	20.08%	21.71%	24.64%	27.21%	27.30%	27.21%	26.44%	28.66%	29.63%	31.99%	37.35%
Latin America	1.96%	2.27%	2.55%	4.70%	8.54%	10.63%	10.48%	10.92%	11.96%	11.87%	12.07%	12.33%	10.05%	10.03%	15.12%
Inter-region	0.11%	1.09%	1.20%	2.39%	3.02%	3.23%	6.84%	7.60%	8.45%	7.85%	8.10%	8.72%	9.72%	10.05%	10.86%
Intra-region	10.35%	10.13%	10.11%	10.35%	11.44%	15.08%	32.64%	32.35%	33.73%	33.07%	44.88%	44.96%	43.57%	46.15%	47.94%
Global (total)	6.05%	6.34%	6.36%	7.06%	7.95%	10.13%	21.94%	22.15%	23.45%	22.82%	29.75%	30.06%	29.32%	30.91%	32.11%
M. Liberalized country-pair routes with direct flights (= C / G)															
Europe	8.93%	9.53%	9.73%	10.10%	10.22%	10.33%	10.48%	11.03%	12.54%	12.44%	25.06%	25.25%	25.79%	28.98%	28.76%
Africa	0.00%	0.00%	0.00%	0.14%	0.28%	6.31%	47.27%	47.56%	49.46%	48.69%	48.99%	49.67%	49.85%	48.91%	48.06%
Middle East	0.00%	0.00%	0.23%	0.22%	0.45%	0.67%	17.03%	16.57%	17.51%	17.25%	17.73%	17.59%	17.05%	17.26%	17.94%
Asia/Pacific	0.00%	0.00%	0.00%	0.98%	1.75%	1.89%	2.39%	2.70%	3.30%	3.22%	4.30%	5.08%	5.48%	5.50%	5.83%
North America	0.59%	6.67%	8.18%	15.87%	18.40%	20.56%	23.64%	25.15%	25.88%	24.78%	25.98%	28.74%	30.37%	32.18%	37.57%
Latin America	1.96%	1.93%	2.04%	3.83%	7.44%	8.44%	8.82%	10.95%	11.30%	11.00%	11.60%	12.14%	10.06%	9.40%	13.77%
Inter-region	0.08%	0.88%	1.06%	2.12%	2.67%	2.97%	6.47%	7.08%	7.77%	7.39%	7.80%	8.59%	9.66%	9.86%	10.64%
Intra-region	9.36%	9.18%	9.21%	9.55%	10.85%	13.92%	33.25%	33.16%	34.53%	34.03%	45.20%	45.28%	43.92%	46.46%	48.47%
Global (total)	5.03%	5.33%	5.45%	6.18%	7.16%	8.99%	21.43%	21.77%	23.02%	22.65%	29.50%	29.95%	29.44%	30.97%	32.12%
N. Non-stop flight frequencies offered on liberalized country-pair routes (= H / J) [Figure 2]															
Europe	55.31%	55.85%	56.63%	56.98%	58.26%	58.19%	58.40%	58.98%	67.29%	64.88%	72.64%	71.55%	72.83%	73.53%	73.87%
Africa	0.00%	0.00%	0.00%	0.36%	0.51%	7.05%	42.72%	44.27%	45.56%	46.18%	46.56%	43.88%	54.51%	54.85%	54.84%
Middle East	0.00%	0.00%	0.00%	0.00%	0.07%	0.16%	29.99%	29.37%	29.81%	29.69%	30.40%	30.25%	31.03%	31.12%	31.26%
Asia/Pacific	0.00%	0.00%	0.00%	1.75%	3.09%	3.17%	5.81%	5.33%	5.67%	5.78%	8.28%	8.02%	7.80%	7.72%	7.78%
North America	1.38%	3.64%	6.65%	11.11%	14.16%	14.60%	14.68%	17.10%	18.75%	19.19%	19.04%	19.60%	21.56%	50.08%	58.33%
Latin America	2.04%	2.23%	2.15%	6.78%	10.77%	11.13%	11.89%	14.15%	16.00%	15.98%	15.49%	16.55%	14.60%	15.12%	18.52%
Inter-region	1.22%	3.24%	5.89%	10.20%	12.61%	13.08%	14.83%	16.60%	17.84%	17.61%	17.57%	17.54%	21.94%	22.24%	27.07%
Intra-region	41.57%	41.46%	41.70%	42.52%	45.11%	45.42%	49.57%	49.45%	56.75%	54.59%	61.33%	61.06%	61.04%	67.78%	67.13%
Global (total)	31.64%	32.39%	33.40%	34.94%	37.52%	38.04%	41.74%	42.07%	47.91%	46.08%	51.16%	50.72%	51.77%	56.79%	57.10%
O. Direct flight frequencies offered on liberalized country-pair routes (= I / K)															
Europe	49.43%	50.50%	54.51%	55.11%	56.56%	56.65%	56.82%	57.68%	65.49%	63.17%	70.94%	70.07%	71.63%	72.35%	73.15%
Africa	0.00%	0.00%	0.00%	0.28%	0.47%	6.54%	43.27%	45.06%	46.76%	48.45%	49.17%	46.47%	55.72%	55.83%	55.72%
Middle East	0.00%	0.00%	0.23%	0.24%	0.32%	0.45%	28.22%	27.18%	27.37%	27.03%	27.88%	28.07%	29.26%	29.50%	29.84%
