Value Creation of M&A in the European Aviation Industry

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ABSTRACT

Extensive research has been carried out on the market reactions of acquirers and targets to Merger and Acquisition transactions, not only at the announcement but also in the long-term. Less attention has been paid to perhaps another crucial element; the resulting operational and financial performance as a consequence of M&A deals. This unique study explores all three elements, and addresses the existing literature gap, in the European Airline Industry from 1986 until 2016. The market reaction to M&A announcements is analysed, but also the market reaction in the long-term (up to 5 years) and the post-M&A performance and profitability 5 years after the announcement. Additionally, worldwide benchmarks are provided to interpret and contextualize the European results. There is significant empirical evidence that the stock prices of the European Airliners react positively to the announcement of the M&A. However, in the long-term a value deduction with double digit negative abnormal returns is found and is in line with the negative operating metrics of ROA, ROE, Gross Profit and Operating Profit. Five years after the M&A deal announcement, only the free cash flow had increased, by more than 108%.

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1. Introduction

The global airline industry is experiencing a period of consolidation. In the US the consolidation seems to be almost competed with its second wave of mergers and the probably final merger between Virgin and Alaska airlines in 2016 (Bilotkach et al., 2013). In Europe, however, this consolidation process has just started with the liberalization of the EU airline market in 1997 (Bilotkach et al., 2013). So far the European airline market has been marginally consolidated through a wave of mergers similar to those occurring in the USA between the 1980 and 2016 (Németh and Niemeier 2012). The previous merger wave in Europe included both network and low-cost airlines, however since the networker carriers became engaged in fierce competition, especially with the arrival of the low-cost carriers, they have also acquired subsidiaries in order to enter the low-cost business model; for example, Germanwings of Lufthansa, Transavia of Air France-KLM, and Vueling of Iberia. The most popular ones among the network carriers involved Air France and KLM, British Airways and Iberia, Lufthansa with Swiss, Austrian and Brussels, and Air Berlin with LTU. (Fageda and Perdiguero 2014). On the low-cost carrier side there was less M&A activity, except for EasyJet and Go Fly, and Ryanair and Buzz (Fageda and Perdiguero 2014), as low-cost carriers usually grow rather organically.

There is evidence that this wave of mergers has just been the beginning as the market needs a further consolidation. Rumours in the media of possible acquisitions of the bankrupt Alitalia and Air Berlin strengthen this argument. Besides, statistics show that Europe has more airline groups than any other region in the world (CAPA 2016a) but also a very low profitability.

Surprisingly, the literature on airline consolidation in Europe (Bilotkach et al., 2013) is very limited as only a few scholars have evaluated the effects of Mergers and Acquisitions in the European airline market. Yet, these analyses have not focused on the value creation of Mergers and Acquisitions. Consequently, it is to date not yet known whether Mergers and Acquisitions in the European airline industry create short- and long-term value for shareholders, and how they impact on the post-merger operating performance for acquiring airliners.

1.2. Purpose of the study

Mergers and Acquisitions are widely discussed throughout literature, however, limited research has been conducted about the Merger and Acquisition activity in the airline industry. This dissertation is partially trying to fill the existing gap, and also attempts to give a

quantified answer as to whether M&A within the European airline industry create value. Despite this the topic seems to be highly relevant as a consolidation in the European airline industry is anticipated for the near future (CAPA, 2016a).

1.3. Objectives of the research

One of the main objectives of this dissertation is to find empirical evidence as to whether shareholders of acquiring airliners elude or gain value. Firstly, an analysis of the stock price development at the announcement will be carried out. Thereby, the analysis incorporates and event window of 5 days, 2 days prior to the announcement period, the announcement day and 2 days after the announcement. Secondly, a study will review the post-merger stock performance from 1 year after the announcement up to 5 years. Apart from event studies the operational performance of the acquiring airliners will be evaluated with operational and financial metrics in a long-term window up to 5 years.

The main research question of this dissertation will therefore be:“ Do Mergers and Acquisitions in the European Airline Industry create value?”

This paper aims to quantify whether mergers and acquisitions create value in the European airline industry.

- What is the market reaction to the M&A announcement in a five day (-2,+2) event window?
- How is the post-merger performance in a 5 year (60 months)time horizon?
- How is the operational performance impacted by M&A in a 5 year (60 months) time horizon?

1.4. Delimitations

Whilst there has been a significant amount of research dedicated to the impact of Mergers & Acquisitions in various industries, especially in the USA and Europe, this dissertation looks precisely at Mergers and Acquisitions in the European Airline Industry in order to understand the performance of deals within this industry, and perhaps help the understanding of Mergers and Acquisitions before the consolidation and next Merger wave in the European Airline Industry will get started. Due to the lack of availability of target firms, this dissertation entirely focuses on the acquirer. Additionally a worldwide benchmark is given to understand the performance globally and in Europe in particular.

1.5. Outline of the dissertation

This Dissertation has the following structure: Chapter two reviews the literature in regards to Merger and Acquisitions, the consolidation of the European Airline Industry, and merger and acquisitions in the Aviation Industry. With the identified knowledge and literature gap the hypotheses are developed in Chapter three. Chapter four will explain, discuss, and justify the methodology of the 3 studies and will also point out the limitation of the methodology. Chapter five will show and discuss the empirical findings with its statistical values. The last one, Chapter 6, will summarize the main results, and a conclusion toward the main research question will be given but also how further research could be conducted. In the following the biography can be found and the appendix which provides the Declaration of Originality Form and additional information form the data.

2. Literature review

This chapter consists of the literature review summarising key-findings of relevant literature throughout the years. The topic Mergers & Acquisitions is thereby generally reviewed, and step by step the chapter moves into a deeper analysis of how mergers are financially evaluated and what factors might determine the outcomes. Lastly, literature of the industry, namely the aviation industry, where the performance analysis is being carried out will be reviewed.

2.1. Mergers & Acquisitions

Mergers and Acquisitions is one of the most researched topics in Corporate Finance but is also of great interest to other academic fields. It used to be a phenomenon in the west; predominantly in the USA but also later in Europe. Nowadays Mergers and Acquisitions can be found all over the world, including developing countries, to chase the objective of strategic growth. However, the centre of attention, and the focus of study, has generally been in North America and Europe.

When two companies combine their operations this transaction is called a merger. Consequently, the previous two individual companies do not longer exist as a new company is formed. Often the names of the former two companies will be combined. The company which usually proactively seeks to acquire the counterpart is hence called acquirer, whereas the acquired company is the target company.

Throughout the entire field both the term “mergers” and “acquisitions” is usually used interchangeably as the outcomes of both methods cause the same result. (Sherman and Hart, 2006). In this Dissertation the terminology of Mergers and Acquisitions will refer to all business transactions in which two companies combine their operations by the acquisition of the majority of ownership, or through a merging activity. In the following Mergers and Acquisitions will be abbreviated by M&A.

2.1.1. Merger waves

A big wave of mergers and acquisitions happened in the 1990’s, after the forging waves in the 1960’s and 1980’s. The new wave was astonishing due to its record breaking in deal size and deal volume. Whereas the 1960s wave was characterized by diversifying strategies in order to form huge conglomerates, and the 1980s wave was splitting up the previous formed conglomerates through hostile takeovers (Schleifer and Vishny, 2003), the 1990’s deals were

a precursor of the emerging globalisation. The goal was to become strong enough to compete on a global scale (Harford, 2005).

In the decade of deregulation; (Andrade et al., 2001) these deals were often driven by the increased deregulation of various industries such as utilities (1992), banking and thrifts (1994), and the communication industry. (1996). Harford (2005) illustrates that merger waves are a reaction to shocks within a specific industry that react to the reallocation of assets (Shleifer and Vishny, 2003; Dong et al. 2006). Mergers and acquisitions are frequently correlated with high stock market valuations. This is conform with the results of Martynova and Renneboog (2008); 'waves are preceded by shock, and occur in a positive economic and political environment, amidst rapid credit expansion and stock market booms' (Martynova and Renneboog, 2008). In order to transform a shock into a wave increased capital liquidity is needed and a reduction in financial restrictions (Harford, 2005). By the end of each wave managerial rationally is frequently lost and takeovers are often driven by self-interest (Martynova and Renneboog, 2008).

2.2. Motives for M&A

Research within the last 40 years suggests failure rates for acquirements varies between 45-82% (Angwin, 2007). Haas and Hodgson (2013) argue that some deals fail to deliver as they should have never been done in the first place, and finds that the basis of the deal evaluation may lead to wrong assumptions. Therefore, why do companies acquire/merge? Scholars in the field find manly three basic motives; namely synergy, agency, and hubris. (Berkovitch and Narayanan, 1993). Berkovitch and Narayanan (1993) find that synergy is the main motive for the majority of takeovers, on the other hand value reducing acquisitions are often caused by the agency motive.

2.2.1. Synergy motive

The name states the obvious as the synergy motive relates to the economic gains through the merging of the two companies. Synergies are often implemented while creating economies of scale or/and scope. A company can thereby achieve a higher productivity, and hence increase efficiency due to the resulting lower unit costs (Berk and DeMarzo, 2007) and consequently it maximizes the shareholder wealth if synergies are present. The target gain increases if it has a certain level of bargaining power due to the ability to resist the acquirer, or there is a competition among potential acquirers for the target (Berkovitch and Narayanan, 1993).

2.2.2. Agency motive

The agency motive suggests that the welfare of the acquirer's management is enhanced at the expense of the acquirer shareholders (Berkovitch and Narayanan, 1993). The reasons for this are the diversification of management's personal portfolio (Amhid and Lev, 1981), and an increase the size of the company with fee cash flow (Jensen, 1986), but also the increase of the company's dependence on acquired assets (Shleifer and Vishny, 1989). The main idea behind this concept is the value extraction from the acquirer shareholders. It results in agency costs which diminishes the combined value of the two firms to the shareholders. (Berkovitch and Narayanan, 1993). It is a crucial for the acquirer to find a suitable target which allows a value extraction in order to increase its own welfare. Consequently, the highest target gains can be realized where the agency costs are the highest.

2.2.3. Hubris motive

Lastly, managers, like all human beings, make mistakes. Hubris relates to the misevaluation of targets and accordingly carrying out the deal even though synergies are non-existent or do not provide gains (Berkovitch and Narayanan, 1993).

There are major drawbacks as the existing empirical evidence on motives for M&A is unsettled. The reason for this is the '…existence of all three motives in any sample of takeovers' (Berkovitch and Narayanan, 1993).

2.3. Performance of M&A

The financial performance of M&A deals has been widely studied throughout the last three decades with mixed consensus, and hence it cannot finally be answered whether mergers create value or destroy, and what makes them successful or failures. 'Despite a significant amount of research on mergers, we still know little about what makes them successful' (King et al. 2004). A key problem lies in the limited and compartmentalized understanding of the complexities as researchers are '… only marginally informed by one another' (Gomes et al., 2013). Consequently, the existing knowledge in M&A seems to be fragmented by each field of study (Gomes et al., 2013).

