Capital Market's Assessment of European Airline Mergers and Acquisitions –

The Case of Air France and KLM

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Abstract

This paper presents empirical evidence on the shareholder value effects of the announcement of the horizontal merger between Air France and KLM, which led to the creation of Europe's leading airline group, between September 2003 and May 2004. Using an event study methodology, the stock price reactions of both, the involved parties and rival carriers, around the announcement day when the intention of the French and the Dutch flag carrier to merge became public as well as on the announcements during the following exchange offer period are analyzed. As expected, KLM as the target firm experienced significant positive abnormal returns whereas shareholders of Air France as the bidding firm earned little if anything. In particular, to shed light on (i) the hypothesis whether carriers' share price responses are a positive function of the implied change in airline industry concentration, an event study of 19 merger-related announcements is conducted using a market-adjusted model. As the European airline industry is highly fragmented in its competitive structure, the reaction of the incumbent airlines' stock price is also of interest. While British Airways and Iberia enjoyed significantly higher stock returns as a result of the merger, shareholders of Deutsche Lufthansa earned negative abnormal returns. As rival airlines did not enjoy homogeneous stock returns (ii) the merger for market power hypothesis does not hold.

Keywords

Mergers and Acquisitions – Airlines – Shareholder Value – Event Study – Abnormal Returns –

Efficient Market Hypothesis

1. Introduction

Financial theory provides a substantial body of empirical research on mergers and acquisitions. Since stock returns are an unambiguous measure of expected profits, numerous studies focus on value effects and the division of gains between acquiring and target firm. While several findings considerably advance our understanding of the wealth effects on shareholders in the deregulated US airline industry between 1938 and 1978, European studies provide only few empirical results.

Nevertheless, takeover and merger activities will remain a basic component of efficient markets for corporate control, even in the highly regulated European airline industry. Especially, deals that are unprecedented or unexpected capture the interest of both, business press and academia. In Europe, the recent cross-border merger of Socit Air France S.A. (Air France) and Koninklijke Luchtvaart Maatschappij N.V. (KLM) fell into this category and will be presented and analyzed in relation to its conformity with the results of international empirical research and with regard to two hypotheses.

This paper presents empirical evidence on the shareholder value effects of the announcement of the horizontal merger of Air France and KLM between September 2003 and May 2004 (see figure 1). Using an event study methodology, the stock price reactions around the announcement days when the intention of the French and the Dutch flag carrier to merge became public as well as on the announcements during the following tender offer period are analyzed. Obviously, for KLM shareholders, the offer represented an immediate premium over KLM's latest share price, while the stockholders of Air France as the acquirer earned insignificant positive returns of +0.24% on the announcement day (see section 4.2). This finding is in line with empirical research by Kyle et al. (1992), Knapp (1990) and Zhang and Aldridge (1997). Contrary, KLM as the target firm experienced significant positive abnormal returns of +1.67% (see section 4.2). In particular, to shed light on (i) the hypothesis whether efficiency gains were achieved by exploiting economies of scale, scope and density (Caves et al., 1984) an event study during the exchange offer period is conducted. Synergistic gains are either derived from the elimination of redundancies, through the exercise of market power or an increased concentration as rivals earn spillover benefits. Major airline consolidations increase opportunities for collusion in the form of higher product prices or reduced service quality. Therefore, financial market efficiency implies that carriers' share price responses of merging firms as well as of rival firms are a positive function of the implied change in airline industry concentration.

Figure 1   Relative Share Price Performance of Air France and KLM
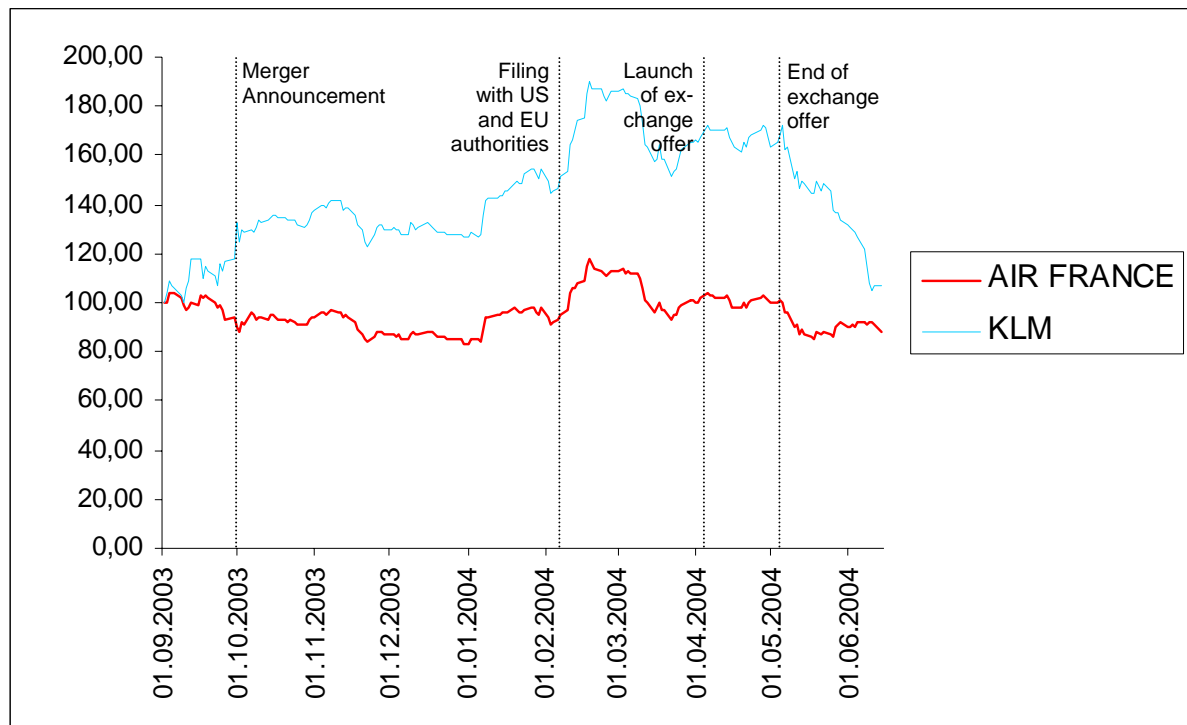
Source: Own calculation (2005).

As the European airline industry is highly fragmented in its competitive structure, with each country served by its own national carrier, the reaction of the incumbent airlines' stock price is also of interest. British Airways, Deutsche Lufthansa and Iberia are by far the greatest competitors ("rivals") by passenger figures (Association of European Airlines, 2004). Hereby, (ii) the hypothesis is tested, whether the horizontal merger of Air France and KLM led to higher fares due to increased market power of the new entity, assuming that incumbents followed the pricing policy of Air France-KLM ("umbrella-effect"). If the concentration-profit relationship holds, airlines would enjoy higher stock returns as a result of a horizontal merger. Empirical evidence by Knapp (1990) and Slovin et al. (1991) supports the merger for market power hypothesis as rival carriers experience higher abnormal returns after the announcement of a consolidating airline merger. In contrast, previous literature in finance by Eckbo (1983), Stillman (1983) and Jordan (1988) conclude that firms merge for efficiency and not for market power. Singal (1996) examined the importance of the information effect by a horizontal merger when observing positive abnormal returns of rival firms.

The main objective to be addresses in this paper is to provide an overview of the shareholder wealth effects of the unique merger process between Air France and KLM. By summarizing international empirical evidence for the airline industry in section 2 this study will focus on

the value impacts for both, bidder and target shareholders as well as for shareholders of rival firms. Section 3 gives a detailed description of the merger between Air France and KLM, its structure and financing. The disregarding of risks and threats in M&A transactions can render original advantages obsolete. The ambivalent arguments whether to merge with another national carrier should be pondered in advance to avoid the risk of failure. However, the presentation of the rationale behind this merger is not within the scope of this paper. Before going into further detail of the profitability analysis of the merger, the following subsections are meant to give an overview of the involved companies as well as the combined entity. Section 4 reviews the methodology of an event study extensively and applies this method on the data sample derived from the merger process of Air France and KLM. Empirical results of the shareholder value effects of Air France, KLM and its most important competitors, i. e. British Airways, Deutsche Lufthansa and Iberia are presented. Financial literature often uses the term "value" without clear demarcation from wealth, welfare, return premiums and gains. To avoid inconsistencies, this paper closely follows the definition of "value" by Lubatkin et al. (1997) and Mitchell, and Lehn (1990), specifying the creation of value as positive outcomes for shareholders in the form of increased expected returns or a higher valuation of equity. Thus, value effects are to be examined on acquirer, target and rival side, in each case comparing pre- and post-transaction status quo. Finally, by summarizing the main findings section 5 gives an overview of the mayor results and a critical evaluation and ends with potential shortcomings of the theoretical approaches to value determination. The paper closes with some propositions for further research.

