

CHAPTER 5

Impact of Liberalization

The liberalization of air services, or as it is referred to in the United States, airline deregulation, the process of removing entry and price restrictions on airlines affecting, in particular, the carriers permitted to serve specific routes, has had a severe impact on the growth of air transport markets in the developed world. The African continent, however, started to liberalize its markets about 20 years later, with different progress in various regions. Nevertheless, there are some clear indicators that liberalization has already had an impact on African air transport services.

Data Sources and Methodology

Several methods are available for analyzing air service markets in any given region of the world. For air carriers, one of the most important indicators is the revenue passenger-kilometer, which represents one fare-paying passenger transported 1 km. The revenue passenger-kilometers of a given flight can be divided by available seat-kilometers, which are the total number of seats available for the transportation of paying passengers multiplied by the number of kilometers flown. This provides the load factor, which for most airlines is one of the leading performance indicators of how well a given route performs within the network. While these data

would generally provide a comprehensive picture of an air service market, the revenue passenger-kilometers and available seat-kilometers of an air carrier are mostly disclosed on a fleet-wide basis only so as not to indicate specific route profitability to competitors.¹ This is especially true in fragmented international markets, where often only a few carriers dominate certain routes.

The standard source for air traffic data collected by airlines and airports is ICAO, which has developed statistics and forecasting programs that are based on data it collects from its contracting states that it then compiles into multiple data series. ICAO's database is known as the integral statistical database (ICAO 2007). The data include information on commercial air carriers (traffic, on-flight origin and destination, traffic by flight stage, fleet personnel and financial data), on airports (airport traffic by passengers and aircraft movements from international airports, and financial data), on air navigation service providers (financial and traffic data), and from civil aircraft registries.² However, the data are based on reporting by states and are often incomplete, inaccurate, and/or unreliable, especially when provided by developing countries whose statistical capacity is limited often because of a lack of training and of funding for adequate staff. Indeed, during several missions to Africa from 2002 to 2008 the author observed, for example, that actual passenger counts were often maintained on paper ledgers with no computerization. In many cases these data were never submitted to ICAO, leaving exceptionally large data holes in any time series. In addition, many contracting states believe that they need to report data only about international traffic to ICAO given that ICAO's mandate focuses primarily on international air services.

As an alternative, official airline schedules, which are in the public domain, are the best source of data for air traffic analysis for developing countries. The limitation of such data published by airlines is that schedules capture the capacity offered only in terms of seats between two points, not the number of actual passengers carried. Nevertheless, given the assumption that no airline would, over time, operate an aircraft that is not filled sufficiently to render the flight economically feasible, one could hypothesize that at any given point in time, 50 to 70 percent of the seat capacity offered on a route would approximate the actual number of passengers carried. One could also hypothesize that even with certain changes in load factors, the overall trend in seat capacity would approximate actual traffic trends over time. Finally, given that airline schedules are readily available and provide additional information such as type of

aircraft, frequency of the routes, and scheduled times of the flight, the analysis of the air service market presented in this chapter will depend primarily on such data.

The traditional source for airline data is the Official Airline Guide, a company with a more than 150-year history of publishing travel schedules. The company provides global flight information and data for the passenger aviation, air cargo logistics, and business travel markets. The firm was founded in the United Kingdom in 1853. In 1993, it merged with a company founded in the United States in 1929 that provided similar information. For many years the Official Airline Guide was the only provider of such data until the creation of the Airline Data Group of the Seabury Group in 2000. Founded in 1995, the U.S.-based Seabury Group provides investment banking, financial advisory, restructuring, and consulting services primarily for transportation companies and companies in related industries around the world. Both sources depend on airlines reporting their routes, and both have captured 99 percent of scheduled airline data, with about 900 to 1,000 airlines participating. While the Official Airline Guide is the more established data collector, both companies enjoy an excellent industry reputation and are endorsed by the IATA.

For the research of air service markets in Africa in this study, a defined set of data was procured from the Airline Data Group and compiled in electronic form (Abbey 2008). To cover the period of implementation of the Yamoussoukro Decision, 12 extractions in time were assembled, four each for 2001, 2004, and 2007. These extractions cover all scheduled flights within, to, and from Africa. To assure the capture of seasonal trends, the four samples for each year consist of data for one week in the months of February, May, August, and November. To annualize these figures, the total sum of the four observations for a given year was multiplied by 13. As these are weekly data, the multiplier 13 ($4 \times 13 = 52$ weeks) is more precise than 12 ($4 \times 12 = 48$).

The data consist of one record of each flight occurring during the sampled week, with relevant entries on the origin and destination airports, the changeover airport in the case of flights with one intermittent stop, the number of miles of the flight, the duration of the flight, the number of seats available on the flight, the number of times the flight occurred during the week, the days the flight was scheduled, the aircraft type used, the carrier, and the actual operator. Using the relational database management system Microsoft Access, the data were normalized and linked to other relevant tables to develop a relational database for extensive summarization and querying. In addition, flights from one airport to another

final destination with an intermediate scheduled stop had their capacity allocated by assigning even proportions to each leg. This implies that a flight from airport A to airport C via airport B would have only half the capacity going from airport A to C while the other half would deplane at airport B. This allocation was made for each leg, that is, if a flight had four legs, each of the destination airports would only have a quarter of the overall capacity allocated. Even though the even distribution among the legs is just an assumption, this methodology prevents double counting of capacity for flights with more than one leg. The overall impact of these calculations resulted in about a 10 percent adjustment of capacities.

To provide safeguards and “sanity checks” (basic tests to quickly evaluate the validity of statements or calculations), some of the airport aggregates were compared with actual data from ICAO and other sources, where available. The ratio of scheduled seats to reported passenger traffic found hinted at a load factor of about 65 to 69 percent for most of the routes tested. This result is a solid and reliable figure that supports the credibility of the data used. Other more general and rougher summaries resulted in a load factor between 50 and 60 percent. However, these were large aggregates measured against each other, most likely also having significant assumptions in the index they were measured against, and therefore less accurate. Overall, when estimating traffic in terms of passengers this study assumes a load factor of 70 percent when deriving seat capacity from flight schedules.

The data used are particularly helpful for capturing trends in city and country pairs, fleet renewal (in most cases the type of aircraft is provided down to the level of detail of series number, for instance, Boeing 737–100 versus Boeing 737–800), and airline market share. However, the data analyzed reflect only scheduled and advertised services. Any data on informal carriers with no public reservation systems that issue paper tickets at the airport and provide only a chalkboard or a printed flyer setting out their schedules was not captured. For example, the Airline Data Group data include virtually no older, Eastern-built aircraft operating in Africa, yet much anecdotal evidence about such operations exists, as do accident statistics. Nevertheless, the overall proportion of such flights is generally considered to be relatively small and they are operated primarily in larger domestic markets, which would not be of significance for the Yamoussoukro Decision.

Finally, to confirm the fleet analysis derived from the Airline Data Group data, the registration information for each aircraft for each African-registered carrier for the years 1997, 2001, 2004, and 2007 was compiled

in an electronic spreadsheet. The data were summarized and entered manually from the *JP Airline-Fleets International* publications for the respective years (Klee 1997, 2001, 2004, 2007).

General Traffic Analysis

The traffic analysis to measure the impact of liberalization focuses on two types of main markets for each REC, namely, international traffic in terms of seat capacity within a REC and international traffic between REC countries and countries in Africa that do not belong to the given REC. The data collected as explained earlier, were annualized and provided an estimated seat capacity for 2001, 2004, and 2007. The change in seat capacity can thus be measured for two periods: between 2001 and 2004 and between 2004 and 2007. However, as most measures to implement the Yamoussoukro Decision were only achieved in recent years, and given the worldwide drop in air traffic after 11 September 2001, the latter dataset provides more evidence of the impact of liberalization.

The RECs were rated in terms of their progress toward implementation of the Yamoussoukro Decision and the extent of liberalization achieved (table 5.1).