Different methods of analysis are being used to evaluate the financial performance of M&A. The most commonly researched method is the announcement-period stock price reaction which has a very short-term focus. Another big bulk of research has been dedicated to abnormal returns in the long run varying from at least 6 months up to 5 years. In both analyses the predominant research on wealth creation has been the event study methodology,

and how the stock market reacts to the merger (Datta et al., 1991). Many scholars argue that in an efficient market, the method of abnormal returns is 'the most effective technique to measure acquisition performance', (Haleblian et al., 2009), as its reaction is predicting the post-acquisition performance (Haleblian et al., 2009). So far less attention has been paid to the operational performance based on accounting and financial data and how mergers are impacting the profitability and other key metrics relevant to the operations of a firm.

2.3.1. Short-term market reaction

The majority of empirical studies have concentrated on the market reaction around the announcement dates of the mergers (Dutta and Jog, 2009) due to market efficiency and null hypothesis (Agrawal and Jaffe, 2000). A common phenomenon with this kind of analysis is that the target companies usually seem to gain shareholder value, whereas the acquiring company faces slightly negative returns (Morck et al 1988, Campa and Hernando, 2004, Campa and Hernando, 2005, Moeller and Schlingemann, 2005, Dutta and Jog, 2009, Shah and Arora, 2014). Nonetheless, the slightly negative returns, or zero returns, at announcement can be disregarded as 'other investment decisions such as research and development, capital expenditures, joint ventures, and product introductions, typically report very small (less than 1 percent) abnormal returns at the announcement of the investment decisions' (Andrade et al., 2001). The most excessive returns for target companies are realized around the days of announcement as the market is reacting to 'a proxy of expected value arising from the merger' (Campa and Hernando, 2004) in terms of increasing expectation in future cash-flows (Campa and Hernando, 2004, Campa and Hernando, 2005). Despite this, there are cases where the merger announcements receive positive responses from the market for the acquirer (Andrade et al. 2001). According to Andrade et al. (2001) this reaction implies that mergers create value for shareholders. This conforms to another study from the Netherlands. Van der Wal et al. (2005) demonstrate that 52% of bidders and 82% of targets have a positive share price reaction. Additional evidence from Asia, where Ma et al. (2009) analyse the emerging markets in China, India, Hong Kong, Singapore, Thailand, Indonesia, Malaysia, South Korea, Taiwan and the Philippines, indicates that shareholders of bidders firms have received abnormal positive returns. The study investigates 1,477 deals from 2000-2005. Ma et al. (2009) point out that due to a lesser severity of the agency problems, the results of American and European studies are not valid in Asia.

Bradley and Sundaram (2006) discover that even the acquirers benefit highly from the deal announcements in certain scenarios, as they identify a positive market reaction to the

announcement. In addition a growth strategy of many small transactions outperform a few large ones (Bradley and Sundaram, 2006). Rosen (2006) find evidence of the merger market momentum: 'When the market has been reacting favourably to merger announcements, it tends to continue to do so' (Rosen, 2006). Therefore, mergers announced during bull markets realize better reactions than during bearish markets (Rosen, 2006). In contradiction, in the long run deals announced in bearish markets perform better than the ones announced in bull markets. Mostly, positive reaction to a merger announcement can be expected when the investors expect synergies (Rosen, 2006).

2.3.2. Long-term market reaction

While the short-term market reaction is anticipating future expectations at the momentum of the announcement of M&A, the long-term market reaction includes financial information in the post period of the deal realization. These long-term studies, usually up to 5 years, typically rely on event studies in order to enumerate the abnormal returns. Due to the complexity of this methodology, and thereby the choices which have to be made in terms of benchmark, method to compute the abnormal returns, value weighting of the firm portfolios, correlation of the event time, and the determinations of the abnormal returns, this approach tends to have errors (Abhyankar et al., 2005). It has to be pointed out that the issues have so far not been resolved. Especially the methodological problems (Agrawal and Jaffe, 2000), and consequently, it is no surprise that the conclusion in this field has a mixed consensus, yet there is a rather negative tendency.

Negative outcomes of long-term post-merger performance can especially be found in the US, where the focus of the research generally lies. One of the most notable studies wascarried out by Agrawal et al. (1992) where 937 mergers and 227 tender offers are evaluated in the 30 year's scope of investigation. Agrawal et al. (1992) discover strong negative abnormal returns of around 10% in a five year period (Agrawal et al (1992) cited in Dutta and Jog (2009)). Asquith (1983) reviews 196 NYSE bidders of successful mergers from 1962-1976, and find that the CAR is significantly negative until the completion of the deal. In a partly overlapping time frame, Malatesta (1983) analyses the performance from announcement up to 240 days afterwards and also finds negative abnormal returns. However, those abnormal returns vary depending on the proximately to the announcement. The longer the evaluated period in Malaesta (1983) up to12 months, the better is the performance, but yet overall it is negative. Rau and Vermaelen (1998) building their research upon Franks et al. (1991), who observe that 3 years into the merger the acquirer still underperforms. Agrawal and Jaffe (2000) find a

strong significance for abnormal under performance. This is conform to earlier studies from Agrawal et al (1992). In the UK Franks and Harris (1989) report a substantial wealth deduction of CAR of -12.6% using a sample of 1800 mergers from 1955-1985. These results seem to match with Limmack (1991) CAR of -9% in a two year period, (Limmack and Mc Gregor 1995) CAR -14.1 % in a two year period and Gregory (1997) up to -18%. Hence, it can be concluded that the negative performance in the UK is similar to the ones in the US.

In an early work Lubatkin (1987) discovers in his analysis of 1031 large deals in the US that mergers lead to permanent gains for the acquiring and acquired firms shareholders (Lubatkin, 1987). Mitchell and Stafford (2000), and Dutta and Jog (2009), point out that there is no negative abnormal long-term stock performance in the Canadian market; based on 1,300 deals from 1993 to 2002. This is somewhat in contrast with most of the previous findings evaluating mergers in the USA. Abhyankar et al. (2005) confirm these findings. Besides, using an analysis of stochastic dominance and not, as previously done, an event study, they find that acquiring firms do not significantly underperform 3 years after the deal (Abhyankar et al., 2005).

In general it can be concluded that the methodology has a remarkable impact on the findings of each study. Also, a number of papers question the validity of the long-term event studies.

2.3.3. Operational performance effect

While many studies have evaluated the stock price performance following M&A a focus on the operating performance in the post acquisitions periods is less widespread and the overall conclusion very inconsistent (Martynova et al., 2006). This is partly caused by the method in the benchmarking, but also variances among the peers and the industries (Martynova et al. 2006). The analysis of the merger and acquisitions by operational metrics, such as free or operating cash flow, return on assets (ROA) and return on equity (ROE), might be a more suitable method in comparison to a stock price analysis because the operational performance effect is an actual indication; whereas the stock price analysis predicts the future change in performance (Healey et al., 1992). As main limitation can be seen the different regulations and bodies in the field of account, such as IFRS or GAAP, and it may lead to different numbers and outcomes. In addition, firms still have the power to adjust their accounts even though they obey the legislative body. The issues might cause a minor drawback while analysing the operating performance of a company and benchmark it with their peers.

In a study, with a sample of 324 mergers between 1967 and 1987, Switzer (1996) reveals that the performance of merged companies usually improves after the deal is completed. Powell and Stark (2005) confirm these findings in a later study from 1985 to 1993 in the UK. Mergers lead to an increase in operating cash flow as improvements in assets productivity are realized (Healy et al. 1992, Andrade et al. 2001). Therefore Healy et al. (1992) analyse in their study the 50 largest mergers in the USA from 1979 to 1984. Evidence from Canada also shows that there is no negative long-term operating performance in the post-acquisition period (Dutta and 2009). Parino and Harris (1999) find that the performance improves, however, the management team of the target firm needs to be replaced. Ghosh (2001) has a contrary viewpoint. He argues that the positive results in the operating performance analysis are likely to be biased due to the fact that acquiring firms involved in the acquisitions which performed well in the past are usually larger than the industry average (Ghosh 2001). Overall Ghosh (2001) does not find any evidence that operational performance improves. In his eyes the higher sales growth for instance leads to a higher cash flow and is not generated by cost reduction or synergies. Other scholars also find that operational performance is neither affected positively nor negatively (Lev and Mandelker, G. 1972, Sharma and Ho, 2002 Martynova et al., 2006, Papadakis and Thanos, 2010).

Dickerson et al. (1997) find significant negative impact associated with the operating performance of acquirers. In the short and the long run there is evidence that the ROA is negatively influenced by 1 -4 % in the UK. It is also argued that organic growth is more profitable than growth by M&A. (Dickerson et al., 1997). Martynova et al. (2006) also identify that the profitability of homogenised firms diminishes but is caused by the macroeconomic changes which are independent of takeovers. Rao-Nicholson et al. (2015) find that mergers during the financial crisis are more profitable than others. This is mainly caused by the synergies created which boost the firm's economic performance (Rao-Nicholson et al., 2015).

2.3.4. Determinants of the value creation for the acquirer

Various studies throughout the years have revealed that determinants like '…method of payment' ([Travlos, 1987; Chang, 1998] Ghosh, 2001; Haleblian et al., 2009; Jensen, 1988; Linn and Switzer, 2001; Martynova et al., 2007 ; Powell and Stark, 2005), 'industry relatedness' (Ghosh, 2001; Healy et al., 1992; Jensen 1986, [Datta et al., (1992); Agrawal et al., (1992)]' Kruse et al., 2007; Martynova et al., 2007 ; Powell and Stark, 2005), 'geographic diversification' (Moeller and Schlingemann, 2004; Shimizu et al., 2004 ; and

‘target's size’ (Chatterjee, 2000; Fowler and Schmidt, 1989; Martynova et al., 2007; Powell and Stark, 2005; Sharma and Ho, 2002 ; Shelton, 1988) (Rao-Nicholson et al., 2016) highly influence the performance of mergers and acquisitions (Rao-Nicholson et al., 2016). In addition not only the size of the target can determine the outcome of the deal but also the size of the acquirer (Moeller et al, 2004).

2.3.4.1. Method of payment

Many studies consider the payment method as a key element of the performance of M&A. Payment methods usually include stock, cash, or both combined. The Stock purchases are the most frequent ones. Nevertheless, due to an information asymmetry bidders favour paying with stock when their stock is overvalued, and cash when their stock is undervalued (Myers and Majluf, 1984). As previous studies are inconclusive, one of the key papers in the field (Travlos, 1987) finds significant differences in abnormal returns depending on the payment method of either cash offers or common stock exchanges. Travlos (1987) also reveals an independence of the type of takeover such as tender offers vs merger. Generally, there seems to be strong evidence which indicates that cash-financed deals are more beneficial for the bidder (Haleblian et al., 2009). Abhyankar et al. (2005) found that cash financed mergers outperform stock-swap transactions. Ghosh (2001) and Linn and Switzer (2001) argue that cash deals may lead to an improvement compared to other methods. Jensen (1988) stresses that cash deals have a positive impact on the performance due to the fact that managers receive incentives to manage the resources of the combined companies more efficiently. These findings are not conform with Chang (1998) who examines the returns of bidders when the target is privately held. Thereby, common stock transactions tend to create a positive abnormal return whereas cash experience no abnormal return. Change (1998) points out that this is correlated to the high concentration of the ownership of private firms and a transaction through the stock market might create blockholders. However, if non-convertible bonds are used as payment method the bondholders tend not to gain value at the announcement (Change,1998).

