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How do mergers impact firm profitability and share prices? Evidence from the airline industry

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MIBA programme

How do mergers impact firm profitability and share prices? Evidence from the airline industry

Bc. Aneta Přibylová **September, 2014**

Declaration

I hereby declare that I have worked on my diploma thesis titled “How do mergers impact firm profitability and share prices? Evidence from the airline industry” by myself and under guidance of my supervisor. I have used only academic literature and information resources mentioned in the end of the thesis. As an author of diploma thesis, I further declare that I have not breached copyright of third parties while working on the thesis.

In Lyon …… Signature ……

Acknowledgment

I would like to express my gratitude to my supervisor David Russell for his guidance, valuable comments, advices and patience.

I would also like to thank Mr. Ivan Kašík, Ph.D. and his wife for their big help with finding relevant sources and their suggestions about the topic.

And finally, I would like to thank my family for allowing me to study in Lyon where I could write this thesis.

Abstract

The thesis examines profitability of airlines before and after the merger. For the empirical observations the mergers from the USA and Europe were chosen – Air France/KLM and American Airlines/US Airways. The share price has been taken as an indicator of profitability, because it is the most objective approach. The thesis is written from the shareholders 'point of view.

General merger theories, European and American competition/antitrust law, history and current situation of airline industry in both areas and two cases of mergers are studied in the literature review

The second part of the thesis consists of the empirical observations. For the purpose of this study, the econometric modelling has been chosen as relevant approach of testing the main research question "Whether the new merged airline company is more profitable than it was before?"

The econometric model shows the influence of chosen variables (revenues, profit/loss, cash and number of passengers) on the share price. The influence is quantified and applied on the case studies. The further discussion answers other questions connected with airline mergers such as the impact on employees or which legal system is more favourable for mergers, the European or the American.

Key words

Merger, airline, share/stock price, profitability, American, European, employee, shareholders, passenger

Abstrakt

Tato diplomová práce zkoumá ziskovost aerolinií před a po fúzi. Pro empirické zkoumání byly vybrány fúze aerolinií ve Spojených státech amerických a Evropě – Air France/KLM a American Airlines/US Airways. Ukazatelem profitability se stala cena akcií společností, neboť se jedná o nejobjektivnější náhled. Tato práce byla napsána z pohledu akcionáře.

V teoretické části jsou popsány známé teorie fúzí, evropské a americké právo hospodářské soutěže, historie a aktuální situace leteckého průmyslu v obou regionech. Jsou zde detailně popsány fáze jednotlivých fúzí.

V praktické části je popsáno empirické zkoumání. Ekonometricky model se stal hlavním prostředkem pro testování hlavní zkoumané otázky, "zda je fúzující letecká společnost vice zisková než byla před fúzí"

Ekonometricky model také ukazuje vliv zvolených proměnych (tržby, zisk/ztráta, hotovost a počet pasažérů) na cenu akcií. Tyto vlivy jsou kvantifikovány a aplikovány na jednotlivé případové studie. Diskuze v závěru práce pak odpovídá i na další otázky jako je dopad fúzí na zaměstnance aerolinií nebo která právní úprava je příznivější pro fúze, evropská nebo americká.

Klíčová slova

Fúze, aerolinie, akcie, ziskovost, americký, evropský, zaměstnanec, akcionář, pasažér

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1. Introduction

Merger refers to a consolidation of two or more entities in business. Unlike in acquisition the goal of mergers is to create a new company. This does not mean that the merging companies dissolves. They usually become subsidiaries of a new company. The statistics register a growing number of mergers of companies doing business in developed countries.

The air transport industry is not an exception in this matter. This highly saturated sector requires cooperation of the players in order to survive. The mergers, acquisitions, holdings, joint ventures and alliance agreements are every day reality in the airline business. As the globalization continues to connect the world tighter, each region – North America, Europe, East Asia etc. – has to cooperate within its boarders and create bigger players to compete on a worldwide basis. The full airline mergers have not yet happen between carriers from different continents. The intercontinental collaboration is usually based on alliance agreements or joint ventures.[1]

I think that this thesis will show that the mergers of airlines cause big changes at the market, especially when it is a merger of big players with a significant market share. It also affects other sectors, because the air transport is crucial for international trade and therefore it affects the economy of a region in almost each sector. The merger has, of course, a microeconomic impact on merging airlines. It is an important step in the strategy and the management of a company has to think about the decision of merger very deeply. The success of this step is not guaranteed. The negotiation about the power in a new company is the key for an airline entering the merger.

I have chosen this topic, because of my background in business law specialized in competition law. I am also interested in airlines, which we deeply analysed during the classes of Strategic Management and I found this sector really interesting. Despite popularly held belief that airline business is highly profitable we discovered that in reality it is the opposite. It is highly competitive sector and it is a nice example of tough business with various strategies. The airlines have to respond quickly to changes and have to make

[1] e.g. North Atlantic Joint Venture, A++JV, Transatlantic Joint Business

good essential strategy decisions in very short time and merger is one of the most common approaches.

This topic is somehow important for everybody. The airline business affects almost all sectors and has significant impact on prices of all air transported products and services connected with travelling by plane. The mergers are important in the airline industry and they have big influence in it. The mergers change the market shares.

The thesis should prove or disprove the hypothesis that the merger makes the airline more profitable and strengthens its position at the market. This hypothesis is based on theory that when there are fewer players on the market, the market is less competitive and the companies can set bigger margins therefore become more profitable.
What are the main factors that cause the successful merger? How can we predict that merger will work out? On the example of one European merger we observe the impact of a merger on a new company. On the example of an American airline we observe the causes of a merger. What are the indicators that the company will be profitable after merger and survive at the market? This thesis should give the answers to all these questions within a given sector.

