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**THE ECONOMIC ANALYSIS OF AIRLINE CONSOLIDATION:
WHETHER THE COMMISSION GOT THE ECONOMICS RIGHT**

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Abstract

Over the last 15 years, 'the more economic approach' has been 'the' buzzword of European competition law. The rules on restrictive agreements, abuse of dominance, merger control and even State Aid have been reviewed and where possible reformed. Formalistic legal thinking has been reduced and the more economic approach gained momentum in Brussels offices. Many articles have been written in general concerning articles 101 and 102 TFEU or the merger regulation and this process, nevertheless this work tries to review whether the more economic approach infiltrated also to the assessment of airline consolidation. Almost 40 decisions were adopted on alliances or concentrations under Article 101 or the merger regulation in this period and we intend to review them in the light of the economic literature on aviation. By analysing the text of these decisions, we would like to assess whether EU officials took into account the results of economic research, whether lawyers who take decisions really apply the more economic approach in the field of aviation as well.

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Preface

This paper is the first part of a longer work we are working on in the next months. The **bold** labelled sections in the outline above are already done. We are looking for any helpful comments and critics. Thank you very much in advance.

The authors

1. Introduction

The 'more economic approach' in EU competition law appeared at the end of the 1990's with the aim of bringing competition law enforcement more in line with current economic thinking. This trend of more reliance on economic theory has been continued ever since and 'infected' already all major fields of EU competition law, from restrictive agreements to abuse of dominance, from merger control to State Aid control. Of course the extent of changes can be different in the various fields of EU competition law, nevertheless nobody can doubt the advance of more economics in competition law enforcement.

In the field of air transport, US deregulation at the end of the 1970's and the subsequent liberalisation of EU markets beginning from 1987 also raised the attention of economists and the literature on air transport economics began to flourish, producing a vast amount of work on various aspects of airline operations. Actually, US deregulation has been spurred by a shift in economic thinking on regulation and the characteristics of air transport; the famous contestable market theory served as a cornerstone for opening up air transport markets.

Considering these two developments, it seems to be worth while to examine whether the general trend of more economic approach also influenced the application of EU competition rules in the field of air transport, especially the decisions of the European Commission adopted in airline alliance and merger cases. The main question of research is, whether these decisions used the results of air transport economics and whether any trends can be identified, i.e. earlier decisions paid less attention to the literature, while with the spread of the more economic approach this changed substantially.

In the following we will shortly describe the more economic approach of EU competition law, then give a snapshot of airline consolidation in Europe, followed by the summary and categorization of air transport economics, and afterwards we will examine the experience of alliance and merger decisions.

2. The more economic approach in EU competition law, a general overview

Over the last 10-15 years, the 'more economic approach' has been a trend in all policy areas of EU competition law with widely differing effects. There are differences both in terms of the timing and also with regard to the depth of changes initiated due to the more economic approach. Consequently, there is no unified definition on the meaning of the more economic approach, which can be applied in all the relevant areas of EU competition law. Nevertheless, if we want to summarize the main characteristics of this process, the following distinctive features can be identified.

First of all, the more economic approach implies the increased use of modern economic theories and analysing techniques. Econometric data analysis is applied whenever possible, provided that the data sets needed are available. The more economic approach also means a departure from the legalistic form based (called also 'per se') assessment to an effect based economic ('rule of reason') approach. Eventually, only those types of economic behaviour should be prohibited, which really

produce detrimental effects on the market, and after a thorough analysis efficiency enhancing competitive conduct should be allowed. Finally, the more economic approach also represents a declared shift towards the protection of consumer welfare and consumer interests when applying the competition rules. It is not competitors, who deserve protection.

After this general description of the more economic approach we will examine its relevance for the different areas of competition law. The first document, which might be mentioned as a result of the more economic approach, was the 1997 Commission notice on the definition of the relevant market¹. This document serves both antitrust and merger policy and describes the methodology to be used when identifying the competitive constraints on market players. The document introduced inter alia the SSNIP test, first used in the US horizontal merger guidelines, mentions economic problems like the cellophane fallacy and provides guidance on various quantitative methods that can be used.

2.1. Restrictive agreements

Concerning restrictive agreements the reform of vertical agreements was the first step towards a more economic approach. Commission regulation 2790/99² radically changed the treatment of vertical restraint and was the prototype of the new style, more economic block exemption regulations. Earlier block exemption regulations³ contained so called white clauses that have to be included in distribution agreements and so called black clauses that were prohibited if an undertaking intended to benefit from the application of these regulations. This had a straight-jacket effect on distribution agreements, since their content was determined by legalistic provisions and not by the economic reality. The new block exemption regulation contains only a black list, i. e. it prescribes only those provisions that are prohibited and at the same time provides freedom for the parties to decide on the conditions of their agreement based on their needs and circumstances. The regulation introduced a more effect-based approach when it emphasized the importance of market power in determining those agreements that cannot be exempted by the regulation. The block exemption regulation was complemented with a guideline on vertical restraints⁴, which explained in detail the economic rationale behind vertical restraints and all the benefits/efficiencies that can be realised by applying them. The guidelines also provide a framework of economic analysis that should be used during the assessment of vertical restraints.

