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## Global strategic alliances in scheduled air transport – Implications for competition policy

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## Global Strategic Alliances in Scheduled Air Transport — Implications for Competition Policy

by Claus-Friedrich Laaser, Henning Sichelschmidt, Rüdiger  
Soltwedel, and Hartmut Wolf

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- In international aviation, global strategic alliances (GSAs) have in recent years become an important form of cooperation between airlines. This cooperation has hit the antitrust nerve of the European Commission. Initially, the Commission had attempted to constrain both the market share of the major alliances in transatlantic air transport and their access to major European hubs (London and Frankfurt). The airlines maintain that they need alliances as an inevitable means to adapt to the changing environment in increasingly liberalized and globalized air transport markets in order to remain competitive and to fully realize their growth potential. The final verdict by the Commission will be published soon.
- Though the existing airline alliances are not stable enough to threaten competition and the openness of airline markets on a global scale, certain hubs or even city pairs might be in danger of being dominated by an individual alliance. This is all the more so as alliances in aviation — contrary to, e.g., strategic R&D alliances in manufacturing — are based on cooperating in a core area of the participants' commercial activities, which might end in collusion. On the other hand, alliances may indeed be regarded as an appropriate tool for internationally active firms to remain competitive.
- For analyzing alliances' impact on competition, networks seem to be more appropriate than city pairs. On the networks level, complementary alliances usually improve overall welfare via lower fares in all submarkets, whereas parallel alliances tend to result in higher prices in the former parallel markets and lower in other markets due to network spillover effects. Since GSAs in aviation are both of a complementary and a parallel nature, no clear-cut a priori position for or against alliances can be maintained based on conventional antitrust reasoning. From the new institutional economics perspective, alliances are ambiguous as well, because this perspective highlights the efficiency objectives of the participating carriers as well as the potential for collusion and opportunistic behavior.
- Empirical evidence on the market shares and pricing behavior of alliances and their members does not as yet reflect an increasing threat to competition by these forms of cooperation. But it should be noted that alliances appear to be gaining greater stability over time and that the number of independent competitors is shrinking. These independent competitors contribute much to the dynamics of the competitive process. If their vital role for competition were to be restricted, GSAs in air transport might prove to be detrimental in the long run.
- The European Commission is right to be on the alert about GSAs having potentially detrimental effects on competition. However, the Commission should avoid overreacting in its zeal to keep markets open (contestable). It should be borne in mind that market access on transatlantic as well as on most other international air transport routes is still governed by the administrative provisions of intergovernmental bilateral agreements and not by market forces. Therefore, the more relevant question for aviation policy would be whether competition on the North Atlantic routes could be best maintained by scrapping the bilateral agreements and embarking on a truly liberal open skies aviation agreement between the EU, the United States, and other countries.

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## **List of Abbreviations**

AEA	Association of European Airlines
APEX	advance purchase excursion
ASA	Air service agreements
CRS	computer reservation systems
FFP	frequent-flyer program
GSA	Global Strategic Alliance
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
NIE	new institutional economics
RPK	revenue passenger kilometers
SAT	scheduled air transport
SCP	structure-conduct-performance approach

# 1 Introduction: The European Commission's Concern about Airline Alliances

In international aviation, new forms of cooperation between firms have emerged in recent years, with strategic airline alliances encompassing cooperation on a global scale in several instances. Strategic airline alliances are voluntary agreements between carriers for the purpose of enhancing their international competitive position — in particular of realizing economies of scale, density, and scope, of saving transaction costs, and of sharing risks —, without giving up their economic independence. These cooperations between air carriers have entailed antitrust activities by the European Commission. A conspicuous case in point is the Commission's attempt to constrain the market share of the major alliances both in transatlantic air transportation links and with respect to the access to major European hubs (London and Frankfurt).

On July 8, 1998, the European Commission's Competition Directorate General IV adopted its preliminary position on the approval of two global strategic alliances (GSAs) in scheduled air transport (SAT), namely those of British Airways/American Airlines as well as of Lufthansa/SAS/United Airlines.<sup>1</sup> The Commission made clear that its approval is subject to the fulfillment of specific conditions by the airlines. Among these conditions are (i) to substantially reduce frequencies on densely served transatlantic routes for a period of 6 months if competitors who are willing to enter the relevant markets will be requesting the alliances to do so; (ii) to make available the respective slots in their European basis hubs free of charge if potential entrants cannot obtain appropriate slots; and (iii) additional measures concerning frequent-flyer programs, computerized reservation systems, interlining agreements and exclusive contracts with travel agencies (European Commission 1998a; 1998b). Only if these regulatory conditions were fulfilled by the alliances, the Commission would not object to their formation.

Not surprisingly, the airlines concerned have objected heavily to the DG IV's position and its regulatory approach to constrain alliances' activities on the North Atlantic routes. They argue that the proposed reduction in their flight frequencies and the cession of slots to potential competitors would be an unacceptable intervention into their freedom of contract and that the Commission's competition policy measures would impair — instead of fostering — competition on global airline markets: In increasingly globalizing airline markets, the strategy of engaging in alliances would be inevitable for single airline companies to remain competitive.<sup>2</sup> If the Commission precluded European carriers from engaging in strategic alliances with North American and Asian carriers in order to gain better access to respective markets, it would not only restrict the European carriers in their business development and growth potential, but also prevent the emergence of competitive European global players on worldwide air traffic markets.<sup>3</sup>

Hence, the problem of GSAs in SAT is that, on the one hand, they reflect the attempt of airlines to exploit the efficiency potential of closer cooperation in globalizing markets, but that they may entail opportunities for participants to exert market power at the expense of economic welfare on the other. In our paper, we will analyze and give empirical evidence on the potential threat to competition and the openness on international markets in SAT. In Chapter 2, we will provide some stylized facts on the formation of alliances in air transport both concerning the different types of alliances and their (relative) significance for international aviation. Chapter 3 is devoted to the analysis of the competitive effects of GSAs by looking at strategic alliances in other sectors of globalizing economies (3.1),

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<sup>1</sup> A final decision of the Commission has not been made yet, but is expected in late October 2000.

<sup>2</sup> For a comprehensive discussion, see *DVZ* (1998).

<sup>3</sup> As a consequence of the conditions set by the Commission, British Airways decided to suspend the respective parts on code sharing and joint fare setting of the alliance agreement for the time being because of the high costs of compliance (Oum et al. 2000: Section 2.5).

by discussing various concepts of competition in network industries, including the perspective of new institutional economics (3.2), and by providing some empirical evidence on the development of market shares and fares (3.3). Against this background, the EC Commission's proposals are evaluated (Chapter 4).

## 2 Stylized Facts on Airline Alliances

Strategic alliances have rapidly spread in SAT since the beginning of the 1990s, while they have been around in this sector for already quite some time: Multiply interconnected networks are a traditional basic feature of all transport markets anyway. Moreover, the International Air Transport Association (IATA) agreement after World War II between all major airlines, which was coordinating international air transport<sup>4</sup>, can be seen as a forerunner of the contemporary strategic alliances in scheduled air transport. Alliances of independent airlines — more or less specialized on traffic relations in certain regions due to a restrictive granting of traffic rights in the system of bilateral air service agreements (ASAs) — can be found first in the U.S. domestic market since the mid-1960s. This was still in the era of tight regulation, when trunk and commuter operators started to cooperate in offering interconnected flight options (Button et al. 1998: 99 f.).

In international aviation, the first strategic alliances, although limited to code sharing<sup>5</sup>, have been formed since the mid-1980s: Two rather small airlines — Air Florida and British Island — started their code-sharing alliance in 1986, while in 1987 a code-sharing alliance with far-reaching network extensions was initiated between United Airlines and British Airways.<sup>6</sup> Since the early 1990s, strategic alliances have rapidly spread throughout international airline relations: While even in 1992 most airline managers did not even mention alliances as a factor furthering the future growth of their companies, since the mid-1990s they share the conviction that the prosperity of internationally operating airlines will largely depend upon their engagement within a GSA (Littek 1997: 454).

The present structure of GSAs is dominated by five alliances (Table 1). While the partnership of British Airways and United Airlines of 1987 had meanwhile been terminated,<sup>7</sup> the first of the contemporary worldwide alliances was launched in 1989, when the Dutch carrier KLM acquired a stake in the U.S. major carrier Northwest Airlines. A cooperation between Swissair and Delta Air Lines, which started in the same year, has recently been terminated in favor of an alliance of Air France and Delta Air. The Star Alliance was initiated in 1993 by Lufthansa and United Airlines, and in 1996 British Airways and American Airlines announced their alliance. The Qualiflyer Group in its recent form was founded in 1998 as a follow-up to the cooperation agreement between Swissair and TAP Air Portugal of September 1997.<sup>8</sup>

<sup>4</sup> The agreement also provided for interlining, i.e. through-ticketing on different airlines at industry-standard fares, which were shared on a pro rata basis (AEA 1999: 18).

<sup>5</sup> Code sharing means that two or more airlines are offering a single flight each under their firm-specific flight number (code), while the real flight operation is carried out by only one of the partners. By code sharing airline A is able to offer a larger variety of flight options under its flag, while a substantial part of them is flown by planes of airline B, and vice versa. See Littek (1997: 452) and Oum and Park (1997: 135).

<sup>6</sup> For details see Oum and Park (1997: 134 f.).

<sup>7</sup> This was done in 1990 after United Airlines had acquired its first own North Atlantic traffic rights from Pan American (Wiezorek 1998: 313).

<sup>8</sup> For a detailed analysis of the alliances' history (which includes further short-lived alliances such as British Airways/US Air [1993–1995] and important changes in membership during the early years of the alliance movement) see Wiezorek (1998: 313–328).



Table 1: The "Big Five" Alliances and Their Members as of mid-2000<sup>a</sup>

Star Alliance	One World	Air France/Delta	KLM/Northwest	Qualiflyer
<i>European members</i>				
Austrian Airlines	British Airways	Air France	Braathens (Norw.)*	Air Europe
British Midland	Air Liberté*	Aeroflot*	KLM (Netherlands)	Air Littoral
Lufthansa	Deutsche BA*		Transavia*	AOM French Airl.
SAS (Scandinavia)	Finnair			Crossair
Spanair*	Iberia			LOT Polish Airlines
Virgin Atlantic*	Aer Lingus			Portugalia
				Sabena
				Swissair
				TAP Air Portugal
				Turkish Airlines
				Volare
<i>North American members</i>				
Air Canada	American Airlines	Delta Air Lines	Continental Airlin.*	—
Canadian Int'l*			Northwest Airlines	
United Airlines				
US Airways*				
<i>Other members</i>				
Air New Zealand	Aerolineas Argentinas*	Aeromexico	Kenya Airways*	South African*
All Nippon Airways	Cathay Pacific	Korean Airlines*		
Ansett Australia	Lan Chile			
Mexicana	Qantas (Australia)			
Singapore Airlines				
Thai Airways				
Varig (Brasil)				

<sup>a</sup>Asterisks indicate associated members (airlines which have equity links or comprehensive marketing agreements with at least one of the major partners, but which are not closely tied with other alliance groupings).

Source: Own compilation based on O'Toole (2000).

Common features of airline alliances are that they

- are formed by one (or two) of the major United States air carriers and one of the leading European airlines<sup>9</sup>,
- participate with airlines from other parts of the world,
- cooperate in several (though not necessarily all) of the following fields of airline operations: flight operations (e.g., joint route planning, crew and aircraft sharing, joint aircraft maintenance), code sharing, joint pricing and schedule integration, reciprocal frequent-flyer programs and access to airport lounges, through check-in, joint ground handling, purchasing, advertising and promotion, cooperation in cargo handling,<sup>10</sup>
- are open to limited agreements (e.g., code sharing on single routes) with nonmember airlines.

The level of integration realized within the various alliances is not in all respects the same (AEA 1999: 19); rather, "while each alliance is promising the long-term goal of a seamless global service, there are wide variations in the extent of their togetherness" (Gallacher 1999: 34). Moreover, in the context of the alliances' openness to limited agreements with outsiders and as a consequence of the still ongoing process of alliance building<sup>11</sup>, a clear-cut and unambiguous description of the member-

<sup>9</sup> An exception is the Qualiflyer Group, which originally consisted of European members only.

<sup>10</sup> For short summaries of individual alliances' activities, see O'Toole (1999).

<sup>11</sup> Major changes in the alliance structure from mid-1999 to mid-2000 have been: shift of Austrian Airlines from Qualiflyer to Star Alliance; formation of a new alliance around Delta Air Lines and Air France, thereby cutting Delta's link to the Qualiflyer Alliance; shift of LOT Polish Airlines, formerly an associated member of One World, to the Qualiflyer Alli-

ship of an alliance is not always possible; this has obvious consequences, e.g., for the calculation of market shares.

The geographical selection of the participating airlines seems to have been done with respect to the aim of building worldwide networks in order to enable as many passengers as possible to reach their destinations without leaving the alliance members' services. Thereby the alliances intend "to capture passengers who would otherwise go elsewhere" (Skapinker 1999). Consequently, each of the five dominating alliances, with the exception of Qualiflyer, comprise airlines from North America, Europe, and other parts of the world, mostly Asia and/or Latin America (Table 1).

Each of these alliances cover several fields of airline operations; therefore, they may be called "broad commercial alliances" in order to separate them from those numerous minor agreements which pertain to cooperation on one or relatively few routes and thus may be called "simple route-by-route agreements"; the latter are, as a rule, of a substantially lower intensity (often limited to code sharing), however, sometimes complemented by joint frequent-flyer programs of the participating airlines.

There seems to be a lot of experimentation going on in alliance formation. According to the latest survey collected by *Airline Business* in July 2000, there are now 579 bilateral partnerships in force among more than 220 mainline airlines (O'Toole and Walker 2000: 46).<sup>12</sup> One year earlier, the number of alliances had amounted to 515 (1998: 502, 1997: 363; see O'Toole 1999: 36).

Of these 579 alliances worldwide, a great number is, in the present context of European competition policy concerns, of only minor (if any) importance because all of their partners are non-European airlines. Thus, they pertain more or less exclusively to routes outside Europe and therefore do not fall within the jurisdiction of EU authorities. An overview of alliances with a participation of European airlines is given in Tables 2 and 3.<sup>13</sup> The majority of these alliances is of the simple route-by-route category; they are mostly in the form of code-sharing agreements, which reportedly applies to at least three-quarters of all alliances worldwide (O'Toole and Walker 2000: 46). Alliances with one-sided or mutual equity investments are shown separately (equity investment alliances); the amount of the equity stake(s) in the partner airline(s) is given in Table 4.

Note that airline alliances are not necessarily mutually exclusive. There are several cases in which an airline belonging to one of the five dominant alliances has some (though usually minor) form of cooperation with members of another alliance. "Neutral" carriers without alignment with any member of the dominant alliances have agreements, mostly route-by-route, with carriers of different alliances; these are often airlines of the former East Bloc (see, e.g., the agreements of the Czech carrier CSA). Furthermore, there are some "associated" carriers (marked by a star in Table 1) which are not members of the big alliances but linked to them by separate agreements with one or two core members. Apart from those carriers listed in Table 1 there are further links to regional carriers that operate mostly within single countries, thereby completing the mainline carriers' network.<sup>14</sup>

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ance; KLM's withdrawal from its alliance with Alitalia; integration of Aer Lingus within One World Alliance. (These changes have all been taken into account in the statistical tables.)

- 12 The survey excludes cooperation with regional partners, as well as alliances which merely pertain to cooperation on frequent-flyer programs.
- 13 The term "European" refers to Europe excluding the former USSR, but including the three Baltic states. — Regional and all-cargo airlines have been excluded from both tables. Each alliance is shown only once. The airlines are grouped according to their membership in the Association of European Airlines and their respective home countries' EU membership.
- 14 Several further alliances, mostly of the equity investment type, are of a more special nature. They presumably reflect former colonial ties between the involved airlines' countries of residence, or long-term strategic considerations, e.g. in the context of the transition process in Eastern Europe. The most important examples (see Tables 3 and 4) are Air France's stakes in, and close cooperation with, several airlines of the former French colonies in Africa — which in the case of Air Afrique, the multinational carrier of francophone West African countries, dates back as far as to 1963 —, Austrian Airlines' stake in Ukraine International Airlines, and KLM's cooperation with Air Aruba. In the present context, these alliances can be regarded as little more than a further extension of the big alliances.