2.3.4.2 Industry relatedness

In order to get a competitive advantage, and to increase profitability, M&A in the same industry can be a crucial pillar (Rao-Nicholson et al., 2016). Hamza (2011) points out that horizontal acquisitions have a bigger value creation than conglomerate acquisitions. However, the findings in recent years have a mixed conclusion. Jensen (1986), Healy et al. (1992), Datta et al., (1992), Agrawal et al. (1992), and Rao-Nicholson et al. (2016) find a

poorer performance of mergers where the industry of target and acquirer differs. This is in contrary with findings where the opposite result is found (Ghosh, 2001, Park et al., 2007). In addition some other studies indicate that there is no relation between the performance and the industry relatedness (Fowler and Schmidt, 1989; Martynova et al., 2007; Powell and Stark, 2005).

2.3.4.3. Geographical diversification

Many researchers state that a geographical diversification could impact the company's performance greatly (Bertrand and Betschinger, 2012; Erel et al., 2012). Reasons for that are the vulnerability to global dynamics. Wang and Boateng (2007), highlight an increased amount of resources and a new customer's base (Shimizu et al., 2004). All these elements could lead to realization of synergies from the foreign acquisition (Rao-Nicholson et al., 2016). However, depending on the target's country and the cultural fit with the acquirer, there might be several challenges which could harm the value creation of the deal. Often a major challenge is related to the organizational capabilities. Gomes et al (2013), stresses the sensitivity of cross-cultural awareness when implementing a cross-border deal. Andre et al. (2014) find that cross-border mergers performed badly at the end of the day.

2.3.4.3. Target size & Deal size

Theories suggest that the larger the deal the larger the synergies, and hence the positive operating and financial effects for the acquirer. (Healy et al., 1992; Martynova et al., 2007). Haleblian et al. (2009) argue that larger deals are more difficult to integrate into one company. Fich et al. (2016) conclude that the size of the target is a key driver for value creation. Bradley and Sundaram (2006) find that the game plan of many small acquisitions outperformed a few large ones. Other scholars observe no significance between the post-performance and the target size. (Chatterjee, 2000; Fowler and Schmidt, 1989; Powell and Stark, 2005; Sharma and Ho, 2002)

2.3.4.4. Bidder size

In a comprehensive study Moeller et al. (2004) find evidence that the firm size is a determinant factor of the performance of mergers the so called 'Size effect' (Moeller et al 2004) The abnormal returns at the time of deal announcement of small firms outperforms those compared to large firms by more than 2% points. A main driver can be found in higher acquisition premiums of larger firms. Moeller et al (2004) stress that in larger firms hubris is more frequently involved.

2.3.4.5. Book to market value of the bidder

Rau and Vermaelen (1998) discover that bidders with a low book to market ratio, also defined as glamour firms, underperform significantly. On the other side while value firms significantly outperform. This is partly caused by the hubris effect as glamour bidders tend to pay with their overvalued shares. Yes it is not entirely explaining the significant underperformance.

2.4. The Consolidation of the Airline Industry

Since the 1980's the European aviation industry has been dominated by airline market consolidation and the development of low-cost-carriers (Lenartowicz et al., 2013). The liberalisation and the deregulation especially has helped airlines to enter the European market place and to grow organically (Merkert and Morrell, 2012). Burghouwt and de Wit (2015) find that the air transport liberalisation has facilitated significant growth in Europe. As a consequence the three large alliances lost market share because the growth phase created excess capacities; especially among flag-carriers which could not compete with the emerging low-cost-carriers (Brueckner and Pels, 2005) and the new market structure of lower fares and new destinations in UK, Spain, and Italy which were previously not served (Burghouwt and de Wit, 2015, Lieshout et al., 2016). As of August 2016 there are 236 airline groups operating in Europe (CAPA 2016a). Even though Europe is geographically smaller, and hence flights are shorter due to its intercontinental proximity, the total amount of players in the market is 20% higher compared to North America. Furthermore, the top five airline groups account for a market share of 43% in Europe compared to 72% in North America (CAPA 2016a). Another comparison reveals the difference between the consolidation process of the two continents. The top 20 Airline groups in Europe have a market share of around 75%, whereas in North America the same market share is held by the top 6 Airliner groups. (CAPA 2016b) Other evidence can be found in the Herfindahl-Hirschman Index (Rhoades 1993) which measures the market concentration. The higher the level of the HHI, the higher is the market concentration; e.g. a level of 2000 gives an indication of a highly concentrated market (Rhoades, 1993). Europe has a level of 487 whereas North America, after its consolidation and liberalisation phase , has 1215 (CAPA 2016a). In general the North American aviation industry can be seen as a good benchmark of market concentration, but also in terms of profitability after a wave of mega-mergers in recent years (United and Continental, American and US-Air, Northwest and Delta) (CAPA 2016a). Verification from the merger of Delta Airlines and Northwest Airlines in the USA proces that productivity increases as market

power becomes greater (Hüschelrath and Müller, 2015). Overall, the consolidation of the European aviation industry seems long overdue. Burghouwt et al. (2015) believe that a phase of political dilemma is emerging since low cost carriers are in direct competition with flag carriers.

Due the structure of the European market only large M&A deals involving large airline groups will change the market concertation and profitability of the overall industry. Since the LCC sector gains maturity it is expected that carriers with the same business model and similar culture will merge. Thereby the motives will be equivalent to merger and acquisition among full service carriers (Lenartowicz et al. 2013.)

The downside of the higher market concentration is the reduction of competition and consequently lower economic welfare (Németh and Niemeier, 2012). Brueckner and Pels (2005) point out that the consequences of an airline merger are anticompetitive as it harms the consumers while diminishing social surplus (Werden et al., 1991). Besides the negative affects Steven et al. (2016) argue that mergers also increase service due to the more efficient use of resources. This is confirmed by Carlton et. al. (1980) who reveals that customers could benefit from substantial benefits caused by superior service. Nevertheless, consolidation is not always associated with customer harm. 2 years after the consolidation of the Chinese aviation industry no evidence of any negative effects for customers could be found (Zhang and Round, 2009). This is somewhat surprising considering China lacks an antitrust body.

The Nature of M&A in the aviation industry is pretty complex, as a result of undue government regulation, network driven structure, organized labour resulting in high labour cost, capital and fuel intensity resulting in high fixed and variable costs, high cyclicality and seasonality of demand resulting in revenue vulnerability, commodity products resulting in cutthroat and destructive competition, vulnerability to the weather and other climate conditions, dependence on infrastructure and technology, an uneven playing field due to state subsidies in other countries, and an exceedingly variable planning horizon (Taneja 2003).

Understandably the acquirers face several issues. These problems include brand identification, opposition from key stakeholders, and the development of unique organisational structure and corporate identity (Sharma and Thomas, 2015). Therefore the choice of partner is a pillar of success and needs to be aligned with cultural aspects in order to have the highest chances of success ,(Sharma and Thomas 2015). Similar to other industries

the motives for M&A differ quite widely. However, commonly it is a means to obtain full control (Németh and Niemeier, 2012).

2.4.1. Performance of M&A deals in the Aviation Industry

Only a few scholars have researched the performance of mergers in the aviation industry. Knapp (1990) find, with the help of an event analysis of 9 proposed mergers in the USA in 1986, that those mergers indeed create value at the time of announcement. The acquired firms (AR of around 25%), as well as the acquirers (AR between 6- 12%), both have positive abnormal returns around merger announcement. The findings are consistent with the data from Singa (1996) at around the same period which lead to 'enhanced market power and made the merging firms' operations more efficient' (Singa, 1996) Almost two decades later Manuela and Rhoades (2014) cannot support Knapp's (1990) findings entirely as they discover mixed results for target firms, but also for acquirers. Some outperform the indices whereas others underperform. Generally, the effect on the target firm's share price is rather positive. However, it has to be kept in mind that their investigation period in 2008 was affected by the financial crisis. Also the Chapter 11 bankruptcy protection and reorganization could have played a significant role, as US Airways was facing bankruptcy and strongly underperformed at merger announcement (Manuela and Rhoades 2014). This underperformance of US-Airways seems to be unjustified at the time as overall shareholders of both airliners benefit from the deal and the financial performance improves due to efficiency improvements and cutting costs. The share price of US Airways has also outperformed S&P 500 and the XAL, and hence the merger can be seen as a success (Manuela et al., 2016). Manuela et al. (2016) argue that their study supports M&A literature 'that mergers do in fact result in the development of more efficient operating and financial structures, improve the ability to control costs, increase shareholder value, and create overall long-term synergy' (Manuela et al., 2016).

2.4.2. Literature gap

Overall it is pretty clear that the amount of research about M&A in the aviation industry is very limited, even though a consolidation is anticipated and is long been overdue in Europe. While there is limited literature evaluating deals in the American Aviation industry (Knapp, 1990, Singa, 1996, Manuela and Rhoades, 2014, Manuela et al., 2016) no scholar could be identified who researched the impact of aviation related M&A's and its performance in

Europe. The need for further research is apparent and justifies a further investigation into the matter.

3. Hypothesis development

The previous chapter has reviewed relevant literature on M&A and the consolidation of the European Airline Industry; based on that review this chapter will develop the hypotheses in order to answer the main research question.

The main objective of this dissertation is to determine whether M&A in the European airline industry create value. Various hypotheses need be developed in order to answer the main research question. The study contains of two main pillars of research. Firstly, the performance and value creation of M&A deals will be assessed in the long and short-term . Secondly, relevant factors such as payment method and geographic diversifications are also tested. The target size and also the industry relatedness, are being disregarded because it is assumed that most deals in the airline transportation industry are usually related to each other.

3.1. Performance of M&A deals

Different analysis may give different outcomes due to divergent methodologies and variables. In order to investigate the value creation of M&A deals in the European Airline Industry three hypotheses, covering the short-term market reaction, the long-term market reaction, and the operational post-performance in the long run, will be tested.

The majority of research discovers that the acquiring firm usually tends to have around zero or slightly negative returns around the date of announcement (Morck et al., 1988, Campa and Hernando, 2004, Campa and Hernando, 2005, Moeller and Schlingemann, 2005, Dutta and Jog, 2009, Shah and Arora, 2014). However, Manuela and Rhoades (2014) illustrate contradicting results in their study which analysed three U.S Airline mergers; the stock price of acquiring airlines increased in 2 out of 3 cases. Knapp (1996) also finds that abnormal returns for the acquirers are significantly positive; between 6% - 12%. Building upon the previous finding in this study it is hypothesized that the stock price of the acquiring airliner will be positively influenced by the announcement of the deal.

H1	There is a significant positive impact of the M&A announcement on the stock price of the acquiring firm.