¹ OJ [1997] C 372/5

² OJ [1999] L 336/21

³ E.g. Regulation 1983/83 on exclusive distribution [1983] OJ L173/1, or regulation 4087/88 on franchising [1988] OJ L359/46

⁴ OJ [2000] C 291/1

Following the reform on vertical restraints, the Commission continued with horizontal agreements, including R&D, specialisation, joint purchasing, joint selling, standardisation or environmental agreements. The block exemption regulations on R&D⁵ and specialisation⁶ were characterized by the same approach that regulation 2790/99 introduced, namely more freedom for the undertakings, and more emphasis on market power. The Commission adopted guidelines⁷ in this area as well, that intended to provide guidance on what it would consider restrictive based on economic analysis. Again the relevance of market power was highlighted, since only the practices of undertakings with substantial market power can be a threat to competition and consumer welfare under the more economic approach.

In the subsequent years the regulations on car distribution⁸ and technology transfer⁹ were overhauled in the same manner, completing the adoption of a more economic approach concerning restrictive agreements. Game theoretical insights on the functioning of anticompetitive cartels helped the elaboration of European leniency policy and in recent years settlement procedures. The reform of EU procedural rules¹⁰ enabled the Commission to focus on hard-core cartels, those infringements of competition law that represent a real threat to consumer welfare. Due to the abolition of the notification system the Commission managed to get rid of the numerous investigations that concerned cases with no real danger for competition. At present, the Commission reviews the legislation and guidelines on both vertical and horizontal agreements; nevertheless the main direction of the more economic approach remained intact.

2.2. Merger control

In relation to merger control, the more economic approach appeared somewhat later than in the case of restrictive agreements. Three consecutive and highly embarrassing court defeats have led to significant changes in the attitude of the Commission concerning economics in merger cases. In the early 2000's the Commission prohibited the mergers of Airtours/First Choice¹¹, Schneider/Legrand¹², Tetra Laval/Sidel¹³ and GE/Honeywell¹⁴. In the first three cases the Court of First Instance reversed the prohibition decisions of the Commission and delivered harsh critique on

⁵ Regulation 2659/2000 OJ [2000] L 304/3

⁶ Regulation 2658/2000 OJ [2000] L 304/7

⁷ OJ [2001] C 3/2

⁸ Regulation 1400/2002 OJ [2002] L203/30

⁹ Regulation 772/2004 OJ [2004] L 123/11

¹⁰ See regulation 1/2003 OJ [2003] L1/1

¹¹ Case M 1524; appealed before the CFI: T-342/99 [2002] ECR II-2585

¹² Case M 2283; appealed before the CFI: T-310/01 [2002] ECR II-4071

¹³ Case M 2416; appealed before the CFI: T-5/02 [2002] ECR II-4381

¹⁴ Case M 2220; appealed before the CFI: T-209/01 [2005] ECR II-5527 and T-210/01 [2005] ECR II-5575

the economics applied by the Commission and its way of treating these mergers. In the fourth, GE/Honeywell case the prohibition decision was upheld by the court, nevertheless the Commission had its difficulties with some parts of its argumentation.

These court defeats have led to substantial changes in terms of internal organization as well as concerning the applicable rules. In 2003, the Commission created the position of the Chief Economist who should provide expert opinion with the help of its staff on the economics used in Commission procedures. Also an internal peer review system has been created to provide the necessary counterbalance of case teams working on the cases. Simultaneously with the enlargement of the EU, a new merger regulation has been adopted¹⁵, which replaced the substantive test of the earlier used dominance test with the SIEC test (significant impediment of effective competition). With the help of the new test the non-collusive oligopoly problem can be caught as well which seemed to be problematic by using the earlier dominance test. The Commission also adopted guidelines in the area of merger policy. The horizontal¹⁶ and the subsequent non-horizontal guidelines¹⁷ deal in detail with the appraisal of mergers and the assessment of non-coordinated (unilateral) and coordinated effects and the possibilities of an efficiency defence. The guidelines are based on the current economic thinking and were prepared in the spirit of the more economic approach.

2.3. Abuse of dominance

The last stage and probably the most difficult task of introducing a more economic approach to EU competition law, is the issue of Article 102 TFEU, the legislation on the abuse of dominant position. It was no coincidence that the reform of Article 102 began only in December 2005 with the adoption of the 'Discussion Paper on exclusionary abuses by dominant firms'¹⁸ and has produced only limited modifications with the adoption of the 'Guidance on the Commission's enforcement priorities in applying Article [102] of the [TFEU] to abusive exclusionary conduct by dominant undertakings'¹⁹. In line with the general trend, the more economic approach intends to put emphasis on the potential or actual effects of the behaviour of dominant undertakings, thereby allowing business decisions that do not decrease consumer welfare.

Even though the Discussion Paper or the Guidance is only a Commission document setting out the

¹⁵ Regulation 139/2004 OJ L24/1

¹⁶ OJ [2004] C31/5

¹⁷ OJ [2008] C265/6

¹⁸ Available at: <http://ec.europa.eu/competition/antitrust/art82/discpaper2005.pdf>

¹⁹ OJ [2009] C45/7

internal consensus of DG COMP (the Commission section responsible for the application of competition law) in relation to the enforcement of Article 102, the fact that both documents show a clear statement towards consumer welfare and the protection of the competitive process rather than competitors themselves, can be interpreted as a first step towards the more economic approach. Many critiques have been expressed due to the not radical enough deviation from the old approach, nevertheless it has to be understood that this area of law is largely determined by the case-law of Community courts and the Commission and this hinders the possibility of overnight transformation of the main principles. In the end effect, it remains the duty of Community courts to decide whether the infiltration of the more economic approach in other areas of competition law also justify a paradigm shift concerning Article 102. What can be clearly established at present is the signal from the Commission that it is open to changes and ready to move in the direction of a more economic approach.