2. Evidence in Financial Theory

Despite the significant attention that the airline industry receives from the media, its customers and government policy-makers almost every day, there have been relatively few comprehensive studies in the field of airline mergers and acquisitions since the US airline industry was deregulated in 1978. However, besides a small body of empirical research from government agencies and independent research institutions, there are some interesting empirical findings from the scientific community. Hence, consequences of airline deregulation have been measured on consumer welfare (Morrison/Winston, 1989, Stillman, 1983), market power, operational results (Jordan, 1988), air fares (Kim/Singal, 1993) or share prices. Michel, and Shaked (1984) found out that after deregulation of the US airline industry for nearly all 14 airlines tested substantial stock price gains accrued during the month prior to deregulation. The abnormal returns were subsequently erased during the post deregulation era. Edelmann, and Baker (1996) confirmed in a more recent study that positive abnormal returns before deregulation are overcompensated by negative abnormal returns in the aftermath.

To set the cornerstone for an in-depth analysis of possible share price reactions of Air France, KLM and its major European incumbents, it is imperative to take a closer look at the most important empirical studies in terms of shareholder wealth effects of airline mergers and acquisitions.

Knapp (1990) analyzed 9 US horizontal airline mergers in the year 1996. Based on the first announcement of the merger in the Wall Street Journal he found out that shareholders of the bidding carrier earned significant abnormal returns of 6% or 12%, respectively whereas the stock price of the acquired airlines had a significant positive abnormal return of around 25% on average for the 20 days before and 10 days after the merger announcement. To specify whether the market power motivation did exist, the stock returns of competitors to merging airlines were further tested. Interestingly, they measured positive abnormal returns of 3% to 6% during an time window of 30 days around the merger announcement, which supports the market power hypothesis.

Slovin et al. (1991) tested 42 airline companies, which were listed on the New York Stock Exchange and undertook a merger announcement in the time interval of 1965 and 1988. For a 5-day event window around the first announcement an abnormal return of 3.15% before and 1.37% after deregulation for the acquiring carrier could be measured. Target carriers earned a highly significant abnormal return of 8.39% before and 15.75% after deregulation. These findings are in line with empirical evidence from other industries. Moreover, they found that rival carriers earned, on average, normal returns around airline acquisition bids.

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In another investigation Kyle et al. (1992) tested 24 mergers in the US airline industry between 1978 and 1989. For the shareholders of the bidding airline the merger announcement yielded a highly significant abnormal return of 3.72% while shareholders of the target carrier earned on average 14.5% over a three-day period around the merger announcement.

Singal (1996) derived in his study about 14 successful mergers of US airlines during 1985 and 1988 that in 4 different event windows around the announcement date bidding firms earned between 2.51% and 0.55%. Rival firms earned abnormal returns raging from -2.08% to 1.85%f or a 2-day event window.

Zhang, and Aldridge (1997) used event study methodology to investigate share price reactions on merger announcements in the Candian airline industry for the 1992/93 period. They found that news that affected the merger possibilities had a significant impact on the stock prices of the two major Canadian airlines.

Though a lack of empirical research in the European airline context findings of the US event studies are consistent, i. e. the empirical results are in line with other industry studies about capital markets' reaction on mergers and acquisitions.

3.   Evidence on the Merger of Air France and KLM

The European airline industry is fragmented and its current competitive structure, with national carriers for each individual country, is an inheritance from a former era. This has obviously contributed to low profitability and a lack of value creation for shareholders. The need for structural changes and consolidation in the European airline industry is widely accepted among academics and practitioners. The single European market and its enlargement to some 455m inhabitants give a new momentum in this connection. Since regulatory, legal and political constraints have hindered a European solution, global airline alliances have been formed instead to overcome the institutional barriers (Oum et al., 1993 and Wang, and Evans, 2002). Therefore, the friendly merger of Air France and KLM is the first step to give the European airline landscape a new shape.

3.1   Deal Structure and Exchange Offer

The horizontal merger of shareholdings by Air France and KLM was aimed to preserve the brands, logos and identity of each company. By simply creating one listed holding company ("Air France-KLM Group") with two operational airlines national traffic rights, a steady and fair hub development of Amsterdam airport Schiphol and the Dutch brand and identity could be secured. As a consequence the Dutch state together with 2 Dutch foundations still holds 50,1% of KLM's voting rights to sidestep the nationality requirements imposed on the ownership of airlines by the so-called bilateral rights. Furthermore, assurances are granted to KLM for a 5-year period and for a period of 8 years to the Dutch state, respectively, by allowing Air France and KLM to retain their respective home bases, operating licences, Air Transport Certificates and traffic rights. Besides these air-political concessions a multi-hub system around Paris Charles de Gaulle and Amsterdam Schiphol was implemented to allow for a fair long-term development of long- and medium-haul services at the 2 hubs.

Based on the closing share price of Air France on September 29, 2003 the public exchange offer valued the common share capital of KLM at approximately EUR 784m or each KLM share at EUR 16.74, which represented a premium of 40% over KLM's closing share price of EUR 11.96 at the Amsterdam Stock Exchange on September 29, 2003.

The main financial terms of the public exchange offer that started on April 5, 2004 and ended on May 3, 2004 are as follows:

- *Exchange Offer:*   11 Air France shares and 10 Air France warrants for every 10 KLM common shares or 11 Air France American Depository Shares (ADS) and 10 Air France American Depository Warrants (ADWs) for every 10 KLM New York Registry Shares

- *Warrants:*   3 Air France warrants give the right to subscribe or to acquire 2 Air France shares at an exercise price of EUR 20; maturity of 3.5 years after the closing of the transaction, exercisable after 18 months

- *Indicative Value of the offer:*   EUR 16.74 per KLM common share

The offer and the following issue of 51.5m shares by Air France gave KLM common shareholders a stake of 19% of the enlarged group and diluted the shareholding of the French state from 54% to 44%. Other French shareholders own some 37% of the newly formed entity (see figure 2). In order to close the transaction, priority and preference shares of KLM were sold to Air France by the Durch State, The Stichting Luchtvaartbelangen Nederland and Rabobank.

3.2 Air France

The 3 core businesses of Socit Air France S.A. (Air France) are passenger, cargo transport and aircraft maintenance services.

Table 1   Air France's turnover per segment (€million)

Turnover per segment (€ million)	2000-01	2001-02	2002-03	2002-03 %
Passenger	10,022	10,378	10,527	83%
Cargo	1,491	1,448	1,479	12%
Maintenance	566	548	540	4%
Others	201	154	141	1%
Total Turnover	**12,280**	**12,528**	**12,687**	**100%**

Source: Air France (2004).

With 42.9m passengers carried to 198 destinations in 83 countries, Air France ranked third worldwide in terms of international passenger transportation and first in Europe in terms of traffic in 2003. With its regional subsidiaries Regional, Brit Air and City Air passenger

transportation was Air France's core activity with revenues amounting to 10.5 billion Euros or 83% of total turnover. With a fleet of 360 aircrafts Air France offered 1,800 daily flights.

Operating under the brand name of Air France Cargo, Air France ranked fourth worldwide for international cargo transportation and second in Europe. Cargo was the second core business of Air France with revenues amounting to 1.5bn Euros in 2002-03.

Air France was the second largest operator worldwide in multi-product aircraft maintenance, which accounted for 4.3% of total group's turnover. In addition to maintaining its own fleet, Air France provided maintenance services to more than 100 clients around the world.