So far, no attention has been paid to the long-term value creation of acquiring firms in the airline industry. That's the reason the hypothesis is developed on the basis of the broad literature. Even though there is mixed consensus in the literature a negative hypothesis is

developed as it is anticipated that the acquiring airliner will not create any abnormal returns in the long run. This is based on long-term stock performance studies up to five years following M&A which generally underperform significantly (Abhyankar et al., 2005).

H2	The acquiring firm will not create abnormal returns for the shareholder in the long run.

Whilst many studies concentrate on the either short or long-term market reaction of the M&A deal, Healey et al. (1992) argue that an analysis by operational metrics might be more suitable, as it gives an actual indication of the post M&A performance of the acquiring firm. Throughout academia the findings are very limited and only Manuela et al. (2016) study the post-performance of M&A with operational metrics in the Airline Industry. Yet their centre of attention lies in the U.S.A., and focuses on the U.S. Airways Group merger in 2005. The findings associate an improved financial and operational performance with the consolidation. Singal (1996) proves that merging airliners have more efficient operations. Based on these findings it is expected that acquiring airliners in Europe will be impacted in a similar way to U.S. Airways, and therefore a positive hypothesis is developed.

H3	The acquiring firm will improve its operational performance with the completed M&A deal.

3.2. Factors determining the performance of M&A deals

Throughout the literature certain determinants greatly influence the performance of M&A deals. One of the factors is the cross border activity. This strategy is often executed to gain access into additional markets, resources, and efficiency and strategic resources Dunning (1993). Academia has contrasted results as to whether cross-border or domestic deals create a higher value (Hamza 2011). Martynova and Renneboog (2008b) argue that higher abnormal returns can be found in M&A where an acquirer with weaker shareholder orientation acquires a firm with higher standards. In addition they argue that difference in corporate governance between acquirer and target can generates synergies (Martynova and Renneboog, 2008b).

There is evidence that cross-border deals perform worse (Andre et al. 2004). Moeller and Schlingemann (2005) discover that domestic deals outperform cross-border deals by a

significant 1% of abnormal returns. This is conform to earlier studies (Chatterjee and Aw 2000, Eckbo and Thorburn 2000). In this research it is expected that similar to the findings of Moeller and Schlingemann (2005) domestic deals will have a higher abnormal return.

H4	Domestic deals have a higher abnormal return than cross-border deals

Another crucial element which might impact the performance of M&A in the European Airline Industry is the method of payment. Theory indicates that cash-financed deals outperform stock-financed ones. This is caused by the existing information asymmetry between the managers of the firm, and the market. When the stock is overvalued, and managers are aware of it, they tend to finance the deal with the equity as they take advantage of the first-hand information. On the other hand, when the stock is considered as undervalued by the managers, they would rather use free cash or debt in order to finance the deal. As a result the market interprets a cash financed deal as undervalued and a stock financed deal as overvalued (Myers and Majluf, 1986).

This hypothesis which states that cash paid M&A deals in the European Airline Industry have higher abnormal returns than those paid with stock will be tested.

H5	Cash paid deals have a higher abnormal return than deals paid with stock

Table 1. Summary of hypotheses

Hypotheses		Expected Sign
1	There is positive impact of the M&A announcement on the stock price of the acquiring firm	+
2	The acquiring firm will not create abnormal returns in the long run.	+
3	The acquiring firm will improve its operational performance	+
4	Domestic deals have a higher abnormal return than cross-border deals	+
5	Cash paid deals have a higher abnormal return than deals paid with stock	+

The table gives a summary of the 5 hypotheses and the expected outcome

4. Data & Methodology

In the previous chapters the literature was reviewed and the hypotheses were developed. This chapter will discuss the data which will be used for the study, and how the research is designed and carried out.

4.1. Data

This study considers all worldwide M&A deals in the Airline Industry (SIC 4512, Air Transportation scheduled flights; SIC 4522, Air Transportation non-scheduled flights) from 1978 until 2016; later on the centre of attention will be focused upon the European Airline Industry. The entire data set has been obtained through Thomson ONE. The following criteria needs to be met: (I) the deals were competed, (II) the target and acquirer operate in the Airline Industry, (III) minimum deal size of 1 million US Dollar, (IV) M&A deals from 1978 – 2016, (V) The acquirer is public, whereas the target can be public or private, (VI) The acquirer controls less than 50% of the shares of the target. Overall, 253 deals were identified, however around 27 deals need to be excluded as no data can be gathered due to a missing DataStream Code or no Stock exchange Data available; for instance in the case of South Africa. With the Thomson Reuters Data Stream add on, relevant operational metrics such as ROA, ROE, FCF, Gross Profit, Operational Profit, and also the daily and monthly price of equity of the identified sample, are collected for the deals from 1978 up to 2016. In order to calculate the abnormal returns the market index of the corresponding country is identified and also acquired.

Table 2. Amount of deals in the Aviation Industry by geographical distribution and by deal value of the sample

Deal Value	Worldwide	Europe	North America	South America	Asia	Australia
< 500	203	70	81	3	37	11
> 500	64	3	13	1	7	0
Total	226	73	94	4	44	11

The table displays the total M&A deals in the Aviation Industry from 1978 until 2016 by geography. As expected, a big part 40 % of the worldwide M&A (94 in total) occurred in North America, and in particular in the USA; in Canada 10 deals were realized. Europe, with 73 completed deals, has only 19 deals less than North America. This number is surprisingly high keeping in mind that the consolidation still has to take place. The deal values of the M&A in Europe are except of 3 deals are in the range until 500 million Dollars. Worldwide around 72% of deals have a deal value of less than 500 million US Dollars.
Note: Deal Value in Million US Dollars

Table 3. Distribution of M&A transactions in the Aviation Industry in Europe by year and announced total value and average value

Year	No of Transactions	Total Value	Average Value
1987	2	458.34	229.17
1988	2	100.88	50.44
1990	3	211.53	70.51
1991	2	28.12	14.06
1992	5	653.30	130.66
1993	3	310.58	103.53
1994	2	204.09	102.05
1995	2	37.62	18.81
1996	1	5.50	
1997	1	106.31	106.31
1998	3	214.88	71.63
1999	3	153.02	51.01
2000	5	176.03	35.21
2001	3	218.47	72.82
2002	2	605.68	302.84
2003	6	1024.17	170.70
2004	1	8.61	8.61
2005	1	3.67	3.67
2006	2	20.27	10.14
2007	4	972.92	243.23
2008	7	793.73	113.39
2009	4	495.30	123.82
2010	3	89.63	29.88
2011	2	407.40	203.70
2012	1	94.11	94.11
2014	2	132.09	66.04
2016	1	4.78	4.78
Total	73	7531.03	2431.10

The table shows the distribution of the M&A transaction in the European Aviation Industry by year, amount of transaction, total value and average value.
Note: No M&A deals occurred in 1989, 2013 and 2015
Deal Value in Million US Dollars

Table 4. Numbers of M&A transactions in the Aviation Industry in Europe by determinants

Determinant		No of Transaction	Percentage
Cross-border	Yes	46	63%
	No	27	37%
Method of Payment	Cash	22	30%
	Stock	3	4%
	Both	-	-%
	Unknown	48	66%
Target Status	Private	27	37%
	Public	43	59%
	Govt.	3	4%
Multiple Acquisitions	Yes	64	88%
	Overlap*	48	75%
	No	9	12%

The table exhibits the number of M&A transaction in the Aviation Industry in Europe under different determinates; cross-border activity, method of payment, target status, and multiple acquisitions by the same acquirer. There is a cross-border tendency as 46 deals (63%) take place between two different European countries. Cash seems to be the favourite payment method used in 22 deals (30%), however it has to be kept in mind that more than 66% of the deals have an unknown payment method. In 43 deals (59%) the target is public; in contrast 27 (37%) are private targets. Most of the M&A transactions were conducted by the same acquirers as 64 deals (88%) were multiple acquisitions. Furthermore, 48 (75%) of the multiple acquisitions overlap in a period of 5 years.

Note: * Multiple Acquisitions by the same acquirer causing an overlap

Table 5. Distribution of European M&A transactions by country and value

Country	No of Transactions	Total Value	Average Value
Netherlands	5	339.25	67.85
United Kingdom	19	2931.91	154.31
Sweden	12	465.14	38.76
Germany	14	1919.35	137.10
Norway	5	100.73	20.15
Austria	2	27.77	13.88
Italy	3	158.05	52.68
France	8	1405.01	175.63
Ireland-Rep	1	21.67	21.67
Turkey	1	6.97	6.97
Finland	2	61.07	30.53
Greece	1	94.11	94.11
Total	73	7531.03	813.64

The table displays, the 73 M&A transactions take place in 12 countries. In especial, West and North Europe account for the most deals. With 19 announced deals the UK accounts for most of the M&A activity, followed by Germany with 14, and Sweden with 12. The highest average deal value can be found in France with 175.63 million US Dollars. So far the southern part of Europe has played a less important role, the east of Europe no role at all.
Note: Deal Value in Million US Dollars

4.2. Methodology

4.2.1. Event study methodology

A theoretical foundation for the short and long-term market reaction is the event study methodology. It is one of the best instruments to measure abnormal returns as capital gains for the shareholders related to the M&A can be detected. Both studies, namely the short and long-term market reaction, use an expected return model, namely the market adjusted model "mam" (De Bondt and Thaler, 1985) which is very similar to the market model "mm". This model is pretty simplified as it uses the actual market return and assumes a constant and linear relation between the equity of the airliner and the corresponding return of the market index. A distinctive risk profile, which can be found in the market model "mm", is not included, yet the market adjusted model is well accepted and is used in the most reputable journals worldwide, as it demonstrates, like all other expected return models, the expectations of the shareholders in regards to future cash flows, and is illustrated by the 'at that moment' current share prices. Mackinlay (1997) argues that prices respond to new information, and hence points out the potential of event studies in empirical studies. This is the key advantage of an event study compared to historical accounting, which will be also used to evaluate the operational performance of the acquirers. Despite this, the event study assumes that there are no conflicting events during the event period. This assumption is a key pillar for the entire event study as occurring unrelated events might be hard to isolate and might falsify the results (McWilliams & Siegel, 1997).

The event study methodology is based on the efficient market hypothesis. It is developed by Fama (Fama 1965, Fama 1970; Fama 1991). He delineates an efficient market as "a market in which prices always fully reflect available information" (Fama 1970 p. 383). Consequently, an investor cannot outperform the market as the information is embedded into the stock price. Thereby Farma (1970) elucidates classifications of market efficiency.

The weak form hypothesis is where stock prices directly show the information of historical past prices (Bodie et al. 2014). Despite this, Farma (1970) argues that stock price changes follow a random walk as they are not relying on serial stock price changes. That is the reason the market efficient hypothesis is also called "Random Walk Theory". Therefore, Bodie et al. (2014) stress the limitation and inability of future stock price predictions and the generation of excess returns based on historical analysis.

The semi-strong form states that all public information will directly be reflected in the stock price (Bodie et al. 2014). Besides historical data such information includes disclosures of companies and their fundamentals (Farma 1970).