3. Airline consolidation

The liberalisation of European air transport has been completed in three steps from 1987 to 1992, and only cabotage remained limited till 1997. The enlarged market place provided better opportunities for European airlines, which answered with significant restructuring initiatives to the new challenges. In the early 1990's several of the leading European airlines received state aid from their owners, nevertheless afterwards airlines like Lufthansa or Air France began to implement their new strategies.

Similarly to the US, several new start up airlines entered the market, old airlines began to enlarge their activities by entering earlier restricted markets. On the other hand leading European airlines began to strengthen their position on the market with the takeover or competing airlines. First they tried to secure their backyard, i. e. achieve a prevailing position in their traditional home markets to provide the amount of passengers needed for the operation of their hub and spoke networks. As the second step of consolidation major airlines took over regional airlines on other European markets to establish themselves in the most important segments of the marketplace. As the final step of this consolidation process major European airlines began to consider the possibility of joining forces with medium or first line competitors. 'Joining forces' refers to the difficulties of real take overs in the case of airlines that have a significant presence in EU-third country markets. In the latter case, taking over an airline can result the loss of all traffic rights of the airline taken over due the to still applicable and rather restrictive bilateral air transport agreements. The probable loss of these traffic rights can actually take away the rationale of a merger. That is one of the reasons why many airlines

made and still make use of strategic alliances, which help them to mimic the effects of a merger without actually completing one.

The above described process resulted almost 40 decisions from the side of the European Commission, which concerned both merger decisions under the European merger regulation and alliance cases under Article 101 TFEU. These cases enabled the Commission to continuously monitor the market and support the process of liberalisation through the proper enforcement of competition law. The amount of decisions also enables us to examine the influence of economic theory on the practice of the Commission, which we will show in section 5 after summarizing the literature. In the following section we show the importance of understanding economics in the competition policy. In order to deal with airline mergers and alliances on the right way, first we need to take a look behind economics.

4. Economic literature on aviation

4.1. The effects of mergers and concentration

Economics uses market structure as a starting point by analysing a given industry. The main output, namely the profit of an industry is up to the market structure. The traditional economic theory says that there is no industrial profit in the long run if we have a perfect competition in the market. In the case of oligopoly, the individual profit is higher than zero. The best case from the airlines point of view is a monopoly with high profit gains, however at the same time this is the worst case from the passengers' – and even from the Commission's approach.

Airlines try to achieve the highest possible profit, while the aim of the passengers is to obtain the cheapest ticket. The role of the authority is to balance these very different purposes, increase the social welfare and maintain the competition in the airline market. By increasing the welfare, the Commission focuses on the consumer surplus, it means, that the merger must not harm the passengers.

Utility

That is why we decided to start with the demand-side analysis from the passengers' point of view. How do passengers decide, which airline to choose? In order to answer this question, we have to understand what the passengers would like, what their preferences are. The main determinants of a traveler's *utility* are: the money cost of the flight, the preferred departure time and the opportunity cost of time. Carlsson (2002) used *address* (or spatial) model to describe an oligopoly with competing flights. It means, that passengers can express, address, under which conditions are they indifferent between the two offered flights²⁰.

In contrast to Carlsson (2002) on year later Peters (2003) described the passenger utility model with: price, flight frequency, airport presence, distance and whether the flight is nonstop. He applied a *simple log-linear function*:

$$u_{ijt} = \beta_p \ln p_{jt} + \beta_f \ln f_{jt} + \beta_{ap} \ln AptPres_{jt} + \beta_n \ln Nonstop_j + \beta_{mi} \ln Miles_j + \mu_{jt} + \varepsilon_{ijt}$$

Where β parameters are independent of the merger. With μ_{jt} this model measures the fixed effects for airlines, like markets, time periods and airports, which all will change after the merger.

²⁰

About the address model see Greenhut et. Al (1987)

Quantity/ Demand

After we described the utility function, we can write out the passenger demand for a given airline route. Morrison and Winston (1989) used the *multinomial logit model*²¹ in order to determine the passengers' best choice between different airlines. The passenger chooses the airline, which offers the highest utility, the highest satisfaction. The decision is made by fare, service time, safety record, reputation and promotional offerings (Morrison and Winston, 1989). The authors found, that the fare and the service time play the most important role in a choice. According to the analysis, passengers' hourly travel time value is nearly \$35, but they evaluated the transfer time even higher.

Considering [these](#) results, the authors suggested [that](#) the airline mergers that reduce transfer time to be positive. They found evidence that „*some passengers could benefit even if improvements necessitate higher fares*“.

Carlsson (2002) analysed the frequency decisions of airlines. He found, that there should be at least three airlines in the market equilibrium offering the same route. In this case, entry is free and the long run profit is zero. On the other side, from the individual airlines point of view, the frequency decreases with the number of airlines and the cost per flight. Comparing to the monopoly case, the authors found that the sum of the frequencies on a given route is twice if there is a competition in the market.