Table 2: Alliances of European Airlines with Other European Airlines as of mid-2000<sup>a</sup>

AEA members of EU countries													AEA members of non-EU countr.					non-AEA, EU				non-AEA, non-EU							
AF	AY	AZ	BA	BD	EI	IB	KL	LH	OS	SK	SN	TP	CY	FI	JP	LZ	MA	OK	SR	TK	IW	DI	NG	VB	BU	OU	OV	LO	RO
*AF				v					v						v		v	v						v		v		v	
**AY		X			v	X					v	v							v			v							
Alitalia	AZ			v									v				v								v	v		v	v
Brit. Airw.	BA				X	X																O							v
Brit. Midland					BD				v	v	O		v		v														
Aer Lingus					EI			v				v																	
Iberia						IB			v							v		v				v				v		v	v
KLM Royal Dutch							KL						v					v							O				
Lufthansa								LH							v			v					O	v		v			
Austrian Airlines								OS		v						v	v	O	v			O						v	v
Scandinavian Airl.										SK				v										v			v	v	
Sabena										SN	X								O			X		v					
TAP Air Portugal											TP								X				v						
Cyprus Airways												CY																	
Icelandair												FI																	
Adria Airways													JP													v			
Balkan Bulgarian															LZ													v	
Malev Hungarian															MA	v	v												
CSA Czech Airlines																	OK	v	v							v		v	
Swissair																		SR	X	X		v						X	v
Turkish Airlines																				TK						v			
AOM French																					AL								
Deutsche																						BA		DI					
Lauda Air																							NG						
Maersk Air																								VB		O			
Braathens S.A.F.E.																									BU				
Croatia Airlines																										OU			
Estonian Air																											OV		
LOT Polish Airlines																												LO	v
Tarom (Romania)																													RO

\* AF = Air France  
\*\* AY = Finnair

<sup>a</sup>Explanation of symbols: v = simple route-by-route alliance, X= route-by-route alliance within the framework of a broad commercial alliance, O = equity investment alliance. — The following route-by-route or equity alliances are not shown in the table: *Air Baltic* with Estonian Air, Lithuanian Airlines, Lufthansa and Malev; *Air Bosna* with Croatia Airlines and Malev; *Air France*, *Finnair*, *Lufthansa* and *VLM* (Vlaamse Luchttransportmaatschappij) with Luxair (LG); *Air Malta* with CSA; *British Airways* with British Mediterranean Airw. and GB Airw.; *British Midland* with Virgin Atlantic Airw.; *KLM* with Transavia Airlines; *Lithuanian Airlines* with Finnair, KLM and LOT; *Lufthansa* with Spanair; *Olympic Airways* with Balkan Bulgarian Airlines, CSA Czech Airlines and TAP Air Portugal; *Malev* with Moldavian Airlines; *Sabena* with CityBird and Virgin Express, *Scandinavian Airlines* with Spanair. JAT Yugoslav Airlines (JU) is AEA member but has no alliances. All-cargo and regional airlines are not included.

Source: Own compilation based on *Airline Business* (2000).

To assess the relative importance of the broad commercial alliances quantitatively, we have estimated their global market share in terms of revenue passenger kilometers (RPK) (Table 5).<sup>15</sup> On this basis, the five dominating alliances accounted in 1998 for about two-thirds of worldwide air transport according to the International Civil Aviation Organization (ICAO). The Star Alliance and its associated members have a share of one-fourth of the total, followed by One World (17 percent). The three other alliances' shares are significantly smaller (3–11 percent).<sup>16</sup>

<sup>15</sup> Alternative yardsticks such as revenue tonne kilometers (i.e., including freight and mail services) or available seat kilometers would hardly make a difference. The delimitation of the alliances is that of Table 1, i.e., regional carriers and alliances of a special nature have been left out. Furthermore, several carriers like Ansett Australia and smaller affiliates like Deutsche BA had to be omitted from the statistical analysis in spite of their alliance membership, just because the appropriate traffic data were only partially (or not at all) available. (This is referred to in footnotes of the tables.) All aggregate data on alliances should be taken as indicative only because the alliance-building process is not yet finished and changes in membership may occur. — A potential candidate for membership in one of the alliances (One World) is the Greek carrier Olympic Airways, whose management has been taken over by British Airways affiliate Speedwing in 1999 (DVZ 2000).

<sup>16</sup> Higher market shares recorded, e.g., in *The Economist* (1998) refer to a worldwide traffic base significantly smaller than the ICAO base used here.

Table 3: Alliances of European Airlines with non-European Airlines as of mid-1999<sup>a</sup>

Partner airlines	Major airlines (AEA members) of EU countries														Other airlines								
	AF	AY	AZ	BA	BD	EI	IB	KL	LH	OA	OS	SK	SN	TP	CY	FI	LO	MA	NG	OK	SR	VS	
Air Canada					v																		
Canadian Airl. Int'l.			v																				
America West Airl.				v																			+
American Airlines		X		X			X						v				v					v	
Continental Airl.	v		v		v			v													v		v
Delta Air Lines	X																	v					
Jet Airways								v															
Northwest Airlines			v																				
Trans World Airlines																	V						
United Airlines					X			X		X	X												
Aerolin. Argentinas			v				X																
Aeromexico	v										v												v
Mexicana									X														
Transbrasil																	v						v
Air Afrique	O																v						
Air Austral	O																						
Air Madagascar	O																						
Air Mauritius	O										v												
Air Seychelles	v		v																				
Kenya Airways			v					O															
Royal Air Maroc	O						v																v
South African Airl.	v				v				v														X
Sun Air	v																						
TAAG Angola Airl.	v																						
Tunis Air	O																						
El Al		v					v											v					v
Gulf Air					v													v					v
Kuwait Airways										v													
Middle East Airlines	v																						
Oman Air								v															
Qatar Airways									v														
Royal Jordanian Airl.							v																
Saudi Arabian Airlines																							v
Air China		v																					v
Air-India	v																						v
Air New Zealand					v				X														
All Nippon Airways									X		X												
Asiana Airlines																							
Ansett Australia								v	X														v
Cathay Pacific				X																			v
China Eastern Airlines	v																						
Japan Air System								v															
Japan Airlines	v			v			v																v
Korean Air	v		(v)	(v)				(v)															(v)
Malaysia Airlines					v			v															v
Qantas		X		O																			v
Singapore Airlines	(v)			(v)					X														X
Thai Airways Int'l.	(v)																						v
Aeroflot	+	(v)																v					v
Aerosweet										v													
Ukraine Int'l.											O			v									O

<sup>a</sup>OA = Olympic Airways, VS = Virgin Atlantic Airways. — (v) = route-by-route alliance for cargo traffic only. For explanation of the other symbols cf. Table 2. — Further alliances (mostly route-by-route): *Air France* with Air Guadeloupe, TACA Intern. Airlines, and TAM Meridionais; *Air Liberté* with American Airlines; *Austrian Airlines* with Iran Air; *Balkan Bulgarian Airlines* with Air Moldova; *Braathens* with Northwest Airl.; *British Airways* with Comair (South Africa) and Emirates; *British Midland* with Royal Brunei Airlines and Sri Lankan Airlines; *Croatia Airlines* with Malaysia Airlines; *CSA* with Air Ukraine and Transaero Airlines (Russia); *Deutsche BA* with US Airways; *KLM* with Alaska Airlines, ALM and Air Aruba; *Riga Airlines* with Transaero Airlines (Russia); *Sabena* with Nationwide Airlines (South Africa); *Swissair* with Armenian Airlines, Georgian Airlines, and Vietnam Airlines; *TAP Air Portugal* with Linhas Aereas de Moçambique. — All-cargo and regional airlines are not included.

Source: Own compilation based on *Airline Business* (2000).

Table 4: Ownership Relations of European Carriers in Scheduled Air Transport as of mid-2000<sup>a</sup>

Owner airlines	Owned airlines	Share (%)	Owner airlines	Owned airlines	Share (%)	
Air France	Air Afrique	12.17	KLM Royal Dutch Airlines	Braathens S.A.F.E.	30	
	Air Austral	35.984		Kenya Airways	26	
	Air Caledonie	2.089		KLM UK	100	
	Air Gabon	20		Martinair Holland	50	
	Air Madagascar	3.48		Transavia Airlines	80	
	Air Mauritius	2.78		British Midland	20	
	Air Tahiti	7.48		Lauda Air	20	
	Austrian Airlines	1.5		Luxair	13	
	Cameroon Airlines	3.57		Estonian Air	49	
	Comp. Corse Médit.	11.95		CityBird	2.99	
	Royal Air Maroc	3.974		Air Baltic	34.22	
	Tunis Air	5.6		British Midland	20	
	Austrian Airlines	Lauda Air		36	Spanair	49
		Ukraine Int'l Airl.		19.7	Air Europe	49
British Airways	Air Mauritius	3.84	Swissair	AOM French Airl.	49	
	Deutsche BA	100		Austrian Airlines	10	
	Go Fly	100		Delta Air Lines	4.6	
	Iberia	9		LOT	37.6	
	Qantas Airways	25		Sabena	85	
Iberia Airlines	Royal Air Maroc	1.3	TAP Air Portugal	34		
	Savia Airline	66	Ukraine Int'l. Airl.	5.6		

<sup>a</sup>All-cargo, regional and/or purely nonscheduled carriers omitted.

Source: *Airline Business* (2000).

Table 5: Development of Market Shares<sup>a</sup> of the "Big Five" Alliances, 1990-1998 (percent)

	1990	1993	1994	1995	1996	1997	1998
Star Alliance <sup>b</sup>	22.1	25.0	25.3	.	24.8	24.8	25.1
One World <sup>c</sup>	15.0	17.9	17.8	17.8	17.4	16.9	17.3
Air France/Delta <sup>d</sup>	9.2	11.5	11.5	10.8	11.1	11.3	11.4
KLM/Northwest	9.2	.	9.8	9.2	9.3	9.5	9.5
Qualiflyer <sup>e</sup>	2.8	3.0	3.1	3.2	3.1	3.4	3.7
All five alliances	58.3	.	67.5	.	65.7	65.9	67.0

<sup>a</sup>Based on revenue passenger kilometers, and membership structures as of the year 2000. — <sup>b</sup>Not including Ansett Australia and Spanair. — <sup>c</sup>Not including Air Liberté and Deutsche BA. — <sup>d</sup>Aeroflot has been included with its international services only. — <sup>e</sup>Not including Air Europe, Air Littoral, Portugalia and Volare.

Source: Calculated from IATA (various issues); ICAO (various issues).

In terms of the routes under investigation of the European Commission, the overall market size of the transatlantic routes between the United Kingdom and the United States is with 12 million passengers per year twice as large as that of the routes between Germany and the United States and three times as that between France and the United States. The alliance partners British Airways and American Airlines, both of them already being mega-carriers, add up to a market share on the U.K.-U.S. route of 60 percent (Button et al. 1998: 126 f.).

Against this background we infer that the five alliances, which have engaged in multilevel cooperation, are dominant players in major air traffic markets. They could foster a potential oligopolization of world air transport markets and can, perhaps with exception of the small Qualiflyer Alliance, be considered as potentially dangerous for the openness of world airline markets as a whole, due to the mere size and potential market power of their members.

### 3 Potential Competitive Threats of Strategic Alliances

#### 3.1 Advantages and Disadvantages of Alliances

Strategic alliances may be seen as an efficiency response to a fundamental change in the business environment of largely liberalized and globalizing air traffic markets. They may arise from the intention of the carriers to cut costs, gain easier access to foreign markets, improve technical efficiency, and reap the gains from networking. However, since the number of actual and potential competitors in the market declines, the potential to abuse market power may increase (Heinke 1995: 33; Höfer 1991: 512). Hence, the relevance of both the efficiency concern and the anticompetitive concern calls for a thorough assessment of advantages and disadvantages of cooperative agreements.

The rapid movement in recent years towards forming global strategic alliances is not a unique phenomenon of international aviation, but rather a general phenomenon that is gaining importance in the international business community at large in the course of globalization. In those industries where cross-border network business strategies are already a common element of a firm's behavior or will become so in the foreseeable future, strategic alliances have been formed just as in the automotive industries, in telecommunications, broadcasting, media transmission, or transportation.

The economic rationale behind strategic alliances as voluntary (temporary) contractual arrangements between firms is, in particular, to realize economies of scale and scope, to save transaction costs, to improve their competitiveness against other firms outside the alliances, and to share risks, while the independence of partners remains basically intact. International strategic alliances are a form of cooperation at a less stringent level than transnational mergers. They are seen as an alternative to extend a firm's activities to foreign markets without bearing the potential costs of merging whole firms, among them being the costs of marrying all the partners' bad features and the costs of potential divorce.<sup>17</sup>

In the following we will look at the efficiency arguments and potential anticompetitive effects in some more detail.

- Alliances permit, and actually create, flexible and loose forms of partnership. As has been demonstrated in Chapter 2, the GSAs in SAT can by no means be regarded as being designed according to a single pattern of cooperation, as stable over time — in fact far-reaching changes in partnership are still going on — and as strictly exclusive. The impact of these features on competition lies in less strain on market openness in the future;<sup>18</sup> moreover, the nonexclusiveness of membership might be an additional source of antitrust concern, because it creates links between still competing alliance networks.
- The momentum for the formation of the alliances is enhanced by the ongoing globalization of markets.<sup>19</sup> Air transport in general is expected to expand strongly with passenger figures doubling be-

<sup>17</sup> From the vast literature on alliances cf. Hammes (1993: 493 f.), Ringlstetter and Morner (1995: 83 ff.), Götz (1996: 31) and Backhaus and Voeth (1995: 77 f.).

<sup>18</sup> In fact, the option of reversibility and independence of the involved partners is the major source of instability of an alliance due to opportunism of partners and ineffective governance structures (Ringlstetter and Morner 1995: 90 ff.).

<sup>19</sup> Globalization can be thought upon as the process by which separate national economies are converted into an integrated world economy by means of international trade, of international factor movements, of an international diffusion of technology, knowledge and information, of the emergence of global travel and communications patterns, and of a widening of economic activity patterns from domestic origins towards a worldwide action radius. This integration process at different layers results in increased competitive pressures in product markets, in factor markets and even for the institutional frameworks of states which compete for internationally mobile resources (cf. Siebert 1999: 8 ff.; Siebert and Klodt 1999: 116 ff.; Nijkamp et al. 2000: 11 f.). In view of this definition, not only air transport in itself as a means of linking distant markets all over the world, but also the airline alliance movement may be interpreted as an integral part of the emergence of integrated world markets.

tween 1995 and 2005, particularly on international traffic relations (Klein 1996: 12; Wolf 1999: 5). Alliances serve the end of enhancing the participants' international competitiveness by enabling them to offer more attractive products and services<sup>20</sup> which they are unable to provide separately.<sup>21</sup> The participating carriers can serve a much greater variety of origin-destination links<sup>22</sup> and, in addition, can make use of seamless intra-alliance network interlining. Seamless services within worldwide networks substantially contribute to passengers' convenience and create network externalities on the consumers' side.<sup>23</sup> As long as air transport services are improved in terms of quality and network variety, the formation of GSAs would lead to welfare gains. This can be expected in particular for "complementary alliances" by means of which existing networks are linked with each other and offer additional traveling options for connecting passengers (Park 1997: 182, 194).

- The alliances allow the participants to save costs by exploiting economies of density and scope as well as by jointly utilizing bottleneck resources. Aviation — in particular after deregulation (Zhang 1996: 293) — is characterized by the emergence of the so-called hub-and-spoke system, which enables an airline to make use of technical economies of density on the single routes and of geographical scope for the whole network by consolidating traffic flows (Brueckner and Spiller 1991: 323–325; Brueckner et al. 1992: 323 ff.). Alliances which serve interconnected hub-and-spoke systems represent a sort of second stage in the evolution of hub-and-spoke-systems after deregulation.<sup>24</sup> Moreover, they enable cost reductions by means of a joint use of ground facilities, joint operation and coordination of flight schedules, joint purchase of inputs needed for flight operations — from toilet paper to airplanes —, joint aircraft maintenance, and also by implementation of improved methods for benchmarking and cost control.<sup>25</sup> As a result, total factor productivity of participating carriers can be substantially improved and less resources are absorbed by air transport purposes.<sup>26</sup>
- Joint use of bottleneck resources is particularly interesting for slots on airports and traffic rights for markets barred by restrictive ASAs.<sup>27</sup> In this case, alliances help circumvent protective national

<sup>20</sup> From the supply side, recent technological changes which substantially lowered unit costs and improved safety records and comfort levels support the ongoing internationalization of aviation (Button 1997: 170).

<sup>21</sup> It may be less a matter of optimal firm size whether even the currently existing largest mega-carriers are deemed to be too small in order to offer a complete worldwide network on their own account or not (Oum et al. 1993). In any case, substantial locational advantages for resident carriers to establish networks in the market of their origin are existing (Oum and Park 1997: 134). The greatest obstacles to the establishment of truly seamless service networks, however, can be found in the existing regulatory framework of still restrictive air service agreements which — despite all efforts to deregulate aviation markets — prevent carriers from setting up their own international and intercontinental networks (Oum et al. 2000: Chapter 1, Section 10.6).

<sup>22</sup> Cf. Button et al. (1998: 109f., 118 f.), who refer to the number of city pairs offered by several alliances: 17,000 for the meanwhile terminated US Air/British Airways alliance of 1993, 36,450 for the Northwest/KLM alliance.

<sup>23</sup> Seamless interlining is regarded as attractive to passengers because of lower transaction costs, expectations of better services, rebates from frequent-flyer programs (FFPs), a lower risk of unsecured connections, less inconveniences, e.g. by changes between distant terminals or a potential loss of baggage, and shorter passengers' schedule delay times between desired and actual departure time (Tretheway and Oum 1992: 17 f.; Oum and Park 1997: 134; Park 1997: 181; Weimann 1998: 213; Oum et al. 2000: Section 2.2). Recent marketing analysis (by means of focus group discussions) has revealed that frequently flying passengers indeed recognize "seamless travel", a worldwide network and worldwide FFPs as most important advantages of strategic alliances (Netzer 1999: 143–148).

<sup>24</sup> If different hubs are linked together by trunk routes, at least additional economies of geographical scope can be reaped, but also further economies of density can result: As long as there are spoke flights with unused capacity, higher load factors can be reached also for relations under code sharing.

<sup>25</sup> Cf. Park (1997: 181). Lufthansa expects its membership in Star Alliance to result in cost savings of DM 500 million annually (Glöckner 1999: 235).

<sup>26</sup> Cf. Oum et al. (2000: Section 5.4), who conducted an empirical investigation of airline cooperations over the 1986–95 period, i.e. of the forerunners of the global alliances discussed here. They found total factor productivity (TFP) to increase by 1.7 percent for the whole system of all participating carriers. In a subsample they looked at those cooperative agreements which covered a variety of issues. In this case, TFP increased even by 4.9 percent.