I believe that my research will show that mergers do make airlines more profitable. The mergers are necessary in the airline business. It improves the airline financial situation, support the market position, and enlarge the market share. In my opinion, the impact on customers is small. Regarding all other players at the market, the flight tickets may increase after the merger, but it would happen anyway, because there are many significant external factors like fuel price, weather or legal issues that have bigger influence on prices than the merger itself. It primarily helps the company itself.

2. Research question

The diploma thesis analyses the cross-border mergers within the European Union and the mergers in the USA. This topic of mergers and its impact has been covered by many studies before, but it requires further research in the airline industry.

The main research question is **"Whether the new merged airline company is more profitable than it was before?"**
This question has to be divided into smaller questions:

1) How do the merger theories apply in airline business?
2) Which legal system is more favourable for mergers, the system of the European union or the United States?
3) Is the merger employee friendly?
4) Does the stock price of the company increase with the announced merger?
5) What are the most influential factors of a stock price?

2.1. The Value added of the Research question

The airline industry is one of the most competitive industries. Nowadays, if an airline company wants to survive and have some profit it has to become a member of an alliance or take the further step and acquire another airline, merger or create a joint venture. If it does not do so there is a big threat that big competitors will destroy their opponent by its cost reducing strategies. In order to apply economies of scale it is economically reasonable to join the merger and be more powerful on the market.

The World financial crisis, which started in 2008, has had significant impact on the airline industry as it had on almost all the industries. Especially American and European airlines still fight with the consequences until today. As the surveys showed they have reduced their costs at all levels of their business. Sometimes the merger is the question of survival, because no investors (not even the governments) want to risk their investment in such a competitive industry. Now the market is in the situation when there are too many seats for few travellers. Other reason for mergers and acquisitions is to increase the market share and have more power over the prices of airline services. It is not easy for traditional

airlines to stay competitive, because at the same time, the low-cost airlines have penetrated the market and have brought a whole new type of air travel, which endangers the classic full service airlines.

The profitability and survival of the company is very important especially for the shareholders. They are the real owners of a company and they have to put the pressure on the management to make the company more profitable and to make their shares more valuable. Profits also mean dividends. In order to make decisions about mergers the shareholders and managers should be aware of all the effects of it. This analysis will bring the answer to these decision makers whether enter the merging negotiation, what to negotiate about and what are the most important factors of the merger.

This study will explain and underline the differences between mergers within the EU and the USA. We can see that during last ten years the number of mergers and acquisitions has grown significantly in both areas. This study will enhance the benefits of cross-country merger as it enhances its disadvantages. There are many opinions on international mergers. Many analysts say it would decrease the competition at the market and customers will loose their power. Even the suppliers of the airlines would be put in a weaker position. On the other hand, some say that the industry is already consolidated too much. The opinion here is that the airlines have already many expenses that they cannot control, like fuel prices, taxes and airport fares, that the customers would not be much affected by lower competition within the industry. Using the empirical approach the determinants of successful cross-country merger will be underlined with specifics of American airline industry and European airline industry. The study will examine the mergers from the airline shareholders (or investors) point of view.

The airline industry is one of the most regulated industries. In the European Union various legal systems and restrictions of different countries cause difficulties to mergers. Each company has their own system how they run their business and merging with another type of company is a long run task. Each airline is also on a different level of development. Not just according to their financial results but also at the level of technical development. Some countries have better economic conditions for expanding than the other one. Also the airlines with different strategies are very hard to merge. The merger of full service carrier with low cost carrier is impossible due to opposite business strategies. The effects of the

cross-border mergers in this industry could bring more power over the competitors but it could have different impact on each former company, which has been merged. In the European Union it will have various results for each country involved, not to mention the citizens and customers at the same time. The harmonization of the legal restrictions for mergers within the EU is compulsory and it still needs time to be at the same level as it is in the USA. The liberalization of the market within the EU has happened at diverse speed. The main variations are seen between first members of the EU, so-called EU 15, and the rest of the members today – EU 28.

2.2. Structure of the dissertation

The dissertation is mainly based on data from reliable sources. There will be graphs and tables from public databases and self-made tables and graphs set up by personally collected data provided by certain airline companies. The data are available on-line in the company's financial statements and annual reports. This study required more data from already underwent mergers. The study will also consist of literature review from reliable books, newspapers, electronic newspapers, academic studies and researches. The data from European stock markets and American stock market are also significant for the thesis.
For the purpose of this analysis, the cargo airlines are not considered as a part of air industry, neither the small local airlines with no significant impact on the market situation. This study will bring the answers whether it is better to merge with the other airline considering the current financial condition of an airline. It will serve the discussion of merging European and American airlines.

The thesis is divided into several parts. The first one, the literature review, will provide the theoretical background of studied topic. In the first part of the literature review the theory of mergers and acquisitions is presented. It will also describe the main theories, which were developed by researchers through history. These theories are then applied on the airline companies. The second part will describe the American Antitrust law and European union Competition law regarding mergers. The differences are underlined. These laws bound all the airline mergers in the past and they will for the future cases of mergers. The third part will present the development and current situation of the airline industry in the US and the EU. To evaluate the conditions and measure the market factors the graphs, tables and charts are used. The analysis of the American and European airline industry will

cover also the factors like airport fares or taxes. All the data are gathered from the public available data sources, which are listed in the references.

The second part of the thesis consists of evaluation and quantification of the airline mergers. To achieve this goal the case studies of mergers are used – the American Airlines US Airways merger and Air France KLM merger. This part will evaluate the financial and non-financial situation of each company before the merger and what are the early results of the new created holding company. The other indicators are taken into account, such as costs of the merger, fleet, hubs, number of passengers, number of destinations and number of employees.