The strong form is only a theory and should be viewed rather as a benchmark. (Farma 1970). This hypothesis asserts that all public and private information are directly impacting the stock price (Bodie et al. 2014). In this study it is assumed that the stock markets are semi-strong efficient. Due to the rationality in the marketplace the impact of the M&A announcement will be directly reflected in the equity price of the acquiring airliner, based on the expectations of future cash flow and dividends. Furthermore, the rationality of the market place also impacts the short and long-term price reaction in a similar way.

4.2.2. Calculation of abnormal returns

In the short and long-term market reaction of the stock price to the announcement of the M&A deal, abnormal returns indicate the impact.
The abnormal return is the difference between how the company performed (R) and the figure after deduction of the normal performance of the market index also called the expected returns (E(R)).

$$AR_{i,t} = R_{i,t} - E(R_{i,t})$$

Where: $AR_{i,t}\ is\ the\ abnormal\ return\ of\ stock\ i\ and\ time\ t$

The expected returns can be seen as normal returns which the shareholders would earn regardless the M&A transaction. The expected returns are calculated with an expected return model. This dissertation applies the market adjusted model (De Bondt and Thaler, 1985).

The average abnormal return is estimated in order to capture the effect for the entire period.

$$AAR_t = \frac{1}{N}\sum_{i=1}^{Nt} AR_{i,t}$$

Where: $AAR_t\ is\ the\ average\ abnormal\ return\ of\ all\ stocks\ \ for\ time\ period\ t$

The cumulative abnormal return (CAR) is computed.

$$CAR_{i,t} = \sum_{i=1}^{T} AR_{i,t}$$

Where: $CAR_{i,t}$ *is the cumulative abnormal return of stocks i and time t*

The cumulative average abnormal returns are often computed in order to estimate the effect of the announcement on the stock price. Cheng et al. (2007) point out that CAAR give a good indication on how the aggregated stock price of the acquirer is impacted during the event.

$$CAAR_t = \sum_{t=1}^{T} AAR_t$$

Where: $CAAR_t$ *is the accumlation of* AAR_t for time period t.

4.2.3 Market reaction study

Several steps are needed to commute the abnormal returns in an event study. Firstly, the event date, in this case the announcement of the M&A, has to be identified. This way conforms with other studies which also use the announcement date as event date. The short-term market reaction summarizes M&A transactions by the same acquirer on the same event deal as a single transaction. Secondly, an estimation window needs to be defined. For the short-term market reaction the period of 2 days before the announcement, and 2 days after the announcement of the deal is used (-2,+2), where the announcement day is 0. Therefore, the estimation period for the short-term market reaction is in total 5 days. Rosen (2006) states that this method gives an immediate reaction to the M&A.

Out of the 73 M&A transactions in Europe 66 deals provide sufficient data, worldwide 184 out of the initial 226 deals, and are included in the sample.

The long-term market reaction uses monthly stock price returns in the period of 12 months after the announcement up to 60 months (+12, +36, +60). In order to overcome any distorting noise, the estimation window starts 2 months after the announcement of the M&A.

Table 6. Amount of M&A transactions in the long-term study in Europe and worldwide

Event Window	Europe	worldwide
1-12 months	56	156
1-36 months	50	130
1-60 months	45	113

In the table the development of the number of M&A transaction in Europe and worldwide can be found. The longer the event window is, the lower the amount of M&A transactions with sufficient data.

For both short and long-term market reaction the market adjusted model is used to calculate the normal returns which is the basis for the abnormal returns. The normal returns are

computed from the corresponding market index through DataStream (Code TOTMK + country code); for the short-term study on a daily basis, and for the long-term study on a monthly basis.

Barber and Lyon (1997) argue that many of the common methods which are used to compute the long run abnormal returns, such as the CAR and CAAR, might be conceptually flawed and could probably lead to a biased test statistics. Instead Barber and Lyon (1997) point out that abnormal returns should be calculated as buy and hold return of a firm deducted by the buy and hold returns of the reference.

$$BHAR_{i,t} = \prod_{t=1}^{t}[1 + R_{i,t}] - \prod_{t=1}^{t}[1 + E(R, i, t)]$$

Where: $BHAR_{i,t}$ *is the cumulative abnormal return of the prodct time series of the firms return deducted by the product time series of the expected return of the market index*

For the long-term market reaction, the BHAR recommended by Barber and Lyon (1997) are provided besides the usual CAR.

4.2.5. Operational metrics

In order to evaluate the operational performance various calculations are made to check the effects on the Return on Assets (ROA), Return on Equity (ROE), Free Cash flow (FCF), Operational Profit, and Gross Profit. These measures are chosen as they represent the core of a firm's operational performance and might directly reflect whether the M&A activity of firm has positively impacted the operational metrics. As financial effects take several years to be reflected in the M&A transaction, the examination should take place over a long period of time (Bishop et.al, 1987). The period 60 months (5 years) after the announcement and 60 months (5 years) beforehand are compared and deducted from each other. Healy et.al. (1992) point out the limitations of accounting based examination for performance analysis of M&A. In this dissertation however, the operational metrics analysis is only one component and should be viewed as one element of an entire analysis as to whether M&A in the European Aviation Industry create value. Below the formulas for the examination of the operational performance can be found.

The formulas for the 120 months observation (60 months post and 60 months pre-announcement) of the deals are shown.

Return of assets

$$\Delta ROA = \frac{1}{N}\sum_{i=1}^{Nt+t60} ROA_{i,t+t60} - \frac{1}{N}\sum_{i=1}^{Nt-t60} ROA_{i,t-t60}$$

Where: $\Delta ROA_{i,t}$ *is the difference of the average ROA +*
60 *months and the average ROA* − 60 *months*

Return on equity

$$\Delta ROE = \frac{1}{N}\sum_{i=1}^{Nt+t60} ROE_{i,t+t60} - \frac{1}{N}\sum_{i=1}^{Nt-t60} ROE_{i,t-t60}$$

Where: $\Delta ROE_{i,t}$ *is the difference of the average ROE +*
60 *months and the average ROA* − 60 *months*

Free Cash flow

$$\Delta FCF = \frac{1}{N}\sum_{i=1}^{Nt+t60} FCF_{i,t+t60} - \frac{1}{N}\sum_{i=1}^{Nt-t60} FCF_{i,t-t60}$$

Where: $\Delta FCF_{i,t}$ *is the difference of the average FCF +*
60 *months and the average FCF* − 60 *months*

Operating profit

$$\Delta OP = \frac{1}{N}\sum_{i=1}^{Nt+t60} OP_{i,t+t60} - \frac{1}{N}\sum_{i=1}^{Nt-t60} OP_{i,t-t60}$$

Where: $\Delta OP_{i,t}$ *is the difference of the average OP +*
60 *months and the average OP* − 60 *months*

Gross profit

$$\Delta GP = \frac{1}{N}\sum_{i=1}^{Nt+t60} GP_{i,t+t60} - \frac{1}{N}\sum_{i=1}^{Nt-t60} GP_{i,t-t60}$$

Where: $\Delta GP_{i,t}$ *is the difference of the average GP +*
60 *months and the average GP* − 60 *months*

The amount of M&A transactions varies by assessment categories and the duration of the assessment. Similarly to the study of the long-term market reaction, the longer the duration

of the assessment period, the fewer M&A transactions are found (Table 7). Especially as only limited data is available for the FCF assessment.

Table 7. Amount of M&A transactions by operational metric in the 120 months (+60, -60) observation

	Europe	worldwide
ROA	54	141
ROE	54	157
FCF	22	60
Operating Profit	55	145
Gross Profit	49	125

The table compares the available data for the operational metrics analysis in Europe and worldwide

4.2.6. Univariate analysis

A univariate analysis is carried out in order to determine whether the calculation of the abnormal returns are statically significant in order to test the 5 hypotheses. Thereby the P-value will be tested on α <1%, 5% and 10 % significance level. A normal distribution is assumed, hence the test statistic is calculated in the way that is matching with a normal distribution.

4.2.7. Limitations of the methodology

Usually similar studies evaluate the performance of the acquirer and target. Due to limited information available with regards to the targets, this dissertation is focusing entirely on the acquirers. The three studies (short- long-term market reaction and the operational metrics analysis) were facing several limitations. The 73 M&A deals in Europe are realised by only 22 acquirers. Statistically each acquirer is involved in 3 deals. As a result some of the deals are overlapping in time and might have impacted the data analysis. On a worldwide scale the overlapping is less expressive with a lower overlapping ratio but still high with a ratio of 2.6 deals per acquirer.

The event study methodology assumes that there are no conflicting events during the event period; however, due to the overlap of M&A deals in the estimation period of the long-term market reaction, the data might be influenced by overlapping deals of the same acquirer in the estimation period. Yet, a judgement call has to be made as either way would create a dilemma. Excluding the overlapping deals in the European sample would have reduced the sample to only 22 deals, which would be mostly likely be too small to find any statistical

significance. Besides, even the sample population, with overlapping M&A deals included, seems too limited to get significant results. Therefore, all overlapping deals are kept even though they might influence the results. The only exception can be found in the short-term study where deals by the same acquirer and announcement data were summarized as a single M&A deal.

As the study has a high level of complexity since the worldwide long-term market reaction covers 29 countries in 40 years, the more simplistic market adjusted model is used as the market model utilizes more parameters to cover the distinctive risk of each observed firm. More parameters in this scope would have unnecessarily convolute the empirical research. Furthermore, the analysis of the operational metrics is lacking an industrial benchmark to better interpret the results. Yet an index such as the Dow Jones US Airlines Index could not be identified on a global or European scope. Last, but not least, relying on external databases has its pitfalls. Firstly, there is no guarantee that the data from Thomson One and DataStream is valid and reliable. In particular, missing data such as the missing DataStream code in order to connect Thomson One with DataStream, as well as the limited information about the payment method, were conspicuous obstacles. In addition, DataStream captures the price Index of their total market index in a slightly different manner than the standard equity indices and hence they do not line up exactly. However, to further consistency as well as ease, DataStream has been used throughout the entire empirical analysis.

5. Findings & Discussion

In this section the findings of the empirical analysis are presented based on the methodology in chapter 4. First is the short-term market reaction in Europe, followed by a discussion of the worldwide results. Afterwards the long-term market reaction is examined.

This chapter will end with additional findings which are not directly related to the main research question of this dissertation, yet are worthy of discussion.

5.1. Short-term market reaction

Firstly, an overview of the results and discussion of the short-term market reaction in Europe as well as in comparison with a worldwide benchmark is given. The following results show per deal characteristics; namely cross-border activity, method of payment, multiple acquisitions, organization form, and finally the size of the M&A deal.