A first glance at the resulting changes in offered seats could lead to the erroneous conclusion that liberalization has had a negative effect on traffic (table 5.2). The REC that scored the highest in relation to liberalization had the steepest drop, or slowest growth, in traffic. Air traffic within the two most liberalized regions (CEMAC and WAEMU) dropped significantly between 2004 and 2007, while traffic between the RECs dropped only slightly between 2001 and 2004, and generally experienced good growth in the period between 2004 and 2007. However, the second most liberalized region, BAG, saw a healthy development in traffic, especially during the years when liberalization took effect (2004–07). Note also that traffic experienced a steep drop within the two fully liberalized regions, but the traffic between these regions and other regions remained stable or stagnant. Nevertheless, the drop in traffic in West and Central Africa was not a direct effect of the Yamoussoukro Decision, but can be attributed to other factors.

A similarly revealing result is achieved when analyzing city pairs served. The analysis shows that the number of city pairs served declined substantially in the most liberalized regions of West and Central Africa, but grew in BAG as well as in the less liberalized RECs in southern and East Africa. A much smaller, but still negative, trend can be observed

Table 5.1 Grading of RECs on Their Liberalization of Air Services as of 30 June 2009

<i>Community</i>	<i>General status of Yamoussoukro Decision implementation</i>	<i>Status of air services liberalization</i>	<i>Overall implementation score^a</i>
AMU	No implementation has occurred.	No liberalization within the AMU has been initiated, but the need for liberalization is recognized.	1
BAG	The principles of the Yamoussoukro Decision have been agreed upon in the MASA.	Up to fifth freedom rights have been granted, tariffs are free, and capacity and frequency are open.	4
CEMAC	The principles of the Yamoussoukro Decision have been agreed upon in an air transport program. Some minor restrictions remain.	Up to fifth freedom rights have been granted, tariffs are free, and capacity and frequency are open. A maximum of two carriers per state may participate.	5
COMESA	Full liberalization has been agreed on (Legal Notice No. 2), but application and implementation remain pending until a joint competition authority has been established.	Liberalization is pending. Once applied, operators may be able to serve any destination (all freedoms) and tariffs, capacity, and frequency will be free.	3
EAC	The EAC Council issued a directive to amend bilaterals among EAC states to conform to the Yamoussoukro Decision.	Air services are not liberalized because the amendments to bilaterals remain pending.	3
SADC	No steps toward implementation have been taken, even though SADC's civil aviation policy includes the gradual liberalization of air services within SADC.	No liberalization has been initiated within SADC.	2
WAEMU	The Yamoussoukro Decision has been fully implemented.	All freedoms, including cabotage, have been granted. Tariffs have been liberalized.	5

Source: World Bank staff's calculations.

a. The rating scale ranges from no progress toward liberalization (1) to full liberalization (5).

Table 5.2 Estimated Number of Seats on International Flights within and between RECs, Selected Years

REC	Number of seats			Growth 2001–07 (percent)	Growth 2004–07 (percent)
	2001	2004	2007		
<i>International flights within RECS</i>					
AMU	799,719	943,345	1,294,189	8.4	11.1
BAG	549,105	425,427	568,306	0.6	10.1
CEMAC	498,708	495,158	152,984	-17.9	-32.4
COMESA	2,952,372	2,745,938	4,484,675	7.2	17.8
EAC	1,384,894	1,458,539	1,751,811	4.0	6.3
SADC	4,033,387	4,465,842	5,663,632	5.8	8.2
WAEMU	983,167	849,818	763,472	-4.1	-3.5
<i>International flights between RECS</i>					
AMU	617,747	879,595	1,641,705	17.7	23.1
BAG	1,911,861	1,573,379	2,130,360	1.8	10.6
CEMAC	1,206,595	1,044,355	1,266,196	0.8	6.6
COMESA	1,675,538	2,075,502	2,961,023	10.0	12.6
EAC	623,131	815,557	1,069,575	9.4	9.5
SADC	1,660,856	1,980,463	2,296,398	5.6	5.1
WAEMU	1,877,875	1,907,297	2,352,456	3.8	7.2

Source: Airline Data Group data and World Bank staff's calculations.

when looking at city pairs between RECs, where the most liberalized regions experienced slow or negative growth (table 5.3).

This trend is linked to an ongoing consolidation of networks, which are focusing on the most profitable routes. It is a consequence of the collapse of the former business model that was based on cross-subsidizing local and regional routes using the income generated on strongly regulated and highly profitable intercontinental routes.

General Fleet Analysis

The fleet analysis was conducted by attributing a specific aircraft group code to each type of aircraft. The codes ranged from extremely old Western aircraft, commuter jets and commuter propeller aircraft, city jets, and wide-body jets, to several Eastern-built aircraft types. The changes in fleet composition by region are calculated as a percentage of seat miles flown. A grading was applied to the overall fleet age, with the highest score (5) being applied to the newest fleet.

The result of the analysis shows an overall improvement in fleet age and types of aircraft across all the regions with the exception of the BAG countries (table 5.4). The two most liberalized regions, CEMAC and

Table 5.3 International Flights, REC City Pairs, Selected Years

REC	Liberalization score ^a	Number of cities end of 2007	Net change in number of cities from 2001	Number of city pairs end of 2007	Net change in number of city pairs	Annual change 2001–07 (percent)	Annual change, 2004–07 (percent)	Overall change 2001–07 (percent)	Average aircraft seating capacity 2001	Average aircraft seating capacity 2007
Within RECs										
AMU	1	9	1	14	2	6.71	11.12	47.68	147	159
BAG	4	8	0	15	1	-0.16	10.13	-0.95	144	117
CEMAC	5	7	-2	9	-9	-18.48	-32.40	-70.66	128	78
COMESA	3	34	-2	71	-3	7.25	17.76	52.20	129	147
EAC	3	10	0	18	-2	3.34	6.30	21.78	113	95
SADC	2	37	4	72	5	4.75	8.24	32.12	98	88
WAEMU	5	9	0	21	-3	-5.32	-3.51	-27.99	150	102
Between RECs										
AMU	1	30	11	7	-3	8.13	15.37	59.85	146	142
BAG	4	28	-5	9	0	-0.84	5.23	-4.96	177	118
CEMAC	5	17	-4	20	3	-2.67	0.24	-14.97	192	170
COMESA	3	74	5	43	6	4.67	6.89	31.47	128	122
EAC	3	42	8	19	3	11.42	17.03	91.29	156	149
SADC	2	50	-2	44	6	3.74	5.74	24.62	135	122
WAEMU	5	30	-8	14	-4	0.96	12.94	5.88	187	198

Source: Airline Data Group data and World Bank staff's calculations.

Note: In the second panel, the data do not take into account when countries belong to more than one REC.
a. See table 5.1.

Table 5.4 Changes in Fleet Composition by REC, 2001–07

REC	Fleet age grade 2001 ^a	Fleet age grade 2007 ^a	Difference in age grades between 2001 and 2007	Comments	Typical aircraft size 2001 ^b	Typical aircraft size 2007 ^b
AMU	4	5	1	Almost all old aircraft replaced	Nearly all Boeing 737-type city jets	Almost 100% city jets
BAG	2	1	-1	Very large proportional shift from old to even older aircraft	Roughly 60% city jets, about 30% wide-bodies	Almost 100% city jets
CEMAC	3	4	1	From mixed (50% old) to about 75% recent, but also an increase in very old aircraft	About 80% city jets	Large shift toward commuter turboprops
COMESA	3	4	1	Shift from 50% relatively recent to almost 75% recent	About 65% city jets, 35% wide-bodies	Shift to about 80% city jets, 20% wide bodies
EAC	3	3	0	Roughly the same proportion, 33% of old aircraft, with the remainder being renewed	About 75% city jets, 20% wide-bodies, 10% commuter props	About 80% city jets, wide-bodies down to 5%, remainder reflects increase in commuter props
SADC	3	4	1	Increase of recent jetliners from roughly 20% to nearly 66%	About 75% city jets, 20% wide-bodies	About 85% city jets, only 5% wide-bodies
WAEMU	3	4	1	Percentage of recent airliners about as high as BAG, but the remainder still old	About 60% wide-bodies, about 10% commuter jets, 30% city jets	Large shift toward 80% city jets, 20% commuter props, no wide-bodies

Source: Airline Data Group data and World Bank staffs' calculations.

a. The newer the fleet, the higher the number with a maximum of 5.

b. For the analysis of the African fleet all aircraft were grouped into the following categories: (a) wide-body (for example, A340, B747), (b) large jet (for example, B757, DC8), (c) city jet (for example, A320, B737, DC9), (d) commuter jet (for example, CRJ, F100), (e) commuter prop (for example, F28, SB200), and (f) general aviation (for example, PC12, BE200, C421).