The second part of empirical observation is dedicated to evaluate and qualify the indicators that affect the stock price of merging airline, because it is the most objective way how to measure the performance of a company. For this purpose, the econometric modelling will be used. There are two models, which reflect the stock price movement of a period 2003 – 2013. In the first model, American Airlines and US Airways merger, we will observe the old American Airlines stock price development between the official comply for bankruptcy protection and the date of merger. The second model, the Air France KLM merger, will determine the Air France-KLM stock price movement after the merger. For the models executed in the empirical part we have chosen the following variables: stock price, net income, cash, revenues, stockholders equity, price of fuel, long-term debt, number of slots at the airports, number of destinations, number of passengers, number of aircrafts and number of employees. These two case studies were selected for their uniqueness and actuality. Especially the American merger will have a significant impact on the American air transport and most probably on the world air transport, because it has become the biggest airline in the world in terms of revenues.

The factors will be incorporated into the econometric model and tested by Ordinary Least Square Method in Linear Regression Model in GRETL program. This method minimizes the sum of squared distances between the observed responses in the data set and the responses predicted by the linear approximation. Variables are tested for their significance and meeting the assumptions of their influence and its intensity on the stock price.

2.3. Who should be interested?

This dissertation will be interesting for the shareholders of particular airline companies. The impact of mergers on the stock market is also important for the investors who are interested in European and American market and in the air transport industry. The local policy makers would be interested, because the airline business influences local economy. Vice versa, their decisions can affect the merger significantly. The authorities can imply antirust laws.

The travel agencies should be aware of what the mergers cause to the price of the flight tickets because it will have direct impact on price of the trips they offer. The travel agencies are usually in the air charter business when they lease the whole aircraft for their clients, but they also offer regular connections. This dissertation should attract attention of the directors of companies of other travel businesses because any negative price movement at the airline industry market influences customers to choose other options of travel, especially for shorter distances in Europe or in the USA. The stakeholders of the companies from other sectors such as train companies should be very well informed about the mergers and acquisitions of airlines assuming it is a competing sector.

The governments will be interested, because many airlines are partly or even mainly owned by the state. The whole process of making decision in the government is very long; therefore it is crucial to predict the situation in the future as much accurate as possible in order to make the decision in advance. The suppliers of the airlines should be aware of the situation of the industry. Mainly the aircraft manufactures because the airlines are their main customers. The demand for aircrafts is very inelastic.

Last but not least, all the shareholders of competitor's company should be aware of what is happening in the competitor's firm. Overall, this study is somehow significant for everybody who uses the air transport, from the wealthy businessmen to family flying once per year to spend their vacation. And it is highly interesting for the companies who send their employees for regular business trips by plane because, according to statistics, they are the main customers of the airlines.

3. Literature review

3.1. Mergers and Acquisitions – introduction

Companies merge and acquire for several reasons. They want to rise up the value of the firm, to strengthen their position at the market, diversify risks and minimise costs. The least ethical reason is that the airline wants to beat its competitor, but usually it is just a natural way of business growth (expansion). It is presumed that the merged company should become more profitable. M&A are tools of strategic management.

Sometimes the firm is forced to make a merger in order to avoid being taken over. From the legal point of view the merger is the state when two or more companies share their resources and make an agreement to make the businesses together. It is a willing action. But acquisitions are usually hostile takeovers. An acquisition refers to the case when one company purchases the assets of the other company and may own 100% of other company's shares and practically controls every step. The acquisition could be friendly. The acquired company still exists as an independent subject. If the acquired firm is larger than the acquirer, the acquisition is referred to as a "reverse takeover". After the process of merger, one new holding company is created. The merging companies can become its subsidiaries. The new entity is founded and the foundations will be built on the previous firms. The strategic alliances have become an alternative to mergers and acquisitions, which we can observe especially in airline business. (Sudarsanam, 1995)
In this time of globalized world we can see significant increase of cross-border takeovers. The companies have to maintain their positions not just on the local or continental market, but they have to be competitive on a global market.

Mergers can be horizontal or non-horizontal (vertical). In the horizontal merger two or more firms from the same industry get together. To forecast the impact of this type of merger is easier to predict. In the vertical merger the firm assimilates a company on the level of the supply chain, e.g. a supplier or a customer. It is hard to predict the impact because it affects more markets.
Companies also divest. The motivations for divesting are getting rid of non-profitable assets and investing into high-value assets, for example to sell the companies cars and invest into intangible assets such as trademark or software. Sometimes the amount of

assets is too high that it is not cost-effective to maintain them and they loose their value. By merging or acquiring a company, the new entity shares the costs with the other company, or better, a former competitor. In this case, the firm will have one less competitor and it will even benefit from it in the sense of costs. The objective of an acquisition or merger does not have to be only maximisation of shareholder's wealth. According to the managerial utility theory, the managers can make decisions about mergers based on their personal desire for power.
The shareholders are sceptical to M&A. Their shares are converted into the shares of a new company and the ratio of exchange could not be beneficial for them. The mergers or acquisitions have to be considered deeply and the managers have to justify this step in front of shareholders. The conflict is obvious. From previous researches we can state, "there is a global agreement that M&A from the acquirer shareholder's perspective, are at best neutral and at worst value destroying to a small degree."(Sudarsanam, 1995)

If the company decides to acquire or merge other entities, the managers have to choose a business strategy. Many negotiations will occur and it is crucial that the managers follow the same goal and same path to achieve that goal. One of the corporate strategies is to get the people of high management of the one company in charge of the future company. In this case, the acquirer tries to profit from the knowledge and skills of the acquired firm. As it was proven, the people are the most expensive "asset" of the organization.
Another corporate strategy is to build a diversified portfolio. It is a lowering risk strategy where the incomes come from different industries, different customers, companies with different strategy or the entities from other countries. The negotiation is targeted on the income issue.

