Deregulation of air traffic

(Liberalisierung im Luftverkehr: Folgen für die Schweiz)

Project D8 of the
National Research Programme (NRP) 41
'Transport and Environment'

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Summary

Project aim

The project "Air Transport Deregulation Effects for Switzerland" investigates in possible effects which might be produced by the air transport deregulation in Europe: Effects on the structure of the uniform European market (Chap. 1), on the market opportunities for Swiss airlines (Chap. 2), on the position of the Swiss intercontinental airports and regional aerodromes (Chap. 3 and 4), on the Swiss railway traffic (Chap. 5), and on the environmental capacity of Swiss airports (Chap. 6).

Research questions

The following outlined questions were considered:

(1) Scenarios of the deregulation: To what extent will Switzerland be able to participate in the European air transport liberalisation?

(2) Market structure and market behaviour: How will the air transport market in Switzerland develop? What market position will Swiss airlines assume in Switzerland and in Europe? Which new market chances will result for foreign air transport companies operating in and with Switzerland?

(3) Market result – costs, prices, schedules: What effects are to be expected for passengers and shippers?

(4) Air traffic volume: Which trends can be expected in the development of air traffic at Swiss airports?

(5) How will the function and the market position develop among Swiss airports and in proportion to other European airports? What will follow for the improvement and organisation of Swiss airports?

(6) How will the co-operation or competition develop between air transport in and with Switzerland and other transport modes (trains, Swissmetro)?

(7) Air traffic management and market regulation: How will the future capacity-demand in the air transport system be mastered? How will the slot allocation be approached?

(8) What environmental effects has air transport deregulation?

(9) Which policy implementation is needed?

Proceedings, methods and scopes of analysis

In order to answer the research questions, publications, reports, and research results were viewed and respectively worked off, and existing databases were analysed (secondary analysis). By the means of this database it was tried:

— to document the deregulation process in Europe and Switzerland according its main features,

— to state the parameters of development in air transport,
— to fathom the consequences of deregulation for air lines,
— to represent the development of the Swiss international airports and national aerodromes during the past ten years,
— to analyse the interaction of air transportation with other transportation systems as well as
— to expose the environmental effects and the possibilities of a transportation management.

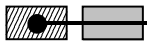
Civil aviation deregulation: substantiation and development

Until the middle of the 1980ies, a strict regulation of the European air transportation was based on the economic-political idea of competition – respectively of imperfect competition. In the meantime, the idea that air transport is not a natural monopoly and that there is no fundamentally imperfect competition has succeeded. However, aviation has considerable external effects. If these external effects can be controlled successfully with market-conforming means, economic theory postulates that competition would bring welfare profits.

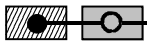
Compared with the deregulation in the United States of America, not only the European, but also the Swiss deregulation will last longer and the deregulation process will evolve through different stages. Nevertheless, European civil aviation deregulation – in its main aspects – has positively changed the European air transport market according to the determination of prices, the encouragement of competition, the uniform market rules within EU etc. The now reached status quo cannot satisfy, because the forces of the market are still blocked by different competition obstacles.

The eight freedoms of the skies demonstrate the expectations of European civil aviation deregulation.

The First Freedom
The right to overfly the territory of another state.



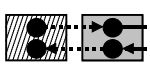
The Second Freedom
The right to make an intermediate landing in another state for technical reasons.



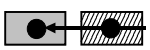
The Third Freedom
The right to transport passengers, cargo and/or mail from one's home state to another state.

The Fourth Freedom
The right to transport passengers, cargo and/or mail from another state to one's home state.

The Fifth Freedom
The right to transport passengers, cargo and/or mail from one non-home state to another.The flight must begin or terminate in the home-state of the carrier.



The Sixth Freedom
An unofficial term: a combination of Third and Fourth Freedom, i.e. the carriage of passengers, cargo and/or mail form one non-home state to another non-home state, via the home state.



The Seventh Freedom
The right to transport passengers, cargo and/or mail from one non-home state to another. The flight does not have to be part of a connection with the home state of the carrier.