Cost

Now, we can change to the supply-side and analyse the situation from the airlines point of view. The key factor [in](#) offering a route is the cost of the flight. Not only the total cost of the flight, but the marginal cost of an additional seat, an additional passenger is very important. If there is perfect competition, the marginal cost should be equal the price of the airline ticket. As we know, that is not the case in the airline industry. The less competitors we have, the more concentrated is the industry. High concentration is described with higher market shares, which can harm passengers if the airlines have significant market power. On the other side, concentration can be positive, since the merged airlines have higher economies of scale and traffic density. A big airline with cost efficiencies can keep the marginal costs lower, offer cheaper tickets and benefit the passengers.

In most of the cases, we have two airlines [competing](#) with each other on a given route. Peters (2003) assumed a non-cooperative *Bertrand duopoly*, where both of the airlines make a price decision. The author calculates the marginal cost after the merger as „*the difference between price and estimated*

²¹ About the multinomial logit model see Small and Hsiao (1985)

markup“. Peters (2003) used American airline data from the DOT’s Origin and Destination Survey from 1985 and compared them to the after-merger period concerning six merger cases.

**Component Effects of
Average % Relative Price Change in Overlap Markets**

	#	Ownership Change	Observed Changes	Change in μ	Change in c	Actual $\% \Delta p$
NW-RC	78	19.8	-1.4	0.9	-10.1	7.2
TW-OZ	50	20.8	-2.2	-0.8	-1.0	16.0
CO-PE	67	6.4	0.7	0.2	20.5	29.4
DL-WA	11	7.6	-1.5	-0.5	6.0	11.8
AA-OC	2	4.7	-3.6	-1.8	7.6	6.5
US-PI	60	12.7	2.0	-1.9	6.7	20.3

Source: Peters (2003)

The result is very surprising. In contrast to the theory, the data show cost efficiencies only in two cases, namely concerning at the Northwest-Republic and TWA-Ozark merger. An explanation for the inefficiencies might be the high financial investments into the bankrupt airlines or the increased post-merger labor costs. This point would be a very interesting topic for future research. Furthermore, Peters (2003) suggested analysing the quantity-based Cournot duopoly and the collusion for future research.

Price

The main part of the literature is concerning with price changes after the merger. Borenstein (1990) examined the US airline merges cases NW-RC and TW-OZ

Werden, Joskow and Johnson (1991) compared the first US merger cases (NW-RC and TW-OZ) and found evidence of the increased fares from 1985 to 1987. In the NW-RC case fares increased by 5.6% on the overlap market, but decreased from the former republic hub, Detroit airport by 0.8%. While in the TW-OZ case fares on short haul (less than 1000 miles) overlap markets increased by around 4.5%,. The price increase concerning long-haul markets were not significant. An interesting point is, that fares outside the overlap markets even decreased by 5.5%.

Kim and Singal (1993) compared 14 US airline merger cases in the period of 1985-1988. The authors found that in this time the merged airlines increased the fares by 9.44% compared to „other routes unaffected by the merger“. Moreover, the price increase could be 40-45% if the merger is concerning a bankrupt airline takeover! On routes, where the airlines operated from the same hub before the merger, there is some evidence of efficiency gains. However, by separating the efficiency gains from the market power effect, the paper makes an interesting observation. The authors

appoint, that the positive synergies do not arise until the end of the merger process, while the negative effects concerning the increased market power arise already during the merger completion. They found that the negative effects are always over the positive synergies.

Evans and Kessides (1994) analysed collusive multimarket contracts among 33 US airlines during 1984-1988. The authors appointed the importance of external contract on airfares: „*fares are higher in city-pair markets served by carriers with extensive interroute contracts.*” That proves the „golden rule”, namely the airlines do not use aggressive pricing because there is a fear of that the competitor behaves in the same way and a price war begins. The change in market structure is also interesting. If the structure moves from the monopoly situation to a duopoly, prices fall by 11%, but from the four-airline to the five-airline oligopoly the change in prices is only 1.1%.

Singal (1996) found similar price increasing effects of US multimarket contracts between airlines. Singal found that „*mergers cause prices to rise on long-distance routes due to an increase in multimarket contract*” by 10-14%. The author suggested that the antitrust policy should examine not only the mergers, but also the collusive contracts. Mergers with multimarket conduct have even more price effects – this result is not surprising. In addition to the previous work from Evans and Kessides (1994), Singal consider the market shares and the relative size of the contracting/ merging airlines. As conclusion the author appointed that consumers are worse off after the conduct, anyway.

Carlsson (2002) examined the market structure changes and its effect on prices. This paper was the first study comparing airline data from eight European countries. He found, that if there is no competition with the railway, the competition between airlines is stronger. However, by differentiating between business and economy passenger classes, Carlsson (2002) assessed an interesting point. He found, that the market structure has no significant influence on the ticket price for leisure passengers. Since this type of passenger is very price sensitive, „*the competition with other modes of transport is stronger*”.

Peters (2003) compared six US merger cases from the 1980's and showed how the post merger prices were developed. The author used two different models (the Nested Logit demand model and its extended version, the GEV model) from two different aspects. He refused to apply the own-price elasticity and suggested – as first in the literature – using cross-price elasticity. He said, „*the own-price elasticity indicates the extend to which consumers are willing to switch to alternatives...by contrast, the cross price elasticity between two products... measures how well the products substitute for each other.*”

The conclusion is very interesting. The actual price increases were definitely higher, than the predicted prices with all of the available economic models. While the GEV model is more effective,

than the Nested Logit, the Instrumental Variables (IV) model is closer to the reality than the OLS model. The differences based on the different elasticity estimates and HHI coefficients.