In most cases, there are two management-opposing teams with contrary perspective of the objective. They struggle for bigger power over future common assets. In this case, intermediates are mostly welcome. It is usually bank, public authorities or specialized consulting companies. These people have big power over the situation and they are well paid for the job.
The other big group of stakeholders in the process of negotiation are employees. They often create unions. It is very significant in the airline industry where are thousands of people employed. The representatives of employees are usually invited to the negotiating meetings from the very beginning. They negotiate number of employees who stay, salaries,

benefits, workplace conditions and employee shares, which are often offered in order to involve the employees into common goal. The negotiators have difficult task to balance two different company's culture. If not, they risk conflicts among employees and possible strike.

Representatives from consumers' side are also invited to the negotiation table. It is usually a non-profit organization, which fights for higher quality of goods or services and for lower prices.

Many countries have legal system with antitrust laws or antimonopoly laws, which requires presence of a representative who tries to defend public interest.[2]

The number of announced mergers rises up in a long-term period. In a worldwide perspective, since 1985 the number has raised from around 4,000 to more than 35,000 in 2013. The biggest amount of M&A happened in 2007 (around 49,000). The most valuable mergers mostly occur in oil and telecommunication industry. The most valuable transaction happened in 1999 when acquirer Vodafone AirTouch PLC targeted Mannesmann AG. The price announced was 204.8 billion euro.(IMAA, 2014)

3.2. Merger theories

There are several theories about mergers. The research of this topic started in 1937 by Coase. Since his time many other scientists have studied this issue.

The main theories are *Neoclassical theory, Agency theory and Behavioural theory.*

Neoclassical theory introduced by Jensen and Ruback (1983) describes managers' struggle over assets where experienced leaders gain control over the less experienced while shareholders are just 'passive judges'. The synergies benefit from two economic patterns and their combination. When two entities merge in order to reduce costs, they benefit from economies of scale whereas the goal of higher revenues comes from economies of scope. According to Lewellen (1971) the purpose of the mergers is always financial. When there is a tight competition on the market, the synergy can diversify and carry forward company's cash flow, increase debt capacity and benefit from tax deductibles. The "Q-

[2] EU Competition law - Treaty on the functioning of the European Union, US - Sherman Act 1890, the Clayton Act 1914, the Federal Trade Commission Act 1914

Theory of Mergers" introduced by Jovanovic and Rousseau (2002) provides a theory based on Tobin's Q ratio[3] where low-q firms invest less than high-q ones. Therefore the big strong companies buy the small and weak. In addition, it is one of the solutions to troubles of big companies when they have poor management and want to take advantage of their position.

Agency theory says that all the costs mostly come from the conflict between owners and management when they are separated (Jensen and Meckling, 1976). Jenson adds that in the maturing industry, when there is a surplus of cash flow, the managers tend to acquire companies with low-value assets and therefore lead the company into the future difficulties. The owners (shareholders) expect high dividends in this situation. Gorton, Kahl and Rosen (2009) upgrade the agency theory with other merger opportunities. When there is a shock to in an industry the mergers are more likely. The managers rather go into acquisition of a smaller firm in order to become too big to be bought. They do not want to loose the control over the assets they hold.

Behavioural theory introduced by Roll (1986) claims that all the decisions of the manager towards acquiring another company is run by their hubris. They overpay the targeted firm just to prove their power and it leads to value-destroying transactions. Unlike the agency theory, where managers are aware of the highly risky move, under the behavioural theory they do it because they are convinced that are doing the right thing. Shleifer and Vishny (2003) extend this hypothesis. They invented a model where mergers happen due to the overvalued stock prices. The holder of this stock tries to use it to finance the acquisition before the overvaluation is revealed.

3.3. United States antitrust law

The United States has the longest tradition in the antitrust law, which considers mergers. The Sherman Antitrust Act of 1890 was the first federal act, which dealt with practices in business that could harm the consumers in the sense of increasing prices, less power of the suppliers etc. The Act defined monopolies, cartels and trusts as a potentially harmful

[3] Economics theory of investment behaviour, where 'q' represents the ratio of the market value of a firm's existing shares (share capital) to the replacement cost of the firm's physical assets (thus, replacement cost of the share capital).

conduct for the competition. The law says that to build a monopoly is legal but to act monopolistic is not. It was made to protect the market. Breaking the Sherman Act is a criminal act and the court can impose penalties. It is set by this act that the penalty of $100 million could be imposed on the corporations and $1 million on the individual plus 10 years in prison. According to federal laws the amount imposed could be even more in particular cases.

The Clayton Act of 1914 broadened the Sherman's Act and described a prohibited conduct, the enforcement, the exemptions, and the remedial measures. The impact on employees is mentioned for the first time. The employees were loosing their power over the employers therefore they united into labour unions. The Clayton Act determined that labour force is not a business commodity so strikes and other similar actions were proclaimed as legal enforcement of power. Both acts have been developed under the decisions of the U.S. courts, particularly the Supreme Court.

At the same time when Clayton Act was implemented, the Federal Trade Commission Act was introduced and established the commission and its powers. These three acts are major acts of the United States Antitrust Law. Each state has their own antitrust laws, which are enforced by state attorney general or private plaintiffs. (Website of the US Federal Trade Commission, 2014)

The antitrust division of the United States Department of Justice enforces the antitrust laws of the United States. They cooperate with the Federal Trade Commission (FTC). They have the power to file criminal cases against violators of the antitrust laws. They supervise the markets not to be manipulated by monopolies, which can occur in the case of mergers and acquisitions.