With 198 destinations in 83 countries Air France operated an extensive route network, both domestically and internationally. The network system is structured around three principal bases, i. e. Paris Charles de Gaulle, Paris Orly and Lyon Saint Exupéry, which are responsible for more than 16,000 weekly flights. As of march 2003, Air France fleet comprised 257 aircraft including 249 in operation. Together with Aeromexico, Delta Air Lines and Korean Air, Air France launched the SkyTeam alliance in June 2000. Besides this alliance, Air France has also signed special agreements with more than 40 partner airlines.

Despite the industry-wide crisis after 9/11 Air France managed to develop a profitable growth strategy based on strong fundamentals (Air France, 2004).

Table 2   Air France's Key Financials (€million)

In € million	2000-01	2001-02	2002-03
Turnover	12,280	12,528	12,687
EBITDAR	1,160	1,650	1,992
EBIT	443	235	192
Net Income	421	153	120

Source: Air France (2004).

3.3 KLM

Koninklijke Luchtvaart Maatschappij N.V. (KLM) has 4 core activities: passenger transport, cargo transport, engineering and maintenance and the operation of charter. These activities are performed by Passenger, Cargo, Engineering & Maintenance businesses and Transavia, respectively.

Table 3   KLM's turnover per segment (€million)

Turnover per segment (€ million)	2000-01	2001-02	2002-03	2002-03 %
Passenger	4,545	4,485	4,425	68%
Cargo	1,178	1,067	1,068	16%
Engineering & Maintenance	273	288	329	5%
Transavia	432	445	472	7%
Others	532	247	191	3%
Total Turnover	**6,960**	**6,532**	**6,485**	**100%**

Source: KLM (2004).

With 19.4m passengers carried to 142 destinations in more than 70 countries, KLM ranked fourth worldwide in terms of international passengers carried and seventh worldwide in terms of international passenger kilometres flown in 2003. With a fleet of 169 aircraft KLM offered more than 600 daily flights.

KLM cargo was the 11th largest airfreight operator worldwide and 5th in Europe according to IATA, based on total scheduled freight tonne-kilometres flown. However, according to the first 6 months of 2003, KLM was the 8th largest airfreight operator worldwide and 3rd in Europe. The Cargo business accounted for 16% of the Group's turnover. With two full freighters and the largest combi fleet in the world and additional belly capacity of other aircrafts, KLM Cargo had 350 weekly flights to some 200 destinations in more than 70 countries.

KLM's Engineering & Maintenance (E & M) Business was one of the three largest aircraft maintenance companies affiliated to an airline. E & M accounted for 5% of the Group's external turnover in 2003. E & M derived 35% of its turnover from 3rd parties.

Transavia, the largest Dutch holiday transporter with 26 aircraft in operation, flew to over 70 varied destinations in and around the Mediterranean, with a market share of over 40% in 2003. The turnover of Transavia represented around 7% of KLM's Group turnover.

The KLM Group offered passengers and airfreight shippers more than 125,000 city-pair-connections, i. e. more than 350 cities in 73 countries on six continents. With more than 30 network partners KLM operated 219 aircrafts, of which 175 are jet aircrafts, from its main hub Amsterdam Schiphol, which is the 4th largest airport in Europe.

In order to improve its financial performance KLM introduced a cost savings program that should improve the operating income by EUR 650m as of 4/2005. Nevertheless, KLM's

competitive and financial position in mid 2003 was far from ideal which is illustrated in table 4 (KLM, 2004):

Table 4   KLM's Key Financials (€million)

In € million	2000-01	2001-02	2002-03
Turnover	6,960	6,532	6,485
EBITDAR	990	648	606
EBIT	277	-94	-133
Net Income	77	-156	-416

Source: KLM (2004).

3.4 Air France-KLM Group

The newly formed airline group will be called "Air France-KLM" with two operating companies, i. e. Air France and KLM. Thus, it capitalizes on two well-known brands, strong hubs and complementary networks. The combination is structured that way to ensure and protect KLM's international traffic rights going forward. Notably, 51% of voting rights are held by two Dutch foundations and the Dutch state during a transitional period of 3 years. Figure 2 gives an overview of the new shareholders' structure of Air Franc-KLM:

Figure 2   New shareholders' structure of Air France-KLM
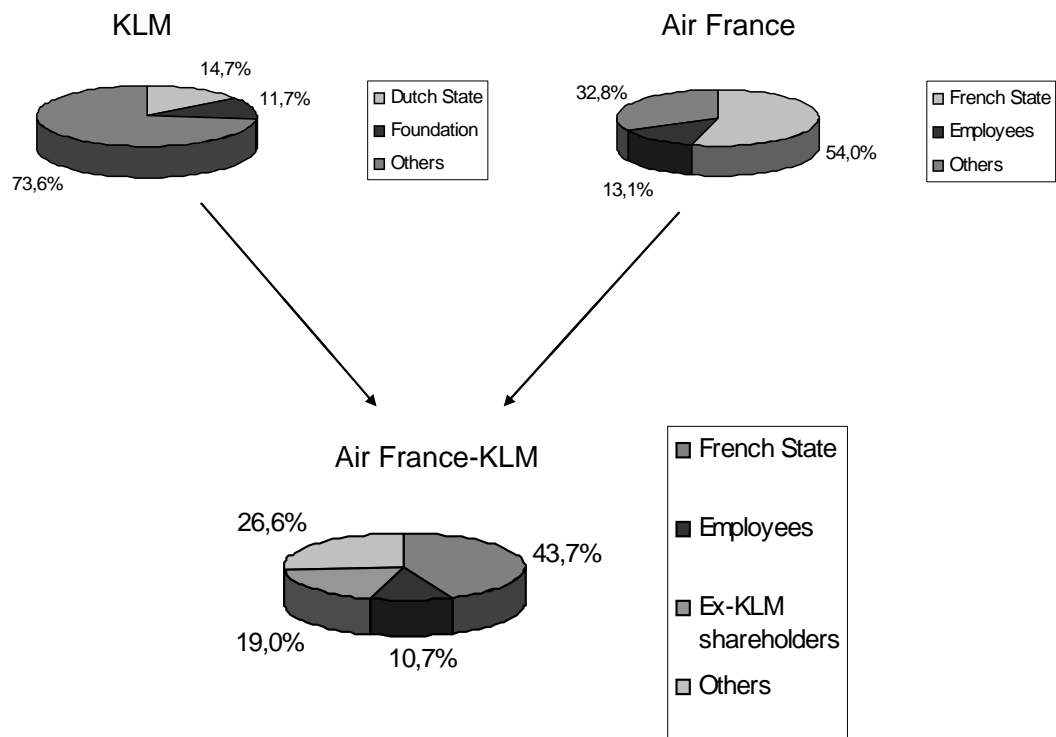
Source: Air France-KLM (2003/04).

The newly formed Air France-KLM group is led by the former Air France CEO and Chairman Jean-Cyril Spinetta while the former KLM CEO Leo van Wijk becomes Vice Chairman of the board. Together with 16 newly appointed executives, of which 4 come from KLM, the board of directors of the French-Dutch airline is formed. Interestingly to mention, that each airline remains responsible for its own commercial and operational management.

Combined, Air France and KLM have EUR 19.2bn in aggregate annual revenues, serve 226 destinations worldwide, operate a fleet of some 540 aircraft and employ approximately 106,000 people. This strategic step is unprecedented in the European airline industry and makes Air France-KLM

- 1st worldwide in terms of revenues (EUR 19.2bn)

- 3rd worldwide in terms of revenue passenger-kilometres

- 1st worldwide non-consolidator cargo airline in terms of revenue tonne-kilometres

- 2nd worldwide among airline alliances (SkyTeam)

The group focuses on three core businesses: Passengers (77% of aggregated revenues), Cargo (14%) and Maintenance (4%).