The Eighth Freedom:
The right to transport passengers, cargo and/or mail between two destinations within a non-home state.

Symbols:

- Contract state (the country which grants the traffic right)
- Home state of the airline
- Third country
- Take-off/landing for commercial purposes (Loading/unloading of pass./cargo/mail)
- technical intermediate stop

Most traditional bilateral air services agreements provide for the first four freedoms specified above. Fifth-freedom rights are usually granted on a case-by-case basis. Sixth-freedom rights do not have to be explicitly granted, as they are a combination of third and fourth-freedom practices. In the scope of the European civil aviation deregulation, the limitation of Fifth freedom rights has ended and Seventh-freedom rights are in force since the 1st of January 1993, and the Eighth-freedom rights since the 1st of April 1997 respectively.

Deregulation of air transport in Switzerland

The revised civil aviation act (Luftfahrtgesetz LFG) is in force since the 15th of November 1998. It demonstrates the legal conditions for the Swiss air transport deregulation. The main items of the new act include the necessarily changes, because article 103 of the civil aviation act is omitted.

— The civil aviation act defines the admittance for scheduled air traffic. It does not differentiate between scheduled and non-scheduled flights anymore.
— The airlines obtaining an operating licence must acquire a traffic right for their preferred routes.
— In proviso of the corresponding treaties, non-Swiss airlines can also request for an operating licence.

The new civil aviation act and the new civil aviation decree encourage competition in the Swiss market for air transportation more strongly than before.

Question 1: Scenarios of the deregulation: To what extent will Switzerland be able to participate in the European air transport liberalisation?

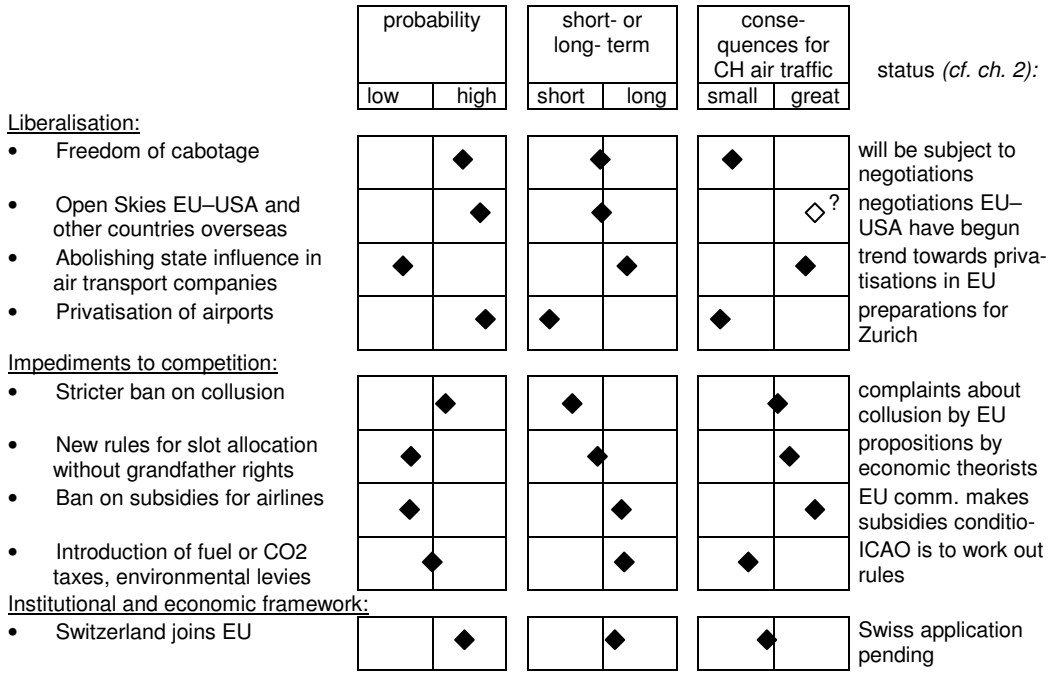
Seven sections of the bilateral treaties between Switzerland and the European Union are paragraphed. The treaties's ratification is arranged and the agreement should come into force by 2001.