WAEMU, experienced a clear shift toward smaller and newer aircraft. In essence, CEMAC was replacing all city jets with newer turboprop aircraft and WAEMU was replacing wide-body aircraft with city jets and commuter aircraft.

A similar trend replacement is observed in BAG, where the rapid growth of air services in Nigeria resulted in a shift to primarily smaller, but older, city jet aircraft. Nonliberalized regions experienced both a renewal in terms of newer aircraft as well as a shift to smaller aircraft. Nevertheless, more wide-body aircraft seem to remain in less liberalized regions such as COMESA and SADC.

Effects of Liberalization on Traffic and Air Carriers by Region

The result of the analysis of traffic and fleet changes must be analyzed within each region by taking into account progress made toward liberalization by the individual RECs along with some external factors that may have occurred independently of the effects of the implementation of a liberalized air services framework.

For analysis of the effects of liberalization in selected countries in each REC, aircraft fleet data were compiled and summarized by country. Only aircraft with more than 30 seats were included on the assumption that despite the number of smaller aircraft, they do not significantly change the conclusions drawn, as they participate only marginally in country-to-country air services. The samples also exclude all aircraft that are not involved in public air transportation, such as aircraft belonging to government air services, corporate fleets, air ambulance operators, and aerial surveyors.

In addition to the fleet analysis the study analyzes changes in traffic flows with a focus on service providers. For example, in 2001, a few large carriers dominated West Africa and Central Africa, but disappeared during the early years of liberalization. After 1994, the traffic served by these air carriers, which were often fifth, or even seventh, freedom flights, started to be replaced by carriers that were not registered in either the departure country or the destination country. Such changes are clearly signs of the impact of liberalization, because new carriers are serving fifth freedom flights, which is one of the basic elements of the Yamoussoukro Decision.

Development across Africa

As table 5.5 shows, the number of carriers increased steadily between 1997 and 2004. The collapse of some of the African legacy carriers such

Table 5.5 Fleet Analysis, Africa, Selected Years

<i>Item</i>	<i>1997</i>	<i>2001</i>	<i>2004</i>	<i>2007</i>
Number of carriers	104	125	166	168
Number of aircraft	585	706	895	978
Seat capacity	76,615	95,828	118,803	123,896

Source: Klee 1997, 2001, 2004, 2007.

as Air Afrique and Ghana Airways during that period has been more than compensated for by the entry of several new carriers into the market. Between 2004 and 2007, the number of carriers stabilized across the continent, but several carriers that existed in 2004 had been replaced by new operators by 2007. The general increase in carriers is due primarily to the reform of domestic policies to allow new carriers to compete with or replace the former national carrier. There is little evidence to indicate that the observed fleet development is only the result of the intra-African liberalization driven by the Yamoussoukro Decision.

The number of aircraft has increased along with the number of carriers, and both grew faster (9 percent) between 2004 and 2007 than between 1997 and 2004. During 1997–2007, the fleet of aircraft with more than 30 seats increased by 67 percent, which represents an annual growth rate of 5.3 percent. The total seat capacity initially grew more rapidly than the number of aircraft, but slowed after 2004. The average fleet size (aggregated number of aircraft in fleets divided by the number of carriers) remained steady at 5.6 during 1997–2001 period and decreased slightly thereafter because of the entry into the market of smaller operators and the growth of existing small carriers, which have added some aircraft with a capacity of more than 30 seats to their fleets. However, average fleet size grew again as of 2004, which reflects a certain trend of consolidation of the industry, with stronger growth by the major carriers.

Between 1997 and 2001, average aircraft capacity increased from 131 to 136 seats per aircraft, but since that time a clear trend toward smaller aircraft resulted in an average seat capacity of 127 seats by 2007. This trend reflects the introduction of smaller aircraft by some major operators to develop new routes; the phasing out of older, sometimes underutilized, aircraft such as the B-727 series; and the removal of several wide-body “flag of convenience” aircraft from the registries of some certain states. (This study considers flag of convenience registrations to be all carriers whose head offices are located outside the country of registration and that do not operate listed air services to and from their country of registration.)

The Yamoussoukro Decision has helped new airlines to enter markets that were abandoned by failing carriers. In many regions, new carriers made up for some of the lost capacities (table 5.6). In many cases, carriers from outside a given REC were allowed to take over unserved capacity, often by adding fifth freedom operations. In this way, Ethiopian Airlines and Kenyan Airways, both East African carriers, gained market share predominantly in West and Central Africa. In other words, as the markets shrank in capacity and older carriers either abandoned those markets or went under, every one of the remaining 6 country pair markets of an original 12 country pairs is being served by a new market entrant. At times, this was undertaken by operators such as Ethiopian Airlines and Libya's Afriqiyah Airways. The latter now provides the only intraregional service connecting the Central African Republic. What seems to be a clear application of the Yamoussoukro Decision can be seen in most of the services reflected in table 5.6. However, caution should be applied when interpreting these findings because many of the airlines that served these routes and are no longer active have also often been foreign to both countries in a pair as far back as 2001.

Most of the RECs saw a reduction in fifth freedom traffic by carriers of their own REC between 2001 and 2004 (table 5.7). This was primarily because large carriers such as Air Afrique and Air Gabon had left the market, but by 2007, fifth freedom flights in most regions had increased. Especially in West and Central Africa, fifth freedom flights accounted for about a third of all traffic.

Table 5.6 Changes in the Number of Seats by REC

REC	<i>International travel within RECs</i>			<i>International travel between RECs</i>		
	<i>Seats available in 2007</i>	<i>Seats from airlines that had left the market by 2007</i>	<i>Seats from airlines that were new to the market in 2007</i>	<i>Seats available in 2007</i>	<i>Seats from airlines that had left the market by 2007</i>	<i>Seats from airlines that were new to the market in 2007</i>
AMU	1,294,189	90,998	45,396	1,641,705	186,977	554,030
BAG	586,306	457,422	432,907	2,130,360	1,265,446	980,850
CEMAC	152,984	663,116	152,984	1,266,196	1,103,435	777,976
COMESA	4,484,675	1,170,550	990,390	2,961,023	674,559	707,209
EAC	1,751,811	806,977	472,030	1,069,575	223,160	217,291
SADC	5,663,632	1,396,004	1,891,595	2,296,398	972,450	722,042
WAEMU	763,472	932,675	408,288	2,352,456	1,550,345	1,395,286

Source: Airline Data Group data and World Bank staff's calculations.

Table 5.7 Fifth Freedom Flights by Carriers of Each REC, Selected Years
(percentage of flights in a REC that are fifth freedom)

Year	AMU	BAG	CEMAC	COMESA	EAC	SADC	WAEMU
2001	7.63	45.26	38.00	25.35	33.01	18.68	47.66
2004	8.27	36.27	11.76	9.86	12.21	2.25	43.70
2007	4.13	43.25	28.48	14.10	16.38	5.68	43.75

Source: Airline Data Group data and World Bank staff's calculations.

Most interesting, however, is the development of African carriers that operate within an REC other than the one where they are based, thus providing fifth freedom traffic (table 5.8). West and Central Africa in particular experienced a significant increase in non-REC fifth freedom flights after 2004. There are strong indications that East African (Ethiopian Airlines and Kenya Airways) and North African (Afriqiyah Airways and Royal Air Maroc) carriers had taken over traffic within BAG, CEMAC, and WAEMU.