<sup>27</sup> Even if slots are available, still existing bilateral air traffic agreements often do not allow foreign carriers to serve certain domestic airports as long as the agreements have not yet been developed towards "open skies" agreements (Oum et al. 2000: Section 10.6; moreover, see Wolf 1999 on the regional impact of open skies agreements).

regulations and barriers to national market entry. By means of GSAs, international carriers can acquire collect traffic rights which are not granted them by the respective ASAs. This may, on the one hand, foster deregulation of restrictive national ASAs and, on the other, serve as a virtual and temporal substitute for real mergers and acquisitions which are actually forbidden by local ownership provisions in ASAs (*The Economist* 1998; Malanik 1999).

In many markets firms choose strategic alliances as contractual arrangements for containing risks in the early life cycle of products.<sup>28</sup> In this respect, GSAs in international air traffic seem to be different: One major difference is related to the market phase in which strategic alliances are formed. Although air transport markets can still be characterized as rapidly growing in size and transport performance, they are in general already existing (and mature) markets: other carriers are already serving the transport routes in question. Even if GSAs cover entirely new routes, they cannot be classified as genuine innovative products. Accordingly, airline alliances are not concerned with creating new knowledge and product innovations, as is the case for most R&D alliances in manufacturing and other service industries, but with creating a more dense network of otherwise less interrelated markets. The competitive impact of this difference between GSAs in SAT and other sectors lies in the prospects for future openness of markets: As long as innovative, inhomogeneous, not yet standardized products in early phases of the product cycle are concerned, dynamic Schumpeterian competition even calls for temporary deviations from competitive equilibria; not the least, even patent protection is deemed necessary for progress in manufacturing. As a result, seemingly anticompetitive results in the first instance do not mean permanent monopolization all the time.

In the case of standardized products in later phases of the product life cycles, however, backward-looking and preserving strategies, which are typical of cartels, are more likely (Hammes 1993: 497; Opdemom 1998: 100 f.). In this respect, it should be kept in mind that GSAs in international aviation often cover the actual core business of the alliance partners, i.e. providing and selling air transport services, and are not confined to a well-defined and separated "arena of mutual interest" as is the case, e.g., for R&D alliances in manufacturing. Admittedly, creating an "arena of mutual interest" which is separated from the remainder of the partners' business could minimize conflicts and, hence, even stabilize an alliance (Ringlstetter and Morner 1995: 92 f.). Moreover, cooperation in the core business of alliance partners might well give rise to anticompetitive behavior if governance structures were created which could minimize conflict also in this more far-reaching case of cooperation. Taking the considerations on market phase and on business relevance of cooperation together, the GSAs in aviation could easily give way to outright cartelizing behavior, justifying concerns about anticompetitive effects, in particular about the openness of markets.

## 3.2 Different Concepts of Competition

### 3.2.1 Paradigms of Competition and Antitrust

Apparently, there is no easy way to balance the advantages and disadvantages of GSAs. This is all the more unfortunate as the three traditional schools of competition and antitrust — the classical Harvard School with its structure-conduct-performance approach (SCP), the more recent Chicago School of

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<sup>28</sup> In a cross-sector perspective, strategic alliances can mostly be found in sectors with emerging markets, where a high R&D share in alliance-related investment can be observed and where competition can be characterized as being dynamic. This is the case, e.g., where information technology, biological technology and advanced material technology play a major role, as in the information and media sector, and in the manufacturing of high-tech products. In the 1980s, 70 percent of all enterprises engaged in strategic alliances belonged to these sectors. In many of these cases, strategic alliances are directed towards developing new markets which do not yet exist, either geographically or because the innovative product is still not yet developed (Hammes 1993: 497; Hagedoorn and Schakenraad 1993).



antitrust approach, and the theory of contestable markets — all have their deficiencies when being applied to the complex contractual vertical and horizontal arrangements within a network industry.<sup>29</sup>

According to the *SCP approach*, the actual market structure (market concentration, product differentiation, size of entry barriers, etc.) determines the conduct of the firms within these structures, such as pricing behavior or collusive action, which ultimately will be decisive for the firms' performance in terms of profits, productive and allocative efficiency (Scherer 1973). Under the SCP approach, market concentration per se is thought to lead to increased prices and profits and a loss of efficiency. Consequently, its wide application in U.S. antitrust in the 1960s and 1970s led to a rather restrictive interpretation of mergers and business practices which were perceived of attempts to exploit or strengthen market power and which had to be declared illegal per se.<sup>30</sup> From that perspective, GSAs are an imminent danger for competition and, therefore, efficiency in international aviation, as GSAs in fact reduce the number of competitors in the market and lead to an increasing market concentration, even if neither an alliance's market share in the aggregate world air transport market nor in a single city pair may be the appropriate focus, but instead the interbrand competition between different networks.<sup>31</sup>

The *Chicago School approach*, which was very influential on U.S. antitrust in the 1980s, turned the SCP reasoning upside down: It considered a growing firm size and increasing market concentration as being the result of efficient firm behavior rather than a result of anticompetitive intentions (Stigler 1968; Posner 1976). With the exception of clearly detectable horizontal price agreements, antitrust policy according to the Chicago approach was very permissive towards all kinds of contractual arrangements between firms including vertical and horizontal mergers, the latter being acceptable if they are likely to yield lower costs in spite of high market concentration. On the basis of the Chicago approach, GSAs in aviation would get a "wild card" for alliance formation, implicitly denying any misuse of market power. However, its shortcoming lies in this neglect of market power effects which may arise in strategic situations in close oligopoly (Bickenbach et al. 1999: 56).

The *theory of contestable markets* was thought to provide a solution to the relevance of market power. It stated that even if the actual supplier enjoyed a natural monopoly position, this would not automatically entail market power and the extraction of monopoly rents. In view of potential competition on contestable markets without sunk investments, even natural monopolies could not disregard competition. Market power, however, could be exerted if the incumbent supplier were protected by important sunk costs which newcomers had to invest and could not recover if their market entry turned out to be a failure. The existence of sunk costs thus serves as central criterion for market power and the necessity to regulate incumbent firms' market conduct.

Meanwhile, the theory of contestable markets has lost most of its original appeal, and the original assessment that air transport services are a prime example of being free from sunk costs and, hence, perfectly contestable has changed. The reason may be found not only in some basic inconsistencies of the theory from a game-theoretic perspective but also in the fact that air transport services actually have proven as being much less contestable than assumed before.<sup>32</sup> This clearly limits the theory's

<sup>29</sup> For the following subsections see Bickenbach et al. (1999: 55 ff.).

<sup>30</sup> Bickenbach et al. (1999: 55). In an intentionally exaggerating statement Kumkar (1998a; 1998b) characterizes the SCP test as an approach which already calls for antitrust action if any deviation from the model of perfect competition can be detected. He refers, e.g., to Shepherd (1988) who introduced a 30 percent market share rule, above which aggressive business action had to be constrained per se because of the unavoidable danger of predatory pricing.

<sup>31</sup> The share in the aggregate world market — as presented in Table 5 for illustrative purposes — ignores differences in regional market structures, while the share on single links does not account for network externalities on the production side.

<sup>32</sup> Indeed, Wiezorek (1998: 264) has denied the applicability of the contestability theory to air transport markets, based on considerations such as the limited availability of slots, possibility of predatory pricing by incumbents, sunk costs for advertising when launching a new route, and the impact of frequent-flyer programs and computer reservation systems. He cited Baumol et al. (1988: 501) who had to admit that "several elements of the structure of supply [in the airline industry] conflict significantly with the conditions necessary for the pure theory of contestability to apply without modification".

applicability to antitrust cases in air transport. What may still be worthwhile considering, however, is its focus on alternative sources of market power apart from mere market shares. In other words, it may be useful to look for the potential sources of limited contestability in aviation in (a) the regulatory regime of slot allocation, and (b) business practices, such as discriminating computer reservation systems (CRSs) and frequent-flyer programs. It may well turn out that these issues should be the prime target of antitrust action, but not monopolization per se. The question to be answered then is whether an airline alliance can lead to a reduction of options for the successful market entry of outsiders which otherwise would discipline the abuse of market power. The answer may not be a per se rule, but instead a rule of reason which takes into account an appropriate reference market concept for network industries.

### 3.2.2 The Relevant Market of Airline Alliances

Generally, there are three dimensions in which competition between airlines could be impaired:

- *Domination of hubs*: Specific airports might be dominated by an alliance with the consequence that only arrivals and departures of alliance partners are offered for services in the most important city pairs and new (or remaining non-alliance) carriers would have severe difficulties in obtaining slots at this airport (Button et al. 1998: 131).
- *Domination of spokes*: Specific spokes or major trunk lines of airline networks might be dominated by alliances so that the alliance partners in these markets might be able to reap supra-normal profits.
- *Network oligopoly*: If, at the end of the day, only five or six alliances survive, global airline markets could be dominated by tight oligopolistic structures with low competitive pressures.

#### *Domination of Hubs*

The case that certain hubs might be dominated by an airline alliance, however, does in principle not differ from the case of the dominance of a hub by a single carrier, where fares are above costs due to market power (Borenstein 1989). Note that hub-and-spoke systems are an important ingredient of efficient airline operations (Brueckner and Spiller 1991). As Zhang (1996: 293 ff.) has shown, treating an airport as own "fortress" and concentrating operations on it may be a superior strategy of an airline which operates a hub-and-spoke system. Even if slot capacities on other airports were available, market entry in a competitor's "fortress" might prove counterproductive for a "fortress" owner, because it may reduce profits in the own network system if economies of density in the own network are sufficiently high. This would mean that even if connecting markets were served in competition from different hubs, the monopolization of the specific hubs might be the natural outcome as long as there were no options for passengers to reach competing hubs by other modes, such as ground transport.

The higher fares for passengers from and to the hub in question, however, may not necessarily be incompatible with overall economic efficiency: Spiller (1989) has shown (with respect to the U.S. domestic market) that higher per mile prices in an airline's large hubs (as Frankfurt is for Lufthansa and London for British Airways) do not necessarily signal market power of that airline. Rather, in the presence of capacity constraints, efficient prices would require that passengers who originate at the hub or whose final destination is the hub be charged more per mile than those passengers that use the airport exclusively as a transfer point. According to this reasoning, fare differentials between direct and connecting passengers would be warranted anyway in this situation, and it would be necessary to isolate the effect of hub domination by an airline or by an alliance. If, on the other hand, fares for connecting passengers were to prove to be in line with comparable fares in competitively served markets elsewhere, the domination might not necessarily be detrimental to the majority of passengers in terms of excessive fares.

### *Domination of Spokes*

The domination of certain spokes or even trunk lines is a more complicated issue. As long as only certain spokes of a hub-and-spoke system are concerned, higher fares might result from network spillover effects of competition which occurs only in limited parts of the network. Brueckner and Spiller (1991: 340) and Brueckner et al. (1992: 324) have demonstrated that if competition is limited to certain legs of a hub-and-spoke network, only the fares for these legs decrease due to competitive pressures on this leg, while fares for other legs not subject to actual competition increase because economies of density and geographical scope in the network are lost. Thus, if competition occurs only in limited parts of a network, this can even entail negative externalities for the rest of the network. This implies that mergers (or alliances) between carriers of course raise fares on city pairs where the carriers directly competed with each other before the merger, but that the positive network effects spill over via lower fares to those other city pairs where competition is not affected by the actual merger, e.g. because only one of the partners initially served the city pair. As a consequence, only passengers on the city pairs with less competition suffer from higher fares while others, in particular connecting passengers, benefit from lower fares (cf. Brueckner et al. 1992: 330 f.).

Nero (1996: 151 ff.) obtains a similar result based on the same model but with a different network structure. Again, a merger (*vis-à-vis* competition in a noncooperative duopoly, which is limited to a single central trunk line between two hubs) would contribute to the exploitation of a higher degree of economies of density throughout the whole network. Accordingly, passengers on spokes which are linked to the central hubs are better off in the merger case, while the situation on the trunk line markets depends on given parameters. However, the (inferior) case of limited competition on the central trunk line is still superior to a situation where the two carriers on this trunk line act collusively, because here profits are maximized jointly, while neither of the carriers can exploit the economies of density on this gateway.

Three conclusions may be drawn from these findings based on a Brueckner-Spiller type of model: (i) positive welfare effects of increased competition after deregulation will occur if economies of density are absent, while their existence may produce the result that a merger can be preferable. (ii) However, a limited step-by-step deregulation is in any case superior to a situation of collusion between separated carriers, permitted by persisting tight regulation. (iii) If a merger comprising the relevant network should still be preferable to the competitive case, the merger must be performed in a way to permit the exploitation of the economies of density, otherwise it would lose its superior cost efficiency *vis-à-vis* the case of limited competition. (iv) Keeping in mind that GSAs may be a substitute to transnational mergers which are barred by national ownership rules, a GSA must permit its participants to cooperate as closely as in the case of a merger.<sup>33</sup> The Brueckner-Spiller model suggests that the most appropriate focus of analyzing for the impacts of competition seems to be complete networks.

### *Network Oligopoly*

Turning to *entire networks*, however, does not really facilitate the assessment of alliances. Recent analyses of competitive effects of alliances within whole networks as done by Park (1997: 186 ff.), using a Brueckner-Spiller type of network model, have revealed that the effects of alliance formation on fares and economic welfare crucially depend on the character of the cooperation: *Complementary alliances* — which provide improved networks and services to passengers — entail lower fares and higher consumer surplus in all submarkets, and in most cases improve overall welfare, unless the networks are not too small and operations are not subject to too high economies of density. *Parallel alliances* — which primarily permit partners to cancel parallel-running services prior to alliance forma-

<sup>33</sup> Brueckner (1997) demonstrated that the results for mergers hold in principle also in the case of an alliance. See also Oum et al. (2000: Ch. 4).

tion — exhibit the normal Brueckner-Spiller result of higher prices in the former parallel markets and lower prices in other markets due to network spillover effects. However, aggregate consumer surplus is likely to decrease and overall welfare would be lower for large networks with moderate economies of density. Only for small networks and high economies of density, aggregate welfare would improve as a result of a parallel alliance. Moreover, parallel alliances entail the danger of further alliance formation and concentration of services with even worse results for welfare (Park 1997: 192 ff.). Park's results are corroborated by the analysis of Oum et al. (2000: Chapter 4) who use a Brueckner-Spiller model as well and, in addition, present some empirical findings. In complementary alliances, carriers are able to increase aggregate output, to generate new connecting passengers, and to cut costs and fares (because of improved load factors all over the network) so that consumer welfare will likely increase. Just the opposite effects can be derived for parallel alliances which serve only the end of consolidating traffic capacities and frequencies in origin-destination markets where the carriers competed before they formed the alliance. Parallel alliances also entail the risk of facilitating the emergence of a collusive environment. Hence, Oum et al. (2000: Sections 4.5 and 6.4) recommend encouraging complementary alliances while being cautious in allowing parallel alliances antitrust immunity.

Applying this categorization to real-world alliances, however, does not instantly solve the task of antitrust authorities, as in most cases GSAs in aviation are both of a complementary and of a parallel nature: Carriers join their networks and offer integrated services, but at the same time they consolidate former parallel-running services. Hence, the question arises whether the complementary or the parallel component will dominate. Only if (a) smaller airlines with entirely separated pre-alliance networks cooperated or (b) carriers from small countries with negligible domestic networks agreed on a code sharing for international flights between their hubs, the result would be unambiguous because these cases come close to the ideal types of a complementary or a parallel alliance (Oum et al. 2000: Sections 10.6.2 and 12.2). The five dominating airline alliances clearly do not belong to these polar cases. But how can one gain additional insights into their nature? A promising avenue could be to relate their conduct in network formation to aggregate market evolution. This is actually done in a more general theoretical microeconomic approach on strategic alliances by Morasch (1994, 1995).

The Morasch approach aims at modeling the conduct of firms engaged in a strategic alliance in oligopolistic markets. The model does not address airline alliances or any other specific sector but deals with any kind of strategic alliances in wide and close oligopolies.<sup>34</sup> Nevertheless, the differentiated findings on GSAs in aviation by Park (1997) and Oum et al. (2000) appear to be broadly in line with the more general findings by Morasch (1994, 1995): Starting from a Cournot equilibrium in an oligopolistic product market, the general approach produces the result that profit incentives exist either to expand output (if a firm is striving for the Stackelberg market leader position) or to reduce output (if implications of mutual actions for joint profits are accounted for and internalized). Applying this basic approach to strategic alliances in oligopolistic markets, Morasch can demonstrate that the first effect will dominate if alliance partners are able to pull ahead from firms outside of the alliance — this will be the case in wide oligopolies with a sufficient number of external suppliers. In contrast, the second effect of reducing output will dominate if the alliance encompasses the majority of dominant suppliers. Morasch's model supports the intuitive conclusion that a dominant position of alliance members on the relevant markets will increase the probability of an abuse of market power (Opdemom 1998: 106 f.).

Although the Morasch approach relies on a more simplified SCP reasoning, one is inclined to interpret complementary airline alliances as options for expanding output, while parallel alliances tend to reduce output. Moreover, as long as a complementary airline alliance does not cover all major carriers, expanding output by improving networks is a promising welfare-enhancing approach to achieve competitive advantages vis-à-vis the rest of the airline business community. In contrast to this con-

<sup>34</sup> For a summarizing description of Morasch's alliance model see Opdemom (1998: 102 ff.) and Seidenfus (1998: 8).

clusion, service consolidation activities by parallel alliances whose members already cover most of the profitable network links would give rise to antitrust concern.

There is, however, one striking difference between Park (1997) and Oum et al. (2000) on the one hand and Morasch (1994, 1995) on the other. Oum et al. (2000: Section 12.2) recommend alliances in important trunk line markets, such as in the North Atlantic market, to grow and to cover most of the European-North American traffic. This conclusion is derived directly from the Brueckner-Spiller model, because an all-encompassing alliance would maximize the network effects compared to separated alliances of different European and North American carriers. But this would create exactly a situation in which according to Morasch's general model without network effects the majority of suppliers would have become members of the alliance and in which the probability of collusive action and of exerting market power would increase. Hence, both models present dissenting views on the conditions under which collusive action among carriers may occur.