With the agreement of the bilateral treaty, the following rights are granted:

	Swiss airlines	EU airlines	*legal source*
freedom of movement	**within EU**	**within Switzerland**	*Art. 4 of the bilateral agreement, refering to VO [EWG] 2407/92*
3rd/4th freedom traffic rights	(= CH airlines between Switzerland and EU countries:) **yes, more or less unlimited**	(= EU airlines between Switzerland and their home country:) **yes, more or less unlimited**	*Art. 15 of the bilateral agreement, refering to VO [EWG] 2408/92*
5th/7th freedom traffic rights	(= CH airlines between EU countries:) **two years after the bilateral agreement comes into power**	(= EU airlines between Switzerland and a third EU country:) **yes, immediately**	*Art. 15 of the bilateral agreement*
8th freedom traffic rights (cabotage)	(= CH airlines within an EU country:) **no**	(= EU airlines within Switzerland:) **no**	*Art. 15 of the bilateral agreement*
freedom of pricing	**yes**	**yes**	*Appendix to the bilateral agreement, refering to VO [EWG] 2409/92*

At the same time, air transport between Switzerland and the EU will be subject to a number of EU regulations. EU competition rules will become applicable to CH–EU air transport. Collusion, e.g. mutual fixing of prices or sharing of markets, will be forbidden, if it aims at restricting or distorting competition (Art. 8 bilat. agreement CH–EU).

Some possible developments in the future:



- Drastic fuel price hike  current development of crude-oil prices

Question 2: Market structure and market behaviour: How will the air transport market in Switzerland develop? What market position will Swiss airlines assume in Switzerland and in Europe? Which new market chances will result for foreign air transport companies operating in and with Switzerland?

Comparing the European Union and EEA, the regulated Swiss air transport market currently presents itself more monopolistic. There is a notable lack of routes with more than two providers. Comparison with 1994 shows, above all, the strong influence which code sharing presently has on the market structure.

Will non-Swiss airlines have new opportunities to participate in the Swiss air transportation system? In the European countries, non-home base carriers have a higher share of traffic than in Switzerland. The presence of foreign airlines leads to more destinations being served and to more competition. With the bilateral air transport agreement EU-CH and with the exception of cabotage, EU airlines will get the same rights for air transport with Switzerland that they have within the EU with the third liberalisation package.

Market opportunities *(cf. ch. 2):*

Options for EU airlines:	**Consequences for Switzerland**
Market access in Switzerland	To be expected on high-volume markets with a high price level. The Swiss air transport volume, however, is not very large.
Frequency increases between Switzerland and EU destinations	Probably in some cases. Competition is decisive. However, EU competition seems not very vivid.
Opening of new direct destinations	Deficiency in Switzerland, partly due to present lack of traffic rights.
Foreign hub marketing in competition with Swiss hubs	Is already going on.
Alliances with Swiss airlines	Alliances would bear chances as well as risks for Swiss airlines. The consequences for the traffic volume would, however, be weak.
Foundation of new airlines in Switzerland, participation in existing ones	Can be observed mainly in big EU countries with high internal market volume In this respect, Switzerland is not so attractive.

Which opportunities for a Swiss market-share increase would be favoured by Swiss participation in the EU-liberalisation?

Strategy	**EU Examples**	**Suitable for CH-Carrier?**	**Favoured by liberalisation?**	**Effect on CH air traffic**
1. Product differentiation (e.g. special high-quality services)	German Wings	- homogeneous	+	0
2. Lower prices	EasyJet, Dt. BA	+ high CH-price level	+	+
3. Fostering of home hubs	British, KLM	+ airport capacity	0/+	+
4. Fostering of foreign hubs	Virgin, Ryanair	+ current SR strategy	+	-
5. New destinations in Europe	Skyways	+ CH deficiencies	+	low
6. Marketing overseas		+ opportunities in Asia	0/+ (5^{th} freedom)	rather low
7. Higher flight frequencies		- already high	+	0
8. Utilisation of 5^{th} and 7^{th} freedom	Finnair	So far only observed in border states of EU	0 only from 2003	0

Which opportunities for a Swiss market-share increase would be favoured by Swiss participation in the EU-liberalisation?