At least EUR 385-495m of improvements in consolidated operating income (EBIT) are expected to gradually increase within the next 5 years. These identified synergies, aligned by the KLM structural cost savings plan, will be achieved through network optimization (EUR 130-195m), improved employment of assets and organization of passenger and cargo operations (EUR 35m), an expanded offering of maintenance services (EUR 10-30m), as well as cost reductions in procurement and purchasing (EUR 60-65m), sales and distribution (EUR 100m) and IT operations (EUR 50-70m). Around 60% of synergies are planned to be derived from cost savings and some 40% from additional revenue (Petersen, 2004). These synergistic goals are in line with empirical findings in the airline industry. Caves et al. (1984) and Oum et al. (1995) point out that the primary factor for explaining cost differences between smaller and larger US airlines is density of traffic within an airline's network. Network optimization by Air France-KLM is the attempt to exploit these economies of density whereas other measures aim to generate economies of scale and scope.

4.   Event Study of the Merger of Air France and KLM

Financial theory provides a substantial body of empirical research on mergers and takeovers. In order to analyze post-takeover value impacts on companies' share prices event studies are applied in scientific research. These studies measure the extent to which share price performance around a specific event window deviate (abnormal) from the share price returns which would have been expected in the absence of the event. Several of theses event studies focus on value effects and the division of gains between acquiring and target firm (for example Bradley et al., 1988 and Asquith/Kim, 1982 and Maltesta, 1983). The following section provides an overview of the methodology used in empirical research on the impacts of corporate takeovers and the quantitative measurement of their results.

4.1   Methodology and Data Sample

The existence of semi-strong market efficiency and the employment of a capital market model for determining the expected return are crucial for understanding this empirical investigation. As they are major assumptions both are briefly explained in the following sections.

In the context of event studies efficient markets are of major importance. A capital market is regarded as being efficient, if all available information is reflected in the share prices correctly all the time (Fama, 1970, Mandelker, 1974 and Firth, 1980).

Three sufficient but not necessary prerequisites need to be assumed as market conditions for immediate and efficient processing of new information in the capital market: (i) there are no transaction costs for the trade of shares, (ii) information is available to all market participants at no cost, (iii) when receiving new information all market participants have the same price expectation. Though this kind of frictionless market seems unrealistic, Fama (1970) made a subdivision of market efficiency. He distinguishes three forms: *(1) weak form*, *(2) semi-strong form* and *(3) strong form* of market efficiency.

- In the *weak form* all information on historic prices, volume or short-term interests is reflected in share prices.

- The *semi-strong form* of market efficiency refers to all publicly available information that is incorporated in the share price. In the framework of an event study this kind of market efficiency is considered as a prerequisite for testing possible reactions in the capital market (Firth, 1979 and Malatesta, 1983).

- The *strong form* of market efficiency is met when all available information is reflected in share prices. This also includes not publicly available information.

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As a precondition for the investigation on reactions of capital markets to informational events usually the stock prices of the involved companies are measured against a reference value. We apply standard event study methodology to estimate the return expectations of the capital market using daily data. The analysis uses a market adjusted return approach, because the business structure of Air France and KLM changed considerably over time, allowing no reliable beta estimates for the announcement windows. However, for calculating abnormal returns it is necessary to determine the "normal" returns, i.e. returns without the influence of an event, in the run-up. Jarrell and Poulsen (1989, p. 16) define abnormal returns as "[...] the extent to which a firm's stock over- or underperformed the market relative to its previous relationship with the market.". Three different market models can be distinguished: *(i) the market model*, a one-factor model which is based upon the CAPM (Sharpe, 1963), *(ii) the mean-adjusted model* which assumes a constant ex-ante stock price and *(iii) the market-adjusted model*. As the latter is applied to this study it is explained in more detail in the following section.

In the *market-adjusted model* the unsystematic, firm-specific risk (α_i) is assumed to be zero and the systematic, market-specific risk of a share i (β_i) set equal to one (Brown and Warner, 1980). Thereby the expected return of the market portfolio is supposed to be the best approximation for the expected return of a share i. The expected return of a share i on day t ($E(R_{it})$) equals the expected market return ($E(R_{Mt})$):

$$E(R_{it}) = E(R_{Mt}) = R_{Mt}$$

Under the assumption that the actual return (R_{Mt}) is equivalent to the expected return of a market portfolio $E(R_{Mt})$ the actual return is determined by a stock index. Hence, for the determination of the abnormal return (AR_t) the difference between the actual return of a company and the return of a corresponding stock index on day t is of high interest:

$$AR_t = R_{it} - R_{Mt}$$

Cable, and Holland (1999, p. 338) consider this simpler investigation method "[…] an acceptable approximation to the market model […]." Also Brown, and Warner (1980, p. 249) confirm in their study that the differences between the three models have been rather small. Since no empiric evidence exists on the need of employing an alleged complex market model the market-adjusted model is used in this study.

For gaining the information that are to be analyzed within the scope of this analysis several inquiries in the databank "Factiva" (Factiva®, a Dow Jones & Reuters Company, provides global content, including Dow Jones and Reuters newswires and The Wall Street Journal.

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Factiva offers a multilingual content covering nearly 9,000 sources) as well as on the website of Air France-KLM were conducted. It was looked for official announcements of Air France or KLM by means of the following criteria:

- The announcements concerned the merger of Air France and KLM

- The announcements were published on a definite day.

- The announcements were made after September 30, 2003

- The announcements were made after June 14, 2004

Thus a sample of 19 announcements concerning the merger of Air France and KLM within the period of September 30, 2003 and June 14, 2004 could be determined. Table 5 gives an overview of the announcements that are included in the study.

Table 5   Sequence of Events – the Merger of Air France and KLM

No.	Announcement Date	Events
1	September 30, 2003	First public announcement of planned merger and merger details
2	October 7, 2003	Announcement of further details concerning public exchange offer
3	October 16, 2003	Signing of final transactiuon agreement
4	October 29, 2003	Announcement 30 days after initial press release (Article 9g of BTE)
5	February 11, 2004	Filing with the U.S. Department of Justice and the European Comisssion
6	March 19, 2004	Announcement of further details concerning public exchange offer
7	March 31, 2004	Announcement to finalize offer and listig details
8	April 2, 2004	Announcement of the launch of the public exchange offer
9	April 5, 2004	Beginning of exchange offer acceptance period and availability of prospectus
10	April 19, 2004	Extraordinary general meeting of KLM shareholders
11	April 20, 2004	Extraordinary general meeting of Air France shareholders
12	April 29, 2004	Ruling of lawsuit against VEB in favor of Air France/KLM
13	May 3, 2004	Expiry of acceptance period for the public exchange offer
14	May 4, 2004	First announcements of public exchange offer results
15	May 5, 2004	Listing of the new Air France/KLM shares and warrants
16	May 6, 2004	Announcement of further details concerning public exchange offer
17	May 21, 2004	End of susequent acceptance period
18	May 24, 2004	Final results of exchange offer
19	June 14, 2004	Delisting of KLM shares

Source: Air France-KLM (2003/04) and Factiva (2005).

Before the first official announcement of an intended merger of shareholdings between Air France and KLM there has been a large body of media coverage about a planned alliance between the two airlines or British Airways, respectively. Since the event study of this paper only focuses on shareholder value effects due to a merger, September 30, 2003, as the first official confirmation, is chosen to serve as the first event date of this study. Consequently, in

the course of the transaction only announcements that are particulary linked to the Air France-KLM merger are part of the investigation. As Air France held more than 95% of the KLM common shares, KLM common shares were de-listed from Euronext Amsterdam and the New York Stock Exchange on June 14, 2004. This date stands for the end of the observation period since after that no abnormal returns of KLM's share price could be measured anymore.

The precise determination of the announcement date is crucial within the scope of an event study. For investigating the announcement date effects, i. e. the impact of the announcement of information regarding the merger of Air France and KLM, the following notation was chosen: "A" is defined as the day of the announcement of news concerning the merger. "A-1" and "A+1" represent the day before or after the announcement, respectively. For avoiding overlapping effects of different consecutive information events a very narrow time interval from "A-3" until "A+3" is used.

For calculating the abnormal return in the scope of the market-adjusted model the already known formula is applied (see section 4.1):

$$AR_t = R_{it} - R_{Mt}$$

The actual return (R_{it}) of a stock i is measured on a daily bases as the change to the previous day for the event window of seven days [A-3; A+3]. The quotation is taken from Thomson Financial Datastream and therefore already adjusted for dividend payments or increases in capital. R_{Mt} in the formula for calculating the abnormal return (AR_t) is the market return that would have occurred without the information event. As an approximation for the return of a market index the MSCI Europe Airline Price Index is used.