This puzzle could eventually be solved by taking into account that the model of Oum et al. (2000: Chapter 4) does neither address the strength of an alliance relative to the entire market nor — as they explicitly point out in Section 4.5 — sequential dynamic games between participants and outsiders. It might well be that after network economies have been exploited and have led to decreasing fares, consolidation activities would come to the fore whose relevance should increase automatically if the individual networks of all relevant competitors were merged within the alliance network. Hence, an implicit change over time from a complementary alliance towards a parallel alliance might result from an ongoing trend to more alliances.

To be sure, even a mere parallel alliance might not to be harmful if the formation of parallel alliances did not keep pace with the growth of world markets for air transport. In this situation, additional scope for competitors could be expected to emerge. Equally, parallel alliances would be harmless if they were not able to foreclose market openness in the long run, i.e. if they did not reduce options for outsiders to enter the business in the links with consolidated alliance traffic so that antitrust concerns could be (partly) mitigated. This outcome could be expected if alliances remained as unstable as they still appear to be.

However, insights from airline network analysis on the important North American market jeopardize the optimism concerning the openness of markets in the future. The analysis of Evans and Kessides (1994) provides evidence that repeated competition between just the same carriers in different locational markets (city pairs) has on average been less intense than competition in other markets which was performed between several actors, i.e. "multi-market contact" of actors lowers competitive pressure.<sup>35</sup> These results, which could easily be applied to alliances on a global scale, shed some light on the dynamics of competition and openness in a network context. If the mere number of different actors meeting each other in different constellations in the various city pairs were to shrink drastically, even a hypothetical atomistic market structure in a great number of links could mean that the overall competitive pressures would be reduced due to a global trading of reciprocal oligopolistic strategies, i.e., that "tit-for-tat" strategies might spread out.<sup>36</sup>

Another open question is the extent to which carriers would pass on their lower costs arising from exploiting economies of density in integrated network operations to passengers all over the network if competitive pressures on a network-wide or global scale were to decrease substantially. Declining competitive pressures may entail x-inefficiency and could shift the carriers' cost function upwards. As a consequence, the higher costs from an increasing distance of actual operations from the production

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<sup>35</sup> The notion of "multi-market contact" is a phenomenon which is not unusual to industrial economics in general.

<sup>36</sup> In some sense, mutual consideration might run along comparable lines as interest coalitions between sovereign states in multilateral trade negotiations under WTO rules are formed, what makes reciprocity without sectoral limitations under multilateral trade negotiations beneficial in the end (Stehn 1993: 7 ff.; Knorr 1998: 384): Concessions to open country I's market for commodity A can be traded for country II's concessions for commodity B. However, the same game applies to retaliation and the consideration to avoid it.

frontier might well overcompensate the lower costs of an improved exploitation of economies of density, even if the carriers' behavior according to the Brueckner-Spiller model did not change, i.e., that passengers on other relations gained from economies of density on the relation with joint operation. Admittedly, this argument of an upward shift of the cost function is beyond the scope of the Brueckner-Spiller model but should be considered as well.

The result of this discussion on different perspectives on relevant airline alliance markets can be summarized by the conclusion that, based on conventional antitrust reasoning, no clear-cut a priori position for or against alliances can be maintained. A per se rule against GSAs appears as misplaced as per se optimism. Instead, the assessment depends on the characteristics of each specific case.

### 3.2.3 The Competitive Effects of GSAs – the Perspective of New Institutional Economics

In a NIE view,<sup>37</sup> strategic alliances can be looked at as hybrid organizations somewhere in the middle of the range between market exchange among independent and competing firms, and hierarchies within enterprises. From this perspective, alliances are motivated by the attempt to save transaction costs (Hammes 1993: 494 ff.), which are a constitutional part of any interaction between independent economic agents, be it in market transactions, be it in hierarchies, be it in coalitions.<sup>38</sup> Thus, NIE takes into account all costs that are associated with various contractual interactions in the course of value-added activities, and in particular costs associated with specific contractual problems due to, e.g., asymmetric information and opportunism.

Compared to both a pure market setting — with entirely separated buyers and sellers of intermediate inputs — and the pure hierarchical setting of a merger or an acquisition of the necessary resources, the formation of alliances as a partial coalition may be a superior strategy to save transaction costs: (i) To achieve the strategic objectives in a pure market setting, search and information costs, negotiation and decision costs, and control and enforcement costs of contract performance between independent and potentially opportunistic trading partners may be excessively high compared with a firm-internal solution. This is the case in particular in a situation in which a contract has to take account of the use of resources in the future. In this case the contract must necessarily be incomplete so that contracting partners may increasingly be tempted to cheat. (ii) In contrast, firm-internal transaction costs, such as information transfer and processing costs, decision and control costs, or hierarchical conflict mitigation costs, which accrue in the case of an acquisition, may lead to inflexibility and to bureaucratic red tape. Cost comparisons can make the alliance as a hybrid form of cooperation potentially superior to the extreme cases of market or hierarchy (Hammes 1993: 496). A strategic alliance can be interpreted as the attempt to combine the advantages of both markets (incentives and flexibility) and hierarchies (superior organizational options) (Arnold 1998: 62 f.).

Interpreting strategic alliances this way, the transaction cost minimization process does not only entail the creation of firm-internal cost savings (or the generation of a quasi-rent as a result of cooperation, cf. Backhaus and Voeth 1995: 77 f.), but can equally come up with an efficiency gain for society as a whole, provided that (a) decisions are not biased, (b) both transaction and production costs in the alternative cases can be accounted for accurately<sup>39</sup>, and (c) transaction costs savings outweigh

<sup>37</sup> The research program of *new institutional economics* encompasses property rights theory, the principal-agent approach, transaction costs theory and the theory of incomplete contracts. See Bickenbach et al. (1999) for a survey on this research program and its implications for antitrust and regulation in network industries.

<sup>38</sup> In their analysis of strategic alliances, Backhaus and Voeth (1995: 75 ff.) try to bridge the gap between industrial economics approaches and microeconomic transaction costs theory. They emphasize the similarities between the transaction costs associated with vertical barter — as put forward by Williamson (1985) — and with the interaction of firms in forming coalitions according to Alchian and Woodward (1987; 1988). Hence, coalitions and alliances can be analyzed within the framework of new institutional economics.

<sup>39</sup> Hammes (1993: 495, Fn. 12) emphasizes the potential trade-off that economies of scale in the sense of technical production costs may be realized to a different degree with different institutional settings.

potential adverse effects of reduced competitive pressures. If the latter condition is fulfilled, the firms' decision to form an alliance reflects also for society as a whole the cost superiority of alliances compared with the alternatives.

Note, however, that the NIE perspective does not necessarily discard the results of conventional competition policy reasoning. NIE does by no means suggest a generally permissive policy stance (Bickenbach et al. 1999: 13 ff.): (i) In accord with most traditional antitrust approaches, a per se prohibition of *price cartels* seems to be justified from a NIE perspective because this ban has to serve as a second-best substitute for an agreement encompassing cartel members and negatively affected consumers, which does not come about because of prohibitively high transaction costs. (ii) Also in the case of *horizontal and vertical mergers*, the NIE approach admits that anticompetitive effects may be relevant in situations of significant market power, because incentives for arrangements which help merging firms save transaction costs and enhance efficiency may well turn out to inefficiencies in strategic situations. In these instances, a rule-of-reason approach seems to be appropriate.<sup>40</sup> (iii) For *complex long-term contracts* between firms, the NIE approach again does not deny the possibility of anticompetitive effects which may outweigh transaction-costs-based efficiency gains in cases of market power, but recommends a per se permission, unless market power is found being substantial. (iv) The different intensity of antitrust action — the strict per se prohibition of price cartels as opposed to the rule-of-reason approach in the case of mergers — is justified by NIE because of the relative “cheapness” of forming a cartel. A merger (with all the ensuing adjustment problems) would not be chosen just for the single purpose of reducing competition. Furthermore, mergers are more likely to generate positive efficiency effects than mere cartels. (v) Complex long-term horizontal and vertical contracts deserve less concern than mergers because prohibiting them, but at the same time allowing firms to merge, would mean both a negative impact on competition and an efficiency loss from the inferior private arrangement. (vi) If efficiency gains were evident, it would be misleading to argue that the hybrid organizational form had to be prohibited just because it would strengthen the involved partners vis-à-vis outsiders. The reason is that efforts for cost efficiency are part of the game of the competitive process.<sup>41</sup>

Our upshot from the NIE approach to antitrust is that NIE is somewhat more sympathetic with vertical and horizontal contracts between firms in cases of evidently competitive situations which are not limited to pure spot market competition, but that it calls for antitrust action just as conventional competition policy does in cases where market power prevails. In these instances, a rule-of-reason approach is given preference, for mere price cartels even a per se rule, because NIE shares the general hostility towards horizontal price or quantity fixing arrangements (cartels) (Bickenbach et al. 1999: 15). From this perspective, it could be argued that the effect of parallel GSAs on the intensity of competition may be of greater concern for competition policy authorities than the effect of complementary GSAs.

NIE can help understand business strategies as a result of transaction cost minimization behavior. These strategies may well be consistent with dynamic competition and need not be forbidden per se. Answers to the question of how to assess competitive threats exerted by alliances depend on whether GSAs in SAT as long-term horizontal or vertical contracts improve worldwide air transport networks by reducing transaction costs (in the widest sense) or whether they just mask more restrictive forms of cooperation such as mergers or, in the end, even price cartels. Hence, the NIE perspective suggests to ask whether these new forms of cooperation between airlines are an efficiency response to a changing institutional environment in international aviation. Looking at some sector-specific institutional changes of the recent past can provide some additional evidence in this respect.

<sup>40</sup> Bickenbach and Williams (1996) demonstrate this for vertical merger.

<sup>41</sup> See Kumkar (2000, Section C.II.2.c) on a discussion of the use of this argument in U.S. antitrust.

There have been substantial changes in the underlying regulatory framework, indeed. The process of deregulation of national and international aviation since the end of the 1970s has contributed to increase both competitive pressures and incentives: On the one hand, national flag carriers can in many cases, especially within the EU, no longer rely on administrative entry barriers against foreign competitors on domestic markets (Klein 1996: 12). On the other hand, progress in deregulation likewise creates new options of business activities for carriers by permitting entry into various foreign markets which as yet are barred by exclusive traffic rights. From a holistic perspective, globalization of air transport relations, a certain liberalization of market entry and the formation of alliances are mutually interdependent: Deregulation of many markets in the course of the open skies movement has eroded domestic monopoly rents of carriers, has given them incentives to erode other carriers' rents on foreign markets, and has forced them to penetrate new traffic relations in order to compensate for their domestic losses.<sup>42</sup> While this process offers new opportunities for individual carriers' growth, it has also contributed to higher risks compared with the *status quo ante*. Strategic alliances can be interpreted as the attempt to balance both new opportunities and risks.<sup>43</sup> The crucial question, however, to which extent risks of alliance partners are reduced at the expense of otherwise efficiency-enhancing competitive pressures is still open.

The increased competitive pressures nourish the (familiar) argument that the supply of regular and scheduled transport services requires at least a certain level of protection against hit-and-run spot market competition (Button 1996: 275 ff.; Button et al. 1998). According to this argument there exists a so-called "empty core" of competition which does not permit firms subject to competition by others to maintain regular services. Such a service package would only be sustainable if it were protected against erosion from outside and if it permitted cross-subsidization, either between routes or between time slots, i.e. costs of unused capacity have to be borne at certain times. The higher costs for high-density services and the lower intensity of competition are the price for the regularity of the services and the supply of scheduled services. To strengthen their argument, Button (1996: 277 f.) and Button et al. (1998) allude to ocean liner shipping conferences. They admit, however, that their argument is rather tentative and needs further research. Underlying this reasoning are notions of "cream-skimming competition" and issues of spatial and temporal network sustainability, e.g., the issue of the extent to which economies of scope exist for a bundle of services. In this respect, GSAs could be justified as an attempt of the participating carriers to privately produce those barriers to cream-skimming competition that make scheduled services sustainable at all — or to make for a renaissance of IATA on entirely private account. However, the former IATA was in essence a cartel, and NIE would join in the traditional antitrust objections against a wide application of the "empty core" for scheduled services.

Furthermore, it could be argued that, in the largely liberalized framework in international aviation, alliances are a substitute for outright mergers given the remaining restrictive ASAs and the local ownership rules: Foreign ownership of national air carriers is in almost every country either prohibited or limited to minority stakes. In spite of examples of partial ownership of airlines by other airlines (some of which are in the range of 40 to 49.5 percent<sup>44</sup>), it is therefore generally impossible for an

<sup>42</sup> BA's European partners in the One World Alliance, notably Finnair and Iberia (and formerly also LOT), all are said to have joined the alliance in order to profit, in view of their forthcoming partial privatization, from BA's international network and market presence (as well as from a better position on CRS screens); BA, on the other hand, hopes to strengthen its competitive position against Lufthansa and the other Star alliance members by building new hubs in Helsinki and Madrid (and Warsaw) in order to gain additional traffic from Northern and Eastern Europe and South America, respectively. See Gill (1998a).

<sup>43</sup> See e.g. Button (1997: 173 f.). Some authors, such as Morrison (1996: 237), hold that in the U.S. the airline industry with its recent mergers of mega-carriers is still in a process of adjustment to the new environment of deregulated markets though the new framework is in effect now for 20 years.

<sup>44</sup> Those cases of 80–100 percent stakes listed in Table 4 are mostly subsidiaries of airlines of the same country; one exception being Deutsche BA which reflects, apart from liberal intra-EU regulations, also BA's former status as one of the three Allied carriers which were able to operate through the Berlin air corridors. Other exceptions such as Braathens' (of



airline from country A to possess more than a minority stake of an airline in country B, with the exception of both countries being EU members.<sup>45</sup> It may well be that GSAs are nothing more than a transitory stage in global market formation. This view seems to be corroborated by Swissair's takeover of 85 percent of the Belgian carrier Sabena, and British Airways current talks of a merger with Dutch KLM (Odell 2000). Once foreign ownership rules in liberalized ASAs were abandoned, still more international mergers of former alliance partners might be the consequence. According to the NIE scale of antitrust action intensity, this transformation of cooperative agreement would then warrant a closer look at potential anticompetitive effects relative to the loose form of an alliance as contractual arrangement between firms, but would equally reveal more of the underlying motives of alliance partners.<sup>46</sup> If traditional ownership rules in bilateral ASAs should be liberalized, and if more full-scale mergers with a higher danger of market foreclosure should loom around the corner, antitrust action would be warranted, but on the other hand a liberalization of restrictive ASAs — with traffic rights being granted to all carriers to whom it may concern — would permit more market entry and traffic diversion.<sup>47</sup>

The considerations of this section cannot completely ease the concerns of antitrust authorities about alliances, be they persistent elements of future airline markets or only transitory stages to cross-border mergers. The NIE perspective highlights at the same time the efficiency objectives of the participating carriers as well as the potential for collusion and opportunistic behavior. In view of the alliances' ambiguity also from a NIE perspective, looking at the empirical evidence on the impact of alliances on market shares and fares is definitely warranted for the antitrust authorities in order to keep track of what is going on in international aviation.

### 3.3 Some Empirical Evidence on GSAs in SAT

The empirical picture of alliances is limited insofar as the statistical base cannot yet provide a sufficiently long and stable period of support. Hence, any results presented here are of a preliminary character. In the light of the theoretical considerations presented above, we will first take a look at alliances' market shares (for a constant membership), which we expect to grow if the hypothesis of members' increased competitiveness by alliance formation is to be affirmed. Thereafter, we will investigate the development of fares. If alliances were to enhance their members' efficiency in providing air transport, we would expect fares to fall (or new low fares being added to a given fare structure) under competitive conditions; if, however, as a result of alliance formation competition in the relevant markets were to have lessened, fares would be expected to rise (or the lowest fares in a fare structure eliminated). We will first present some results for selected route bundles and then address the question of competition in a whole network.<sup>48</sup>

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Norway) ownership of Swedish regional carrier Transwede and KLM's ownership of KLM UK mostly also reflect liberal EU rules.

45 These industry-specific foreign ownership laws were originally justified mainly by military defence arguments by which civil aircraft were seen as reserve transport capacities in wartime. In today's civil air transport markets, however, they "prevent any real move towards global industry consolidation" (*Airline Business* 1998a).

46 If mergers were realized in that situation, this could serve as a litmus test both for the reality of transaction costs savings and for the potential of future market foreclosure.

47 It can be demonstrated that once some links between hubs in different countries which are subject to different ASAs are opened up to competition, traffic diversion will serve as a spillover mechanism from regulated to nonregulated markets in terms of intensified locational competition between hubs for traffic flows and served links (Gillen et al. 2000).

48 Empirical observations about GSA's impact on competition can be derived from statistical sources such as IATA's yearly "World Air Transport Statistics"; however, it should be noted that since the alliance trend has started, on a really global level, not before the announcement of their alliance by British Airways and American Airlines in 1996, there are at most three years, 1996, 1997 and 1998, from which statistical data on early effects of GSAs can be expected at the time of this writing.