The Hart-Scott-Rodino Antitrust Act of 1976 maintains merger transaction with significant assets involved. This act is an amendment which modify Clayton Act , 7A particularly - Premerger notification and waiting period. It sets a group of thresholds which state which mergers has to file the notification with the FTC and the Assistant Attorney General and wait until gaining the approval. The thresholds are then verify every year, which is important in the modern rapidly changing world. The actual thresholds are:

If a result of an acquisition, the acquiring person would hold an aggregate total amount of the voting securities and assets of the acquired person - in excess of $303,400,000 or

in excess of $75,900,000 but not in excess of $303,400,000; and if

- any voting securities or assets of a person engaged in manufacturing which has annual net sales or total assets of $15,200,000 or more are being acquired by any person which has total assets or annual net sales of $151,700,000 or more;
- any voting securities or assets of a person not engaged in manufacturing which has total assets of $15,200,000 or more are being acquired by any person which has total assets or annual net sales of $151,700,000 or more; or
- any voting securities or assets of a person with annual net sales or total assets of $151,700,000 or more are being acquired by any person with total assets or annual net sales of $15,200,000 or more.[4]

If the participants of the upcoming merger do not declare their intention and file the Notification and Report Form, they could face the statutory penalty of up to $16,000 per each day of delay.[5]

3.3.1. US Merger Guidelines

The first Merger guideline was introduced 1968. It has given the definition of the market and described horizontal and vertical mergers. Horizontal type is a merger between two direct competitors, which deal on the same market whereas vertical merger could be "backward" into a supplying market or "forward" into a purchasing market. It also defined highly concentrated market, less highly concentrated and Market with trend towards concentration. The market shares were measured by the dollar value of the sales or other transactions (e.g., shipments, leases) for the most recent twelve-month period. They used four-firm concentration ratio where the four largest companies together owned more than 75% of shares of the market.

In 1982 new set of guidelines were released. They established new method of calculating the market share and measuring the concentration. The Department of Justice started to use

[4] Revised Jurisdictional Thresholds for Section 7A of the Clayton Act

[5] Revised 2014 Hart-Scott-Rodino Antitrust Thresholds—Effective February 24, 2014

the Herfindahl-Hirschman Index ("HHI") to interpret the market concentration. This new scale of concentration takes into consideration all the firms in the market and gives the largest firms greater weight in the measurement. But more importantly it raised the level of market concentration when the government has to supervise the merger.
1984 merger guideline revised the previous one. It describes the theories of the impact of non-horizontal mergers on the competition on the market.

The most recent document is 2010 Merger guideline. To determine the effects of the upcoming merger the agencies carry out the test of "'small but significant and nontransitory' increase in price" (SSNIP). They hypothetically increase the price by five per cent and ask how many buyers would be likely to shift to the other products within one year. This test also allows us to see what is the next best substitute.
Another important indicator is geographical competition. In the case of DaVita–Gambro (FTC 2005) the distance between the premises of each party mattered. The distributors of dialysis services competed across the whole Unites States. Their customers could use the competitors' services, but they had to travel a long distance. DaVita wanted to acquire Gambro, which would have led to monopolistic situation in 35 local markets. The Commission required the divesture of the clinics at the mentioned markets. (Commentary on Horizontal Merger Guidelines, 2006)

3.4. European Union competition law

The mergers started in the United States tens of years before Europe. As mentioned, the first act in the US that dealt with the law competition was introduced in 1890 due to rising concentration on the market. Europe implemented first laws 60 years later. The European firms had to be competitive on the world market where big American conglomerates represented big powerful players.

At first, all the members of the EU had their own legal system and it took a long time until they reached a compromise. The Treaty of Rome 1958 was the first agreement of the members of the Community where competition law was mentioned. Article 85 implies anti-cartel rules. It is against all the agreements that lead to fixed selling or purchasing prices, to control the production, technical development or any other actions, which place the competitors into the competitive disadvantage. The European Commission requires a

pre-notification of agreements in order to investigate their potential impact. The Commission can give an exception to deals, which encourage production, research and development or allow companies to make products of higher quality. The case Philip Morris (1987) established a principle that a purchase of shares of one company by its competitor is not a breach of Article 85. The agreement has to lead to the change in the competitive behaviour of the companies involved.

The article 86 implies anti-dominance rules. Unlike the anti-cartel rules, in this case the Commission does not require pre-notification nor gives exemptions. The abuse of the dominant position is for example predatory pricing or other unfair trading conditions. In 1988 the British Airways wanted to acquire British Caledonian. The European Commission intervened above the UK MMC decision and required more undertakings in order to protect the competition on the British airline market (Sudarsanam, 1995).

During the time, the Treaty of Rome and its two articles about competition had become insufficient. The procedures were exhausting. There were only general criteria (nothing measurable by numbers) and many mergers were irreversible. The mergers were just reviewed and additional undertakings were demanded lately.
The regulation 4064/89 on the control of concentrations between undertakings was the first document, which maintained merger policy. It set up the procedures for notifications and timetable for the Commission. It was written in order to harmonize the national antitrust regulations and EU regulations. It defines when the merger occurs. It also considers the direct and indirect control by one company (or managers) over the other that could lead to higher concentration. However, the Commission had to look at each case separately. The short-term agreements could get the permission.

Within the European Union the merger falls under the European Commission jurisdiction when the concentration happens in the "Community dimension":

The first alternative requires:
(i) a combined worldwide turnover of all the merging firms over € 5,000 million, and
(ii) an EU-wide turnover for each of at least two of the firms over € 250 million.

The second alternative requires:

(i) a worldwide turnover of all the merging firms over € 2,500 million, and
(ii) a combined turnover of all the merging firms over € 100 million in each of at least three Member States,
(iii) a turnover of over €25 million for each of at least two of the firms in each of the three Member States included under ii, and
(iv) EU-wide turnover of each of at least two firms of more than €100 million.[6]

The amount used to be double but it was not sufficient, because many important mergers happened without the commission's supervisory. If the amount of the merger does not reach the level, the EU member state can review the merger. European Commission can get involved in the decision-making process of merging companies outside of the EU when they somehow affect the European market (sell their products or services, use the local suppliers, distributors). The Commission can prohibit the merger if the merging entities are major competitors and it would deeply hit the market or if the merger will strengthen a company with already a dominant position. If the proposed merger does not influence the competition that much, the Commission can approve the merger under some conditions. It could force them to sell some of their assets. Every year the Commission has to check around 300 mergers. It usually takes 5 months until the body comes to a decision.(European Commission, Competition, website, 2014)

Nowadays, the air transport is one of the fastest growing industries. The regulations have to follow the trend while keeping the highest standards of safety and rights of the passengers.
Although the market is completely free, the European Commission still controls the mergers, alliances and any other cooperation that could lead to distortion of the competition within the European area (European Commission, Air Market Integration, website, 2014).