After having determined the actual returns (R_{it}) within the event window (three days before and three days after the announcement date) the same calculation is conducted for the comparison index MSCI Europe Airline Price Index. Afterwards the daily excess return can be determined by subtracting the market return (R_{Mt}) from the actual return of the stock i (R_{it}). Out of this the arithmetic mean of the daily excess returns is calculated for each day within the observation period [A-3; A+3].

For allowing comparability with other studies each investigation cluster was subdivided into four event intervals: [A-3; A+1], [A-1; A], [A; A+1] and [A-1; A+1]. The calculation of the cumulative abnormal return (CAR_t) complies with the procedure described in chapter 4.1.

The established daily excess returns (AR_t) need to be checked for their statistic significance in a last step. For excluding a solely accidental excess return a hypothesis test is conducted by

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checking the null hypothesis: "The average abnormal return (AR_t) on the announcement day t is zero.":

$H_0 : AR_t = 0$

A method of testing developed by Brown and Warner (1980) is applied, which is derived from the quotient of the mean abnormal return an day t (AR_t) and the standard deviation of the mean excess return s (AR_t) (Brown and Warner, 1980):

$$t_{AR} = \frac{AR_t}{s(AR_t)}$$

For calculating the standard deviation an observation period of seven days was taken into consideration. In the scope of the test statistics the 1%, 5% and 10% level of significance are measured by comparing them with the critical value of the standard normal distribution. Each of the critical values employed in the investigation of the t-test are declared. As the excess return in all investigations can be assumed to be zero, a right-hand hypothesis test for the test of significance can be applied. If the test value t_{AR} exceeds the value of the t-distribution the null hypothesis (H_0) needs to be rejected according to the examined level of significance. The appearance of abnormal returns in this case is not accidental but significant. If the hypothesis is not rejected the observed returns are to be considered as not significant (Brown and Warner, 1980).

4.2   Empirical Results

Our study is based on 19 announcements concerning the friendly merger process of Air France and KLM between September 2003 and June 2004. Applying an event study methodology the purpose of this paper is to measure abnormal returns of stock prices of Air France, KLM and its direct competitors British Airways, Deutsche Lufthansa and Iberia. As previously defined abnormal returns are a measure for the extent to which share price performance around a specific event window deviate from the share price returns which would have been expected in the absence of the event.

The results provide evidence that *Air France* as the acquiring company achieves significant positive abnormal returns for a short time period before the announcement date, i.e. that the underlying transactions create short-term value. Table 6 exhibits the cumulative abnormal returns for various time windows. On the announcement date Air France's shareholders earn a positive abnormal return of +0.24%, which is, however, not statistically significant. As an average significant abnormal return at the 5% and 10% level of +0.75% one day before the

announcement date [A-1] can be observed, it is reasonable to assume that the informational event seemed to be earlier in the stock market than the official confirmation of Air France-KLM. Whether some market participants (insiders) had privileged access to relevant information which led to purchases of Air France stocks could only be of speculative nature. For the [A-1;A] event window a highly significant cumulative abnormal return of +0.99% can be found. This observation is significant at the 5% and 10% level of significance, respectively. This finding seems to validate the supposition of insider trading.

Table 6   Cumulative Abnormal Returns of Air France's Share Price

Cumulative Abnormal Returns

		[A-3;A+1]	[A-1;A]	[A;A+1]	[A-1;A+3]
CAR_t		0,32%	0,99%	-0,11%	0,51%
1% Level	2,5669				
5% Level	1,7396		**		
10% Level	1,3334		*		

Source: Own calculation (2005).

In comparison with former studies for the US and European market for corporate control as well as for airline M&A transactions our results are consistent to a great extent, i. e. our findings fit in the body of empirical evidence. The results of Travlos (1987) are best in line with our findings. He observed a positive abnormal return for the acquiring companies of 0.29% on the announcement date. The event studies of Asquith (1983) for the American as well as Gerke, Garz, and Oerke (1995) for the German market of corporate control come to the result of small or non-existent abnormal return for an event window of [A-1;A] days. Compared with airline-specific event studies the results indicate that the abnormal returns in these studies are on average higher for the acquiring airline.

The most decisive of the facts to emerge from empirical literature in our context concerns the high premiums earned by the target firm's shareholders. As expected, shareholders of *KLM* earn statically significant abnormal returns of +1.67% on the announcement day [A]. Therefore the utterance holds true that "[...] the market responds to the plan rather than the bid." (Banerjee and Owers, 1992, p. 46). On the day when Air France and KLM publicly declared their intention to merge the stock price of KLM jumped by +14.47%. However, the loss within the three days after the announcement is larger than the gain on the day of the announcement. Market participants seem to correct their estimates on the days after the announcement which contradicts the claim of immediate and full reflection of new information in stock prices. This indicates that the efficient market hypothesis does not hold

true. The cumulated abnormal return in the period from three days before the announcement through the day after the announcement [A-3; A+1] amounts to +1.60%, being significant at the 5% and 10% level. Also within the time window through one day before the announcement until the day of the announcement [A-1; A] a cumulative abnormal return of +2.29% is observed, which is statistically significant at the 1% level. Moreover, in the time interval of the announcement day and one day after a cumulative abnormal return of +1.15% is detected, which is statistically significant at the 10% level. These observations allow for the supposition that the information on the events was in the market before the official announcement day.

Table 7   Cumulative Abnormal Returns of KLM's Share Price

Cumulative Abnormal Returns

		[A-3;A+1]	[A-1;A]	[A;A+1]	[A-1;A+3]
CAR_t		1,60%	2,29%	1,15%	0,92%
1% Level	2,5669		***		
5% Level	1,7396	**	**		
10% Level	1,3334	*	*	*	

Source: Own calculation (2005).

These findings seem to underestimate the announcement effect of an airline merger on the target's stock price since empirical studies of airline M&A have measured abnormal returns for the target carrier of around 20%. The results of Slovin et al. (1991) are the best to fit our own empirical findings. As our study only tested one merger the results should not be considered representative for the whole industry.

The merger announcement of Air France and KLM had mixed valuation effects on rival carriers, i. e. *British Airways, Deutsche Lufthansa and Iberia* for either abnormal returns or cumulative abnormal returns. There is no evidence that rival airlines neither gained nor lost from carriers' consolidations.

As for *British Airways*, an abnormal return of +0.31% on the announcement date could be stated. Positive abnormal returns to rival firms are known to arise from more efficient operations of the merged firm and greater market power. A violation of the semi-strong efficient market hypothesis can be proven in our analysis as abnormal returns earned on the announcement date diminish within the following 3 days and are not considered to be of long-term nature. The market power hypothesis deserves further study for validation. In this

context, shareholders of British Airways earn cumulative abnormal returns in the event window [A-1; A] which could be due to prior release of merger-relevant information. Another possible explanation might be that private and institutional investors anticipate synergistic gains of theses transactions or speculated on further consolidation.

Table 8   Cumulative Abnormal Returns of British Airways' Share Price

Cumulative Abnormal Returns

		[A-3;A+1]	[A-1;A]	[A;A+1]	[A-1;A+3]
CAR_t		0,14%	0,28%	0,12%	0,15%
1% Level	2,5669				
5% Level	1,7396				
10% Level	1,3334		*		

Source: Own calculation (2005).

Though statistically not significant, shareholders of *Deutsche Lufthansa* earn an abnormal return of -0.55 % on the day of the announcement [A] (see figure 3). One day after the announcement [A+1] a statistically insignificant abnormal return of -0.03% can be stated. Though both abnormal returns are not significant they give an indication on the tenability of the efficient market hypothesis.