Strategy	EU Examples	Suitable for CH-Carrier?	Favoured by liberalisation?	Effect on CH air traffic
9. Purchase of capacity/seats	all	+ risk sharing	+	0
10. Foundation of new enterprises	Virgin	+ funds available	+ freed. of movement	0
11. Purchase of airlines	British, KLM	+ current SR strategy	+ majority possible	0/- lower competition
12. Alliances	"Star", One-World, KLM-Alitalia	+	+	+/- new CH-hubs?
13. Franchising partners	Debonair	+ for small airlines	+	low
14. Exploitation of new marketing channels (Internet)	EasyJet	+	+	? still low
15. Isolation against competition	Alitalia	-	-	-

Question 3: Market result – costs, prices, schedules: What effects are to be expected for passengers and shippers?

Competition is decisive for lower fares and higher flight frequencies. A comparatively high flight price level can be observed in the regulated, oligopolistic air transport market between Switzerland and the EU.

Due to additional traffic rights and market accessibility for regional airlines, liberalisation should also lead to the introduction of new direct flights.

The following effects can be predicted for Switzerland:

effect	on which destinations	additional passengers p. year		
		Bale	**Geneva**	**Zurich**
Fare decreases by 10 %	predominantly on short high-traffic routes to D, F, GB, also to Austria and Scandinavia	± 0 %	+ 0,1 %	+ 0,1 %
Increases in flight frequency	principal routes to Germany, Paris, London	± 0 %	+ 1,3 %	+ 0,8 %
New destinations	predominantly in southern Europe (Italy, Greece) due to current lack of traffic rights or capacity restrictions	± 0 %	+ 0,4 %	+ 0,2 %
	Total:	**± 0 %**	**+ 1,8 %**	**+ 1,1 %**

Air cargo transport is considered to be "de-facto" liberalised since the beginning of the eighties, because market regulations were very difficult to enforce. Substitute air-cargo transport on the road ("trucking") is also liberalised, which leads to a high land-side cargo volume at Swiss airports. For shippers, there will be not much impact of the Swiss air transport liberalisation. Rather, present disadvantages for Swiss shippers result from the absence of Switzerland in the EU.

Question 4: Air traffic volume: Which trends can be expected in the development of air traffic at Swiss airports?

The Swiss air transport system (scheduled and non-scheduled traffic) is constituted by the international, intercontinental airports Bale, Geneva and Zurich and by the regional aerodromes Altenrhein, Bern, Lugano and Sion.

The international airports Zurich, Geneva and the regional aerodrome of Bern are forming a uniform sub-system of the Swiss civil aviation. Looking at the proceedings of the deregulation process in the European civil aviation market, this benefit of co-operation might be lost, because this kind of Swiss city connection is no longer important for the framing of the scheduled flights.

In parallel to the present study, the development of Swiss civil aviation was forecasted by the Paris Institute for Air Transport (ITA). This prospective study, published in 1999, investigates in the passenger- and cargo transport as well as aircraft movements up to the year 2000. Point of departure of the scenario analysis is 1997.

Air traffic on Swiss airports by the year 2020
(scheduled and non-scheduled flights)

	1997	2000	2010	2020
Passengers (in mio.)				
Total	27,0	32,3	50,2	66,0
Zurich	17,9	21,5	34,0	43,0
Geneva	6,0	6,7	9,3	12,5
Bale	2,6	3,5	6,0	8,5
Aircraft Movements (in 10^3)				
Total	435	503	685	752
Zurich	241	277	380	395
Geneva	98	106	131	147
Bale	68	89	129	150
Total Cargo (in 10^3 t)				
Total	709	860	1'590	1'950
Zurich	493	570	1'070	1'160
Geneva	118	141	255	398
Bale	98	141	255	387

Source—ITA, 1999

According to the growth scenario, passenger travel at Swiss airports will increase from 27 million passengers in 1997 to 66 million in 2020, which is equivalent to an average annual increase of 4%. Up to the year 2005 an average annual growth of 6% is expected. After the year 2010 growth will yet reach 3% per year. In 1997 435'000 aircraft movements (take-off and landings) of scheduled and non-scheduled flights took place at Swiss airports. According to the growth scenario, scheduled and non-scheduled flights at Swiss airports will reach a number of 752'000 movements by the year 2020.