### 3.3.1 Changes in Market Shares

The market shares<sup>49</sup> of the alliances have changed only slightly after the alliance formation in the mid-1990s. The market shares of three of those airline groupings which afterwards formed today's five dominant alliances expanded significantly in the early 1990s (Table 5).<sup>50</sup> The expansion amounted to three percentage points in the case of later Star<sup>51</sup> and One World alliances (leaving them with market shares of about 25 and 17–18 percent, respectively), and to nearly two percentage points for those airlines which have recently formed the Air France/Delta alliance with a share of about 11 percent. The KLM/Northwest alliance gathered about 9.5 percent of the market during the whole decade. The share of the smallest grouping, Qualiflyer, grew from 2.8 percent in 1990 to 3.2 percent in 1995, and then continued to grow reaching 3.7 percent in 1998. Thus, traffic growth of those airlines which afterwards formed the alliances had been substantially faster than on world average in the early 1990s. In more recent years, the alliances — with the exception of One World — have continued to expand slightly stronger than total world air traffic, which grew by 18 percent, with Qualiflyer alliance taking the lead (Table 6).<sup>52</sup>

Within all alliances, differences in growth rates between individual members are substantially greater than those between the alliance aggregates or between them and the world total: In the period 1995–1998, the difference in growth rates between the highest- and lowest-growth airlines ranged from 33 to 140 percentage points, the maximum growth difference between two alliance aggregates being just 22 points (Table 6). Thus, there still seems to be a great deal of disparity between individual alliance members' economic success, which points to ongoing heterogeneity of alliances, which in turn may raise doubts as to their future stability (Chapter 2).

Note, however, that the stability of alliances seems to have increased in recent years. A study by the Boston Consulting Group has shown “that 38 per cent of alliances (of all types) in existence in 1992 were still in place in 1995. By contrast, 68 per cent of alliances which were in existence in 1995 were still going strong in 1998” (Skapinker 1999; see also Oum et al. 2000: Sections 2.3 and 2.4). Moreover, there remain only relatively few major independent airlines which could compete with the alliance members. On a worldwide traffic (RPK) basis, only 17 out of the first 50 IATA members (and only 5 out of the first 25) carriers are still not linked to one of the Big Four alliances.<sup>53</sup> The performance of these airlines is shown in Table 7. Their possible impact on competition in air transport to, from and within Europe is, however, rather limited for a number of reasons.<sup>54</sup>

<sup>49</sup> Market shares may be expressed in several terms, the most familiar being (percentages of) the passenger transport performance as measured by worldwide total “revenue passenger kilometers” (RPKs). The use of market shares in alternative terms (e.g., transport supply in the passenger or in the passenger, freight and mail sectors as measured by “available seat – or tonne – kilometers” or transport performance on international routes only) would hardly change the overall impression.

<sup>50</sup> In Tables 5 and 6, the traffic and market share data have been traced back to 1990 on the basis of the 2000 alliance membership (Table 1). – Market shares do not add up to 100 percent due to the existence of airlines which (still) are independent of alliances (Table 7).

<sup>51</sup> The market share of the Star alliance had to be estimated because traffic data from Air New Zealand were lacking.

<sup>52</sup> The aggregate traffic of the five alliances grew by 20 percent, the rest of the total world air traffic grew by 15 percent in 1998 over 1995 (calculated from Table 6 data).

<sup>53</sup> These are Japan Airlines (rank 7), Trans World Airlines (16), Alitalia (18), Malaysia Airline System (22), America West Airlines (25), Saudi Arabian Airlines (29), Alaska Airlines (30), China Southern Airlines (32), Air China (37), Japan Air System (38), Emirates (40), El Al (41), Air-India (42), Pakistan International Airlines (43), China Eastern Airlines (45), Gulf Air (47) and Hapag Lloyd (49). See IATA (1999: 47).

<sup>54</sup> These reasons are: (i) Some of the independent carriers are former national carriers of Eastern bloc countries such as the Czech carrier CSA and may sooner or later follow one of the alliances. (ii) The abundant majority of the remaining carriers are residents of non-European, mostly Middle East and Asian countries and thus, by virtue of the bilateral air transport agreement between the relevant states, confined to traffic between their own countries of residence and the individual European countries (so-called third and fourth freedom traffic) so that they cannot be significant competitors on intra-European or North Atlantic routes, while some fifth freedom rights held by these carriers do not change the overall picture.

Table 6: Alliance Members' Transport Performance 1995 and Index Numbers for 1990–1998

	1995	1990	1993	1994	1996	1997	1998
	mill. RPK <sup>a</sup>	1995 = 100					
<b>1. Star Alliance</b>							
Air Canada	26,314	93	77	86	122	139	142
All Nippon Airways	42,855	77	86	90	110	120	125
Austrian Airlines	4,913	57	76	78	111	127	148
British Midland	2,476	61	78	89	110	121	124
Canadian Airlines Int'l.	23,479	92	85	88	108	108	113
Lauda Air	2,141	42	78	80	126	136	175
Lufthansa	61,602	68	85	92	103	116	122
Mexicana	8,329	137	104	105	101	120	124
Scandinavian Airlines System	18,506	90	98	100	105	110	113
Singapore Airlines	48,400	65	85	93	111	114	119
Thai Airways	27,053	73	85	93	110	115	127
United Airlines	179,499	68	91	97	104	109	112
US Airways	60,538	95	94	101	104	111	110
Varig	20,877	79	102	103	104	115	125
Virgin Atlantic Airways	14,539	40	68	84	98	126	136
Total Star Alliance <sup>b</sup>	541,521	75	88	95	106	114	119
<b>2. One World</b>							
Aer Lingus/Aerlinte	4,661	90	81	92	110	126	139
Aerolineas Argentinas	9,685	87	80	96	105	111	109
American Airlines	165,247	75	95	96	102	104	106
British Airways	93,860	71	85	92	107	113	124
Cathay Pacific	35,323	67	82	93	114	110	115
Finnair	8,340	56	64	78	103	115	128
Iberia	23,804	93	98	95	109	116	137
Lan Chile	3,535	60	66	77	137	191	217
Qantas	51,870	54	86	93	107	112	109
Total One World <sup>c</sup>	396,325	72	89	94	106	110	115
<b>3. Air France/Delta</b>							
Aeroflot (internat. services)	13,063	137	114	89	102	103	121
Aeromexico	8,519	80	107	123	104	118	126
Air France	49,524	74	88	101	116	137	151
Delta Air Lines	136,962	69	97	101	110	117	121
Korean Air Lines	33,782	55	76	87	112	118	95
Total Air France/Delta	241,850	72	94	99	111	121	124
<b>4. KLM/Northwest</b>							
Braathens	2,044	61	75	85	113	116	121
Continental Airlines	57,131	110	119	117	105	122	140
Kenya Airways	1,757	94	.	99	105	103	116
KLM	44,458	59	83	92	110	125	129
Northwest Airlines	100,603	82	93	93	110	115	107
Total KLM/Northwest	205,993	85	.	99	109	119	121
<b>5. Qualifyer</b>							
AOM French Airlines	7,364	83	70	55	109	116	130
Crossair	577	30	99	78	155	183	240
LOT	4,242	82	83	92	92	99	100
Sabena	8,620	88	75	87	105	131	178
South African Airways	13,098	69	80	85	105	115	121
Swissair	19,725	80	87	93	108	128	142
TAP Air Portugal	7,716	89	102	98	103	114	121
Turkish Airlines	9,475	51	76	90	116	131	138
Total Qualifyer <sup>d</sup>	70,817	76	83	90	107	122	137
ICAO (World) Total	2,230,000	85	88	94	108	115	118

<sup>a</sup>Revenue passenger kilometers. — <sup>b</sup>Not including Air New Zealand, Ansett Australia, and Spanair. — <sup>c</sup>Not including Air Liberté and Deutsche BA. — <sup>d</sup>Not including Air Europe, Air Littoral, Portugalia and Volare.

Source: IATA (various issues); ICAO (various issues); authors' calculations.

Table 7: Transport Performance of Major Airlines Not Tied to the Big Alliances, 1990–1998

	1995	1990	1993	1994	1996	1997	1998
	mill. RPK <sup>a</sup>	1995 = 100					
<b>Europe and Middle East</b>							
Alitalia	31,748	72	89	95	109	113	112
CSA	2,317	88	82	85	102	105	114
Cyprus Airways	2,667	70	82	105	98	100	102
El Al	11,287	62	76	85	102	102	108
Emirates	7,192	32	78	89	119	153	180
Gulf Air	11,063	56	n.a.	88	100	90	96
Icelandair	2,499	66	79	91	115	127	149
Kuwait Airways	5,124	n.a.	79	88	119	117	n.a.
Malev	1,694	89	88	98	123	138	148
Olympic Airways	7,945	98	99	106	107	117	108
Royal Jordanian	4,395	63	91	95	108	112	93
Ryanair	1,121	34	n.a.	n.a.	133	182	165
Saudi Arabian Airlines	18,501	87	100	99	103	102	102
Tarom	2,526	n.a.	72	102	72	64	67
<b>Asia/Pacific</b>							
Air China	13,222		82	87	105		110
Air India	11,454	82	66	80	101	101	102
Airlanka	3,966	86	91	93	96	107	104
Dragonair	2,220	34	73	94	108	113	107
Garuda Indonesia	17,584	76	87	97	101	109	n.a.
Japan Air Lines	69,775	79	78	90	109	113	113
Japan Air System	11,186	73	92	95	109	119	126
Malaysia Airlines	23,475	51	74	87	114	123	125
Pakistan International	10,384	90	95	100	102	112	106
Philippine Airlines	14,374	n.a.	91	97	105	117	114
<b>Africa</b>							
Air Afrique	2,451	n.a.	91	96	101	109	116
Air Mauritius	3,198	71	83	93	106	121	121
Egyptair	7,678	78	69	81	114	117	105
Royal Air Maroc	4,602	63	96	99	101	116	128
<b>North America</b>							
Alaska Airlines	13,735	56	64	88	115	121	132
America West Airlines	21,360	83	84	92	115	122	123
Trans World Airlines	40,074	139	92	100	108	101	98
<b>Latin America</b>							
Avianca	3,859	89	87	94	103	120	122
Ladeco (Chile)	2,461	36	70	92	57	36	42
Transbrasil	5,311	70	81	84	102	100	93
VASP (Brazil)	6,441	67	55	76	120	148	156
Viasa	3,776	76	86	96	n.a.	n.a.	n.a.

<sup>a</sup>Revenue passenger kilometers.

Source: IATA (various issues); ICAO (various issues); authors' calculations.

However, in several instances the traffic performance (RPK growth) of the nonallied airlines was comparable and sometimes even better than that of the majority of alliance members pointing to potential outsiders' competition by at least some nonallied airlines. The most prominent one is Ryanair, a new independent carrier, which grew by 65 percent — faster than most of its alliance-bound counterparts — in 1998 over 1995 (Table 7). Another example is Virgin Atlantic Airways with 36 percent growth in the same period, i.e., before it became an associated member of Star Alliance. Apparently, competitive pressures will — apart from rivalry among the different alliances — mostly have to be expected from newly emerging independent carriers. Since new carriers on a route would be unable to

do their job without acquiring slots before, this points to the importance of the availability of slots for competition — liberal ASAs presupposed anyway.<sup>55</sup>

### 3.3.2 The Impact of Alliances on Fares for Selected Routes

Whether or not the alliances had any significant effects on fares can only be analyzed on a preliminary basis.<sup>56</sup> We have compared fares on specific North Atlantic routes<sup>57</sup>, this important traffic area being the only one which has been specifically addressed in the EU communication, and fares for selected routes within Europe; this latter part of the analysis can give additional information on fare developments, especially by comparing the effects on German-Scandinavian routes, where Star alliance has, by virtue of membership of both SAS and Lufthansa, a rather dominant position, with the effects on other routes where other alliances' or independent airlines' competition is more intense. Comparisons have been carried out for fares valid in 1998 and a reference year (1996 with respect to North Atlantic routes, 1994 for intra-European routes).<sup>58</sup> For each route, we have investigated the development of the relative difference between the highest and lowest fares (the so-called tariff spread) as an indicator for the fare structure as a whole.<sup>59</sup> We would expect a lessening of competition to translate into an elimination of the lowest tariffs, indicated by a diminishing of the tariff spread (negative sign in the last column of our tables).

The results for the *North Atlantic routes* are summarized in Tables 8 and 9. It can be seen that there is no clear distinction between fare developments, with respect to the tariff spread, on those routes where the Commission demanded frequency reductions or slot transfer by alliance members (see below for details), and on the other routes in the sample. This is obvious especially for the routes from Frankfurt, where business and economy class fares as recorded by the *ABC World Airways Guide* have been raised almost uniformly (by 8 percent).<sup>60</sup> On traffic relations from London, the by far wider tariff spread has been widened further. This, admittedly, does not result from the introduction of new cheap fares on the low end of the tariff structure, but rather from the relatively high increase of the highest fares; however, there is hardly a difference in the relative fare developments on routes to Chicago, Dallas and Miami, which attracted the Commission's special attention, and those to other destinations, which did not.<sup>61</sup> Hence, with respect to those North Atlantic routes which are, in the

<sup>55</sup> This conclusion coincides with an econometric study of the effects of market entry in the United States: "The figures clearly illustrated that the entry of low cost carrier Southwest on a route had a differential impact from the entry of other carriers, on average. ... The entry of Southwest resulted in a significantly greater price reduction and increase in traffic. Both of these impacts were sustained over a one-year period after route entry. The entry of established carriers, such as United, American, and Delta, appeared to have little or no effect on prices and passenger traffic. ..." (Windle and Dresner 1995: 24).

<sup>56</sup> This qualification is referring on the one hand to the continuing instability of alliances on the North Atlantic market, and to the suspension of code-sharing and joint fare-setting agreements in the British Airways/American Airlines alliance One World on the other.

<sup>57</sup> Pertinent routes are those which the EU Commission particularly thought to be in danger of being dominated by a single alliance (Frankfurt-Chicago/Washington, London-Chicago/Dallas/Washington) and, comparatively, a few other routes between Frankfurt or London and U.S. cities (such as New York or Los Angeles).

<sup>58</sup> The choice of the reference years was done with respect to the foundation of Star Alliance in 1993 and the British Airways/American Airlines alliance in 1996.

<sup>59</sup> For analytic purposes, first class and (on the North Atlantic) supersonic fares have been completely ignored, however, the lowest fares have been taken into account irrespective of any restrictions of their applicability (as to seasonality, advance purchase, minimum stay, limitation to a certain carrier or the like).

<sup>60</sup> It should be noted that the *ABC World Airways Guide* does not warrant completeness or accuracy of its fare information. For the fares for routes from Germany to the United States, the lower margins recorded in the guide (Table 8) seem to be unrealistically high (in contrast to those from the United Kingdom to the United States, see Table 9). But the lower margins are comparable for all German-U.S. routes so that tariff spread changes of published fares on these routes are shown accurately. However, undetected developments might be found for fares not published in the guide.

<sup>61</sup> With special reference to the lowest (Apex) fare category it should also be noted that there are only minor discrepancies between the rates of increase of the lowest and the highest of the daily and seasonally differing fares.

Commission's view, in danger of being dominated by alliances, the influence of their market shares on the level and structure of fares is at best of minor importance — notwithstanding, as Skapinker (1998) presumes, "an unstated aim of airline alliances is to try to slow the fall in fares."

Table 8: Selected North Atlantic Fares from Germany and the Tariff Spread, 1996 and 1998 (fares in DM)

Traffic relation	1996			1998			Tariff spread change <sup>c</sup>
	Highest fare <sup>a</sup>	Lowest fare	Tariff spread <sup>b</sup>	Highest fare <sup>a</sup>	Lowest fare	Tariff spread <sup>b</sup>	
<i>Routes where EU has demanded frequency reduction by Star Alliance</i>							
Frankfurt–Chicago	5,610	5,171	7.8	6,068	5,593	7.8	0
Frankfurt–Washington	4,971	4,584	7.8	5,377	4,959	7.8	0
<i>Routes where EU has required slot transfer on demand by competitor</i>							
Frankfurt–Boston	4,586	4,109	10.4	4,961	4,445	10.4	0
Frankfurt–Dallas	6,153	5,676	7.8	6,655	6,139	7.8	0
Frankfurt–Los Angeles	6,912	6,373	7.8	7,476	6,893	7.8	0
Frankfurt–Miami	5,585	5,147	7.8	6,041	5,568	7.8	0
Frankfurt–San Francisco	6,912	6,373	7.8	7,476	6,893	7.8	0
<i>Other routes</i>							
Frankfurt–Atlanta	5,585	5,147	7.8	6,041	5,568	7.8	0
Frankfurt–New York	4,586	4,109	10.4	4,961	4,445	10.4	0
Frankfurt–Seattle	7,086	5,964	15.8	8,220	7,160	12.9	-2.9

<sup>a</sup>First class fares excluded. — <sup>b</sup>Difference between the highest and the lowest fare as percentage of the highest fare. Return tickets. — <sup>c</sup>1998 over 1996 in percentage points.

Source: ABC World Airways Guide (July 1996, July 1998).