Non-African carriers had a remarkable share of fifth freedom flights in Sub-Saharan Africa, accounting for 6 to 29 percent in 2001 (table 5.9). However, this traffic declined steeply when African carriers began to take over such fifth freedom operations. This can be seen as a successful response to concerns expressed at the Summit of the OAU in 1979, which feared that European carriers would replace African airlines. Clearly the Yamoussoukro Decision did facilitate the expansion of African carriers in domestic markets.

Development in North Africa

North Africa has made little progress toward liberalizing its air services and no liberalization of international air services took place within the AMU. Nevertheless, some countries have achieved some domestic liberalization by allowing more than one carrier, and some of these carriers have begun to serve international destinations.

In Algeria, the national carrier, Air Algérie, benefited for several decades from a monopoly both in the domestic and international markets, but liberalization of the domestic market in 2000 resulted in the entry of a few new carriers. This resulted in a more than 70 percent increase in aircraft and seat capacity. The most significant new operator, Khalifa Airways, embarked on an ambitious and aggressive growth policy, but subsequently collapsed. In addition, the liberalization of domestic market entry was not accompanied by adequate new regulatory instruments (World Bank 2005, p. 34). By 2004, only two carriers remained in the domestic

Table 5.8 Fifth Freedom Flights by African Carriers of Other RECs, Selected Years
(percentage of fifth freedom flights by carriers of other RECs within the given REC)

Year	AMU	BAG	CEMAC	COMESA	EAC	SADC	WAEMU
2001	0.00	39.11	35.23	20.79	32.63	17.95	25.73
2004	0.00	24.43	3.19	3.63	11.50	1.48	29.34
2007	0.00	27.99	28.48	7.22	14.56	3.97	28.74

Source: Airline Data Group data and World Bank staff's calculations.

Note: During the selected years, there were no African Carriers from other RECs operating fifth freedom flights in AMU.

Table 5.9 Fifth Freedom Flights by Non-African Carriers, Selected Years
(percentage of fifth freedom flights)

Year	AMU	BAG	CEMAC	COMESA	EAC	SADC	WAEMU
2001	5.62	28.64	11.02	19.39	26.48	13.35	16.52
2004	8.27	19.71	2.02	2.59	6.77	0.63	0.00
2007	4.13	15.19	0.00	3.86	0.77	2.55	0.37

Source: Airline Data Group data and World Bank staff's calculations.

market, and by 2007, Algeria's air transport industry had reverted to a de facto monopoly (table 5.10).

Libya experienced steady progress toward liberalization that resulted in the number of carriers increasing from one in 1997 to nine in 2007, while seat capacity doubled. This development is a result of the opening of the country following the end of the international embargo. In addition, Libya seems to have focused on a policy of developing an air transport sector that is competing with sixth freedom flights between West Africa and Europe. In addition, Libya seems to support primarily its new carrier Afriqiyah Airways by designating it for all the new routes that were opened to the detriment of its legacy state-owned carrier Libyan Airlines.

Morocco appears to have a more restrictive policy that seems to control liberalization by allowing the introduction of only a few new operators. The number of carriers increased from one in 1997 to four in 2007. However, the only major operator among the new entrants, Atlas Blue, is a subsidiary of the legacy carrier Royal Air Maroc.³ It is strictly focused on low-cost operations and on supplementing the traffic of Royal Air Maroc under franchise or code-sharing agreements on low-density routes. The policy seems to have succeeded, as the fleet size more than doubled during the period, whereas unit capacity increased slightly from 149 in 1997 to 155 in 2007 (table 5.10).

Tunisia's air carrier development in terms of fleet size and seat capacity has been fluctuating. This seems to be due primarily to the changing

Table 5.10 Fleet Analysis, North Africa, Selected Years
(number)

Country	1997			2001			2004			2007		
	Carriers	Aircraft	Available seats	Carriers	Aircraft	Available seats	Carriers	Aircraft	Available seats	Carriers	Aircraft	Available seats
Algeria	1	40	5,035	5	68	8,885	2	55	6,692	1	58	7,854
Egypt, Arab												
Rep. of Libya	9	56	10,289	15	71	12,445	8	63	11,418	12	72	12,229
Morocco	1	27	2,346	2	21	2,673	7	58	4,969	9	51	5,369
Tunisia	3	28	4,176	1	41	5,617	3	49	7,364	4	73	11,303
Total	15	31	4,533	3	49	7,317	5	59	9,552	4	49	7,692
		182	26,379	26	250	36,937	25	284	39,995	30	303	44,447

Source: Klee 1997, 2001, 2004, 2007.

relative competitiveness between Tunisian charter operators and their European counterparts on the international market with Europe. In addition, the national carrier, Tunisair, seems to have been less successful than Royal Air Maroc in capturing sixth freedom traffic between West Africa and Europe. This is probably due to its smaller size and its stronger exposure by geographic proximity to competition from Libya's Afriqiyah Airways on this particular market segment.

The Arab Republic of Egypt is not a member of the AMU, but a member of COMESA. COMESA has made some progress toward liberalization, but still falls short of fully implementing the Yamoussoukro Decision. The number of carriers in Egypt fluctuated during 1997–2007, whereas total seat capacity has remained more or less steady. The fluctuation was mainly due to changes in the industry's structure, which consisted of one dominant flag carrier, EgyptAir, and several smaller charter operators, some of which ceased operations soon after they entered the market. A variety of factors appeared to account for this, such as the volatility of the international tourist market given recurrent security problems and the domination of this segment of the industry by financial investors some of which have only short-term investment strategies.

Overall, the Yamoussoukro Decision has had little impact within the North African market. However, some North African carriers have begun to expand their operations into Sub-Saharan Africa, where most can benefit from being located in state that is party to the decision.

Development in West Africa

West Africa has done quite well in implementing the principles of the Yamoussoukro Decision. WAEMU has fully liberalized its internal market and BAG has applied most of the principles in a multilateral agreement. The regional development of West African countries can be examined by grouping certain smaller players, while reviewing dominant countries separately.

The first group of small countries comprises Benin, Burkina Faso, Guinea, Guinea-Bissau, Mali, Mauritania, Niger, and Togo, most of which are members of WAEMU. The development of the air transport industry of these countries was unstable, consisting of the entrance of only a few carriers with low capacities (table 5.11). In some of countries, for instance, Mali and Togo, the air transport industry completely disappeared after some unsuccessful attempts to develop new operators. Niger has only one operator that apparently has no aircraft. Burkina Faso has been able to maintain its flag carrier, which continues to operate at a reduced scale,

Table 5.11 Fleet Analysis, West Africa, Selected Years
(number)

Country	1997			2001			2004			2007		
	Carriers	Aircraft	Available seats	Carriers	Aircraft	Available seats	Carriers	Aircraft	Available seats	Carriers	Aircraft	Available seats
Benin	0	0	0	1	1	118	1	1	108	1	3	324
Burkina Faso	1	1	85	1	1	85	1	4	369	1	1	189
Cape Verde	1	5	367	2	5	353	1	5	508	1	6	554
Gambia, The	2	12	1,370	3	7	1,040	5	9	1,433	2	7	789
Ghana	1	5	748	1	6	1,312	3	12	1,600	4	8	670
Guinea	3	5	318	2	4	274	3	3	220	2	2	172
Guinea Bissau	1	1	44	0	0	0	0	0	0	1	1	48
Côte d'Ivoire	2	16	2,613	1	11	2,395	1	4	385	3	7	546
Liberia	1	1	40	3	4	409	2	2	100	1	2	96
Mali	1	2	168	1	1	65	1	2	180	0	0	0
Mauritania	1	4	254	1	2	158	1	5	566	1	5	545
Niger	0	0	0	1	0	0	0	0	0	1	0	0
Nigeria	12	83	10,431	15	64	7,316	20	78	10,285	20	98	11,789
Senegal	1	1	37	1	1	50	2	5	452	2	5	452
Sierra Leone	0	0	0	0	0	0	8	24	5,596	4	13	3,731
Togo	1	3	225	1	1	281	1	1	46	0	0	0
Total	28	139	16,700	34	108	13,856	50	155	21,848	44	158	19,905

Source: Klee 1997, 2001, 2004, 2007.

whereas Mauritania created a new carrier after its national carrier, Air Mauritania, went out of business.