5.1.1. Short-term market reaction overview

In the short-term study there is significance in the findings that M&A deals in a five day window (-2+2) create abnormal returns of 1.53%. This discovery does not entirely conform to Manuela and Rhoades (2014) as their findings include negative and positive results around the announcement date. The AAR fluctuates vigorously, which can be seen in Table 8, from 0.67% 2 days before the announcement, to -0.20% 1 day before the announcement. On the day of the announcement the AAR is also slightly negative with 0.05%. Nevertheless, the day after the announcement (+1) it recovers and reaches the highest AAR with 0.89%. On the second day after the announcement (+2) a positive AAR of 0.23% is captured. These empirical findings are in line with discoveries from other scholars where slight positive abnormal returns are realised around the announcement window and indicate the 'proxy of expected value arising from the merger' (Campa and Hernando, 2004). The cumulative abnormal return of 1.53% for the five day event window is matching with the findings of Dutta and Jog (2009) and their CAR of 1.6%. Van der Wal et al. (2005) refer in their study to 52% of bidders who have a positive stock price reaction, in this sample 61% of acquirers react positively.

The European airliners seem to underperform in a worldwide comparison as the AR with 3.17% is more than double on a global scale. Compared to the work from Knapp (1990) who reports cumulative abnormal returns of 9.8% the European airliners also seem to underperform tremendously in a three day (-1,+1) event window with cumulative abnormal

returns of only 0.64%. On a worldwide scope the CAR with 1.6% are slightly improved but yet cannot reach the results of Knapp (1990).

Table 8. Short-term market reaction overview of acquirers in Europe and worldwide in the three day (-1,+1) and five day (-2, +2) event window

	3 Day Event Window (-1,+1)			5 Day Event Window (-2,+2)		
	CAR	N	P- Value	CAR	N	P- Value
Europe	0.64%	66	0.157	1.53%**	66	0.044
worldwide	1.60%***	184	0.004	3.17%***	184	0.002

This table shows the CARs, number of observations and the P-value of acquirers in Europe and worldwide in the three day (-1,+1) and five day (-2,+2) event window.
Note: *** significant at 10% level

Looking closer at the AAR in the event window, Table 9, on the days prior the announcement (-2,-1), the AAR of Europe and Worldwide have a similar trend and hence the CAR for the 2 days before the announcement is in an equal range of 0.4%. On the day of the announcement Europe has a slight negative result, whereas the worldwide sample reaches a positive 0.48% AAR. In the days following the announcement (+1,+2) both samples have a similar tendency, yet Europe cannot reach the global results, especially one day after the announcement.

Table 9. Average abnormal returns (AAR) of acquirers in Europe and worldwide in the event window of five days (-2,+2)

	Day				
	-2	-1	0	+1	+2
Europe	0.67%	-0.20%	-0.05%	0.89%	0.23%
Worldwide	0.88%	-0.43%	0.48%	1.55%	0.69%

This table indicates the AAR at each day of the event window for European and acquirers worldwide.

The empirical findings are in line with the hypothesis H1 that there is a positive impact around the announcement date on the stock price of the acquiring airliner in Europe.

H1	There is a significant positive impact of the M&A announcement on the stock price of the acquiring firm.

5.1.2. Factors affecting the short-term market reaction

In this section the short-term market reaction is evaluated by M&A deal characteristics which might determine the performance of deals.

The European aviation M&A deals which take place domestically outperform those of which take place cross-border. This is in line with Moeller and Schlingmann's (2005) findings in the

USA. Domestic M&A deals have a CAR of 3.47% which is more than double the CAR of 1.53% for the entire European sample. Not surprisingly on a global scale the deviation from the mean has a similar tendency, with a CAR of the entire sample of 3.17% and 4.82% for the domestic deals.

The method of payment does not significantly impact the performance of M&A deals around the announcement date. This may be caused by the small subsample of 21 and 3 acquirers for cash and stock financed deals respectively. Yet each of the CAR are within a range of 0.22 (pp); Cash 1.38%, Stock 1.43%, and unknown payment method 1.62%.If the method of payment was grouped into stock and no stock, worldwide there would be a significance that no stock payment CAR of 3.22% outperforms a stock payment CAR of 2.45%. These results are similar to Andrade et al.(2001) who also find abnormal returns of 3.6% for non-stock financed M&A deals in a three day window (-1,+1), yet this study has a five day window (-2,+2). Worldwide cash payment has a lower CAR, with 2.49%, than the CAR of all deals, 3.17%, but it has to be kept in mind that in Europe around 60% of the M&A transactions have an unknown method of payment; worldwide it is around 55%, and hence due to this limitation the results should not be any revelation.

Public targets outperform private targets European-wide and globally. This is contrary to the findings of Antoniou et al. (2007) where deals with private targets create higher abnormal returns. For the European airlines with public targets the CAR of 2.27% is significant, and around 0.7% higher than the CAR for the entire sample. Globally, the deviation from the CAR in favour of airliners who acquire public targets has a similar development with a size of 0.82% (CAR of 3.99% and the CAR of all 3.17%) at a 1% significance, corresponding to the results in Europe.

As most of the M&A activity is undertaken by the same airliners, evidence is discovered that acquirers with only one single acquisition greatly outperform multiple acquisitions. The CAR of subgroup “acquirers with single acquisition” is, with 8.72%, more than 5 times higher than the CAR of 1.53% of the entire sample. Worldwide there is also significance found that the CAR of multiple acquirers is with 1.99% more than 1% lower than the total CAR of 3.17%.

There is a tendency for mega deals which exceed a volume of 500 Million US Dollars to have a higher CAR than those below the 500 Million threshold. However, no significance for deals over 500 Million US Dollar in Europe can be found with only 3 observations. Yet the

findings from Moeller et al. (2004) suggesting that smaller acquirers outperform bigger ones at the acquisitions announcement cannot be confirmed.

Worldwide, however the findings are robust with significance levels of 5 and 1% and conform to the new findings of Alexandridis et al. (2017) for a three day (-1, +1) event window. This is somewhat surprising as Alexandridis et al. (2017) only cover deals from 1990 until 2009; this study has a sample from1986 to 2016 for the European acquirers, and from 1978 to 2016 for the worldwide sample.

Table 10. CARs of acquirers in Europe and worldwide

		Europe			worldwide		
Deal characteristics		CAR	N	P-Value	CAR	N	P-Value
Cross-border	Yes	0.35%	41	0.357	0.65%	73	0.165
	No	3.47%**	25	0.026	4.82%***	25	0.003
Method of Payment	Cash	1.38%	21	0.192	2.49%***	64	0.002
	Stock	1.43%	3	0.458	2.45%	13	0.188
	Both				3.67%*	5	0.100
	Unknown	1.62%**	42	0.047	3.66%**	102	0.024
Target Status	Private	0.65%	24	0.379	1.74%	57	0.288
	Public	2.27%***	39	0.003	3.99%***	134	0.000
Multiple Acquisitions	Yes	0.54%	58	0.240	1.99%***	150	0.001
	No	8.72%**	8	0.039	8.37%*	34	0.056
Deal Value	<500	1.44%*	63	0.053	3.10%***	166	0.004
	>500	3.60%	3	0.311	3.74%**	18	0.015
All		1.53%**	66	0.044	3.17%***	184	0.002

The table exhibits the short-term CARs of acquirers in the Aviation Industry in Europe and worldwide under different determinates; cross-border activity, method of payment, target status, and multiple acquisitions by the same acquirer. For both samples the CAR, number of observations and the P-value is provided.
Note: ***,** and * respectively significant at 1%, 5% and 10% level, Deal Value in million US Dollars

5.2. Long-term market reaction

In the following the results of the long-term market reaction for European airliners are shown. Similarly to the short-term market reaction, firstly an overview is given, and at a later stage the results for each sub group per deal characteristic are shown in order to understand which factors might influence the performance of M&A deals in the Aviation industry.

5.2.1. Long-term market reaction overview

Empirical evidence is discovered that the European airliners do not create long-term value; neither in 12 months (CAR -15.63%) and 36 months (CAR – 15.01%), nor in 60 months (-

3.97). The discovery for 36 months is broadly consistent with Rau and Vermaelen (1998) CAR of -15.23 and Agrawal et al. (1992) CAAR of -13.85%; both studies evaluate American acquirers. Gregory (1997) covers the M&A performance of acquirers in the UK and also finds double digit negative abnormal returns. All this indicates that the long-term market reaction is robust and the value deterioration is in line with other researchers.

Table 11. CARs of acquirers in Europe and worldwide in 12, 36, and 60 months

	Europe			worldwide		
Event window	CAR	N	P-Value	CAR	N	P-Value
1-12	-15.63%***	49	0.002	-3.77%	156	0.196
1-36	-15.01%**	43	0.023	12.11%*	130	0.094
1-60	-3.97%	40	0.346	19.82%**	113	0.036

The table illustrates the CARs for European and worldwide acquires in the long-term (12, 36 and 60 months).
Note: ***,** and * respectively significant at 1%, 5% and 10% level

The cumulative abnormal returns (CAR) in Table 11 from this study are somewhat in line with the buy and hold abnormal returns (BHAR) in Table 12 for the identical sample and observation period. Yet the BHARs tend to be more extreme and all values are significant at a 1% level. BHAR-17.80%, BHAR -34.70%, and respectively BHAR -32.76% for 12, 36, and 60 months. Compared to Loughran and Vijh (1997) who find a five year buy and hold abnormal returns of -15.9%, this study reaches more than double that value with -32.76%. Similarly, the BHAR in the 3 year observation seems to be almost double too, in contrast to the work of Sudarsanam and Mahate (2003) with an average BHAR of -15%, or Moeller et al. (2003) with a BHAR of -16.02%. The development in Europe is dissimilar to findings worldwide. In a 5 year analysis airliners worldwide create long-term value with a significant CAR of 19.82%.

Table 12. BHARs of acquirers in Europe and worldwide in 12, 36, and 60 months

	Europe			worldwide		
Event window	BHAR	N	P-Value	BHAR	N	P-Value
1-12	-17.80%***	49	0.000	6.71%	156	0.302
1-36	-34.70%***	43	0.000	2.86%	130	0.407
1-60	-32.76%***	40	0.000	9.77%	113	0.278

The table shows the BHARs for European and worldwide acquires in the long-term (12, 36 and 60 months).
Note: ***,** and * respectively significant at 1%, 5% and 10% level

Consequently, the hypothesis that the acquiring firm do not create abnormal returns in the long run can be accepted for European airliners as significant results are found in a 12 months and 36 months analysis CAR, and 12, 36 and 60 months BHAR.

H2	The acquiring firm will not create abnormal returns for the shareholder in the long run.

5.2.2. Factors affecting the long-term market reaction

In the following the long-term market reaction is analysed by deal characteristics (cross-border activity, method of payment, target status, multiple acquisitions, and deal value). A primary focus is given to the event windows of 12 and 36 months respectively as the 60 months observation does not show any significance.

The performance of cross-border M&A deals depend on certain factors; for instance, the bilateral trade agreement (Erel et al. 2012). Since the centre of attention for this study lies in Europe and, with the exception of 10 deals, the entire European sample is within the EU, among members, this argument can be neglected. In a 12 months observation period cross-border deals outperform domestic deals by an abnormal return of almost 9%. Yet, in both cases the acquirers' value deteriorates; cross-border deals with -12.14% and domestic ones with -21.64%. This contradicts Eckbo and Thorburn (2000) where the acquirers of domestic targets outperform foreign targets. In the long run, at an observation period of 36 months, it seems that domestic deals with a CAR of -4.28% are recovering, and outperform cross-border deals with a CAR of -20.75%. This is somewhat surprising at it would be anticipated that a synergy realization and improved profitability would be realized in the long run and not after 12 months post-announcement.