Table 9: Selected North Atlantic Fares from the UK and the Tariff Spread, 1996 and 1998 (fares in £)

Traffic relation	1996			1998			Tariff spread change <sup>c</sup>
	Highest fare <sup>a</sup>	Lowest fare	Tariff spread <sup>b</sup>	Highest fare <sup>a</sup>	Lowest fare	Tariff spread <sup>b</sup>	
<i>Routes where EU has demanded frequency reduction by One World Alliance</i>							
London–Chicago	2,996	383	86.2	3,896	426	89.1	2.9
London–Dallas	3,130	393	87.4	3,878	417	89.2	1.8
London–Miami	2,648	353	86.7	3,280	374	88.6	1.9
<i>Routes where EU has required slot transfer on demand by competitor</i>							
London–Los Angeles	3,844	413	89.3	4,536	430	90.5	1.2
London–Boston	2,504	293	88.3	3,102	311	90.0	1.7
London–Charlotte	2,598	313	88.0	3,220	333	89.7	1.7
London–New York	2,504	293	88.3	3,102	311	90.0	1.7
London–Philadelphia	2,480	303	87.8	2,954	321	89.1	1.3
London–Seattle	3,844	413	89.3	4,762	439	90.8	1.5
<i>Other routes</i>							
London–Atlanta	2,600	313	88.0	3,222	333	89.7	1.7
London–Detroit	2,832	383	86.5	3,644	426	88.3	1.8
London–Orlando	2,648	353	86.7	3,280	374	88.6	1.9
London–Pittsburgh	2,778	313	88.7	3,440	333	90.3	1.6
London–Washington	2,576	303	88.2	3,190	321	90.0	1.8
Manchester–New York	2,504	409	83.7	3,102	311	90.0	6.3
Glasgow–New York	2,362	288	87.8	3,102	311	90.0	2.2

<sup>a</sup>First class and supersonic fares excluded. — <sup>b</sup>Difference between the highest and the lowest fare as percentage of the highest fare. Return tickets. — <sup>c</sup>1998 over 1996 in percentage points.

Source: ABC World Airways Guide (July 1996, July 1998).

Oum et al. (2000: Sections 6.3.3 and 6.4) investigated the impact of code-sharing agreements on the North Atlantic market in the early alliance period from 1990 to 1994 on fares and found that the agreements of KLM/Northwest Airlines and of Delta/Swissair/ Sabena (which does not exist any longer as Delta is now cooperating with Air France whereas Swissair and Sabena belong to Qualiflyer) even reduced fares in the North Atlantic market. For the agreements between British Airlines and US Air (which does not exist either) and between Lufthansa and United Airlines (the Star alliance's predecessor) the results were statistically insignificant. Hence, these findings do not suggest strong anticompetitive effects either.

In order to determine the effect of alliances on air fares *within Europe*, we have differentiated our results as to routes from Germany to Scandinavia (i.e., where the Star alliance partners Lufthansa and SAS are dominating) and from Germany to other countries in Europe (i.e., routes where Lufthansa competes with nonmember airlines of the Star alliance). For each route, the tariff spread change in 1998 over 1994 has been calculated.<sup>62</sup> If competition on German-Scandinavian routes were to have lessened substantially as a consequence of the Lufthansa/SAS alliance, one should expect the tariff spreads on these routes to shrink, and to shrink more (i.e. absolutely higher negative values in the last column) than they do on the other routes shown in Table 10.

In the case of European air transport markets, the downward pressure on prices, which usually results from intensified competition, had already increased as a consequence of the EU's Single European Market policy. It materialized mainly in a widening of the tariff spread by adding further low tariffs to an existing tariff structure<sup>63</sup>; this may be seen from the development of the fare structure in the ten years before 1994: according to the Association of European Airlines (AEA), the average promotional fare in its members' European traffic slipped from 60 percent of the average normal fare in 1984 to less than 50 percent in 1994 (AEA 1995: 8) or, alternatively, the tariff spread increased from 40 to more than 50 percent.<sup>64</sup>

It can be seen from Table 10 that, indeed, the tariff spread on German-Scandinavian routes shrank in 1998 by nearly 30 percentage points over 1994, from about 70 percent to just over 40 percent, mainly because the very low discount fares of 1994 were no longer available in 1998.<sup>65</sup> On several other routes, however, where the Star alliance is without direct relevance because Lufthansa has to compete with other airlines which it is not allied to, the tariff spread has shrunk similarly, by at least 20 percentage points.<sup>66</sup> There are cases where the diminution of the spread has been substantially lower, only around 10 or even less percentage points — and on most routes from Germany to London

<sup>62</sup> In some cases where "high" return fares were not shown (but only one-way fares in that price category), they were replaced by the indicated "Eurobudget" fares for which only minor restrictions, compared with those applicable to genuine "low" fares, apply. For details see the "Fare notes" in the appropriate Airways Guide. — With respect to routes to Austria, remember that Austrian Airlines in 1998 still had not joined Star alliance.

<sup>63</sup> The fact that competitive pressures will often result in an enlargement of a given tariff structure (by adding further low tariffs) rather than in a downward movement of the existing tariffs is common to many transport markets; it has already been mentioned, with special respect to rail and sea transport, by Predöhl (1964: 242, 259). For a more recent statement on this topic (with respect to air transport) see Hanlon (1994: 21–22); it would go beyond the scope of the present study to examine the point raised by Hanlon, whether relatively high fares in some relations like those with Scandinavia are to be explained by lack of charter competition and whether the resulting profits are used by the airlines to cross-subsidize low fares on routes where the airlines face tough charter competition (e.g., to the Iberian Peninsula).

<sup>64</sup> A more specific analysis with respect to the routes selected in Table 10 has shown that on nearly all routes, apart from a few connections to Zurich and Amsterdam, the tariff spread has been widened. Though the extent of this widening differs considerably between individual routes, the difference in developments before and after 1994 is evident.

<sup>65</sup> On the other hand, the tariff spread on these routes had, in accordance with the Europe-wide trend observed by the AEA, expanded from roughly 45 percent in 1984 to about 70 percent in 1994. The addition of new low tariffs to the tariff structure had resulted, e.g., in a reduction of the lowest return fares Frankfurt-Copenhagen from DM 559 to DM 435 and Frankfurt-Oslo or Stockholm from DM 839 to DM 637, while at the same time the highest (economy) fares had been raised from DM 1,032 to DM 1,464 (Copenhagen) or from DM 1,556 to DM 2,183 (Oslo/Stockholm). (Table 10 and *ABC World Airways Guide* July 1984).

<sup>66</sup> Examples from Table 10 are routes to Amsterdam (especially from Frankfurt and Munich), Madrid, Paris, Vienna, and Palma de Mallorca.

Table 10: Selected Intra-European Fares and the Tariff Spread, 1994 and 1998

Traffic relation <sup>a</sup>	1994			1998			Tariff spread change <sup>d</sup>
	Highest fare <sup>b</sup>	Lowest fare	Tariff spread <sup>c</sup>	Highest fare <sup>b</sup>	Lowest fare	Tariff spread <sup>c</sup>	
	DM			DM			
<i>Routes between Germany and Scandinavia</i>							
Berlin-Copenhagen (51)	1,003	297	70.4	1,118	765	31.6	-38.8
Berlin-Oslo	1,662	927	44.2	1,855	1,077	41.9	-2.3
Berlin-Stockholm	1,662	487	70.7	1,855	1,077	41.9	-28.8
Dusseldorf-Copenhagen (91)	1,333	392	70.6	1,490	878	41.1	-29.5
Dusseldorf-Oslo or Stockholm	2,028	594	70.7	2,263	1,316	41.8	-28.9
Frankfurt-Copenhagen (188)	1,464	435	70.3	1,635	958	41.4	-28.9
Frankfurt-Oslo or Stockholm	2,183	637	70.8	2,436	1,416	41.9	-28.9
Hamburg-Copenhagen (82)	815	244	70.1	912	582	36.2	-33.9
Hamburg-Oslo or Stockholm	1,608	477	70.3	1,797	1,044	41.9	-28.4
Munich-Copenhagen (71)	1,775	520	70.7	1,982	1,162	41.4	-29.3
Munich-Oslo or Stockholm	2,466	732	70.3	2,753	1,595	42.1	-28.2
Stuttgart-Copenhagen (56)	1,636	499	69.5	1,825	1,072	41.3	-28.2
Stuttgart-Stockholm	2,359	689	70.8	2,634	1,432	45.6	-25.2
<i>Other selected intra-European routes from Germany</i>							
Berlin-Amsterdam (99)	EB 1,057	447	57.7	EB 1,206	704	41.6	-16.1
Berlin-Brussels (52)	EB 1,264	490	61.2	EB 1,384	848	38.7	-22.5
Berlin-London (225)	1,516	428	71.8	1,702	479	71.9	0.1
Berlin-Milan (4)	1,704	548	67.8	1,900	830	56.3	-11.5
Berlin-Paris (148)	EB 1,414	555	60.7	EB 1,651	1,125	31.9	-28.8
Berlin-Palma de Mallorca	2,341	429	81.7	2,559	1,006	60.7	-21.0
Berlin-Vienna (30)	1,386	436	68.5	1,550	907	41.5	-27.0
Berlin-Zurich (94)	1,377	711	48.4	1,621	996	38.6	-9.8
Dusseldorf-Barcelona (52)	1,698	468	72.4	1,821	858	52.9	-19.5
Dusseldorf-Birmingham (94)	1,180	458	61.2	1,324	472	64.4	3.2
Dusseldorf-Istanbul (79)	2,649	698	73.7	2,840	918	67.7	-6.0
Dusseldorf-London (378)	966	319	67.0	1,085	299	72.4	5.4
Dusseldorf-Manchester (81)	1,317	508	61.4	1,478	524	64.5	3.1
Dusseldorf-Milan (42)	1,334	548	58.9	1,495	773	48.3	-10.6
Dusseldorf-Paris (169)	EB 822	314	61.8	EB 963	656	31.9	-29.9
Dusseldorf-Palma de Mallorca	1,880	339	82.0	2,063	826	60.0	-22.0
Dusseldorf-Vienna (52)	1,652	545	67.3	1,839	1,068	41.9	-25.4
Dusseldorf-Zurich (94)	1,066	523	50.9	1,232	779	36.8	-14.1
Frankfurt-Amsterdam (221)	EB 746	299	59.9	EB 863	547	36.7	-23.2
Frankfurt-Athens (160)	2,472	738	70.1	2,705	963	64.4	-5.7
Frankfurt-Barcelona (152)	1,698	468	72.4	1,821	858	52.9	-19.5
Frankfurt-Birmingham (81)	1,390	518	62.7	1,560	479	69.3	6.6
Frankfurt-Brussels (209)	EB 870	348	60.0	EB 960	616	35.8	-24.2
Frankfurt-Bucharest (32)	EB 2,295	1,028	55.2	EB 2,528	1,123	55.6	0.4
Frankfurt-Budapest (73)	EB 1,480	646	56.4	EB 1,616	964	40.3	-16.1
Frankfurt-Geneva (113)	1,107	543	50.9	1,246	768	38.4	-12.5
Frankfurt-Glasgow (5)	1,674	588	64.9	1,879	629	66.5	1.6
Frankfurt-Istanbul (207)	2,524	698	72.3	2,709	918	66.1	-6.2
Frankfurt-Lisbon (117)	2,362	680	71.2	2,617	1,135	56.6	-14.6
Frankfurt-London (793)	1,186	429	63.8	1,332	249	81.3	17.5
Frankfurt-Madrid (171)	2,122	578	72.8	2,276	1,073	52.9	-19.9
Frankfurt-Malaga (59)	2,460	598	75.7	2,587	1,104	57.3	-18.4
Frankfurt-Manchester (120)	1,527	573	62.5	1,714	529	69.1	6.6
Frankfurt-Milan (165)	1,183	548	53.7	1,329	773	41.8	-11.9
Frankfurt-Moscow (127)	EB 2,507	1,133	54.8	EB 2,707	1,600	40.9	-13.9
Frankfurt-Naples (26)	1,788	767	57.1	2,030	886	56.4	-0.7
Frankfurt-Nice (65)	EB 1,363	534	60.8	EB 1,589	777	51.1	-9.7
Frankfurt-Paris (403)	EB 955	375	60.8	EB 1,118	763	31.8	-29.0
Frankfurt-Palma de Mallorca (47)	1,880	329	82.5	2,063	826	60.0	-22.5
Frankfurt-Prague (101)	982	317	67.7	1,261	317	74.9	7.2
Frankfurt-Rome (93)	1,731	648	62.6	1,928	720	62.7	-0.1
Frankfurt-Sofia (19)	EB 2,333	1,024	56.1	EB 2,519	1,506	40.2	-15.9
Frankfurt-Venice (121)	1,269	590	53.5	1,425	773	45.8	-7.7
Frankfurt-Vienna (176)	1,344	436	67.6	1,505	883	41.3	-26.3
Frankfurt-Warsaw (118)	EB 1,502	568	62.2	EB 1,640	983	40.0	-22.2
Frankfurt-Zurich (197)	847	415	51.0	962	597	37.9	-13.1
Hamburg-Amsterdam (125)	EB 748	462	38.2	EB 864	551	36.2	-2.0
Hamburg-Brussels (55)	EB 1,251	450	64.0	EB 1,374	775	43.6	-20.4
Hamburg-London (256)	1,270	491	61.3	1,425	359	74.8	13.5
Hamburg-Milan (7)	1,791	648	63.8	1,993	886	55.5	-8.3
Hamburg-Paris (139)	EB 1,290	578	55.2	EB 1,507	1,028	31.8	-23.4
Hamburg-Palma de Mallorca	2,341	439	81.2	2,559	1,006	60.7	-20.5
Hamburg-Vienna (28)	1,784	752	57.8	1,985	1,161	41.5	-16.3
Hamburg-Zurich (63)	1,577	928	41.2	1,760	1,081	38.6	-2.6



Table 10 continued

Traffic relation <sup>a</sup>	1994			1998			Tariff spread change <sup>d</sup>
	Highest fare <sup>b</sup>	Lowest fare	Tariff spread <sup>c</sup>	Highest fare <sup>b</sup>	Lowest fare	Tariff spread <sup>c</sup>	
	DM			DM			
Munich–Barcelona (78)	1,698	468	72.4	1,821	858	52.9	-19.5
Munich–Brussels (87)	EB 1,207	401	66.8	EB 1,325	816	38.4	-28.4
Munich–Istanbul (84)	2,351	598	74.6	2,522	808	68.0	-6.6
Munich–London (397)	1,516	480	68.3	1,702	479	71.9	3.6
Munich–Madrid (60)	2,122	578	72.8	2,276	1,073	52.9	-19.9
Munich–Malaga	2,460	539	78.1	2,587	1,104	57.3	-20.8
Munich–Milan (61)	1,038	448	56.8	1,170	659	43.7	-13.1
Munich–Paris (239)	EB 1,214	491	59.6	EB 1,419	969	31.7	-27.9
Munich–Palma de Mallorca	1,880	410	78.2	2,063	826	60.0	-18.2
Munich–Rome (48)	1,376	548	60.2	1,540	830	46.1	-14.1
Munich–Thessaloniki (56)	2,159	469	78.3	2,362	733	69.0	-9.3
Munich–Vienna (111)	864	273	68.4	980	603	38.5	-29.9
Munich–Zurich (91)	667	392	41.2	765	477	37.6	-3.6
Stuttgart–Brussels (47)	EB 979	561	42.7	EB 1,079	667	38.2	-4.5
Stuttgart–Istanbul (55)	2,524	838	66.8	2,709	918	66.1	-0.7
Stuttgart–London (172)	1,294	491	62.1	1,452	479	67.0	4.9
Stuttgart–Paris (115)	EB 960	377	60.7	EB 1,123	765	31.9	-28.8
Stuttgart–Zurich (44)	539	317	41.2	625	393	37.1	-4.1

<sup>a</sup>Numbers in brackets = number of one-way passengers in 1996 in thousand according to ICAO (1998). — <sup>b</sup>First class fares excluded; EB: Eurobudget fares. — <sup>c</sup>Difference between the highest and the lowest fare as percentage of the highest fare. — <sup>d</sup>1998 over 1994 in percentage points.

Source: ABC World Airways Guide (July 1994, July 1998).

(and other places in the United Kingdom) the tariff spread has even increased. In most cases, however, this enlargement may be attributed to the emergence of new competitors such as Debonair or Gill Airways (Table 11).<sup>67</sup> The most pronounced enlargement of the tariff spread, by nearly 18 percentage points, appeared on the route from Frankfurt to London where British Midland introduced a new cheap fare in 1998 although the competitive structure in this market had hardly changed — all competitors which operated the route in 1998 had done so already in 1994.

As for the routes between Germany and other destinations, in most cases, where the tariff spread was diminished by a percentage substantially lower than on German-Scandinavian routes, the original tariff spread had also been substantially lower, mainly in the range of 50–60 percent instead of 70 percent. Note that in 1998 and with the existence of the Lufthansa/SAS alliance, the available discount on the highest fares to Scandinavia was about 40 percent, which is in line with most other European routes (within the EU) from Germany, i.e., where Lufthansa faces competition from airlines not allied to it, such as Air France, Alitalia or the Dutch carrier KLM. Where higher discounts were available, i.e., the tariff spread was greater than 40 percent, this mostly reflected — like the London routes — special market conditions such as the intense competition of low-cost (former charter) carriers on routes to Palma de Mallorca.

Turning from the route-by-route analysis to the statistical overview of *all* selected routes<sup>68</sup>, it becomes clear that among non-Scandinavian routes there are relatively numerous (38 out of 72; shown in box of Table 12) cases where the tariff spread has declined only moderately — by less than a quarter<sup>69</sup> — or even increased, while there is only 1 of 17 Scandinavian routes where the tariff spread has not shrunk by more than a quarter (Table 12: area just above the box).

<sup>67</sup> For instance, the DM 359 return fare from Hamburg to London, an Apex fare, was offered by newcomer Gill Airways.

<sup>68</sup> In selecting the routes, care has been taken to include all routes from the six German airports listed in Table 10 to Copenhagen, Oslo (except from Stuttgart where there is no direct service which is the precondition for the application of most tariffs of the low categories), Stockholm, and all other European destinations with more than 50,000 (from Frankfurt: 100,000) passengers on flight stage basis in 1996 as recorded by ICAO (1998); a few additional routes have been freely selected so as to take into account special conditions such as charter airlines' competition in the case of destinations like Palma de Mallorca.