As we mentioned before, Peters (2003) also showed the changes in the marginal costs after the merger. If we take into consideration the surprisingly increased marginal costs, the price changes became more acceptable. That is why Peters (2003) suggested focusing on the changes in marginal costs and markups instead of price changes after the merger.

**Average Predicted % Relative Price Change in Overlap Markets
1985 vs. 1st Year Post-Merger**

	#	Simulation		Linear Prediction		Actual
		NL	GEV	OLS	IV	
NW-RC	78	7.0 (0.5)	19.8 (1.9)	8.8 (0.6)	21.6 (1.5)	7.2 (0.8)
TW-OZ	50	7.2 (0.6)	20.8 (2.5)	8.7 (0.7)	21.5 (1.8)	16.0 (2.3)
CO-PE	67	3.4 (0.3)	6.4 (0.6)	4.1 (0.4)	9.8 (1.1)	29.4 (3.6)
DL-WA	11	3.3 (1.0)	7.6 (3.1)	3.0 (1.1)	7.2 (2.7)	11.8 (3.6)
AA-OC	2	1.3 (0.1)	4.7 (0.0)	1.1 (0.2)	2.5 (0.5)	6.5 (4.6)
US-PI	60	4.5 (0.6)	12.7 (2.2)	6.4 (0.8)	15.7 (1.9)	20.3 (2.6)

Standard errors for the mean, under normality, are in parentheses.
Simulations assume no change in flight frequency, airport presence,
the unobserved component of mean utility, or marginal costs.

Source: Peters (2003)

Kwoka and Shumilkina (2008) analysed the US airline merger, namely the USAir (now US Airways) – Piedmont Airlines case from 1987. With OLS regressions the authors showed that air fares increased by 10-12 % on overlapping routes. They also proved that there is another new anti-competitive effect of mergers, the *incumbent pricing*. This allows the merged airlines to deter entry and raise the prices by 5-6 % on affected routes by eliminate of potential competition.

Welfare

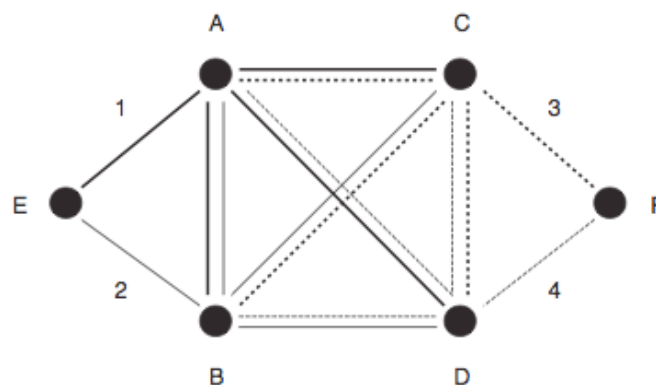
It is not a question, whether the merger increases the revenue, the profitability of the individual airline. Of course, it does, otherwise airlines would not merge. More important is the question of the change in total welfare. While airlines always benefit from the merger (increased producer surplus), consumers might be worse off. The purpose of the European competition policy is to maintain competition and do not harm consumers.

Morrison and Winston (1989) analysed the previous mentioned six US merger cases from the welfare point of view. The authors appointed that the effects could vary from -\$75 million to +\$71 million annually. They found however, that if there would not been an extended Frequent Flyer Program, all of the mergers would harm the passengers, by around annual \$335 million. If the competition policy focuses only on price effects, they will always find proves again the merger. The result is even more interesting, because the authors choose a random sample of 115 routes, where minimum one of the merger parties offered a flight. It means, that the price increasing effect of the merger was spilled over above the overlapping routes.

Relationship	Fare change/ mile, in \$	Fare Change – sample distance of 983 miles, in \$	Fare Change in percent
Duopoly to Monopoly	0,09	89	32
From 3 to 2 competitors			4-12 ²²
Oligopoly – minus one airline	0,01	6	2
Hub affected	0,03-0,09	32-93	Up to 55

Brueckner and Pels (2005) examined the European airline mergers and alliances and their effects on consumer welfare. The conclusion shows that the effects of the analysed merger (KLM/Air France) were anticompetitive. The overall decrease in consumer surplus was even higher than the increase in producer surplus due to efficiency gains. However, the authors have pointed out, that the Commission’s pessimism according to the airline mergers is still more extreme.

Brueckner and Pels (2005) took the base case, as airline 3 and 4 are independent. The first scenario showed the merger of airlines 3 and 4 with a consolidation of the 1-3 and 2-4 alliances. Under scenario II is the cooperation higher. Because of the eliminated competition the authors found evidences on reduced consumer surplus in each scenario after the merger.



²²

According to Borenstein (1990): 21 percent

	Base case	Scenario I	Scenario II
Consumer surplus	84.83	77.73	74.84
Profit 1	5.30	5.44	5.55
Profit 2	5.30	5.44	5.55
Profit 3	5.30	5.70	5.88
Profit 4	5.30	5.70	5.88
Social surplus	106.01	100.00	97.70

Source: Brueckner and Pels (2005)

Market Share and Entry

Werden, Joskow and Johnson (1991) measured the market share on a new way.: taken into account not only incumbents (previous HHI measure), but also new entrants. First, they determined the number and size of incumbent airlines for a nonstop city pair market. A new entrant (called LPE₃) has a minimum sufficient scale (MES) of one flight per day if the city pair has sufficient density to support two carriers at all. The new index called *adjusted Herfindahl (AH)*:

$$AH = 1/((1/H) + LPE_3)$$

The authors also considered the effects of competition from *commuter carriers* (seats less than 60), connecting carriers and “*the possible entry-detering effects of slot constraints*”. With their results they criticize the DOJ decisions, not predicting the significant anticompetitive effects regarding the NW-RC case. However, the authors concluded, “*no economic model could ever hope to accurately predict effects on individual city pairs*”. Not in 1991.