Asia/Pacific	0.00%	0.00%	0.00%	2.84%	4.43%	4.63%	6.75%	6.26%	6.48%	6.51%	8.70%	9.02%	8.67%	8.47%	8.50%
North America	1.13%	3.89%	8.51%	12.55%	15.65%	16.34%	16.13%	18.26%	19.56%	19.53%	19.27%	20.25%	22.63%	49.14%	58.12%
Latin America	2.11%	2.29%	2.26%	7.77%	12.01%	12.72%	13.04%	15.78%	17.27%	16.95%	16.69%	17.57%	15.11%	15.56%	19.20%
Inter-region	1.00%	3.42%	7.36%	11.07%	13.51%	14.13%	15.43%	16.86%	17.89%	17.40%	17.46%	18.01%	22.28%	22.69%	27.81%
Intra-region	38.55%	39.02%	39.40%	40.19%	43.09%	43.67%	48.20%	48.56%	55.29%	53.14%	59.51%	59.33%	59.55%	66.70%	66.34%
Global (total)	26.13%	27.63%	29.86%	31.85%	34.81%	35.63%	39.37%	40.14%	45.34%	43.67%	48.38%	48.28%	49.68%	55.02%	55.86%

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
P. Utilization of liberalized country-pair routes by airlines in terms of non-stop flights (= A / E)															
Europe	89.13%	78.79%	78.31%	80.36%	79.65%	79.89%	78.53%	77.22%	79.90%	80.35%	73.64%	73.54%	73.00%	73.01%	70.45%
Africa	na	na	na	100.00%	100.00%	48.78%	18.49%	18.42%	19.01%	18.39%	19.37%	19.99%	19.68%	19.03%	19.77%
Middle East	na	na	0.00%	0.00%	50.00%	40.00%	57.39%	56.47%	60.17%	56.72%	57.26%	59.92%	59.38%	60.77%	63.91%
Asia/Pacific	0.00%	0.00%	0.00%	55.56%	40.91%	36.00%	42.86%	43.75%	39.53%	43.18%	42.86%	48.33%	46.27%	40.24%	36.96%
North America	100.00%	90.91%	84.62%	80.77%	83.87%	75.68%	70.83%	71.15%	71.43%	71.43%	62.90%	63.77%	64.86%	64.38%	63.02%
Latin America	70.00%	80.00%	90.00%	89.47%	61.00%	69.81%	69.81%	63.93%	63.77%	64.49%	62.33%	63.89%	55.71%	55.71%	50.87%
Inter-regional	50.00%	83.33%	78.57%	78.57%	73.68%	65.22%	56.70%	59.40%	60.08%	56.11%	54.17%	55.88%	53.74%	53.03%	51.56%
Intra-regional	88.36%	78.53%	78.53%	80.36%	73.65%	68.66%	26.06%	25.51%	26.94%	26.97%	33.15%	33.81%	33.21%	34.04%	34.56%
Global (total)	87.84%	78.86%	78.53%	80.10%	73.65%	68.18%	28.02%	27.75%	29.31%	29.08%	34.65%	35.48%	35.08%	35.80%	36.29%
Q. Utilization of liberalized country-pair routes by airlines in terms of direct flights (= C / E) [Figure 3]															
Europe	90.58%	80.91%	81.02%	83.33%	81.98%	79.89%	78.53%	77.78%	80.40%	80.35%	73.86%	74.22%	73.73%	73.57%	70.89%
Africa	na	na	na	100.00%	100.00%	53.66%	22.15%	21.25%	21.95%	21.88%	23.41%	24.20%	23.95%	23.60%	24.23%
Middle East	na	na	100.00%	100.00%	100.00%	60.00%	65.22%	62.07%	64.41%	62.61%	62.50%	62.70%	63.28%	63.08%	66.17%
Asia/Pacific	0.00%	0.00%	0.00%	77.78%	54.55%	52.00%	57.14%	56.25%	51.16%	50.00%	51.79%	58.33%	57.46%	46.34%	42.93%
North America	100.00%	100.00%	100.00%	96.15%	96.77%	89.19%	81.25%	78.85%	78.57%	75.00%	69.35%	71.01%	71.62%	70.00%	69.27%
Latin America	100.00%	100.00%	100.00%	100.00%	70.00%	71.70%	76.42%	80.33%	73.91%	72.46%	73.97%	76.39%	68.57%	62.86%	54.78%
Inter-regional	50.00%	91.67%	92.86%	92.86%	84.21%	76.09%	66.07%	66.67%	65.89%	62.21%	59.38%	62.09%	59.36%	57.32%	56.03%
Intra-regional	91.78%	81.29%	81.29%	83.93%	77.83%	70.42%	29.32%	28.51%	29.89%	30.07%	36.71%	37.37%	36.96%	37.60%	37.87%
Global (total)	91.22%	82.00%	82.20%	85.20%	78.84%	71.21%	31.66%	31.03%	32.47%	32.40%	38.33%	39.24%	39.00%	39.42%	39.71%

Sources: ICAO Air Transport Bureau and OAG-BACK airline schedule database