<sup>69</sup> It should be noted that while in the preceding sections the absolute change in the tariff spread (in percentage *points*) has been analyzed, this section as well as Table 12 deals with the relative change in the tariff spread, in order to compare the changes that had taken place in different routes with initially differing tariff spreads.

Table 11: Competitors on Selected European Air Routes from Germany, 1994 and 1998

Traffic relation	Competitors <sup>a</sup>						Change <sup>c</sup>
	1994			1998 <sup>b</sup>			
	<i>Routes between Germany and Scandinavia</i>						
Berlin-Copenhagen	SAS				Cimber Air (on behalf of Lufthansa and SAS)		-
Berlin-Oslo	British Airw.				Wideroe		-
Berlin-Stockholm	British Airw.	Finnair	Lufthansa		SAS		-1
Dusseldorf-Copenh.	Lufthansa	SAS			SAS		-1
Dusseldorf-Oslo	SAS				Lufthansa	SAS	-
Dusseldorf-Stockholm	Lufthansa	SAS			Lufthansa		-1
Frankfurt-Copenh.	Lufthansa	SAS	(1*)		Lufthansa	SAS	(1*)
Frankfurt-Oslo	Lufthansa	SAS			Lufthansa	SAS	-1
Frankfurt-Stockholm	Lufthansa	SAS			Lufthansa	SAS	-1
Hamburg-Copenh.	Finnair	SAS			Finnair	SAS	-
Hamburg-Oslo	Lufthansa				Iberia	Lufthansa	+1
Hamburg-Stockholm	Lufthansa	SAS			SAS		-1
Munich-Copenhagen	Lufthansa	SAS			Lufthansa	SAS	-1
Munich-Oslo	Lufthansa	SAS			Lufthansa		-1
Munich-Stockholm	British Airw.	Lufthansa			Finnair	Lufthansa	-
Stuttgart-Copenhagen	SAS				Lufthansa	SAS	-
Stuttgart-Stockholm	SAS	Finnair			Lufthansa	SAS	-1
	<i>Other selected intra-European routes from Germany</i>						
Berlin-Amsterdam	KLM	Eurowings			KLM		-1
Berlin-Brussels	Lufthansa	Sabena	Eurowings		Lufthansa	Sabena	-1
Berlin-London	British Airw.	Conti-Flug	Lufthansa		British Airw.	AB Airl.	-
	United Airlines						-2
Berlin-Milan	Alitalia				Alitalia		-
Berlin-Paris	Air France	Lufthansa			Air France	Air Littoral (on beh. of Lufth.)	-
Berlin-Palma de Mall.	Condor Flugd.	LTU			Condor Flugd.	LTU Aero Lloyd	+1
Berlin-Vienna	Austrian Airl.	Lufthansa			Austrian Airl.	Lufthansa	-
Berlin-Zurich	Lufthansa	Swissair			Lufthansa	Swissair (1*)	-
Dusseldorf-Barcelona	Alitalia	Finnair	Iberia		Iberia	Lufthansa Debonair	-
	Lufthansa						-1
Dusseld.-Birmingham	British Airw.	Lufthansa			British Airw.	Lufthansa	-
Dusseldorf-Istanbul	Lufthansa	Turkish Airl.	(Istanbul Airl.)		Turkish Airl.	Istanbul Airl. LTU	-1
	LTU						-
Dusseldorf-London	British Airw.	Lufthansa	Air UK		British Airw.	Lufthansa KLM UK Debonair	+2
					Vlaamse Luchttransportmij.		-
Dusseld.-Manchester	British Airw.	Lufthansa			British Airw.	Lufthansa	-
Dusseldorf-Milan	Alitalia	Lufthansa			Alitalia	Lufthansa	-
Dusseldorf-Paris	Air France	Lufthansa			Air France	Lufthansa	-
Dusseld.-Palma de M.	Condor Flugd.	LTU			Condor Flugd.	LTU Hapag-Lloyd	+1
Dusseldorf-Vienna	Austrian Airl.	Lufthansa			Austrian Airl.	Lufthansa	-
Dusseldorf-Zurich	Lufthansa	Swissair			Lufthansa	Swissair	-
Frankfurt-Amsterdam	KLM	Lufthansa	(5*)		Lufthansa	KLM Cityhop. (1*)	-
Frankfurt-Athens	Lufthansa	Olympic Airw.	(1*)		Lufthansa	Olympic Airw. Hapag-Lloyd	-
	Condor Flugd.				Cronus Air		+1
Frankfurt-Barcelona	Iberia	Lufthansa			Iberia	Lufthansa (1*)	-
Frankfurt-Brussels	Lufthansa	Sabena			Lufthansa	Sabena	-
Frankfurt-Bucharest	Lufthansa	Tarom	(1*)		Lufthansa	Tarom	-
Frankfurt-Budapest	Lufthansa	Malév	(1*)		Lufthansa	Malév (2*)	-
Frankfurt-Geneva	Lufthansa				Lufthansa	(1*)	-
Frankfurt-Glasgow	British Airw.	Lufthansa			British Airw.		-1
Frankfurt-Istanbul	Lufthansa	Turkish Airl.	(1*)		Lufthansa	Turkish Airl. Istanbul Airl.	-
	(Istanbul Airl.)						-
Frankfurt-Lisbon	Lufthansa	TAP Air Port.			Lufthansa	TAP Air Port. (1*)	-
Frankfurt-London	British Airw.	Brit. Midland	Lufthansa		British Airw.	Brit. Midland Lufthansa	-1
	Air UK	(6*)			KLM UK	(2*)	-
Frankfurt-Madrid	Iberia	Lufthansa	(2*)		Lufthansa	(1*)	-
Frankfurt-Malaga	Condor Flugd.	Lufthansa	Viva Air		Aero-Lloyd Hapag-Lloyd	Condor-Flugd. Lufthansa	+1
					British Airw.	Lufthansa	-
Frankfurt-Manchester	British Airw.	Lufthansa	(1*)		British Airw.	Lufthansa	-
Frankfurt-Milan	Alitalia	Lufthansa			Alitalia	Lufthansa	-
Frankfurt-Moscow	Aeroflot	Delta Airlines	Lufthansa		Aeroflot	Lufthansa Transaero	-
Frankfurt-Naples	Condor Flugd.	Lufthansa			Aero-Lloyd	Condor Flugd. LTU	+1
Frankfurt-Nice	Lufthansa				Air France	Air Littoral Lufthansa	+2
Frankfurt-Paris	Air France	British Airw.	Lufthansa (6*)		Air France	Lufthansa (1*)	-1
Frankfurt-Palma de M	LTU	Lufthansa	Viva Air		Condor Fl.	Lufthansa Hapag-Lloyd	-
					LTU	Aero-Lloyd	+2
Frankfurt-Prague	CSA	Lufthansa	(1*)		CSA	Lufthansa (1*)	-
Frankfurt-Rome	Alitalia	Lufthansa	(1*)		Alitalia	Lufthansa (2*)	-
Frankfurt-Sofia	Balkan Bulgar.	Lufthansa			Balkan Bulgar.	Lufthansa	-
Frankfurt-Venice	Lufthansa				Lufthansa		-

Table 11 continued

Traffic relation	Competitors <sup>a</sup>						Change <sup>c</sup>
	1994			1998 <sup>b</sup>			
Frankfurt-Vienna	Austrian Airl.	Lufthansa	(2*)	Austrian Airl.	Lufthansa		-
Frankfurt-Warsaw	LOT Polish A.	Lufthansa	(1*)	LOT Polish A.	Lufthansa	(1*)	-
Frankfurt-Zurich	Lufthansa	Swissair		Lufthansa	Swissair		-
Hamburg-Amsterdam	KLM			KLM			-
Hamburg-Brussels	Lufthansa	Sabena		Lufthansa	Sabena		-
Hamburg-London	British Airw.	BASE Region.	Lufthansa (1*)	British Airw.	Lufthansa	Gill Airw.	-
Hamburg-Milan	Alitalia	Lufthansa		Alitalia	Lufthansa		-
Hamburg-Paris	Air France	Lufthansa		Air France	Lufthansa		-
Hamburg-Palma de M	Condor Flugd.	LTU		Condor Flugd.	<b>Hapag-Lloyd</b>	LTU	+1
Hamburg-Vienna	Austrian Airl.	Lufthansa		<b>Lauda Air</b>	Lufthansa		-
Hamburg-Zurich	Lufthansa	Swissair		Lufthansa	Swissair		-
Munich-Amsterdam	KLM	Lufthansa		KLM	Lufthansa		-
Munich-Athens	Lufthansa	LTU	Olympic Airw.	Lufthansa	Olympic Airw	<b>Condor Fl.</b>	
				<b>Cronus Air</b>	<b>Hapag-Lloyd</b>	LTU	+3
Munich-Barcelona	Iberia	Lufthansa		<b>Debonair</b>	Lufthansa	Lufthansa	+1
Munich-Brussels	Lufthansa	Sabena		Lufthansa	Sabena		-
Munich-Istanbul	Lufthansa	Turkish Airl.	(Istanbul Airl.)	Lufthansa	Turkish Airl.	Istanbul Airl.	-
Munich-London	Air UK	British Airw.	Lufthansa (2*)	British Airw.	Lufthansa	<b>Debonair</b>	-
Munich-Madrid	Brit. Airways	Iberia	Lufthansa	Iberia	Lufthansa		-1
Munich-Malaga	Condor Flugd.	LTU		Condor Flugd.	<b>Hapag-Lloyd</b>	LTU	+1
Munich-Milan	Alitalia	Lufthansa		Alitalia	Lufthansa		-
Munich-Paris	Air France	British Airw.	Lufthansa	Air France	Lufthansa		-1
Munich-Palma de M.	Condor Flugd.	LTU		Condor Flugd.	<b>Hapag-Lloyd</b>	LTU	
				<b>Aero-Lloyd</b>			+2
Munich-Rome	Alitalia	Lufthansa		Alitalia	Lufthansa	<b>Debonair</b>	+1
Munich-Thessaloniki	Lufthansa	LTU	Olympic Airw.	Lufthansa	LTU	Olympic Airw.	
				<b>Cronus Air</b>	<b>Condor Fl.</b>	<b>Hapag-Lloyd</b>	+3
Munich-Vienna	Austrian Airl.	Lauda Air	Lufthansa (1*)	Austrian Airl.	Lauda Air	Lufthansa	-
Munich-Zurich	Swissair			<b>Lufthansa</b>	Swissair	(1*)	+1
Stuttgart-Brussels	Sabena			<b>Lufthansa</b>	Sabena		+1
Stuttgart-Istanbul	Turkish Airl.	(Istanbul Airl.)		Turkish Airl.	Istanbul Airl.		-
Stuttgart-London	British Airw.	Lufthansa		British Airw.	Lufthansa		-
Stuttgart-Paris	Air France	Lufthansa		Air France	Lufthansa		-

<sup>a</sup>Non-European carriers which operate intra-European routes as part of an intercontinental route (so-called fifth-freedom traffic) are not indicated by name; on relevant routes, their whole number is indicated by asterisk. Carriers which practice code sharing with carriers which operate the same route on behalf of their own are not indicated. All transfer connections are excluded. Carrier's name in brackets means scheduled charter flights. — <sup>b</sup>New entrants after 1994 in bold. Names of airlines of the same alliance operating the same route are in boxes. — <sup>c</sup>Change in number of independent European competitors 1998 over 1994.

Source: Authors' compilation based on *ABC World Airways Guide* (July 1994, July 1998).

To sum up, we conclude that the establishment of the alliance between Lufthansa and Scandinavian Airlines has contributed to some lessening of price competition, in comparison to many of the other routes analyzed. However, the route-by-route analysis suggests that overall competitive and demand conditions on a route are as much important as the existence of an alliance when it comes to explain the tariff spread, in particular (remaining) outsiders' competition, as is shown by the two routes from Frankfurt and Hamburg to London.<sup>70</sup> This underlines the crucial importance of the openness of air transport markets for new carriers.

<sup>70</sup> Further routes where newly emerging competitors (Debonair, Easy Jet, Ryanair, and Virgin Express) were reported to have pushed drastic reductions in fares were those from Munich to Rome, Barcelona and Madrid, as well as Brussels to London, Rome and Barcelona, Dublin to Paris and Brussels, London to Amsterdam and Barcelona (*Blick durch die Wirtschaft* 1997). There is also evidence that in the wake of the liberalization movement on intra-EU routes, air fares on domestic routes within several EU countries such as France, Germany and Sweden fell considerably — mainly because of increased competition from aggressive newcomers (*Handelsblatt* 1997). In the UK, where the low-cost carrier movement has started, such carriers like Ryanair and Easy Jet meanwhile are said to account for about 15 percent of domestic traffic and traffic to the rest of Europe (Done 2000).

Table 12: Selected Air Routes from Germany Classified According to Relative Change in Tariff Spread 1998 over 1994

Route category		Number of routes where the tariff spread in 1998 was			
Geographic area	Independent competitors, change 1994/98	< 50 %	50–75 %	75–100 %	>100 %
<i>All selected routes</i>					
Routes from Germany to Denmark, Norway, Sweden (N = 17)	2 more (n=0)	–	–	–	–
	1 more (n=1)	–	1	–	–
	no change (n=6)	1	4	1	–
	1 less (n=10)	–	10	–	–
Routes from Germany to other European countries (N = 72)	2-3 more (n=6)	–	1	4	1
	1 more (n=11)	–	5	6	–
	no change (n=45)	1	21	14	9
	1 less (n=9)	–	6	1	2
	2 less (n=1)	–	–	1	–
<i>Selected routes with a tariff spread of 70 % or more in 1994</i>					
Routes from Germany to Denmark, Norway, Sweden (N = 15)	2 more (n=0)	–	–	–	–
	1 more (n=1)	–	1	–	–
	no change (n=4)	1	3	–	–
	1 less (n=10)	–	10	–	–
Routes from Germany to other European countries (N = 20)	2-3 more (n=4)	–	1	3	–
	1 more (n=7)	–	5	2	–
	no change (n=5)	–	2	3	–
	1 less (n=3)	–	2	1	–
	2 less (n=1)	–	–	1	–

Source: Authors' calculations.

### 3.3.3 On-route Competition versus Network Competition

Is the route-by-route approach really appropriate to grasp the effects of GSAs on competition? The AEA (1999) argues that the alliances' positive (i.e., welfare-enhancing) effects on passenger service emerge mostly from network effects. As for the effects of alliances on competition, the AEA emphasizes—in line with our above findings—that the competitive situations not on single *routes* but only on whole *networks* are relevant because “for most passengers the relevant market (for assessing the impact of alliances on competition) is broader than an individual sector or route” (AEA 1999: Paragraph 7). On networks, such as North Atlantic or Europe-Far East, passengers will be able to choose between (at least) two alliances so that no single alliance can dominate the market. This is seen as especially relevant for so-called “interconnecting passengers” who must, for lack of a direct connection between their airports of origin and ultimate destination, change flights on their journey anyway. Obviously, if changing planes is unavoidable, it is a priori<sup>71</sup> of minor importance where it is done. This enables passengers who intend to travel, e.g., from a local German airport to the United States, to choose between routings not only via Frankfurt, but also via other hubs such as Amsterdam, Brussels, London, Paris or Zurich.

The AEA-initiated study therefore concludes “that in the case of interconnecting passengers, the appropriate market definition will typically cover a range of indirect services between individual city-pairs. Within this wider market, competition appears to be strong” (AEA 1999: Paragraph 17). This argument seems to be corroborated by a recently published study conducted by the University of

<sup>71</sup> That is, before aspects of competition between alternative routings such as prices, time schedules and convenience of transfer are taken into account.

Illinois, which analyzed the itineraries of more than 45,000 travelers and concluded that interconnecting passengers who used alliance-bound airlines on their (indirect) trips had paid on average 38 percent less than they would have paid for comparable trips when using airlines that were not member of an alliance (Brüggemann 1999).<sup>72</sup> According to the AEA study the alliance partners' pricing strategy aimed at the goal of joint profit maximization with respect to the whole alliance, and not only with respect to a single carrier, and could thus circumvent the inefficiency of double marginalization. This way of reasoning would be consistent with the more recent findings on alliances of Oum et al. (2000: Section 6.2).

An important question in evaluating strategic alliances would pertain to the distribution of the whole air transport market with respect to passengers who reach their ultimate destination on a *direct flight* and *interconnecting passengers*. The higher the share of interconnecting passengers in total passenger transport, the less relevant the negative impact of alliances might be on the whole merged network; this is due to complementarity effects of the Brueckner-Spiller type which permit fares to decrease. According to the AEA study, "on average 33 per cent of passengers on every flight originating in Germany connect at a European hub in order to travel to a further destination" (AEA 1999: Paragraph 14). On the basis of data from the air transport statistics of the Federal Statistical Office of Germany, a somewhat different picture emerges although, due to data restrictions, only some preliminary hints can be presented here. For instance, in scheduled intercontinental traffic from Germany, the share of indirectly — with a change in the flight number in another German or foreign airport — routed passengers amounted to only 15 percent in 1998 (Table 13.)<sup>73</sup> Whereas the difference between the two sources must be ascribed to discrepancies in the statistical concepts and methodology<sup>74</sup>, it is obvious that for those German secondary airports other than Frankfurt with its widespread network of

Table 13: Scheduled Intercontinental Passenger Traffic from Germany by Countries of On-Flight and Ultimate Destination, 1998

	Passengers from German airports to the respective continent (or country)		Passengers with indirect routing (col. 3–col. 2)	Share of indirect routings (percent)
	as on-flight destination	as ultimate destination		
Africa	932,613	1,131,992	199,379	17.6
America	4,478,787	5,402,299	923,512	17.1
thereof: United States	3,318,491	3,936,848 <sup>a</sup>	618,357	15.7
Asien	2,877,141	3,144,414	267,273	8.5
thereof: Japan	383,478	449,330 <sup>a</sup>	65,852	14.7
Thailand	364,853	420,669 <sup>a</sup>	55,816	13.3
India	290,567	335,210 <sup>a</sup>	44,643	13.3
Australia/Oceania	42,073	157,215	115,142	73.2
Total non-European countries	8,330,614	9,835,920	1,505,306	15.3

<sup>a</sup>As the distinction between on-flight and ultimate destinations is made on the country (not continent) level, these figures include passengers who travelled to the United States via another American country (e.g., Canada), or to Japan, Thailand or India via another Asian country (e.g., Singapore).