The second group comprises Cape Verde and Senegal, where the flag carriers have been able to develop their markets and have performed reasonably well. Cape Verde's national carrier, Transportes Aéreos de Cabo Verde, has reduced its focus on the regional market in West Africa to concentrate on long-haul routes to Europe and the United States (Sterling Merchant Finance, Ltd. 2007, p. 82). Air Sénégal International, a re-emergence of the former national carrier with participation by Royal Air Maroc, has successfully carried out a strategy of developing its business on the routes to and from Dakar, which had been abandoned by the defunct Air Afrique (Sterling Merchant Finance, Ltd. 2007, p. 86). Air Sénégal's success on regional fifth freedom sectors, such as Bamak–Abidjan and Bamako–Niamey, may have contributed to driving Mali's, Niger's, and Togo's carriers out of business. This is a direct consequence of the effects of liberalization induced by the Yamoussoukro Decision.

The third group of countries is composed of The Gambia, Liberia, and Sierra Leone. The flag of convenience phenomenon has become particularly important in these countries. In The Gambia, fleet size and seat capacity remained at a high level well in excess of the country's market potential from 1997 to 2004. However, it had dropped significantly by 2007, apparently because of the authorities' efforts to remove flag of convenience registrations from the country's registry. In Sierra Leone, the trend was opposite to what was observed in The Gambia. While no carrier operating aircraft with more than 30 seats was listed in 1997 and 2001, by 2004 the country had 8 carriers and 24 aircraft with almost 5,600 seats, obviously reflecting flag of convenience registrations. The figures had dropped by 2007, reflecting the authorities' efforts to remove flag of convenience registrations. Finally, Liberia's fleet figures are similar to those of the first group of countries with small air transport industries. However, large numbers of freighter aircraft not shown in table 5.11 appear on its registry, most operated by carriers based outside the country.

Three countries, Côte d'Ivoire, Ghana, and Nigeria, are countries where specific circumstances have influenced market and fleet development. Nigeria accounts for nearly half the region's air carriers and well over half the region's air fleet and seat capacity. The country experienced in-depth reform of the air transport sector, resulting in the full liberalization of domestic air services, in the late 1990s. Its flag carrier,

Nigeria Airways, then faced tough competition on its domestic market and subsequently collapsed in 2003. The new private carriers initially operated a massive fleet of old aircraft, such as 30-year-old Romanian-built BAC-111s, most of which were phased out between 2004 and 2007 and replaced by newer aircraft, predominately of the Boeing 737 series. The average seat capacity slowly increased from about 116 in 2001 to about 120 in 2007, but remained relatively low because carriers competed for high-frequency services on major domestic routes. In 2005 a new flag carrier, Virgin Nigeria, was established as a public-private partnership to operate Nigeria's international traffic rights. In 2007, the government of Nigeria indicated its intent to designate Arik, a carrier created in 2006 by Nigerian private investors, to operate most long-haul routes previously assigned to Virgin Nigeria. Arik subsequently placed a large order for Boeing 777 and 787 aircraft to be delivered in the next few years (Atiba 2007, p. 26).

The fleet size of Côte d'Ivoire and its capacities dropped dramatically from 2,395 seats in 2001 to 385 seats in 2004. This was due to the collapse of Air Afrique, whose fleet was registered in Côte d'Ivoire. A new national carrier, Air Ivoire, was established on a modest scale and has been building up its capacities to serve regional destinations and a few routes to Europe.

Ghana's fleet size and seat capacity increased steadily from 1997 (5 aircraft and 748 seats) to 2004 (12 aircraft and 1,600 seats). Since then, and despite a large increase of carriers to four in 2007, fleet size and seat capacity fell significantly to only 8 aircraft and 670 seats in 2007. This was followed by the collapse of the legacy carrier Ghana Airways, which suffered a freeze in traffic rights with the United States because of safety concerns and subsequent downgrading to FAA International Aviation Safety Assessment Program category 2. In addition, Ghana's aircraft registry lists a significant number of freighter aircraft, including seven B-747-200s, that are operated by carriers based in the United Kingdom and the United Arab Emirates that are supposedly using Ghana as a flag of convenience.

Overall, the region underwent a fundamental change from a few major national air carriers to various smaller operators. There is no evidence that liberalization contributed to the disappearance of unsustainable flag carriers. However, the Yamoussoukro Decision provided both the political and the regulatory basis for a few carriers, such as Air Sénégal International, to expand into abandoned markets. In addition, several carriers both from within the West African RECs as well as from other RECs have expanded their services with fifth freedom operations.

Development in Central Africa

The Central African region consists of two distinct main groups with quite different characteristics. On the one hand are the CEMAC countries and on the other are the Democratic Republic of Congo and the small island state of São Tomé and Príncipe.

The Democratic Republic of Congo is the largest and most populated country of the region. It accounts for about half the region's fleet and seat capacity, although the numbers fluctuate somewhat erratically. This may be attributed to successive periods of relative peace and internal fighting, but may also be a result of a lack of appropriate reporting. The country experienced a sharp drop in the number of operators, aircraft, and seats from 1997 to 2001 (table 5.12), which probably reflects the crisis experienced following the fall and death of its long-time leader President Sese Seko Mobutu. However, a strong upturn followed from 2 carriers in 2001 to 12 carriers in 2004 with 25 aircraft and 2,871 seats. The situation then stabilized, with some consolidation of the industry resulting in a reduction to nine carriers. However, most of the country's fleet consists of old aircraft models. In addition to its passenger fleet, the Democratic Republic of Congo also has a large number of freight carriers. One of the major carriers, Hewa Bora Airways, seemed to be becoming an international carrier of some standing serving routes to Johannesburg and Brussels, but blacklisting by the EU and a recent accident suspended its plans (European Commission 2007b).

São Tomé and Príncipe has two airlines operating aircraft with fewer than 30 seats. Its registry also includes several flag of convenience listings, including a large fleet of B-727 and L-100 freighters (not shown in table 5.12) that are owned by a carrier based in Angola. Of the CEMAC countries, both Cameroon and Gabon are special cases. The two countries withdrew from Air Afrique in the early 1970s to set up their own flag carriers in the belief that their traffic potential would be able to sustain their operations (Kofele-Kale 1981, p. 202). Both Cameroon Airlines and Air Gabon were initially successful operators, but experienced serious financial and operational problems in the late 1990s that led to the collapse of both carriers. (Note that the figures for Cameroon shown in table 5.12 for 2007 were collected before Cameroon Airlines finally went out of business.) The disappearance of these carriers resulted in the progressive phasing out of wide-body aircraft in the region. What remained was a few niche carriers operating local routes with smaller aircraft.

**Table 5.12 Fleet Analysis, Central Africa, Selected Years
(number)**

Country	1997			2001			2004			2007		
	Carriers	Aircraft	Available seats	Carriers	Aircraft	Available seats	Carriers	Aircraft	Available seats	Carriers	Aircraft	Available seats
Cameroon	2	5	551	2	7	751	2	6	1,162	2	5	730
Central African Republic	0	0	0	1	3	90	0	0	0	0	0	0
Chad	1	1	44	1	1	44	1	1	87	1	1	72
Congo, Rep. of,	3	9	455	2	7	590	4	10	669	4	13	803
Congo, Dem. Rep. of,	9	22	1,777	2	9	965	12	25	2,871	9	27	2,984
Equatorial Guinea	2	2	64	3	4	212	4	9	447	3	7	301
Gabon	2	8	944	4	11	1,113	7	20	1,692	5	17	1,022
São Tomé and Príncipe	1	1	118	0	0	0	2	3	315	0	0	0
Total	20	48	3,953	15	42	3,765	32	74	7,243	24	70	5,912

Source: Klee 1997, 2001, 2004, 2007.