In 1997, 710‘000 tonnes of cargo were turned over at Swiss airports. It is expected that cargo turnover at the national airports will increase to 1'950'000 tonnes until the year 2020.

In the short term, Switzerland’s participation in the European deregulation will show only a weak, and in the middle term a stronger impulse on the growth rate. Because the growth rate is already strong without deregulation, the effect of deregulation can be neglected, respectively it will not be observable over a longer period of time.

Question 5: How will the function and the market position develop among Swiss airports and in proportion to other European airports? What will follow for the improvement and organisation of Swiss airports?

The position of the airports is analysed by the indicators passengers, cargo and aircraft movements. A hub can maintain its position by its integration in the world economy. The table below shows the positions of European airports in the world air-transportation system.

The rank of airports in the international system, 1998

Passengers (mio.)		Freight (mio. t)		Flight movements ('000)	
Pos.	Airports	Pos.	Airports	Pos.	Airports
1	Atlanta ATL 73	1	Memphis MEM 2.4	1	Chicago ORD 896
2	Chicago ORD 73	2	Los Angeles LAX 1.9	2	Atlanta ATL 847
3	Los Angeles LAX 61	3	Miami MIA 1.8	3	Dallas DFW 836
4	London LHR 61	4	Hong Kong HKG 1.7	4	Los Angeles LAX 774
5	Dallas DFW 61	5	Tokyo NRT 1.6	5	Detroit DTW 539
7	Frankfurt FRA 43	7	Frankfurt FRA 1.5	17	London LHR 451
9	Paris CDG 39	12	London LHR 1.3	23	Paris CDG 430
11	Amsterdam 34	14	Amsterdam AMS 1.2	26	Frankfurt FRA 416
21	London LGW 29	16	Paris CDG 1.0	28	Amsterdam AMS 393
29	Madrid MAD 25	27	Brussels BRU 0.6	41	Brussels BRU 300
30	Rome FCO 25	28	Toledo TOL 0.5	46	Zurich ZRH 288
31	Paris ORY 25	39	Luxembourg LUX 0.4	47	Copenhagen CPH 281
42	Munich MUC 19	42	Cologne CGN 0.4	51	Munic MUC 278
43	Zurich ZRH 19	43	Copenhagen CPH 0.4		
46	Brussels BRU 18	51	Zurich ZRH 0.4		
49	Manchester MAN 18				
127	Geneva GVA 6	138	Bale-Mulhouse BSL 0.07	126	Geneva GVA 152
198	Bale-Mulhouse BSL 3	147	Geneva GVA 0.06	169	Bale-Mulhouse BSL 117

Source.—The World’s busiest Airports. ACI Traffic Data 1998.

Swiss airports' positions are defined with respect to the position of the airports of Amsterdam, Frankfurt, London, and Paris. They are not competitors of these European hubs. However, they are important as secondary hubs.

Zurich's immediate competitors with respect to traffic volume and structure are the airports of Paris ORY, Munich MUC, and Brussels BRU in passenger transport, as well as Luxembourg LUX and Cologne CGN in cargo transport.

At present, the economic impact of airports is not very well researched and often ignored by the public. The economic contribution of airports goes further than what can be read from the airports' profit and loss account.

Over 17'000 people are employed in various departments at Zurich airport (1998). These people receive wages. The direct effect on the national income can be calculated accordingly. The salaries paid to people *employed directly by the airport* amounted to 60 Mio. Fr.[1] in 1998.