In 2008 the European Parliament and the Council introduced the Regulation (EC) No 1008/2008 establishing common rules for the operation of air services in the Community. It regulates the licensing and pricing of air services. To get a licence the airline has to hold an Air Operator Certificate (AOC). The national authority, in accordance with the

[6] http://ec.europa.eu/competition/mergers/procedures_en.html

Regulation, provides the AOC. The undertaking also has to give the evidence of ownership or a lease of at least one aircraft, insurance and financial stability to prove its real interest in becoming an airline. The national authorities can always suspend the licence if there is a reasonable suspicion that the airline is no longer capable of providing air services. The operating license is given for eternity; however, the authorities shall revise new airlines after two years on the market or any other airline when there is a potential problem or when there is upcoming merger or acquisition.

The member states cannot prevent any community air carriers from using their air routes. The only exception is whether the route is extremely important for the state or when it would affect heavily the developing peripheral areas. It is an issue of environment or safety. Restrictions may be imposed under bilateral agreements between a Member State and a third country, as long as these restrictions do not limit competition, that they are non-discriminatory and that they are not more restrictive than necessary. The only restriction towards pricing is that the carriers always have to display the full price (including taxes, charges and fees). (Europe.eu website, EUR-lex)

In 1992 the Commission approved the acquisition of French TAT European Airways by the British Airways. Their combined market shares on particular routes rose to 50%. Under the Commission's conditions, they had to give up some slots to the competitors in the United Kingdom.
The Commission has the possibility to delegate the member state by supervising the merger even though it is a community dimension state (See Seetley and Tarmac case, 1992). On the other hand, a member state can demand a Commission supervision if the subject of the merger is relatively important for all Europe, such as mergers of banks, security companies etc.

In 2008 the Commission proposed a reform called Single European Sky. It has four pillars: performance, single safety, new technologies and managing capacity on the ground. The European airspace should integrate into so-called blocks in order to control the performance in these areas. The Commission propose objectives regarding cost reduction, delays and routes and the national authorities should approve them and apply. This should lead to better organization and decreasing the prices of flight tickets. By coordination of slots the routes will be better organized and result in less fuel burnt by redundant flights.

This system is called European route network design. Another aim of the Single European sky is to ensure that the airport capacity remains balanced.

Nowadays, the air transport is one of the fastest growing industries. The regulations have to follow the trend while keeping the highest standards of safety and rights of the passengers.

Both systems, American and European, consider a dominant position on the market as legal. But act monopolistic and exploit the position on the market is against the law. The abuse of dominant position has different meaning in Europe and in the United States, which is caused by their different ways of measurement and different thresholds. Also the official definition is slightly different, but overall it expresses the same situation.

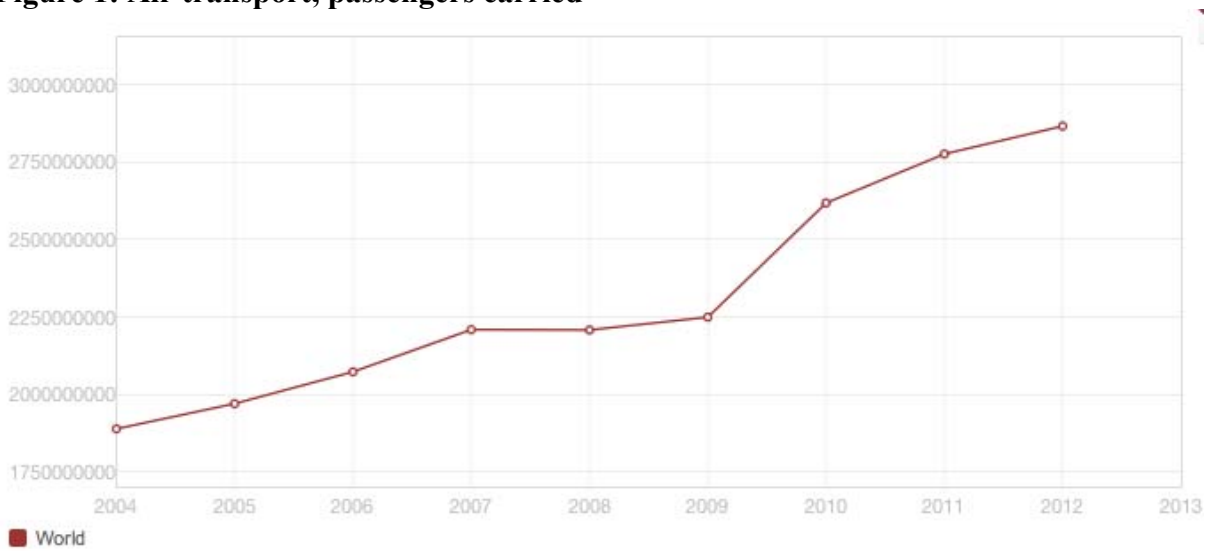
In the case of merger of companies from the same federal state, they can decide if they want to undergo proceedings of the state or of the federal. This is different from the European system where European Commission is not obliged to supervise the non-community dimension cases.

The thresholds settled by American and European authorities are very different. The US Department of Justice controls mergers that start at 303,400,000 USD (223 million EUR) but EC starts to supervise cases of amount of 100 million EUR. Therefore, more mergers and acquisitions are controlled in the US than in the EU. There are two main authorities that work separately tn the US, but they also has to share the results. The EC consults its final decisions with the member state authorities and the European Court of Justice but its findings are not binding for the EC.