Even being so, after 10 years Carlsson (2002) tried it again. He defined the market share as “*the airline’s share of the aggregate number of seats*”. Carlsson (2002) separated the index into two parts²³: the first part is the square of the coefficient variation (cv) for the market share compared to the symmetric equilibrium (all firms have the same market share); the second part is the symmetric equilibrium. It means, the first part shows the firm size inequalities, the second the symmetries. Population size and country dummies were also taken into account later in the model.

$$Herf_j = \sum_{i=1}^f \left(\frac{Seat_{ij}}{\sum_{k=1}^f Seat_{kj}} \right)^2 = \frac{cv_j^2}{f_j} + \frac{1}{f_j}$$

He found, that “*for a given number of airlines, an increase in market share inequality results in an increased price....an increase in the number of airlines, for a given market share inequality,*

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After Adelman (1969)

decreases the price...but it does not have a significant effect on the number of flights.” However, the paper concluded, that due to the significantly different coefficient values, the Herfindahl index is restrictive. The HHI index failed, again.

One year later, Peters (2003) made another experiment. He used HHI index based on revenues and not on passenger shares. In his paper the author developed a complicated nested PD-GEV model²⁴ He found, that the potential entry hardly depends on the population of the endpoint cities. Peters (2003) concluded, that due to the anticompetitive post-merger entry deterrence behaviour, new entry had very small effects on price reduction. He suggested the policy “*should not be expected to yield large gains*” from expected new entries. We think, that future research is still required in this topic.

Code-Sharing

While airline mergers mostly harm consumers, Carlton, Landes and Posner (1980) found evidences on the welfare-increasing role of code-share agreements. By analysing the North Central Airlines and Southern Airways merger from 1977 they declared the fares to be 9% lower, while the achieved timesaving was even 12%. The authors found that this merger had a “*total annual consumer benefit...of \$3.54 to \$4.79 million.*” However, one should appoint that this case be happened before the deregulation.

²⁴ See page 12., at Peters (2003)

5. EU Commission decisions in the light of the literature

5.1. Alliance decisions under Article 101

The AuA/Lufthansa alliance case

In July 2002, the European Commission authorized till the end of 2005 the cooperation agreement between AuA and LH concluded within the framework of the Star Alliance²⁵. The agreement created a quasi merger integration of the parties' activities on various routes, but most importantly on the Austria/Germany market, where the agreement provides for a joint venture for all traffic between the two countries. They share their revenues and costs derived from these joint services. The European Commission found the agreement of the parties restrictive in relation to the traffic between Austria and Germany since it excluded any actual or potential competition between AuA and LH, which given their position on the market appreciably restricted competition. The Commission also established that the cooperation had the effect of restriction on routes between Austria or Germany and another member country of the EEA.

In its authorization the Commission imposed conditions and obligations to maintain competition on the markets concerned and to incentives new entry, which would remedy the loss of competition between AuA and LH. The conditions included a release of slots on congested airports, a freeze on the frequencies operated by the parties, mandatory price cuts on routes not concerned by competition whenever AuA/LH decreases its prices on other routes as a response to new competition, if required the conclusion of blocked space agreements, as well as interlining agreements with new entrants or intermodal agreements with railways.

The decision itself is rather short and not too informative about the economics used in this case. The part on restriction of competition simply states that since the parties, as former competitors, cooperate on all routes between Austria and Germany and Austria or Germany and EEA third countries, they restrict competition. There is no detailed analysis of particular O&D city-pair markets, even if there might have been significant differences between routes that connect hubs like Frankfurt or Vienna and other routes, which concern only non-hub airports.

The most informative parts are the ones on the conditions of exemption from the general prohibition of the EC Treaty and the conditions and obligations. From these chapters you can see that the Commission was generally not too concerned about the cooperation as a whole and concentrated its efforts only on those markets where the parties' activities were of a parallel and not complementary

²⁵ Case COMP/37.730 – AuA/LH Commission decision 2002/746/EC, OJ [2002] L242/25

nature. The remedies concerned the Austrian/German market and clearly had the aim of removing barriers to entry on these markets. This can be interpreted as if the Commission had acknowledged the general proposition in the literature that the combination of airlines in overlap routes can significantly raise prices, while complementarity brings efficiencies. The decision also mentions cost savings arising due to the integration of activities and in particular through the increase in traffic throughout the new network, which is actually economies of traffic density, nevertheless there is no quantification about the amount of these efficiencies or any attempt for that purpose. In addition, the decision mentions almost exclusively alliance benefits of a qualitative nature. 'Improved possibility of transfer and connections', 'attractive connections', 'a more comprehensive European network', 'better planning', 'extension of network' are rather abstract and not easily quantifiable effects.