In addition to the employment effects which can be directly calculated from the wages, secondary employment and income effects have to be taken into account, which, at present, cannot be calculated precisely. At the beginning of the 1990ies, employment at Zurich airport – including the indirectly dependent jobs – was estimated at approximately 90'000 people. This is the equivalent of 8% of canton Zurich's residents.

In the future, employment will develop independently from air traffic growth as well as from the impulses of deregulation. Rather, it will be determined by the impact of technological progress on productivity.

Question 6: How will the co-operation or competition develop between air transport in and with Switzerland and other transport modes (trains, Swissmetro)?

Because of the liberalisation, air transport will gain some competitive advantage over rail transport, mainly through additional direct flight connections (e.g. between Switzerland and Italy) and through lower air fares. Within Switzerland, air transport will not enter into a stronger competition with the railways: Rail transport within Switzerland will remain cheaper and – taking into account access and waiting times at airports – faster, too — except for transfer passengers.

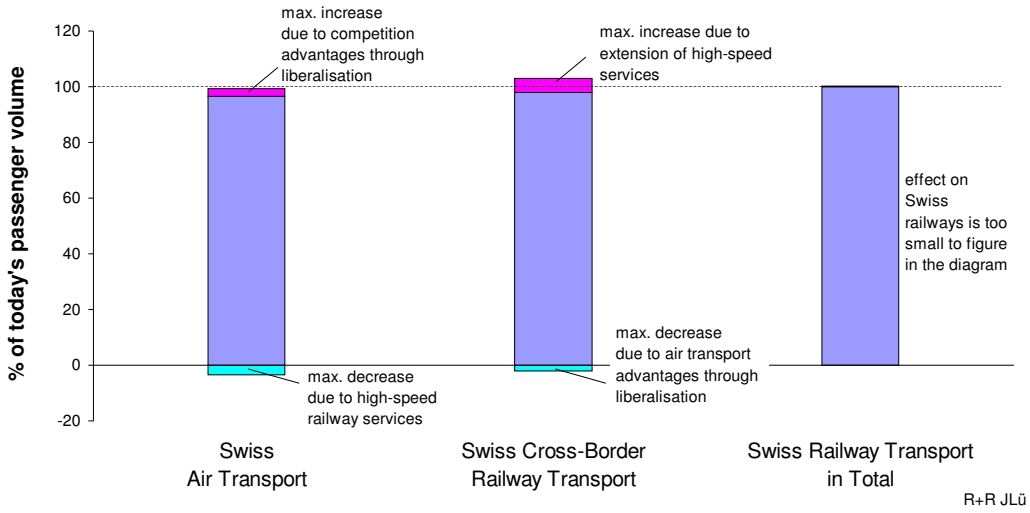
The extension of high-speed rail transport in Europe will not have a strong effect on Swiss air transport. As seen from Switzerland, only a few destinations (Paris, Brussels, Cologne, Duesseldorf) will have a realistic chance that the rail-journey time will become shorter than the journey time by air (but for air-journey time, there is also room for optimisation).

The railways will profit from a liberalisation-induced air traffic growth by transporting more passengers to the airports. However, the increase in rail traffic will only be slight, measured against the total rail-passenger volume in Switzerland. Attractive rail-air connections change the land-side modal split in favour of public transport.

Chances for better railway competitiveness against air transport: realisation of operational efficiency advantages; concentration on interregional traffic (where

[1] Annual Report of Zurich Airport Administration, 1998.

there are no airports, or where direct air transport connections are sparse); exploitation of advantages in travelling comfort; taking over substitute air-cargo transport (instead of "trucking" air cargo on the road).



Question 7: Air traffic management and market regulation: How will the future capacity-demand in the air transport system be mastered? How will the slot allocation be approached?

The future air traffic management has to take into account the environmental effects of air traffic; in particular, measures against emissions and noise are going to be introduced. A possible approach to this is provided by the control of aircraft operations at and near airports. As in other matters of aviation, a balance between an efficient air traffic management and the environmental measures must be found.