Figure 3   Abnormal Returns of Deutsche Lufthansa's share price
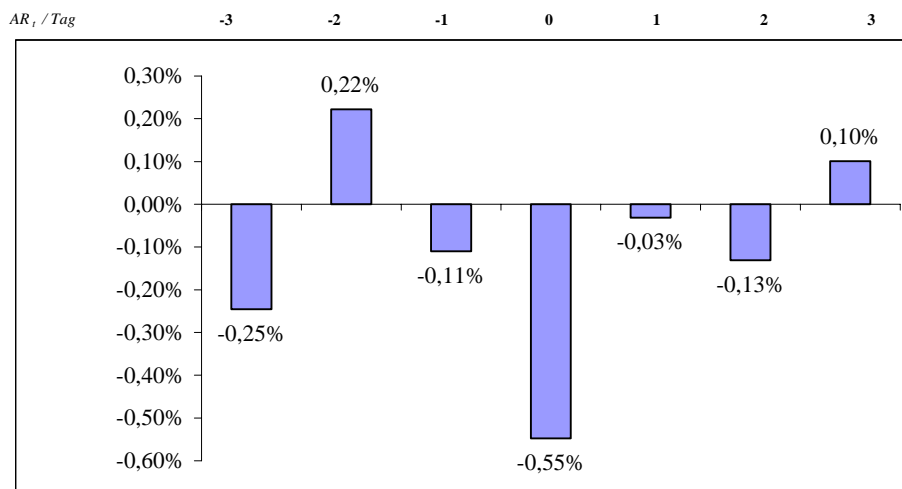
Source: Own calculation (2005).

Since the abnormal returns of *Iberia's* stocks on the announcement day [A] are only weakly positive (+0.32%) it is interesting to find out that these non-significant positive returns are overcompensated in the aftermath. 3 days after the announcement the positive abnormal returns are almost compensated which can be understood as a sign for market participants correcting their estimates which again contradicts the efficient market hypothesis. Notably, highly statistically cumulative abnormal returns of +1.41% can be observed in the event window [A-3; A+1] as well as in the event period from the announcement date until one day after this event. This observation is significant at the 5% and 10% level of significance, respectively.

Table 9   Cumulative Abnormal Returns of Iberia's Share Price

Cumulative Abnormal Returns

		[A-3;A+1]	[A-1;A]	[A;A+1]	[A-1;A+3]
CAR_t		1,41%	0,29%	0,79%	0,15%
1% Level	2,5669	***			
5% Level	1,7396	**		**	
10% Level	1,3334	*		*	

Source: Own calculation (2005).

If a merger is assumed to have only efficiency and market power effects, then a positive abnormal return of the rival firms implies a dominance of the market power effect. However, mergers also release new information on the market of corporate control. Therefore, positive abnormal returns for the incumbents may also be due to an information effect. Knapp (1990) measured positive abnormal returns between 3% and 6% for rival airlines which supports the merger for market power hypothesis. In contrast, Slovin et al. (1991) and Singal (1996) found only normal returns around the announcement day for incumbents of an airline merger, which seems to support our own findings the best. As the stock market incorporates the true economic consequences in a relatively fast and efficient manner, the hypothesis, whether the horizontal merger of Air France and KLM led to higher fares due to increased market power of the new entity has to be rejected. Since the concentration-profit relationship does not hold in this study. British Airways, Deutsche Lufthansa and Iberia do not enjoy higher stock returns as a result of the horizontal merger of Air France and KLM.

5. Conclusion

The necessity of consolidation in the European airline industry has been on the agenda of European airline executives and officials for years. However, up to now global airline alliances and minor national acquisitions sidestepped the nationality requirements imposed on the ownership of airlines by the so called bilateral rights and prevented European airlines from a deeper cooperation. Since the horizontal merger of Air France and KLM is a significant move in this context, this unique case has been presented and analyzed in relation to its shareholder wealth effects. 19 announcements during the merger process between September 2003 and May 2004 have been subject of the investigation.

The main objective of this event study was to find empirical evidence on the value effects for the bidding and target shareholders of Air France and KLM, respectively. The friendly merger of the 2 national carriers generated insignificant abnormal returns for shareholders of Air France which is in line with a large body of empirical research. The study was also able to show that there was a sustainable impact on the KLM share as the target whereas shareholders of Air France as the bidding firm earned little if anything. To test for the hypothesis of synergistic gains by exploiting economies of scale, scope and density during the merger process efficient capital market theory implies that the share price is the best approximation for measuring changes in airline-industry concentration. Though the time period analyzed is too short to derive a meaningful result, the study could demonstrate in a quantitative and qualitative case analysis that financial market participants were in favor of the deal.

As for the rival carriers' share price reaction to the horizontal merger of Air France and KLM the results measured are of varied nature. While British Airways and Iberia enjoyed significantly higher stock returns as a result of the merger shareholders of Deutsche Lufthansa earned negative abnormal returns on the announcement day, though being not statically significant. Therefore the merger for market power hypothesis and the concentration-profit relationship do not hold. Conversely, previous empirical results by Eckbo (1983), Stillman (1983) and Jordan (1988) that companies merge for efficiency and not for market power have been proven.

It is needless to say, that stock market studies alone may not provide a complete picture of the effect of mergers and acquisitions on shareholder value. Using product price data (fares) instead of stock price data could yield valuable information on the question of whether mergers increase market power and lead to wealth transfers from consumers (Kim/Singal, 1993). Further research would be necessary to enhance external validity by applying a more differentiated and greater sample of European M&A airline transactions as well as using other methodologies. Although unanimous opinions in this case are very unlikely to be achieved, this research paper can only provide a first indication on the wealth effect of this
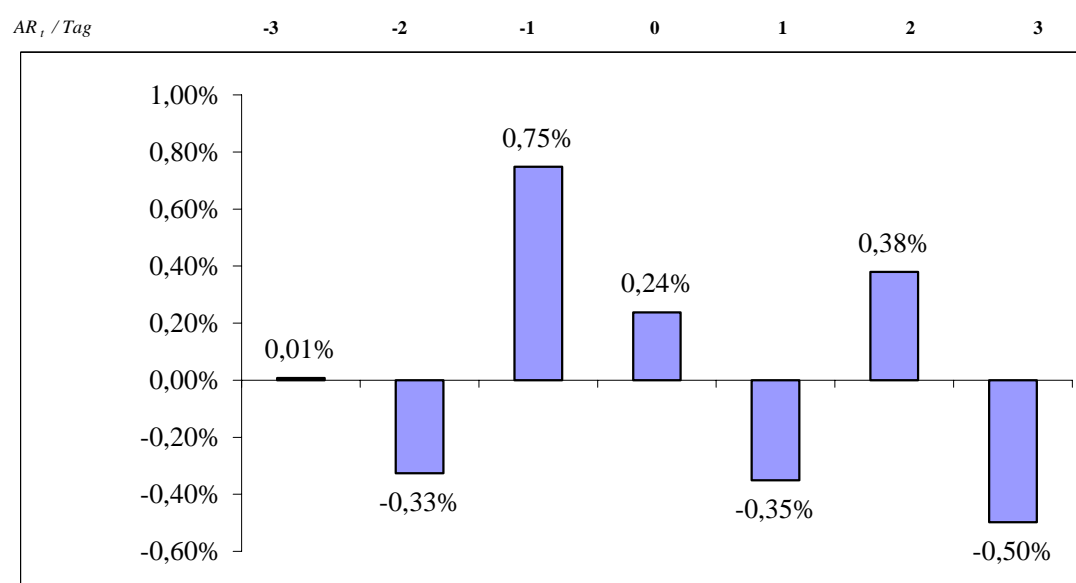
unprecedented or unexpected merger in the European airline industry. Whether Air France-KLM would "[…] be big enough to be a key player on the world stage" (Spinetta/van Wijk, 2004) has to be proven in the future.