Because of the big value of airline mergers, they always meet the thresholds and they are always under the supervision in both continents.

3.5. Current situation of world airline industry

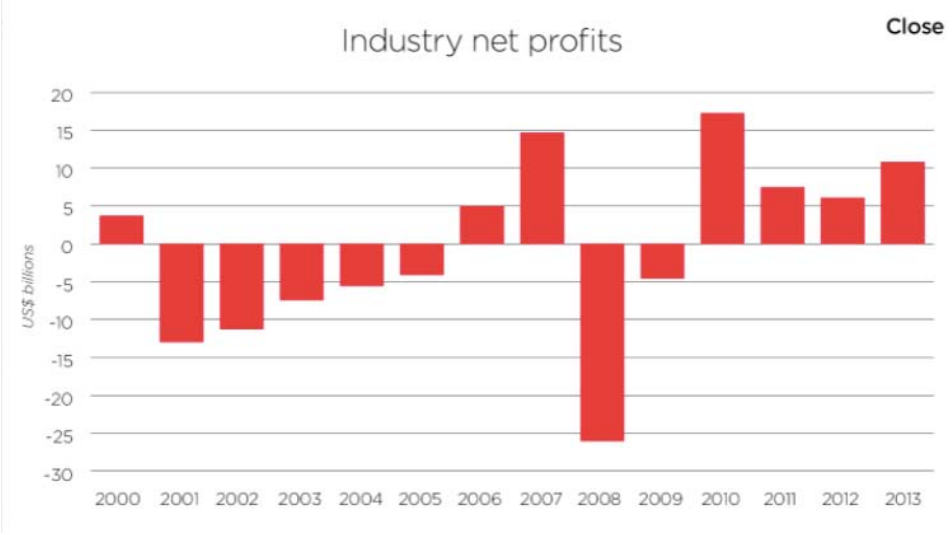
Figure 1: Air transport, passengers carried



Source: The World Bank

The world economy is still recovering from the financial crisis that started in 2008. The decline of passengers willing to travel by plane decreased in 2007 and 2008, but immediately rose again in 2009. The developed economies were still in recovery and oil prices remained high due to unstable situation in the Middle East and North Africa. The airlines responded good to the new conditions and focused more on the new emerging markets such as China, India, Brazil or Mexico. While middle class is getting stronger the potential of these regions is tremendous. All these countries have millions of inhabitants (potential customers) of airlines, which provide international routes. They can even set the prices high, because millions can afford to buy these tickets. The first who gets significant the market share, wins. Therefore, the airlines merge, acquire and gather in alliances to become stronger and take over the markets as fast as possible.

Figure 2: Industry net profits



Source: IATA, ICAO

In 2013 the rebounding global economy contributed to higher demand for airline transport. It is a forth year of profits after slump in 2008, 2009. Net post tax profit for 2013 was $10.6 billion, a 1.5% margin on revenues. In the figure 3 we can see the various development net post tax profit margin of airlines within different regions.

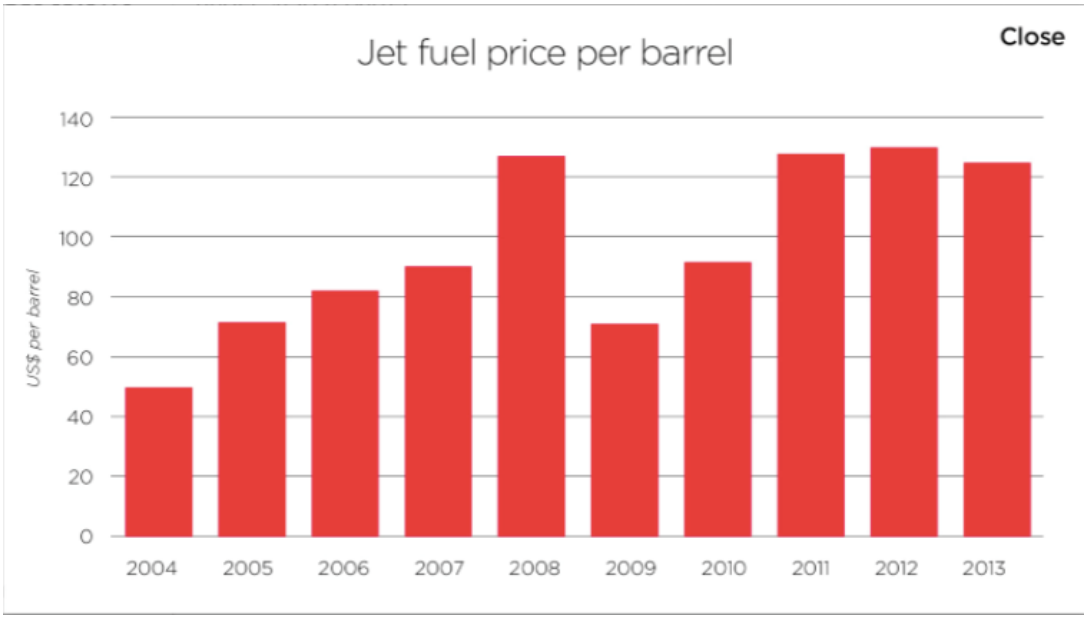
Figure 3.: Airline net post-tax profit margins

Source: IATA, ICAO

While in African and Asian markets the prices for flight tickets decrease due to higher competition, in North American market the concentration is lower and tickets are getting more expensive. The American airlines focus more on efficiency – lower consumption of jet fuel, fewer personnel, less environmental damages. In 2012, U.S. airlines carried 16% more passengers and cargo than in 2000, while using two billion fewer gallons of fuel (Airlines for America, website 2014). The European market is still weak. There is a significant growth in inter-continental flights where airlines use bigger and more efficient aircrafts.