Such a balance becomes obvious by the application of environmental measures in a way that flight-time reductions not only reduce emissions but also create additional airspace capacity. For this, a restructuring programme is currently initiated by the European Civil Aviation Conference ECAC. Respective issues and tasks are exposed in the harmonisation and integration programme EATCHIP and carried out in the "ATM Strategy 2000+".

These plans are currently implemented by adapting the European airway structure and the vertical separation of the respective flight-levels. For this purpose, three projects are being carried out: (1) The introduction of general area navigation B–RNAV, which must be understood as a sub-programme of area-navigation programmes on a larger scale. (2) From this follows that reduced vertical separa-

tion minima can be introduced. (3) Moreover, adaptions in the standard-route pattern SRS also belong to the concept for future air traffic services.

Concerning the restructuring of the upper airspace, the air traffic flows have been rearranged. This takes place under the programme for the air traffic services concerning the airway networks ARN. On 25 February 1999, phase 2 of version 3 of ARN was started. In this phase, 85 airways in French and Swiss upper airspace are revised. The most important revisions of ARN V3 consists of separating traffic flows.

Existing capacity bottlenecks are being managed with slot allocation rules. In 1993, the EU introduced an order for the slot allocation on airports which guarantees the so-called grandfather rights of the airlines and mandates a slot pool for new competitors *(EU Order 95/93)* who can now claim larger slot contingents than before. By introducing the EU liberalisation, Switzerland has to take over the EU slot allocation rules as well.

Nevertheless, the slot-allocation rules of EU-order 95/93 still contain obstacles to competition. Recommendations by economic theorists to amend this situation by introducing pricing or bargaining systems – e.g. peak-load pricing or slot auctions – have not yet been tried out, except for a very few singular or time-limited cases.

Question 8: What environmental effects has air transport deregulation?

Introducing air transport deregulation also in Switzerland will cause a very little effect on traffic increase. This effect is created by the airlines fleet policy and by the nature how advantages in a deregulated market situation can be drawn.

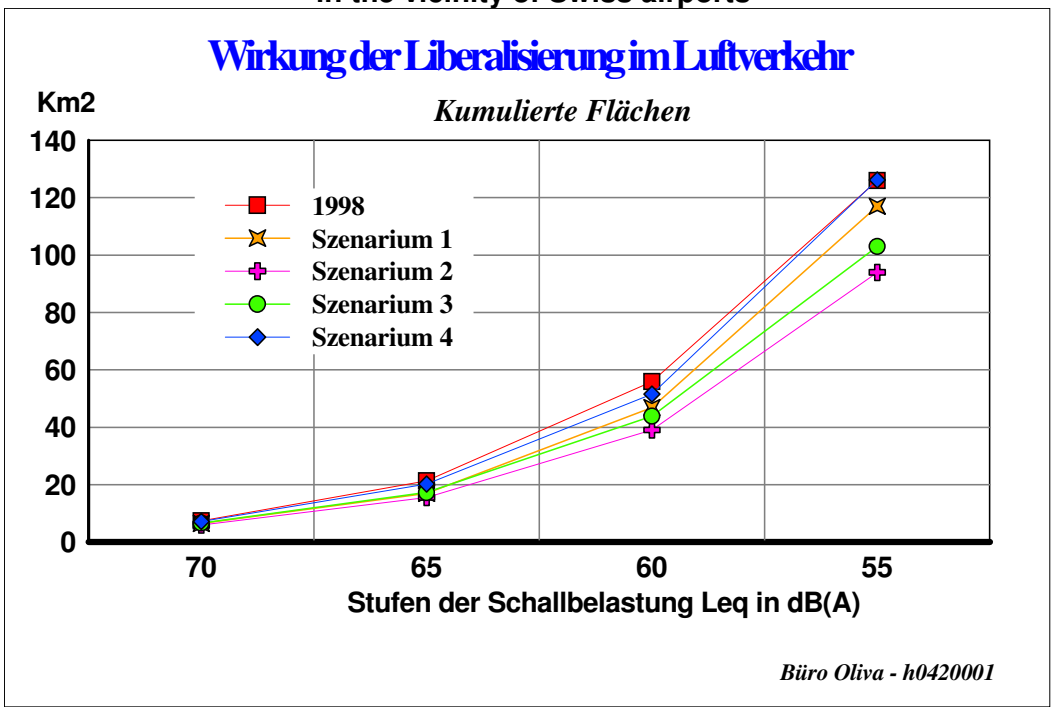
There are two different hypotheses with respect to fleet policy**.** Both consider the pressure on cost reduction induced by competition. In the first scenario, airlines would use primarily ordinary aircraft-types with low capital costs. In the second scenario, airlines would employ newer aircraft-types with accordingly high capital costs, but low operating costs.