The Republic of Congo showed steady growth in the number of aircraft and seat capacity, whereas the number of operators stabilized, indicating that consolidation was taking place. However, the aircraft fleet consists primarily of older aircraft ranging from earlier Boeing 727 to Antonov aircraft.

Chad and the Central African Republic are completely marginalized in terms of their air transport industry. Central Africa does not have any air carriers and the planned establishment of Chad's new carrier Air Toumaï did not materialize.

Equatorial Guinea, whose territory is split between a continental part, the former Rio Muni, and its islands, offers an opportunity for the development of niche domestic air transport. At the same time, the oil boom has become a major driver for international travel to the country, which is an important petroleum producer. Nevertheless, the carriers of Equatorial Guinea are weak, as demonstrated by major fluctuations in the number of aircraft and seats. In addition, flag of convenience registrations account for a large part of the capacities listed.

Even though the CEMAC countries are fully liberalized, there is little evidence that to date the Yamoussoukro Decision has facilitated the establishment of new carriers in the region. However, this might be because the two main national carriers in Cameroon and Gabon have only recently disappeared and have not yet been replaced by new operators. On the positive side, the decision has clearly facilitated the ability of carriers from other RECs to operate in Central Africa. In CEMAC, for example, most fifth freedom flights by carriers from another REC in 2001 were presumably Air Afrique flights, a carrier registered in Côte d'Ivoire. These flights disappeared in 2004 and were replaced by nearly the same percentage of fifth freedom flights from non-CEMAC carriers. As table 5.13 indicates, carriers from Benin, Ethiopia, Libya, and Nigeria, now have an important market share of fifth freedom traffic in the region.

Table 5.13 Out of Region Carriers Providing Intra-regional Service in CEMAC, 2007

<i>Country pair</i>	<i>Airline</i>	<i>Nationality</i>	<i>Market share (percent)</i>
Cameroon-Gabon	Ethiopian Airlines	Ethiopia	22
	Bellview Airlines	Nigeria	11
Cameroon-Central African Republic	Afriqiyah Airways	Libya	100
Republic of Congo-Gabon	Benin Golf Air	Benin	11
Equatorial Guinea-Gabon	Benin Golf Air	Benin	11
Equatorial Guinea-Cameroon	Benin Golf Air	Benin	31

Source: Airline Data Group data and World Bank staff's calculations.

The principles of the Yamoussoukro Decision are thus clearly affecting traffic flows, both on a regional as well as a continent-wide basis. The prime indicator is traffic that is now served by carriers from outside the region that are replacing flights that in the past were carried out by the former major regional carriers. Full liberalization of air services within the region has apparently had little effect yet on the replacement of lost capacity from within CEMAC. This, however, is positive, signaling that implementation of the decision on a regional basis has not shut the door to carriers from other RECs that are operating under the continent-wide principles of the decision.

Development in East Africa

East Africa's air transport sector has experienced remarkable growth, both in terms of number of carriers and markets. However, this growth is unevenly distributed, as only two countries, Kenya and Ethiopia, represent about two-thirds of the region's seat capacity (table 5.14). Both countries operate strong flag carriers, but the situation of each nation is entirely different. In terms of RECs, Kenya is within the EAC, where Burundi, Rwanda, Tanzania, and Uganda are relatively small players in the regional air transport market. COMESA, which includes most East Africa states, is dominated by Ethiopia, but also includes Egypt with its strong national carrier.

Kenya has reformed its air transport policies with the aim of liberalizing the domestic air transport sector. The number of carriers doubled from 1997 to 2007 and average fleet size and seat capacity have trebled, reaching 6,045 seats in 2007. Implementing domestic liberalization has, however, been less successful. One example concerns a privately-owned carrier that operated on the domestic market during 2002 and 2003 under a franchise agreement with British Airways, quickly becoming a strong competitor to Kenya Airways. However, this undertaking was short-lived, and British Airways abruptly terminated the franchise agreement. Kenya Airways subsequently remained as the only major operator, and all other carriers were either small charter companies or local operators on low-density routes. Note that the Kenyan government has carried out a partial privatization of Kenya Airways, with KLM (today Air France-KLM) owning a 27 percent share and providing support services in the role of a technical partner.

Ethiopia shows no sign of effective internal liberalization of the air transport market. Ethiopian Airlines still remains a *de facto* monopoly and enjoys strong support from the government in negotiating new air service

Table 5.14 Fleet Analysis, East Africa, Selected Years
(number)

Country	1997			2001			2004			2007		
	Carriers	Aircraft	Available seats	Carriers	Aircraft	Available seats	Carriers	Aircraft	Available seats	Carriers	Aircraft	Available seats
Djibouti	1	2	222	3	8	735	1	1	48	3	12	1,443
Eritrea	0	0	0	0	0	0	1	2	412	1	2	403
Ethiopia	1	17	1,668	1	17	1,920	1	25	3,558	2	25	3,547
Kenya	5	17	1,914	7	28	3,894	10	40	4,219	10	56	6,045
Rwanda	0	0	0	1	1	79	1	1	142	1	1	37
Somalia	0	0	0	1	1	164	0	0	0	1	1	48
Sudan	3	12	1,478	3	121	2,213	3	15	1,359	5	21	2,169
Tanzania	2	6	390	2	7	516	4	14	916	4	10	674
Uganda	1	3	249	0	0	0	1	1	103	1	1	103
Total	13	57	5,921	18	73	9,521	22	99	10,757	28	1,29	14,469

Source: Klee 1997, 2001, 2004, 2007.

agreements (see appendix A for a complete list of bilaterals negotiated by the Ethiopian government). The fleet experienced steady growth, with a 50 percent increase in the number of aircraft from 1997 to 2007, while average seat capacity doubled during the same period. This illustrates Ethiopian's strategic priorities in favor of fostering the development of long-haul routes. At the same time, Ethiopian Airlines continues to establish its intra-African network, which in the past essentially aimed at playing a feeder role for its intercontinental services. Nevertheless, increased fifth and some seventh freedom routes indicate clear intra-African market development, with Ethiopian Airlines becoming a major operator serving several RECs.

Tanzania, despite being a relatively large market for air transport compared with other countries of a similar size, is dominated by several smaller carriers flying aircraft with fewer than 30 seats that primarily serve the domestic tourism market. As concerns international carriers, two major operators stand out. The national carrier, Air Tanzania, was partly privatized in 2002 when South African Airways acquired a 49 percent stake and was becoming a major shareholder and technical partner. However, the partnership ended in 2006 when South African Airways sold back its stake.⁴ The other carrier is Precision Air, which is a privately owned carrier with substantial shareholding by Kenya Airways. Precision Air has been steadily gaining ground against Air Tanzania, effectively becoming the country's most important operator in the domestic and regional market within the EAC. Other Tanzanian carriers are small operators serving selective local routes, for instance, to and from Zanzibar and Arusha. Nevertheless, Tanzania has also become one of the most competitive domestic markets compared with other African countries, where at least two carriers compete on any major domestic destination.

Sudan, the largest country in Africa, has the region's third largest fleet. Its air transport market seems to be volatile, resulting in fleet size and capacity fluctuating between the years analyzed. Most of Sudan's fleet is composed of older Western- and Eastern-built aircraft split among a few operators. None of these operators has been able to dominate the country's air transport sector by becoming a serious contender on international routes. In addition, Sudan's safety record is particularly worrying, which led to the recent suspension of the national carrier's air operator certificate (Henshaw 2008).