Significance is found in that 3 years (36 months) after announcement, domestic deals generate a higher abnormal return than cross-border deals. As no significance is discovered for a 60 months observation, hypothesis 5 can be accepted with these findings, despite the fact that at the 12 months period significant results are found which demonstrate the outperformance of cross-border deals.

H4	Domestic deals have a higher abnormal return than cross-border deals

For the 12months observation cash acquirers create higher returns than equity acquirers; -17.55% compared to -20.96%. In general this is compatible with early research from Sudarsanam and Mahate (2003), Abhyankar et al. (2005), and Haleblian et al. (2009). The observation up to 36 months shows reverse results. Stock financed deals outperform cash deals tremendously. Nevertheless, the stock sample only has 2 firms. No significance is found, either for cash or stock paid deals.

As 60% of M&A deals have very limited information available regarding the payment method no significance could be found in a longer observation window than 12 months. Therefore Hypothesis 4, that cash paid deals have a higher abnormal return, will be rejected as no significance is found. Yet the 60 months observation has a positive trend. With a bigger subsample size for the 36 and 60 months observation perhaps less conflicting results could be computed.

H5	Cash paid deals have a higher abnormal return than deals paid with stocks

M&A deals with public targets outperform those with private targets in a 12 months and 36 months event window. In the 12 months observation the discrepancy between both target statuses is more extreme as private targets have a CAR of -24.10% and public targets -8.4%. In the 36 months observation private targets recover slightly, -16.37%, and public targets follow a negative trend to a CAR of -12.26%. These findings for both event windows have a similar pattern to that illustrated by research from Rau and Vermaelen (1998) where private targets also underperform compared their public counterpart.

The discoveries from Antoniou et al. (2007), that acquirers with multiple acquisitions suffer significant wealth loss, can confirmed in a 36 months period. Up to 12 months however, sole acquirers have a higher deterioration with CAR of -24.10% to -8.4%.

Regardless, within the observation window, mega deals which exceed 500 million US Dollar outperform smaller deals in a 12, 36, and 60 months period.

Table 13. CARs of acquirers in Europe by deal characteristics in 12, 36, and 60 months

Deal characteristics		CAR	N	P-Value
Panel A: 1- 12 months				
Cross-border	Yes	-12.14%**	31	0.020
	No	-21.64%**	18	0.025
Payment	Cash	-17.55%**	16	0.023
	Stock	-20.96%	3	0.116
	Unknown	-14.07%**	30	0.031
Target Status	Private	-24.10%**	16	0.025
	Public	-8.4%*	31	0.055
Multiple Acquisitions	Yes	-8.94%**	43	0.032
	No	-63.56%***	6	0.005
Deal Value	<500	-16.62%***	46	0.002
	>500	-0.38%	3	0.469
All		-15.63%***	49	0.002
Panel B: 1-36 months				
Cross-border	Yes	-20.75%***	28	0.003
	No	-4.28%	15	0.386
Payment	Cash	-4.82%	15	0.344
	Stock	50.99%	2	0.142
	Unknown	-25.96%***	26	0.0027
Target Status	Private	-16.37%	11	0.133
	Public	-12.26%*	30	0.070
Multiple Acquisitions	Yes	-16.17%**	40	0.016
	No	0.46%	3	0.493
Deal Value	<500	-16.83%**	40	0.018
	>500	9.28%	3	0.219
All		-15.01%**	43	0.023
Panel C: 1-60 months				
Cross-border	Yes	-10.71%	27	0.177
	No	10.02%	13	0.255
Payment	Cash	14.73%	15	0.149
	Stock	-31.80%	1	
	Unknown	-14.49%	24	0.126
Target Status	Private	8.70%	9	0.310
	Public	-4.09%	29	0.353
Multiple Acquisitions	Yes	-3.98%	38	0.344
	No	-3.71%	2	0.325
Deal Value	<500	-5.75%	37	0.295
	>500	17.97%	3	0.240
All		-3.97%	40	0.346

The table exhibits the long-term CARs of acquirers in the Aviation Industry in Europe and worldwide under different determinates in the long term (12, 36 and 60 months).
Note: ***,** and * respectively significant at 1%, 5% and 10% level, Deal Value in million US Dollars

5.3. Operational metrics

In this section the empirical findings of the operational metrics are discussed. Each operational metric; namely Return on Equity (ROE), Return on Assets (ROA), Free Cash Flow (FCF), Gross Profit, and Operating profit, are shown for a 5 year analysis, and are compared to the worldwide sample of Airliners with M&A activity..

The analysis of the operational metrics shows that airliners have a higher return on equity (ROE) in the time frame before the announcement of a M&A transaction (ΔROE -7.39). Similar findings can also be found for the return on asset (ΔROA -2.1). Consequently, the realized M&A lowers the performance in terms of ROA and ROE for European Airlines. These findings match those of Yeh, T. and Hoshino, Y. (2002) who also state a deterioration in profitability. Lakstutiene et al. (2015) point out that one quarter after the announcement of M&A the ROA and ROE tend to underperform and in the long run recover. This phenomenon cannot be seen. The development of the ROE and ROA on the worldwide sample have a similar trend, however, they are slightly worse for the ROE (-9.50 worldwide, -7.39 Europe), and slightly better but still negative for the ROE. (-1.19 worldwide, -2.10 Europe).

The Free Cash Flow (FCF) increases by 108% in Europe. Worth mentioning here is the relatively small sample of 22, yet a significance at the 5% level is discovered. Healy et al. (1992) and Switzer (1996) illustrate a strong connection between M&A and an increase in operating cash flow (OCF). The difference between FCF and OCF, the deducted capital expenditure, can be discarded in this case in order to compare both methods. For the worldwide sample a positive result (FCF 9.21%) is discovered; however, with a p-value at 37.3% and t-value of 0.326 it is not near any significance.

Gross profit and operating profit are both in the same range (Gross Profit -1.21, Operating Profit -1.47). The worldwide sample outperforms both the European sample, with a Gross Profit -0.53, and the Operational Profit of 1.69. Yet, the positive Operational Profit is only significant at a 10% level.

Table 14. Comparison of operational metrics in Europe and worldwide in (+60, -60)

	Europe			worldwide		
		N	P- Value		N	P- Value
ΔROE	-7.39**	54	0.027	-9.50*	157	0.061
ΔROA	-2.10***	54	0.008	-1.19**	156	0.021
ΔFCF	108%**	22	0.028	9.21 %	60	0.373
ΔGross Profit	-1.21**	49	0.040	-0.53	125	0.360
ΔOperating Profit	-1.47***	55	0.009	1.69*	145	0.029

The table shows the operational metrics analysis for European and worldwide acquirers. Thereby the time frame of 60 months before the deal announcement is deducted from the 60 months post- announcement in order to capture the change.
Note: ***,** and * respectively significant at 1%, 5% and 10% level

The analysis of the operational metrics; namely Return on assets (ROA), Return on Equity (ROE), Free Cash Flow (FCF), Gross Profit, and Operational Profit show that the acquiring firm does not necessarily improve its operational performance. Besides the improved free cash flow (FCF), all other metrics capture a deterioration in performance 5 years after the announced deal. Therefore, the hypothesis that acquiring firms will improve their operational performance can be rejected.

H3	The acquiring firm will improve its operational performance with the completed M&A deal.

5.4. Additional findings

In this section remarkable findings which do not address the main research question are discussed. As other research (Knapp, 1990, Singal, 1996) focus especially on North America, it is worthwhile to compare findings in this dissertation with the previous work. Also the findings for 3 other continents (South America, Asia, and Australia) will be partly provided.

5.4.1. Short-term market reaction worldwide

North America drives up both the three (-1+1) and five day (-2+2) window with significant CARs of 3.16% and 5.96%. The results of Knapp (1990), with a CAR of 9.8%, are three times higher at the three (-1+1) a day window. In both event windows Europe seems to underperform compared to its peers.

Table 15. Short-term market reaction worldwide in the three day (-1, +1) and five day (-2, +2) event window by geography

	3 Day event window (-1,+1)			5 Day event window (-2, +2)		
	CAR	N	P- Value	CAR	N	P- Value
Europe	0.64%	66	0.158	1.53%**	66	0.044
Worldwide	1.60%***	184	0.004	3.17%***	184	0.002
North America	3.16%**	67	0.014	5.96%**	67	0.016
South America	1.26%	4	0.495	3.19%*	4	0.054
Asia	0.38%	37	0.263	1.25%*	37	0.059
Australia	2.11%*	10	0.094	2.32%*	10	0.060

This table shows the CARs, number of observations and the P-value of acquirers by 6 geographical zones in the three day (-1,+1) and five day (-2,+2) event window.
Note: ***,** and * respectively significant at 1%, 5% and 10% level

Table 16. Average abnormal returns (AAR) of acquirers by geography in the event window of five days (-2, +2)

	Day				
	-2	-1	0	+1	+2
Europe	0.67%	-0.20%	-0.05%	0.89%	0.23%
Worldwide	0.88%	-0.43%	0.48%	1.55%	0.69%
North America	1.90%	-0.92%	1.01%	3.07%	0.90%
South America	0.32%	-0.22%	-0.73%	2.21%	1.61%
Asia	-0.12%	-0.02%	0.53%	-0.14%	1.00%
Australia	-0.53%	-0.18%	0.66%	1.62%	0.74%

This table indicates the AAR at each day of the event window for 6 geographical samples

5.4.2. Long-term market reaction in North America

Besides Europe only significant results are found for North America. In contrast to the value deterioration in Europe, North America creates values for the shareholder with a CAR of 55.79% in 5 years after the announcement of the M&A deal. This is corresponds somewhat with the findings of Abhyankar et al. (2005), but it has to be kept in mind that Abhyankar et al. (2005) use a stochastic methodology and observe the UK market. Consequently the positive results in North America drive up the worldwide benchmark. Excluding these exorbitant high CARs from American Airliners, the worldwide benchmark turns into a negative CAR of -4.47%, -13.92% and -16.82% for 12, 36 and 60 months respectively, which conforms to the general conclusion in the field.

Perhaps a factor can be found in the already completed consolidation in the North American Aviation Industry and the higher profit margins and, consequently, a higher market reaction.

Table 17. CARs of acquirers in North America and worldwide in 12, 36, and 60 months

	North America			worldwide		
Event window	CAR	N	P-Value	CAR	N	P-Value
1-12	-1.93%	54	0.429	-3.77%	156	0.196
1-36	39.85%*	44	0.052	12.11%*	130	0.094
1-60	55.79%**	38	0.028	19.82%**	113	0.036

The table shows the CARs for North American and worldwide acquires in the long-term (12,36 and 60 months).