Appendix

Figure 4   AR and CAR of Air France vs. MSCI Europe Airline Price Index

Announcements AF-MSCI

AR_t / Day	-3	-2	-1	**0**	1	2	3
Minimum	-2,81%	-3,79%	-2,83%	-2,23%	-3,52%	-2,07%	-3,79%
Median	0,08%	0,22%	0,48%	0,20%	-0,10%	0,15%	-0,19%
Mean	**0,01%**	**-0,33%**	**0,75%**	**0,24%**	**-0,35%**	**0,38%**	**-0,50%**
Maximum	3,88%	1,46%	5,08%	2,52%	1,05%	3,88%	2,75%

Statistical Significance

AR_t	0,01%	-0,33%	0,75%	0,24%	-0,35%	0,38%	-0,50%
$s(AR_t)$	0,42%	0,42%	0,42%	0,42%	0,42%	0,42%	0,42%
t-Value	0,0175	-0,7778	1,7832	0,5655	-0,8375	0,9031	-1,1872

Critical Value

1% Level	2,5669						
5% Level	1,7396			**			
10% Level	1,3334			*			

AR_t / Tag	-3	-2	-1	0	1	2	3

Cumulative Abnormal Returns

	[A-3;A+1]	[A-1;A]	[A;A+1]	[A-1;A+3]
CAR_t	0,32%	0,99%	-0,11%	0,51%

1% Level	2,5669			
5% Level	1,7396	**		
10% Level	1,3334	*		

Source: Own calculation (2005).

Figure 5   AR and CAR of KLM vs. MSCI Europe Airline Price Index

Announcements KLM-MSCI

AR_t / Day	-3	-2	-1	**0**	1	2	3
Minimum	-5,72%	-2,95%	-2,95%	-1,79%	-7,56%	-4,58%	-3,51%
Median	-0,54%	-0,09%	0,36%	1,12%	-0,25%	-0,06%	-0,64%
Mean	**-0,22%**	**0,06%**	**0,62%**	**1,67%**	**-0,52%**	**-0,24%**	**-0,60%**
Maximum	2,78%	5,51%	4,48%	14,47%	3,91%	3,91%	2,32%

Statistical Significance

AR_t	-0,22%	0,06%	0,62%	1,67%	-0,52%	-0,24%	-0,60%
$s(AR_t)$	0,74%	0,74%	0,74%	0,74%	0,74%	0,74%	0,74%
t-Value	-0,2969	0,0774	0,8314	2,2564	-0,7050	-0,3307	-0,8153

Critical Value

1% Level	2,5669							
5% Level	1,7396				**			
10% Level	1,3334				*			
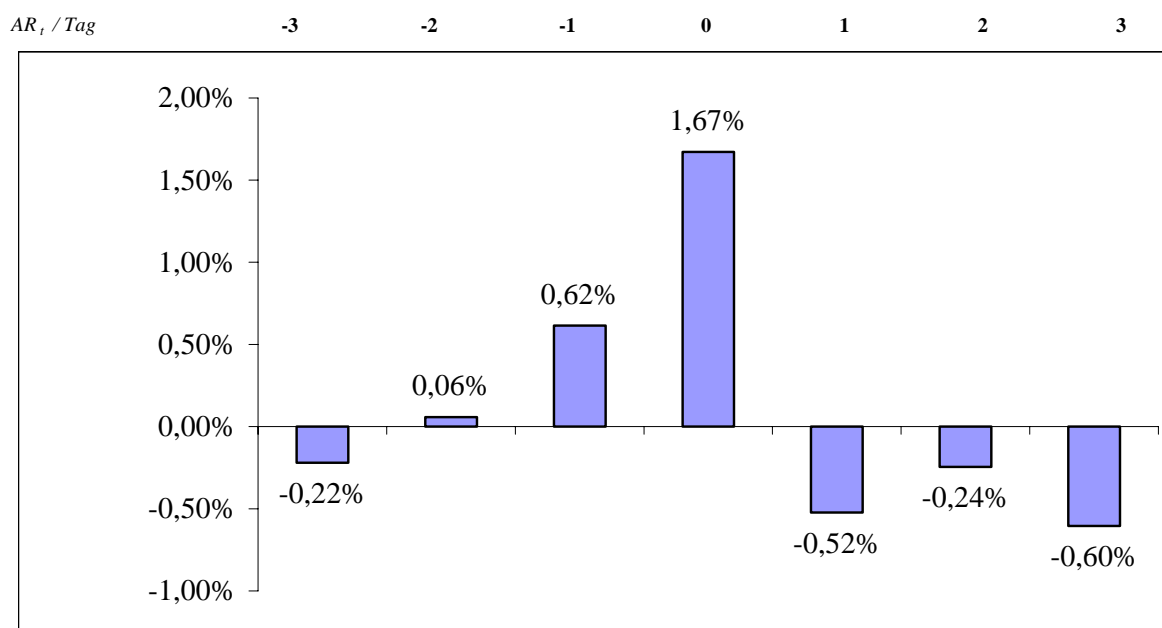
AR_t / Tag	-3	-2	-1	0	1	2	3

Cumulative Abnormal Returns

	[A-3;A+1]	[A-1;A]	[A;A+1]	[A-1;A+3]
CAR_t	1,60%	2,29%	1,15%	0,92%

1% Level	2,5669		***		
5% Level	1,7396	**	**		
10% Level	1,3334	*	*	*	

Source: Own calculation (2005).

Figure 6   AR and CAR of British Airways vs. MSCI Europe Airline Price Index

Announcements BA-MSCI

AR_t / Day	-3	-2	-1	**0**	1	2	3
Minimum	-3,27%	-3,27%	-3,27%	-1,52%	-3,27%	-3,59%	-3,59%
Median	0,23%	0,07%	0,00%	0,36%	0,01%	-0,13%	0,40%
Mean	**0,08%**	**-0,04%**	**-0,03%**	**0,31%**	**-0,18%**	**-0,23%**	**0,28%**
Maximum	2,21%	1,53%	1,94%	1,94%	1,39%	1,94%	4,03%

Statistical Significance

AR_t	0,08%	-0,04%	-0,03%	0,31%	-0,18%	-0,23%	0,28%
$s(AR_t)$	0,19%	0,19%	0,19%	0,19%	0,19%	0,19%	0,19%
t-Value	0,4127	-0,1878	-0,1378	1,5946	-0,9494	-1,1811	1,4412

Critical Value

1% Level	2,5669							
5% Level	1,7396							
10% Level	1,3334					*		*
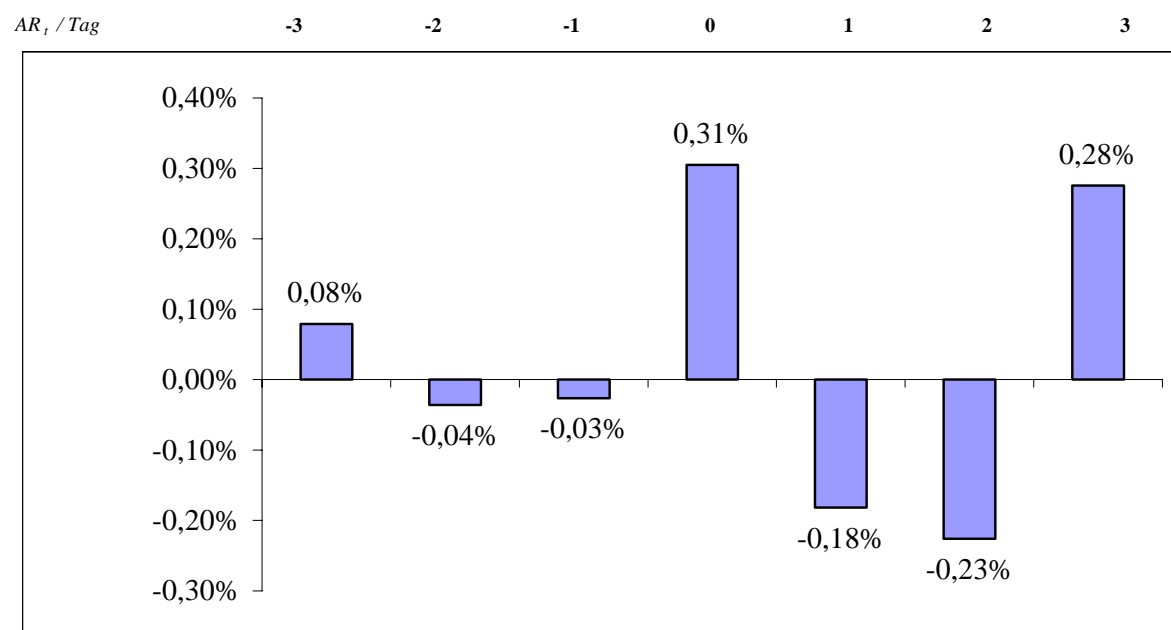
Cumulative Abnormal Returns

	[A-3;A+1]	[A-1;A]	[A;A+1]	[A-1;A+3]
CAR_t	0,14%	0,28%	0,12%	0,15%

1% Level	2,5669				
5% Level	1,7396				
10% Level	1,3334		*		

Source: Own calculation (2005).