Furthermore the Commission did not try to balance the potential negative effects against these undefined positive effects. Nor tried the decision-makers assess whether the imposed remedies would really restore competition on the Austrian/German markets. It simply accepted that the almost complete elimination of competition on Austrian/German markets served the achievement of better connections, improved transfer or extension of network. It also tried to reduce barriers to entry on these markets to incentives new competition that would produce a downward pressure on prices without actually making sure that based on the economic reality of the particular O&D markets an equally competitive alternative would appear up front.

5.2. Merger decision under the ECMR

The LH/AUA case

The Lufthansa – Austrian merger case (COMP M/5440) was the fifth²⁶ merger in Lufthansa's last 5 years history. Austrian Airlines had financial problems and KLM/Air France already announced to take over the loss making Austrian flag carrier. However, even the Commission was surprised when in autumn 2008 KLM/Air France withdraw from the deal and Lufthansa made a bid for the Star Alliance partner Austrian.

Neither Deutsche Bahn nor alliance partners were considered as competitors. Only Niki, TUIfly, Sky Europe and partially Air Berlin could reduce the common market power of LH and Austrian on these routes. Since the decision in August 2009 Sky Europe went into bankrupt, and Air Berlin took over TUIfly. The potential to behave in an anticompetitive manner is even higher, as we can see from the figure below.

²⁶

After taken over Swiss (2005), Eurowings (2005), bmi (2009) and SN Airholding (2009)

Relevant Market	Change in Concentration/ Market Share ²⁷ (%)	New Entry In 2010	Remedies Surrender of Slots (Nr.)	Change in Frequency (In percent)	Change in Frequency (Nr./Week)
Vienna-Stuttgart	Only LH Group	-	3	-21	-12 (56 to 44)
Vienna-Cologne/Bonn	LH Group: -18 (100 to 82) Air Berlin: +18 (0 to 18)	Air Berlin	3	+15	+8 (AB) -1 (4U) (48 to 55)
Vienna-Frankfurt	LH Group: -5 (72 to 65) Adria: -1 (16 to 15) NIKI: +6 (11 to 17)	-	5	+7	+7 (NIKI) (97 to 104)
Vienna-Munich	LH Group: +1,1 (78,6 to 79,7) Niki: -0,8 (22,4 to 21,6)	-	4	-3	-1 (LH) -1 (NIKI) (76 to 74)
Vienna-Brussels	LH Group: +40% (60 to 100)	-	4	? n.a.	+8 (SN) n.a.

Source: own calculations according to the current Summer Plan at www.viennaairport.com and the Commission's decision about LH/AUA merger

The question is, whether the efficiency gains can outweigh the anticompetitive market power? Since there is no data available about route price changes due to the merger, we have to rely on Lufthansa's²⁸ - calculation on technological synergies: annual revenue gains: 31.2 million €; the annual distribution cost efficiency: 30.4 million € and the annual other cost efficiency: 18.4 million €.

Now, where are the revenue gains come from? After the merger the LH Group immediately cut all its flights from Vienna to Stuttgart by more than 20 percent. Since LH has a monopoly on this route and already decreased the frequency, it arises the question, whether the revenue gains come from the monopoly pricing? Similar to this, on the Vienna Munich route LH operates now with fewer airlines, but the difference is not significant.

In contrast to this, on the route Vienna-Cologne/Bonn a new airline appeared, namely Air Berlin with 8 weekly frequencies. This entrance decreased the previously 100 percent market share of LH down to 82 percent. However, there is a surprising point in the Commission's decision. They

²⁷ Source: www.viennaairport.com Period: 23. June 2010 – 29. June 2010

²⁸ Deutsche Lufthansa AG webpage: „Partnerschaft für die Zukunft mit Austrian Airlines“ pp.12

considered the market share of all passengers at Austrian to be 5-10% in 2008, while Austrian provided 18 weekly flights. The only “competitor”, Germanwings offered another 20 flights with the market share of 80-90%²⁹. In our point of you, there must be some mistake in the calculation.

On the Vienna-Frankfurt route NIKI increased its frequency by 7 percent, which led to a decrease of market share by LH. However, on the Vienna-Brussels route the only competitor, Sky Europe exited the market and left monopoly power for LH behind. Hereby LH increased her flights under SN, but unfortunately we do not know the precise data according to Austrian flights in 2008.

In the light of the results, the Commission needs to consider again, whether it used the economics in its decision right and whether his forecast due to new entries was really established by the theory. We recommend to do further research according to the anticompetitive effects of the previous European airline mergers.

6. Conclusions

In summary the AuA/LH alliance decision seems to be not influenced too much by the „more economic approach” since its evaluation of the circumstances of the case are based on rather dubious assumptions both in terms of the potential harm, the potential benefits and the applicable remedies as well. The decision referred to none of the literature already at hand at that time, which would support the general findings on negative or positive effects of the cooperation, nor did the Commission perform its own calculations based on data required from the parties to base it case. Today, in a case like this the Commission would apply a much higher standard of proof for sure.

In the light of the results of the LH /Austrian merger case, the Commission needs to consider again, whether it used the economics in its decision right and whether his forecast due to new entries was really established by the theory. We recommend to do further research according to the anticompetitive effects of the previous European airline mergers.

²⁹ Commission’s decision about Lufthansa/ Austrian, p.29.