Note: ***,** and * respectively significant at 1%, 5% and 10% level

The BHARs in Table 19 indicate similar results to the CARs, however only a significance for the 60 months observation period could be found at a 10% level. Once again North America drives the worldwide results. Excluding these exorbitant high BHARs from American Airliners, the worldwide benchmark rotates into a negative with BHARs of -4.47% -13.92% -16.82%.

Table 18. BHARs of acquirers in North America and worldwide in 12, 36, and 60 months

	North America			worldwide		
Event window	BHAR	N	P-Value	BHAR	N	P-Value
1-12	27.82%	54	0.224	6.71%	156	0.302
1-36	35.65%	44	0.136	2.86%	130	0.407
1-60	62.26%*	38	0.080	9.77%	113	0.278

The table shows the BHARs for North American and worldwide acquires in the long-term (12,36 and 60 months).

Note: ***,** and * respectively significant at 1%, 5% and 10% level

5.4.2. Operational metrics worldwide

Europe has the highest, but still negative, ROE. However, each region has a double-digit negative ROE 5 years after deal announcement. Only the North American ROA is positive but not significant; all the others are negative but significant.

The positive FCF worldwide of 9.25% is gained through the figures for Europe, 108%, and Asia, 55.26%. All other countries have a negative free cash flow development. Especially in North America it would be anticipated that the FCF development is positive as the FCF reflects future dividends and the market has reacted positively to the deal with high CAR and BHAR.

North America and Australia have a significant positive Gross profit of 4.09 and 6.80, but only Australia has a significant positive Operating Profit with 2.46 at the 10% level. Europe -1.47 and Asia 3.73 have significant negative Operating Profits at the 1% significance level.

Table 19. Comparison of operational metrics by geography in (+60, -60)

	Δ	N	P Value
Panel A: ΔROE			
Europe	-7.39**	54	0.027
Worldwide	-9.50*	157	0.061
North America	-15.28	55	0.139
South America	-42.62	3	0.029
Asia	-12.21	34	0.065
Australia	-15.05**	9	0.045
Panel B: ΔROA			
Europe	-2.10***	54	0.008
Worldwide	-1.19**	156	0.021
North America	0.70	54	0.289
South America	-11.40**	3	0.049
Asia	-1.56**	21	0.021
Australia	-3.69**	9	0.029
Panel C: ΔFCF			
Europe	108%**	22	0.028
Worldwide	9.25%	60	0.373
North America	-31.56	24	0.138
South America	-96.45%	3	0.187
Asia	55.27%	6	0.163
Australia	-222%*	5	0.096
Panel D: ΔGross Profit			
Europe	-1.21**	49	0.040
Worldwide	0.53	125	0.360
North America	4.09**	40	0.018
South America	-12.01**	3	0.020
Asia	-5.40**	19	0.025
Australia	6.80**	11	0.011
Panel E: ΔOperating Profit			
Europe	-1.47***	55	0.009
Worldwide	1.69	145	0.28
North America	0.08	55	0.47
South America	-9.50**	3	0.028
Asia	-3.73***	21	0.004
Australia	2.46*	10	0.068

The table shows the operational metrics analysis for 6 geographical samples. Thereby the time frame of 60 months before the deal announcement is deducted from the 60 months post- announcement in order to capture the change.

Note: ***,** and * respectively significant at 1%, 5% and 10% level

6. Concluding Remarks

This chapter will present the conclusions which derive from the empirical findings and try to answer the question of whether mergers and acquisitions create value in the European airline industry. In addition, suggestions for further research and the limitations are provided.

6.1 Conclusion

Around the five days (-2,+2) of the M&A announcement it is discovered that the stock prices of the European Airliners indeed react positive and are in line with Dutta and Jog (2009). Even though Europe has a significant positive CAR of 1.52%, in comparison with other continents, this performance seems weak and is surpassed by every other region (North America, 5.96%, South America, 3.19%, and Australia, 2.32%), except for Asia with a CAR of 1.25%. North America in especial dominates the benchmark, yet the results of Knapp (1990) CAR of 9.8% cannot be reached. Similarly to Moeller and Schlingmann (2005), domestic deals outperform cross-border deals in Europe. Due to the small subsample no significance is found for the method of payment impacting the performance of M&A deals around the announcement date. Furthermore, Public targets outperform private targets European-wide and globally. In addition, acquirers with only one single acquisition outperform multiple acquisitions tremendously. There is a tendency for mega deals which exceed a volume of 500 Million US Dollar to have a higher CAR than those below the 500 Million threshold. In Europe no significance is found, but worldwide it is in line with the recent findings of Alexandridis et al. (2017).

The long-term market reaction on the other side reveals that European airliners suffer a significant wealth loss; with CARs of -15.63%, and -15.01% -3.97, and BHARs of -17.80%, -34.70%, and BHAR -32.76% for 12,36, and 60 months respectively. Worldwide acquirers perform better due to the fact that the significant positive North American results (CAR of 55.79%) drive up the results of the entire sample CAR of 19.82% in the 60 months period. These findings of the North American are very rare and in contrast to the general findings within the field of M&A. Excluding these results would lead to a negative result of CAR-16.82%. These high double-digit CAR declines conform to the results several scholars namely Rau and Vermaelen (1998), Agrawal et al. (1992), Gregory (1997). In the long-term (+36, +60) domestic deals perform slightly better, but cannot reach positive abnormal returns. Due to the limited information regarding payment of the deals no significant evidence is discovered that cash financed deals perform better. European deals with public targets

outperform those with private targets in a 12 months and 36 months event window, and confirm the findings of Rau and Vermaelen (1998). The discoveries from Antoniou et al. (2007), that acquirers with multiple acquisitions suffer significant wealth loss, can be confirmed in a 36 months period. Regardless of the observation window, mega deals which exceed 500 million US Dollar perform slightly better than smaller deals in a 12 and 36 months period.

The results of the operating performance for European Acquirers follow the long-term market reaction where a high level of value deterioration 5 years after the announcement of the deal is observed. Overall, 4 KPI's (ROA, ROE, Gross and Operating Profit) indicate a significant deterioration of performance and profitability 5 years post M&A announcement. In contrast to Lakstutiene et al. (2015) no recovery of the ROA and ROE in the long-term can be identified. Only the Free Cash Flow increases dramatically by 108%, which confirms the studies of Healy et al. (1992) and Switzer (1996) and shows a gain in cash flow. Consequently, significant gains from mergers cannot be found. Even though acquiring Airlines in North America creates enormous value in the long-term market reaction, only a significant positive Gross profit 4.09 is identified.

6.2. Suggestion for further research

The research in regards to the performance of M&A and its determinants is quite extensive. However, there are still many questions left, especially those related to M&A in the Aviation Industry.

Firstly, a similar study to this should be carried out in order to validate the robustness of the conducted research. As this dissertation has not focused on a wide range of statistical testing there is still plenty of room for statistical analysis, such as the multi variate analysis with addition regression analysis. Also, it is highly recommended that another study will be carried out, where the data does not derive from Thomson One and DataStream, to cross-check the validity, and perhaps to increase the total sample. Such an additional database could be Zephyr.

Another appealing approach would be to find a more complex methodology to cope with and isolate the overlapping M&A deals. Furthermore, it would be worth knowing how different market expected return models, such as the market model, would alter the results. In addition the short-term market reaction study could use different event windows around the event date. In despite, the BHARs could also be checked regarding deal determinants.

Also the operational analysis could be benchmarked with a relevant index. In this analysis each operational metric could be weighted depending on the total assets of the airliner. In addition, other KPI's could be computed to see whether this study is robust. Such a study could also evaluate the operating performance depending on the deal characteristics.

Last but not least another interesting aspect can be found in answer the questions why do European acquirers in the Aviation Industry and acquirers worldwide destruct so much value? Furthermore, why do North American acquirers outperform their peers in Europe but also worldwide tremendously?

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Appendix

Appendix A: Declaration of originality form

Declaration of Originality Form

This form **must** be completed and signed and submitted with all assignments.

Please complete the information below (using BLOCK CAPITALS).

Name	Torge Luckfiel
Student Number	2277977
Course Name	Dissertation (MBA)
Assignment Number/Name	Dissertation Submission

I confirm that this assignment is my own work and that I have:

Read and understood the guidance on plagiarism in the Postgraduate Handbook, including the University of Glasgow Statement on Plagiarism	☐
Clearly referenced, in both the text and the bibliography or references, all sources used in the work	☐
Fully referenced (including page numbers) and used inverted commas for all text quoted from books, journals, web etc.	☐
Provided the sources for all tables, figures, data etc. that are not my own work	☐
Not made use of the work of any other student(s) past or present without acknowledgement	☐
Not sought or used the services of any professional agencies to produce this work	☐
In addition, I understand that any false claim in respect of this work will result in disciplinary action in accordance with University regulations	☐

DECLARATION:

I am aware of and understand the University's policy on plagiarism and I certify that this assignment is my own work**,** except where indicated by referencing, and that I have followed the good academic practices noted above

Signed.....

Appendix B: Distribution of M&A transactions worldwide by year and announced total value each year and average value

Year	No of Transactions	Announced Total Value	Average Value
1978	1	396.39	396.39
1984	3	55.60	18.53
1985	3	130.40	43.47
1986	10	3439.44	343.94
1987	6	2215.94	369.32
1988	5	153.58	30.72
1989	4	383.90	95.98
1990	5	284.03	56.81
1991	10	1119.78	111.98
1992	5	653.30	130.66
1993	5	437.58	87.52
1994	6	256.45	42.74
1995	7	326.40	46.63
1996	4	37.83	9.46
1997	5	213.16	42.63
1998	7	792.00	113.14
1999	12	3909.40	325.78
2000	10	969.25	96.92
2001	7	889.07	127.01
2002	4	628.52	157.13
2003	8	1140.82	142.60
2004	2	31.55	15.78
2005	8	619.65	77.46
2006	8	2743.02	342.88
2007	11	1351.46	122.86
2008	11	3967.08	360.64
2009	8	1958.81	244.85
2010	8	8406.21	1050.78
2011	8	948.41	118.55
2012	10	4149.74	414.97
2013	6	800.18	133.36
2014	8	900.08	112.51
2015	6	2514.01	419.00

2016	5	4450.51	890.10
Total	226	51273.56	7093.11

The table shows the distribution of the M&A transaction in the worldwide Aviation Industry by year, amount of transaction, total value and average value.
Note: No M&A deals occurred from 1979-1981
Deal Value in Million US Dollars

Appendix C: Numbers of M&A transactions in the Aviation Industry worldwide according to different determinants

Determinants		No of Transaction	Percentage
Cross border	Yes	85	38%
	No	141	62%
Method of Payment	Cash	83	37%
	Stock	13	6%
	Both	7	3%
	Unknown	123	54%
Target Status	Priv.	67	30%
	Public	155	69%
	Govt.	4	2%
Multiple Acquisitions	Yes	189	84%
	Overlap*	133	59%
	No	37	16%
	Yes	85	38%

The table exhibits the number of M&A transaction in the Aviation Industry worldwide under different determinates; cross-border activity, method of payment, target status, and multiple acquisitions by the same acquirer.
Note: * Multiple Acquisitions by the same acquirer causing an overlap