Source: Statistisches Bundesamt (1998); authors' calculations.

<sup>72</sup> On direct routes, the study found no difference in passengers' travel costs between alliance-bound and other airlines — a result which seems to be in line with our own analysis of selected North Atlantic routes.

<sup>73</sup> Table 13 pertains only to intercontinental travel, which is most important in the relevant context. With respect to passengers whose ultimate destination was a European country, the share of indirectly routed passengers cannot be precisely calculated but may, on the basis of the available data, be inferred to be minimal.

<sup>74</sup> One of these discrepancies is that the AEA-initiated study refers, as far as travel originating in Germany is concerned, to all (not only intercontinental) traffic.

Table 14: Scheduled Intercontinental Passenger Traffic from Germany (other Airports than Frankfurt) by Countries of On-Flight and Ultimate Destination, 1998

	Passengers from German airports to the respective continent (or country)		Passengers with indirect routing (col. 3–col. 2)	Share of indirect routings (percent)
	as on-flight destination	as ultimate destination		
Africa	304,752	560,355	255,603	45.6
America	1,111,480	2,471,921	1,360,441	55.0
thereof: United States	867,319	1,786,726 <sup>a</sup>	919,407	51.5
Asia	317,757	953,851	636,094	66.7
thereof: Japan	6,389	106,703 <sup>a</sup>	100,314	94.0
Thailand	60,237	144,511 <sup>a</sup>	84,274	58.3
India	1,008	58,444 <sup>a</sup>	57,436	98.3
Australia/Oceania	97	43,919	43,822	99.8
Total non-European countries	1,734,086	4,030,046	2,295,960	57.0

<sup>a</sup>As the distinction between on-flight and ultimate destinations is made on the country (not continent) level, these figures include passengers who travelled to the United States via another American country (e.g., Canada), or to Japan, Thailand or India via another Asian country (e.g., Singapore).

Source: Statistisches Bundesamt (1998); authors' calculations.

direct flights all over the world, the share of passengers who must use a variety of connecting points (such as Amsterdam, London, Zurich and of course Frankfurt itself) to reach their ultimate destination is much higher and may approach even 100 percent as on routes to Australia and Oceania (Table 14). According to the AEA study (Paragraph 14), a quarter of all passengers traveling between London and the United States is indirectly traveling from or to other countries, while 18 percent of the London–U.S. passengers transfer to another flight within the United States.

The problem with these data, however, is that we lack an appropriate simple yardstick for the threshold level beyond which the interconnecting passengers' share is high enough so that their welfare gains will overcompensate welfare losses of direct passengers. This difficulty is closely related to the task to decide on a more complementary or parallel character of alliances if both network-widening and service consolidation activities can be discerned.<sup>75</sup> It is, therefore, neither justified to classify the 15 percent share of interconnecting passengers in the Germany- and London-related markets (Table 13 and AEA 1999: Paragraph 14) as low (because under more liberally granted traffic rights in ASAs more inter-hub competition would exist), nor the nearly 100 percent in the markets for secondary airports as high (because more liberal ASAs would permit more direct connections). Hence, the openness of air transport markets appears to be the crucial parameter. The AEA study deals, however, almost exclusively with effects that GSAs may have within existing networks and existing cost structures, whereas the important issue of the possibility for newcomers to come and try to introduce innovative concepts — indeed, the question of openness of air transport markets — seems not to have been adequately taken into account in this study.<sup>76</sup>

The preliminary empirical picture of airline alliances appears thus to be as mixed as the antitrust considerations:<sup>77</sup> Market shares and pricing behavior of alliances and their members do not yet reflect

<sup>75</sup> Oum et al. (2000: Sections 4.4 and 6.5) consider the Lufthansa/United Airlines code-sharing agreement being both of a complementary and a parallel nature. While it has contributed to an increase in aggregate passenger miles it has not resulted in lower fares.

<sup>76</sup> For instance, in the context of the frequent-flyer programs the study has to admit that “the combination of incentive programs can place smaller carriers at a competitive disadvantage”, but declares that this “is not, in itself, damaging to competition” (AEA 1999: Paragraph 54).

<sup>77</sup> It should be noted that a study on the competitive impact of airline alliances (including a comprehensive empirical analysis of fares, traffic volumes and market concentration) is currently being prepared by the DLR (Deutsches Zentrum

an increasing threat to competition as exerted by these forms of cooperation, all the more so as alliances have not yet acquired any stable form and constellation, but it is equally remarkable that alliances appear to gain more stability over time and that the number of independent competitors is shrinking. These independent outsiders can be considered as factors which provide for the dynamics and the momentum of competitive pressures. If their vital role for competition were to be restricted, GSAs in SAT might turn out to be detrimental in the long run. The final question remains, however, to which extent the openness of air transport markets for outsiders could be safeguarded without hampering clearly discernable complementary alliances to unfold their dampening effect on fares.

#### 4 Conclusions: Different Types of Remedies for Competitive Problems Raised by GSAs in SAT

The preceding discussion has substantiated that the concerns about negative effects of GSAs on the intensity of competition in international aviation are warranted in the sense that the competition authorities should be on the alert. GSAs might enable the big carriers to reduce openness in air transport markets by melting their frequent-flyer programs, by the practice of code sharing with its effects on the presentation of flights in computer reservation systems and by hoarding slots on airports just in order to block market access for smaller competitors (Flottau 1998). Hence, the EC Commission's efforts to keep market access open to newcomers are, in principle, quite understandable. The legal base for its action is the "effects doctrine" according to which antitrust authorities are entitled to an extraterritorial application of antitrust law in the case of effects for domestic markets even if the anti-competitive action is done abroad.<sup>78</sup> The question is, however, whether the Commission's target is appropriately defined.

When the Commission decides whether or not to implement an antitrust procedure according to Articles 85 or 89 of the EU Treaty, it is well prepared to balance positive and negative effects of each single alliance rather than to adhere to per se rules, all the more so as strategic alliances between European enterprises in general have been acknowledged by the Commission as a tool to strengthen the competitiveness of EU industry (Corbett 1993: 387). In its 23rd Report on Competition Policy, the Commission declared its intention to support any projects that would enable cooperations which are of mutual advantage to the partners (Fiebig 1996:180; European Commission 1994: Paragraphs 20, 77). When evaluating the effects of GSAs in air transport, the Commission is taking aspects of market access and, therefore, the openness concept of competition into special consideration.

As a consequence of the establishment of the alliances between Lufthansa, SAS and United Airlines on the one hand and between British Airways and American Airlines on the other, the European Commission has initiated the procedure according to Article 89 of the Treaty of Rome. The Commission stated that the alliances could be exempted from prosecution under Article 85, provided that the following conditions were fulfilled by the airline parties to the alliances<sup>79</sup>:

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für Luft- und Raumfahrt e.V./German Aerospace Center). This study is commissioned by the German Federal Ministry of Transport, Construction and Housing (Ehmer and Berster, forthcoming).

78 Most industrial nations recognize this doctrine and, in addition, have signed treaties on mutual cooperation of authorities (positive comity), such as the United States and the EU (Kleinert and Klodt 2000).

79 For full details of the conditions which are only briefly outlined here, see *Official Journal of the European Communities* (1998a, 1998b). The Commission's investigation had also been extended to the former alliance of KLM and Alitalia which had been approved by the Commission in August 1999 on the condition that the routes from Amsterdam to Milan and Rome are opened for competition by third airlines, including the cessation of the necessary slots and opening of the FFPs (*Süddeutsche Zeitung* 1999b). Recently, however, Alitalia has left the alliance with KLM after the endeavors of both carriers to merge were not successful, and British Airways is in preliminary talks with KLM which could possibly result in a merger by which BA possibly would be enabled to make use of the provisions of the liberal Dutch open-sky agreement with the United States (ITA press 2000).

- On certain routes between hub airports where a great part of the total capacity is offered by the alliance members<sup>80</sup>, they would be obliged, on demand by a competitor, to reduce their weekly frequencies so as to enable independent competitors to operate, in the following half-year IATA period, up to 55 percent of all frequencies, and to cede the corresponding slots without compensation<sup>81</sup> to competitors if they were unable to acquire appropriate slots in normal slot allocation procedures.<sup>82</sup>
- With respect to other routes to the United States — and vice versa— from Frankfurt and Copenhagen (LH/SAS/United Airlines) or London (BA/AA) no frequency reductions, but, on demand by competitors, a slot transfer was required at conditions comparable to those for the aforementioned routes between hub airports.<sup>83</sup>
- Frequent-flyer programs, which the alliance members had intended to combine in order to make them still more attractive to passengers<sup>84</sup>, should either remain separated for each airline or opened for the participation of other airlines which have no comparable programs at their disposal.
- In computer reservation systems (CRS), double presentation of flights<sup>85</sup> offered by the alliance members should, even in the case of densely flown routes, not result in the first screen page being filled exclusively with flights of the alliance members.<sup>86</sup>
- Travel agents' commission schemes must not aim at or result in any binding of agents to the alliances, and agents' remuneration must exclude any rate differentials according to total turnover,
- On relevant routes, alliance members will be bound to conclude interlining agreements with newcomers, at least with respect to "fully flexible" fares.

The obvious intention behind the Commission's proposals is to secure, as far as possible, the existence of several independent operators (at least, more than one operator) on the selected routes between European and North American hub airports, and to sustain the contestability of these particular air transport markets. The proposed Commission's rulings on a compulsory and uncompensated slot transfer as well as on frequent-flyer programs, presentation of flights in CRS, travel agents' commissions and interlining agreements all try to ensure that the possibility of market entry by newcomers remains open even in cases where it could otherwise be difficult to obtain the necessary slots at highly frequented airports, or to lure passengers away from well-established networks.

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<sup>80</sup> The routes concerned are Frankfurt-Chicago and Frankfurt-Washington in the case of the LH/SAS/United alliance and those from London to Chicago, Dallas and Miami in the case of the BA/AA alliance. They were selected according to the criteria that they have more than 120,000 passengers annually and are served by at least 12 weekly flights by members of the relevant alliance.

<sup>81</sup> This point has not been undisputed at least within the former Commission. Former Transport Commissioner Neil Kinnock had reportedly announced that he planned to legalize slot sales within the EU. Competition Commissioner Karel van Miert was said to have opposed these proposals (Gill 1998b).

<sup>82</sup> Further details are: frequencies are not to be reduced below 12 weekly flights; ground handling facilities necessary to operate the ceded frequencies should also be handed over to the competitors on request; frequencies and slots must not be ceded to any airline to which members of the alliance are linked by stakes or franchise agreements for the relevant routes.

<sup>83</sup> The upper limit of slots to be transferred is 108 (24 for hub routes and 84 for other routes) in the case of the LH/SAS/United alliance and 267 (50 + 217) in the case of the BA/AA alliance. Another limitation to the slot transfers is that the relevant alliance's competitors shall not be entitled to demand more than 55 percent of all slots used on the relevant route (including slots which the competitors already possess).

<sup>84</sup> This would result from the fact that a passenger who, dependent on his individual travel needs and airline networks and schedules, uses different airlines can accumulate miles in a frequent-flyer program the more easier the more airlines participate in the program.

<sup>85</sup> This often results from code sharing which is normally part of alliance agreements: each flight is shown once with a flight number of the airline who actually performs it, and once with a flight number of the code sharing partner airline.

<sup>86</sup> According to a consultant's (Roland Berger) analysis, double presentation of flights can easily be used by partners of an alliance to edge flights of nonmember airlines out of the first CRS screen page from which travel agents use to book, on average, 85 percent of all trips (the first screen page of a CRS shows at most five offers) (Glöckner 1999: 234).



One problem of the Commission's proposals, however, refers to the question *who* (i.e., which airline) should acquire those slots which the alliances will be required to relinquish. According to the relevant publications in the *Official Journal* (1998a, 1998b), the Commission's ideas on this question seem to be somewhat contradictory: (i) As regards to Paragraph 10 of the Commission's communication,<sup>87</sup> such slots shall be made available to *airlines* who want to operate (or expand) services on the relevant routes and are unable to acquire the necessary slots in the usual slot allocation procedure.<sup>88</sup> (ii) As regards Paragraph 19 of the same communication, however, such slots shall primarily be made available to *public authorities* which are responsible for the allocation of slots on the relevant airports, and which shall distribute the ceded slots according to criteria which enhance competition on the markets concerned.<sup>89</sup> However, the cessation of slots could result in a less efficient allocation of slots because of limited knowledge on the most efficient use of scarce resources on the side of any regulatory agency. The conditions the Commission plans to impose on the alliance members represent a serious public interference at actual spot markets for slots without, at the same time, formulating and enforcing consistent rules for economically efficient slot allocation regimes. This interference may entail a substantial impediment in the European airlines' struggle for improving of their competitive position in today's globalized transport markets against airlines from other parts of the world (Noack 1998).

Against this background, it is an open question whether the Commission actually overreacted in its zeal to keep markets open (contestable) and to tackle potential competitive problems raised by the GSAs. The ceded frequencies could be operated (and slots be used) by other airlines (at least in traffic relations between EU and non-EU countries) only as far as these airlines have acquired the appropriate traffic rights as granted by the bilateral ASAs; otherwise, the carriers would have to apply for such traffic rights to both parties of the relevant bilateral ASA (i.e., governments of the states at either end of the route envisaged).<sup>90</sup> It should be borne in mind that market access also on transatlantic routes is still governed primarily not by slot availability, but by administrative provisions of the bilateral agreements between each of the EU member states and the United States.

Therefore, the more relevant question for aviation policy would be whether competition on the North Atlantic routes could be best maintained by scrapping the bilateral agreements and embarking on a truly liberal "open skies" aviation agreement between the EU as a whole and the United States as well as with other countries.<sup>91</sup> We would like to argue that a further liberalization of ASAs would seem more appropriate than antitrust action against the alliances at the moment, because there would still exist diverse options for newcomers to find market niches and provide low-priced services if only traffic rights were granted in ASAs on a liberal base. Note, however, that concerns have been voiced

<sup>87</sup> This refers to the communication concerning the LH/SAS/United Airlines alliance. The corresponding paragraph in the communication concerning the BA/AA alliance (reading almost identical) is Paragraph 8.

<sup>88</sup> Special reference is made to EC decrees 95/93 and 1617/93 with amendments.

<sup>89</sup> The Commission has tried to specify such criteria by enumerating a few aspects which may be relevant, e.g. an airline is able to establish competition on certain routes even if it has no extensive network of its own, or an airline is already operating a route and wishes to increase its frequencies, or an airline has already slots in Frankfurt or Copenhagen (or London, respectively) so that it can, together with slots ceded from the alliance, reach a considerable frequency, or an airline has a hub at either or both ends of the route it wants to serve (see Para. 19 or 17, respectively, of the relevant communications).

<sup>90</sup> Remember that even in the case of so-called bilateral open skies agreements the unconditional market access is limited to airlines of the state parties to each agreement.

<sup>91</sup> The Commission has, however, so far not been successful in gaining from member states an appropriate mandate for negotiations with the United States (and other nonmember states); rather, competencies for such negotiations still rest with national governments, and bilateral air transport agreements remain in force. In this context, the Commission strives for an extension of the scope of EU decrees 3975/87 and 3976/87, which presently govern the application of EU competition rules to air transport within the EU territory only, to routes to and from third countries such as the United States (European Commission 1996: Paragraph 100). It has therefore been suspected (Kolf 1998; Noack 1998) that the Commission's scrutiny into the GSAs has in fact (at least partly) been motivated by the Commission's frustration over its inability to negotiate bilateral agreements directly on the Union level with third countries.

about a further liberalization of ASAs giving incentive to more mergers and acquisitions in the future, substituting for the current alliances and, hence, the current antitrust problem would only be postponed. We would suggest a wait-and-see attitude, keeping in mind the higher “costs of marriage and potential divorce” for unfortunate mergers compared to alliances. These potential future mergers might then be subject to antitrust measures, but not their more loose predecessors, which would be less stable anyway due to lower termination costs.<sup>92</sup> What would be warranted in this situation, not only for a more liberalized aviation sector (Gillen et al. 2000), but also for transnational mega-mergers in other sectors, would be a harmonized application of antitrust rules between trading partners connected by alliance networks (Oum et al. 2000: Section 10.6.3) and, may be, even a more global form of antitrust which goes beyond the current effects doctrine and positive comity treaties (Kleinert and Klodt 2000).

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<sup>92</sup> The notion of relatively low stability of GSAs seems — apart from the termination of the KLM/Alitalia and Delta/Swissair alliances and the other changes in membership mentioned above — to be further reinforced by recent considerations of Thai Airways International that the airline might leave the Star Alliance after its main competitor in South East Asia, Singapore Airlines, has joined this alliance effective April 7, 2000 (*FAZ* 2000). — It must be left for further observation whether airlines might succeed in raising the stability of their alliances by means of contractual penalties or similar arrangements; pertinent efforts by, e.g., Lufthansa with respect to its agreements with other members of the Star alliance have been mentioned by Becker (1999). Should such efforts result in a substantial strengthening of the alliances’ stability, this would certainly warrant some form of reaction by antitrust authorities.

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