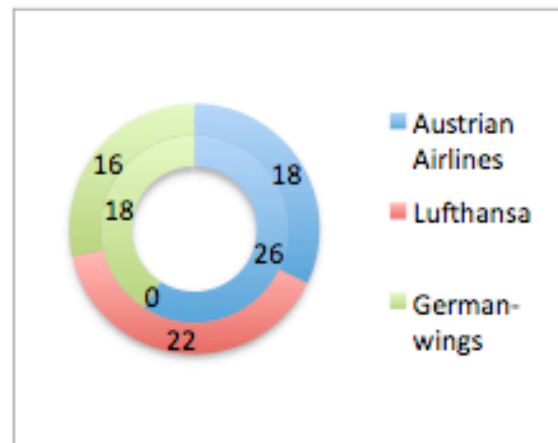
7. Appendix

Concentration/ Market Shares before and after the LH/AUA merger on the Relevant Routes

Vienna-Stuttgart

Airline	Weekly Frequency Sommer 2010	Weekly Frequency 2008
Austrian Airlines	26	18
Lufthansa	0	22
Germanwings	18	16

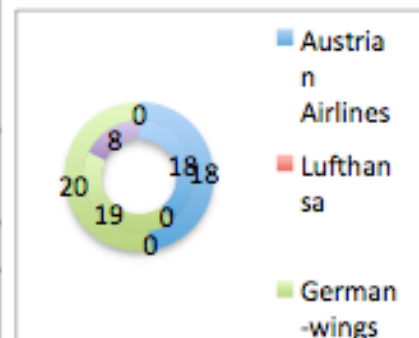
Intern Ring Extern Ring



[1] Commission decision based on MIDT data from Sommer 2008 and Winter

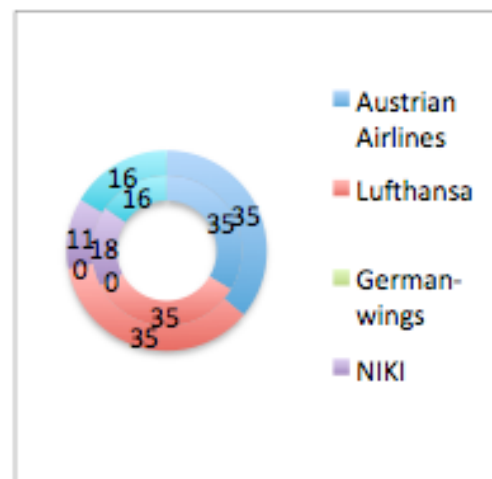
Vienna-Cologne/Bonn

Airline	Weekly Frequency	Weekly Frequency 2008	Market Share Sommer 2008
Austrian Airlines	18	18	5-10% ???
Lufthansa	0	0	0
Germanwings	19	20	85
AB	8	0	0



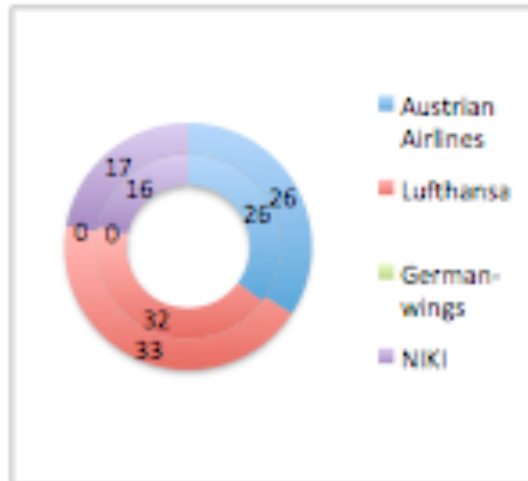
Vienna-Frankfurt

Airline	Weekly Frequency	Weekly Frequency 2008
Austrian Airlines	35	35
Lufthansa	35	35
Germanwings	0	0
NIKI	18	11
Adria Airways	16	16



Vienna-Munich

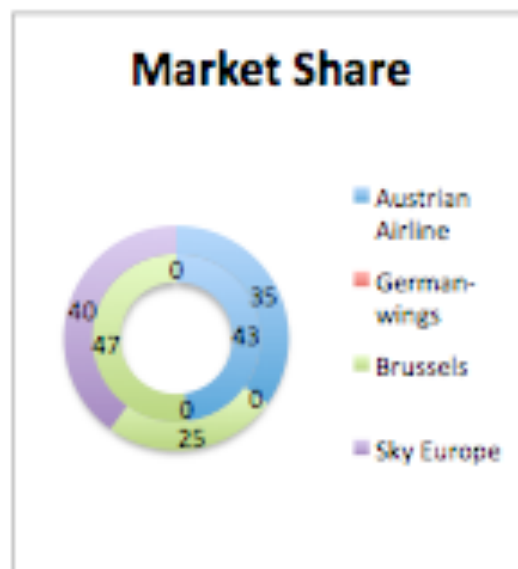
Airline	Weekly Frequency	Weekly Frequency 2008
Austrian Airlines	26	26
Lufthansa	32	33
Germanwings	0	0
NIKI	16	17



Vienna-Brussels

Airline	Market Share Sommer 2010	Market Share Sommer 2008	Weekly Frequency 2008	Weekly Frequency
Austrian Airline	43	35	?	20
Germanwings	0	0	?	0
Brussels	47	25	18	26
Sky Europe	0	40	?	0

Intern Ring *Extern Ring*



Source: own calculations regarding to the current Summer 2010 schedule plan Vienna airport and the market share data from the Commission Decision COMP M/5440

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