Two different hypothesis evaluated the exploitation of the deregulated market advantages about the effect of various aircraft-type combinations. One scenario concentrates on the exploitation of the now granted intra-European traffic rights. In the other scenario airlines will use the additional traffic rights to strengthen their position within the intercontinental market.

Each of these two scenarios corresponds to a certain combination of aircraft-types of which the noise impact was calculated and analysed.

— Scenario 1: Exploitation of the intra-European traffic rights
— Scenario 2: Strengthening of the intercontinental position as hub
— Scenario 3: Maintenance of the market position without exploitation of market advantages
— Scenario 4: Loss of market share.

Effect of different scenarios of market feature on the noise impact in the vicinity of Swiss airports



The main result is that scenario 2 – trend of strengthening the position as hub – using a long-haul fleet and applying medium-size aircraft more often as feeders shows the smallest area impacted by noise. Under this point of view, the investment in a modern and therefore in an ecological technology, which is more efficient, has a positive effect compared with the other scenarios.

Question 9: Which policy implementation is needed?

The question about policy implementation is two-folded. What should politics do, if they want to reduce environmental impacts drastically? What must they do, if they want to strengthen the Swiss airports' and airlines' positions? The cutting point of this question is the environmental capacity of an airport, thus clearly spoken, the environmental capacity is that capacity, which an airport concedes by the political means of environmental reasons. In most cases, the environmental capacity is set lower than the runway capacity whereby multiple antagonism between the society, the aviation industry, the airport authority, and the state occur. If the environmental capacity is low, then the position of an airport in the global competition will be weak, which can also restrict the competitiveness of airlines.

Recommendations:

(1) Promotion of an indicator-system

The investigation in the unwanted effects requires certain indicators and databases. A thorough analysis of existing material shows some research lacks. A principal problem of the empirical analysis is that present traffic statistics are insufficient to investigate in such research questions.

(2) Development of air traffic management

Air traffic management uses the environmental policy's action margin in a way that legal limits for environmental effects can be guaranteed. The action margin of environmental policy is defined by the set of alternatives for the alleviation of environmental effects, e.g. emission-bound landing-taxes, limitation of night-flights, subsidies for noise-reducing windows in the airport's vicinity etc. This definition doesn't mean that each single airport always has such a number of different advantages. The limits are set by the means of secure, efficient, and economic air traffic control.

(3) Clarification and legitimation of the proceedings for an air-traffic management

An airport can be evaluated by its capacity. The capacity refers to an airport's ability handling a particular traffic volume (demand). The capacity is that limit which cannot be surpassed. In order to reduce the noise impact and air pollutants, there are two voluntary measures: (1) technical improvement of engines and aircraft configuration; (2) operational means at the airports.

(4) Tension reduction between the airport-system and the residents

In addition to the technology-orientated measures for noise reduction at its source, a variety of measures is directed at the arrival and departure procedures. These measures have the reduction of the noise impact as an aim. Some of these procedures are already in use, others are still proposals.

The question remains whether restrictive guidelines transfer the problems instead of solving them. With restrictive ecological guidelines, the complexity of politics tends to increase. Regulations and allocation systems should be created, which would permit the determination and charging of external costs to emission producers and, at the same time, would guarantee fair and non-discriminatory competition for all market participants.

Negotiations will only be successful, if various and alternative possibilities for the reduction of the noise impact and the reduction of air pollutants are proved and if the institutionalisation of an environmental capacity is implemented in order to negotiate a social contract between the concerned groups.