The other countries of the region include Burundi, Rwanda, and Uganda, which belong to the EAC; Djibouti and Eritrea, which belong to COMESA; and Somalia, which is not part of any REC. Each of these states

has a marginal and relatively unstable air transport industry, with Burundi not even having a carrier operating aircraft over 30 seats. Nevertheless, Uganda is a good example in terms of policy, as it completely opened up its air transport market after its national carrier was liquidated. While its own fleet remains stagnant, traffic by other carriers, which have been allowed to operate quite freely, has risen steadily.

Another special case in the region is Djibouti. The relatively large number of aircraft and seats in 2007 is deceptive, as carriers based out of the country seem to account for most of them. Apparently Djibouti, which was flagged with respect to safety oversight after the 2008 ICAO universal safety oversight audit, has recently become a provider of flag of convenience registrations (ICAO 2008).

East Africa experienced a strong development of its air transport services since 2001. Liberalization has helped two main carriers, Ethiopian Airlines and Kenya Airways, to expand their regional operations. As a consequence, however, fifth freedom operations from carriers that are not based in either the EAC or COMESA have lost importance in the region, suggesting a lesser influence of the continent-wide Yamoussoukro Decision. Nevertheless, strong growth of intraregional traffic, including fifth freedom operations, confirm that regional liberalization of air services is taking place in East Africa.

Development in Southern Africa

Southern Africa's air transport industry is predominately located in SADC countries, which have generally made relatively little progress in implementing the Yamoussoukro Decision on a regional basis. However, several SADC states are also members of COMESA (Angola, Malawi, Swaziland, Zambia, and Zimbabwe), which has made far more progress in liberalizing air services.

One of the prime factors underlying SADC's slow progress is South African carriers' domination of the air transport market (table 5.15). These represented 68 percent of the region's aircraft in 1997, growing to more than 80 percent in 2007. At the regional level, the number of carriers, aircraft, and seats has grown steadily, resulting in a 60 percent increase in carriers, a 112 percent increase in aircraft, and a 72 percent increase in seat capacity. These figures reflect a certain consolidation of the industry and stronger growth of regional and domestic routes. However, given the magnitude of South Africa's air transport industry, it is primarily the region's domestic market that is driving the region's fleet and seat capacity indicators.

Table 5.15 Fleet Analysis, Southern Africa, Selected Years
(number)

Country	1997			2001			2004			2007		
	Carriers	Aircraft	Available seats	Carriers	Aircraft	Available seats	Carriers	Aircraft	Available seats	Carriers	Aircraft	Available seats
Angola	4	21	2,136	4	20	2,238	4	15	1,976	8	33	2,818
Botswana	1	2	84	1	3	138	1	4	211	1	5	281
Lesotho	1	1	44	0	0	0	0	0	0	0	0	0
Malawi	1	2	177	1	2	177	1	2	177	1	3	287
Mozambique	1	4	654	1	5	613	1	5	520	3	9	886
Namibia	2	6	1,435	2	6	680	2	5	679	2	7	1,044
South Africa	8	85	13,960	16	161	21,853	20	206	27,364	19	220	28,039
Swaziland	1	2	156	2	3	660	2	8	2,275	1	4	503
Zambia	2	4	360	0	0	0	1	1	48	1	2	236
Zimbabwe	2	11	1,374	1	6	836	1	6	836	1	9	968
Total	23	138	20,380	28	206	27,195	33	252	34,086	37	292	35,062

Source: Klee 1997, 2001, 2004, 2007.

South Africa has been liberalizing its domestic market for several years, but with its flag carrier, South African Airways, still not privatized, implementation of the liberalization policy remains incomplete. The number of South African carriers increased from 8 in 1997 to 16 in 2001, and to 20 in 2004, dropping slightly to 19 in 2007. The number of passenger aircraft with more than 30 seats doubled from 1997 to 2001, reaching 220 in 2007. Seat capacity also doubled from 1997 to 2004, but had stabilized by 2007.

Other important South African carriers include the following:

- Comair and Nationwide, both of which operate domestic trunk routes and a few short- to medium-haul international destinations. Comair operates under two different brands: regular services are flown under a franchise agreement with British Airways and “low-cost” operations are flown as Kulula.com.
- South African Express and South African Airlink are both equipped with 50-seater aircraft and operate feeder services to smaller South African towns and neighboring countries (Lesotho and Swaziland) under franchise agreements with South African Airways.

In recent years, the industry has modernized its fleets by replacing aging Boeing 737-200s with newer versions (table 5.16). However, the figures shown in the table are not by themselves sufficient to provide a

Table 5.16 Fleet Evolution of Major South African Carriers, Selected Years
(number)

<i>Carrier</i>	<i>Aircraft types</i>	<i>1997</i>	<i>2001</i>	<i>2004</i>	<i>2007</i>
Comair	B-727 and 737-200	8	15	10	6
	MD-80 series	0	0	6	6
	B-737 newer versions	0	0	4	12
Nationwide	B-727 and 737-200	1	7	14	16
	B-737 newer versions	0	0	1	2
	BAC111	12	11	0	0
South African Airlink	F-28	0	0	1	0
	EMB-135	0	0	0	5
	Bae-146	0	0	0	3
South African Airways	B-727 and 737-200	1	1	11	0
	B-737 newer versions	0	11	21	21
	A-320 and 319	7	5	4	11
	A-300	7	3	3	3
South African Express	DHC-8	0	7	7	9
	CRJ	0	6	6	9

Source: Klee 1997, 2001, 2004, 2007.

clear picture of South Africa's aircraft fleet given the extent of modernization and the creation of small, new carriers.

Botswana's fleet experienced steady growth, with just one carrier operating aircraft with more than 30 seats, but with the number of aircraft and overall seat capacity growing. Namibia's fleet has fluctuated. The number of operators and aircraft remained stable, but capacities were halved before timid growth resumed. This was partly due to Air Namibia's difficulties in sustaining its long-haul operations in the face of aggressive competition from South African Airways, which was using low-fare connections based on sixth freedom rights via its Johannesburg hub to a much wider range of long-haul and medium-haul destinations than Air Namibia could achieve.

Malawi, Mozambique, Zambia, and Zimbabwe faced the same problem. In Zambia, the flag carrier, Zambia Airways, was liquidated in 1994. In Zimbabwe, Air Zimbabwe's capacity stabilized after a significant drop from 1997 to 2001. Linhas Aereas de Mozambique, the national carrier of Mozambique, experienced a continued drop in unit capacities, reflecting limited liberalization of the domestic market and the difficulties of competing on long-haul routes, as the South African Airways hub in Johannesburg is increasingly capturing its international traffic. The Mozambican authorities have tried to limit this competition by imposing a cap on frequencies and capacities on the Johannesburg–Maputo route. This attempt has been challenged by competitors wanting to enter the market based on the liberalization of third and fourth freedoms by the Yamoussoukro Decision.

Malawi's flag carrier seems to be able to maintain a niche market strategy, capturing a substantial proportion of the passengers traveling to and from the small country. The situation is similar for Lesotho, which is also a small and landlocked country with limited traffic potential, but the only flag carrier went of business, partly because of competition from South African carriers and partly because of competition from cheaper transportation services offered by bus operators on the routes to Bloemfontein (200 km) and Johannesburg (500 km). Swaziland's national airline has also not been successful in competing with South African carriers. Nevertheless, the country's registry lists several aircraft, some of which are flag-of-convenience registrations. The reduction of aircraft in the registry from 2004 to 2007 was a consequence of international pressure to reduce flag of convenience registrations.

Overall, the southern African region provides little evidence of an impact from the liberalization of air services. The SADC countries remain dominated by the South African flag carrier, and as a consequence, fifth

freedom operations from both the SADC and from other RECs have declined steeply. However, some of the SADC states are also members of COMESA and there are some indications that these states have benefited in a few isolated cases from fifth freedom flights to other COMESA states that were requested on the basis of the Yamoussoukro Decision (see the case of Malawi, which requested several fifth freedom operations that were mostly refused [Bofinger 2007b, p. 15]).