Figure 7   AR and CAR of Deutsche Lufthansa vs. MSCI Europe Airline Price Index

Announcements LH-MSCI

AR_t / Day	-3	-2	-1	**0**	1	2	3
Minimum	-1,88%	-1,75%	-1,86%	-2,61%	-2,61%	-2,65%	-1,37%
Median	-0,25%	0,22%	-0,11%	-0,21%	-0,26%	-0,05%	0,08%
Mean	**-0,25%**	**0,22%**	**-0,11%**	**-0,55%**	**-0,03%**	**-0,13%**	**0,10%**
Maximum	2,29%	2,15%	2,15%	0,88%	2,15%	1,97%	1,71%

Statistical Significance

	-3	-2	-1	0	1	2	3
AR_t	-0,25%	0,22%	-0,11%	-0,55%	-0,03%	-0,13%	0,10%
$s(AR_t)$	0,23%	0,23%	0,23%	0,23%	0,23%	0,23%	0,23%
t-Value	-1,0663	0,9649	-0,4779	-2,3781	-0,1352	-0,5683	0,4375

Critical Value

1% Level	2,5669
5% Level	1,7396
10% Level	1,3334
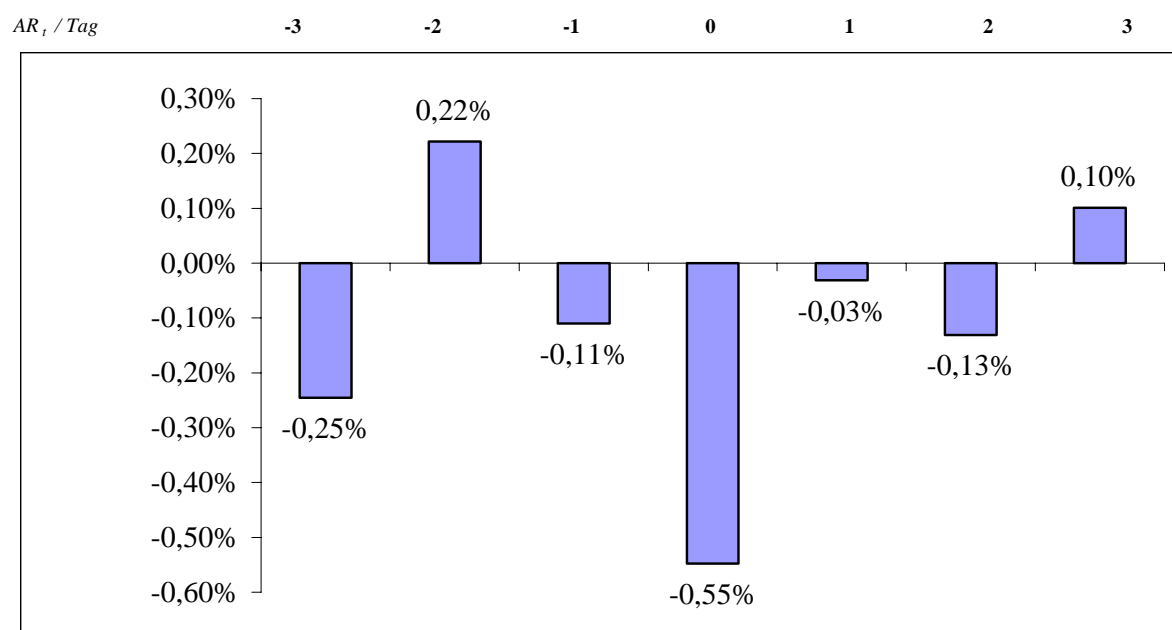
Cumulative Abnormal Returns

	[A-3;A+1]	[A-1;A]	[A;A+1]	[A-1;A+3]
CAR_t	-0,71%	-0,66%	-0,58%	-0,72%

1% Level	2,5669
5% Level	1,7396
10% Level	1,3334

Source: Own calculation (2005).

Figure 8   AR and CAR of Iberia vs. MSCI Europe Airline Price Index

Announcements Iberia-MSCI

AR_t / Day	-3	-2	-1	**0**	1	2	3
Minimum	-2,22%	-1,78%	-2,40%	-2,30%	-1,37%	-3,84%	-1,96%
Median	0,12%	-0,05%	0,04%	0,38%	-0,08%	-0,31%	-0,37%
Mean	**0,62%**	**0,03%**	**-0,03%**	**0,32%**	**0,47%**	**-0,39%**	**-0,23%**
Maximum	5,62%	2,48%	1,66%	2,83%	4,45%	2,83%	2,10%

Statistical Significance

	-3	-2	-1	0	1	2	3
AR_t	0,62%	0,03%	-0,03%	0,32%	0,47%	-0,39%	-0,23%
$s(AR_t)$	0,34%	0,34%	0,34%	0,34%	0,34%	0,34%	0,34%
t-Value	181,89%	7,65%	-8,44%	92,94%	137,20%	-112,86%	-65,72%

Critical Value
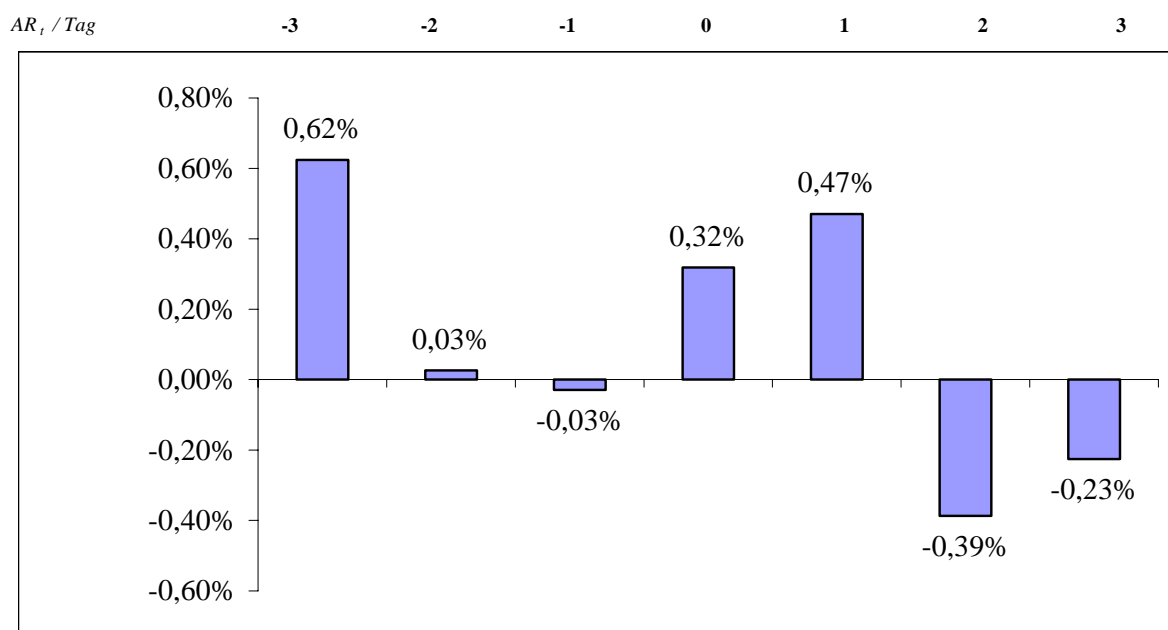
1% Level	2,5669							
5% Level	1,7396	**						
10% Level	1,3334	*				*		

AR_t / Tag	-3	-2	-1	0	1	2	3

Cumulative Abnormal Returns

	[A-3;A+1]	[A-1;A]	[A;A+1]	[A-1;A+3]
CAR_t	1,41%	0,29%	0,79%	0,15%

		[A-3;A+1]		[A;A+1]	
1% Level	2,5669	***			
5% Level	1,7396	**		**	
10% Level	1,3334	*		*	

Source: Own calculation (2005).

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