Development in Indian Ocean Island Countries

The Indian Ocean island countries depend heavily on air transportation for both domestic and international destinations. Of the four countries in this group, two belong to COMESA (the Comoros and the Seychelles) and two belong to both COMESA and SADC (Madagascar and Mauritius). However, only the Comoros and the Seychelles are parties to the Yamoussoukro Decision, while Madagascar is not and the case of Mauritius remains unclear (see appendix B).

Only one carrier was listed for the Comoros in 1997 and none was listed for the subsequent years (table 5.17). Nevertheless, the country operates a national carrier with two aircraft that are not registered in the Comoros. In the Seychelles, the number of aircraft registered rose and then dropped, while capacities dropped from 2004 to 2007 following a peak accounted for by the registration of a carrier based abroad.

Mauritius represented two-thirds of seat capacity in 1997, but its relative share then declined even though its total seat capacity grew slowly during the period, but at a slower pace than total traffic, reflecting a loss of market share by Mauritius. However, the upward trend in unit capacity reflects Air Mauritius' developing of its long-haul services, as well as its difficulties in diversifying its markets at the regional level. A recent reform of air transport policy has ended Air Mauritius' monopoly by allowing the entry of the new carrier Catovair, but its operations remain limited, concentrating on services between the mainland of Mauritius and the outer island of Rodrigues (Bernard Krief Consultants 2008, p. 4).

Madagascar's aviation capacity doubled between 1997 and 2001, but then dropped. The number of medium-haul aircraft remained steady, but newer models replaced aging ones. The long-haul fleet was increased from one Boeing 747 to two Boeing 767-300ER aircraft to help meet the objective of opening new routes and increasing the frequency of services on existing ones. Similar to other African countries, reformed policies have liberalized domestic market entry, and a second carrier was

Table 5.17 Fleet Analysis, Indian Ocean Island Countries, Selected Years
(number)

Country	1997			2001			2004			2007		
	Carriers	Aircraft	Available seats	Carriers	Aircraft	Available seats	Carriers	Aircraft	Available seats	Carriers	Aircraft	Available seats
Comores	1	1	44	0	0	0	0	0	0	0	0	0
Madagascar	2	7	788	1	12	1,642	2	11	1,341	2	10	1,074
Mauritius	1	11	1,996	1	12	2,216	1	12	2,222	2	12	2,463
Seychelles	1	2	454	1	3	696	2	8	1,311	1	4	564
Total	5	21	3,282	3	27	4,554	5	31	4,874	5	26	4,101

Source: Klee 1997, 2001, 2004, 2007.

established with a limited fleet operating on domestic routes (Bernard Krief Consultants 2008, p. 4).

The analysis of the region's air transport industry would be incomplete without mention of La Réunion Island, a French territory. The local carrier, Air Austral, which flies two Boeing 737-300/500 and one ATR72-500 aircraft on regional routes, has recently added three Boeing 777-200s to its fleet to operate its new routes to France and Southeast Asia.

Conclusions

The general move toward liberalizing air services in Africa resulted from the following three different set of causes:

- worldwide trend toward liberalization that had a strong impact on African carriers' long-haul operations, especially through increased competition that resulted in lower fares, as well as their past business model, which consisted of cross-subsidizing domestic and regional services with profits made on intercontinental traffic;
- domestic liberalization policies that caused the end of domestic monopolies, and in some cases the disappearance of state ownership of flag carriers, and the arrival of new entrants on domestic markets, mostly privately owned, that began competing with legacy carriers for international routes;
- continent-wide liberalization of intra-African air services promoted by the Yamoussoukro Decision and already implemented by some RECs.

The first two causes of liberalization produced strong and conspicuous impacts during 2001–04, in particular, the collapse of some major legacy carriers, demonstrable by significant drops in seat capacities and the supply of air services. However, the impact of the Yamoussoukro Decision only became sizable during 2004–07. The most remarkable impacts of the Yamoussoukro Decision on the African air transport sector during this period were

- the relative strengthening of a limited number of stronger African carriers, such as Ethiopian Airlines and Kenya Airways, that reaped the benefits of their comparative advantages in terms of geographical location; financial, commercial and managerial strength; and access to intercontinental markets;

- the marginalization of many already weak carriers, some of which ultimately disappeared, for instance, Air Tanzania, Nigerian Airways, and Cameroon Airlines;
- the consolidation of networks through the phasing out of a number of low-density routes and growth of routes to and from the main hubs, most significant in East Africa;
- the development of fifth freedom traffic, especially in regions and country pairs that lacked strong local carriers, often offered by dominant carriers at marginal cost, effectively resulting in pressure on regional fares, which is forcing locally-based third and fourth freedom carriers to accept lower fares;
- the significant development of sixth freedom traffic, fostered by the liberalization of third and fourth freedom capacities within Africa, and in some cases with intercontinental counterpart countries.

With respect to the last point, some of the sixth freedom services are increasingly competing with point-to-point intercontinental traffic, especially on West African routes to and from Europe and over certain hubs in East Africa. These carriers, which appear to be the main beneficiaries of the ongoing liberalization, are mostly based in North and East Africa and are likely to emerge as key actors in relation to the future consolidation of Africa's air transport industry.

On a regional basis, only West and Central Africa have fully achieved the liberalization of air services in terms of policy implementation. While these regions experienced a high turnover of carriers, they also felt the largest impact in terms of fifth freedom flights. Nevertheless, while a high percentage of these fifth freedom flights are of carriers registered in the RECs of West and Central Africa (WAEMU and CEMAC), African carriers of other RECs also account for a significant number of fifth freedom flights. As no strong regional carrier has emerged in West or Central Africa, the question of whether regional liberalization or continent-wide liberalization will ultimately shape the market in West and Central Africa remains open.

Regions that have not implemented the Yamoussoukro Decision, such as North and southern Africa, would generally benefit from the decision. However, some countries, such as South Africa, are facing strong, continued resistance by neighboring states with weak carriers. Nevertheless, the examples of several North African carriers that have begun expanding their route networks into Sub-Saharan Africa are inspiring continent-wide liberalization.

The most inspiring development is the progress in East Africa, where a few operators have aggressively expanded their air services into other regions of Africa. Both Ethiopian Airlines and Kenya Airways are good examples of how to replace the capacity of failed operators, often found in smaller, unviable markets. However, the final steps to liberalize East Africa's regional market must still be taken.

Notes

1. International publicly listed airlines have become increasingly transparent by generally disclosing a set of data that includes number of passengers transported, available seat-kilometers, revenue passenger-kilometers, passenger load factor, amount of freight transported, cargo load factor, available cargo-ton-kilometers, revenue cargo-ton-kilometers, total revenue ton-kilometers, overall load factor, and number of flights flown in a given year (see, for example, Deutsche Lufthansa AG 2007, p. 46).
2. On-flight origin and destination data show, on an aggregate basis, the number of passengers and tons of freight and mail carried between all international city pairs on scheduled services. Traffic data by flight stage indicates traffic on board aircraft on flight stages of international scheduled services. The data are classified by international flight stage for each air carrier and aircraft type used and by the number of flights operated, the aircraft capacity offered, and the traffic (passengers, freight, and mail) carried. These data are provided to contracting states and are publicly available at <http://icaodata.com/Trial/WhatIsICAO.aspx>.
3. One of those included in the group of new entrants is privately-owned Regional Air Lines, which actually already existed in 1997 and 2001, but was not yet operating aircraft with more than 30 seats, which is why it is not listed in table 5.10 for those years.
4. On 32 March 2006, the government of Tanzania declared that it would dispose of Air Tanzania following four years of losses amounting to TZS 24.7 billion. The director-general of Tanzania's Civil Aviation Authority stated that Air Tanzania was in worse shape than before the involvement of South African Airways. Meanwhile South African Airways blamed the Tanzanian government for not releasing about US\$ 30 million that were needed to implement Air Tanzania's restructuring and to stop continued losses. On 7 September 2006, the government of Tanzania bought back the 49 percent stake for US\$ 1 million (*East African Business Week* 2009).