There is decrease of connection flight between Europe and Africa because of political uncertainty in North Africa and slow economical growth in Europe. The Europe-USA route slightly increases in growth, because of higher consumer spending in the USA. (IATA, 2014)

Figure 4: Jet Fuel Price ($/barrel)



Source: IATA, ICAO

In figure 4 we observe that development of jet fuel prices. High price of jet fuel in 2008 was mainly caused by the financial crisis. There were still many passengers willing to fly and companies using the cargo services. But the oil conglomerates were already hit by the crisis. The demand was high thus they increased the prices.

The slump in price in 2009 could be explained by cutting the costs by companies, which sent fewer products overseas and cargo services did not require too much fuel. Lower

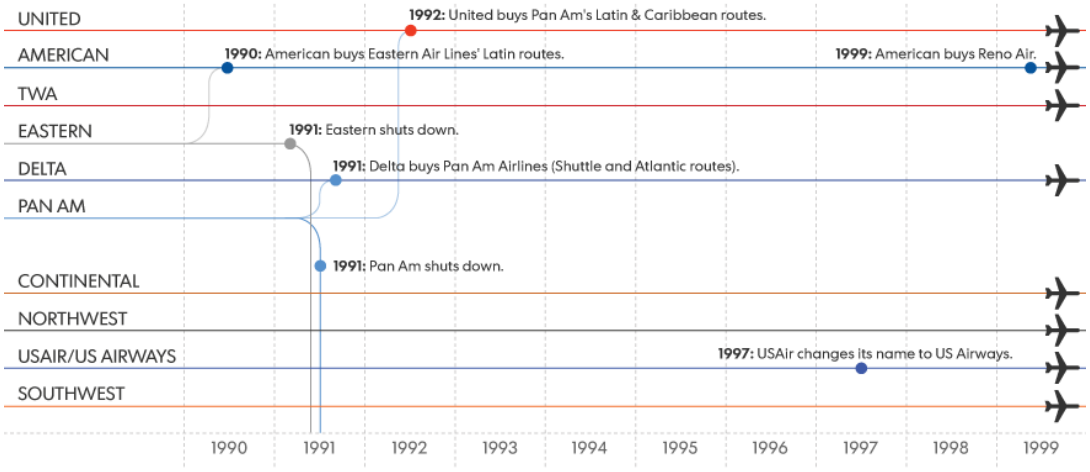
consumer spending on travelling had also a big impact on flying. The result of all these influences was lower demand for jet fuel therefore the price went down.

Because of the so-called Arabic spring, the price of petrol rose up rapidly in 2011 and remained high until now. The US has raised their energy supply, which contributed to little decrease in 2013. The average price of jet fuel in 2013 was $125.5., which is $5 less than year before. The airlines 'costs are comprised by 31% by jet fuel, which makes the fuel the biggest debit column. It is expected that the prices remain high in the following years.

3.6. The American Airline Industry

3.6.1. The development of American airline industry

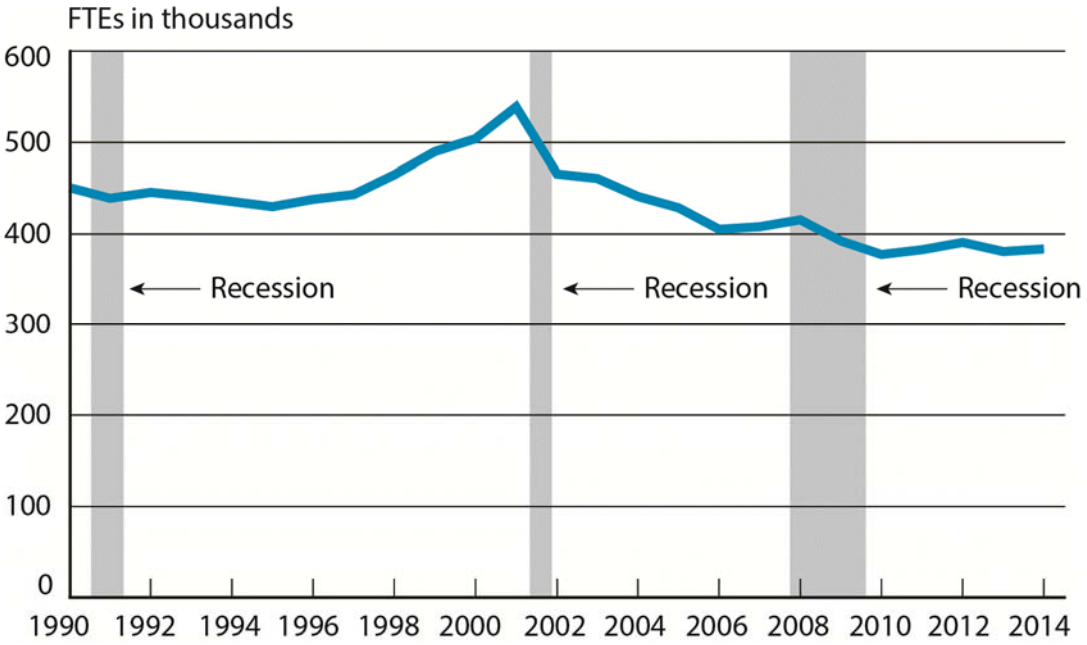
Figure 5: How the Airline consolidated



Source: USA Today

In 1930's 30 small airlines merged into 4 main carriers: United, American, Eastern and Trans West Airlines. From those four only two are still in operation. In 1979 there were ten main airlines operating in the USA. The shrinking market is depicted in figure 5. Due to bankruptcies and other reasons the airlines have merged or acquired and the number shrank to only four big traditional airlines and one big low-cost carrier. Only low-cost or regional companies take the rest of the market.

Figure 6: Scheduled Passenger Airline Full-Time Equivalent Employees



Source: Bureau of Transportation Statistics

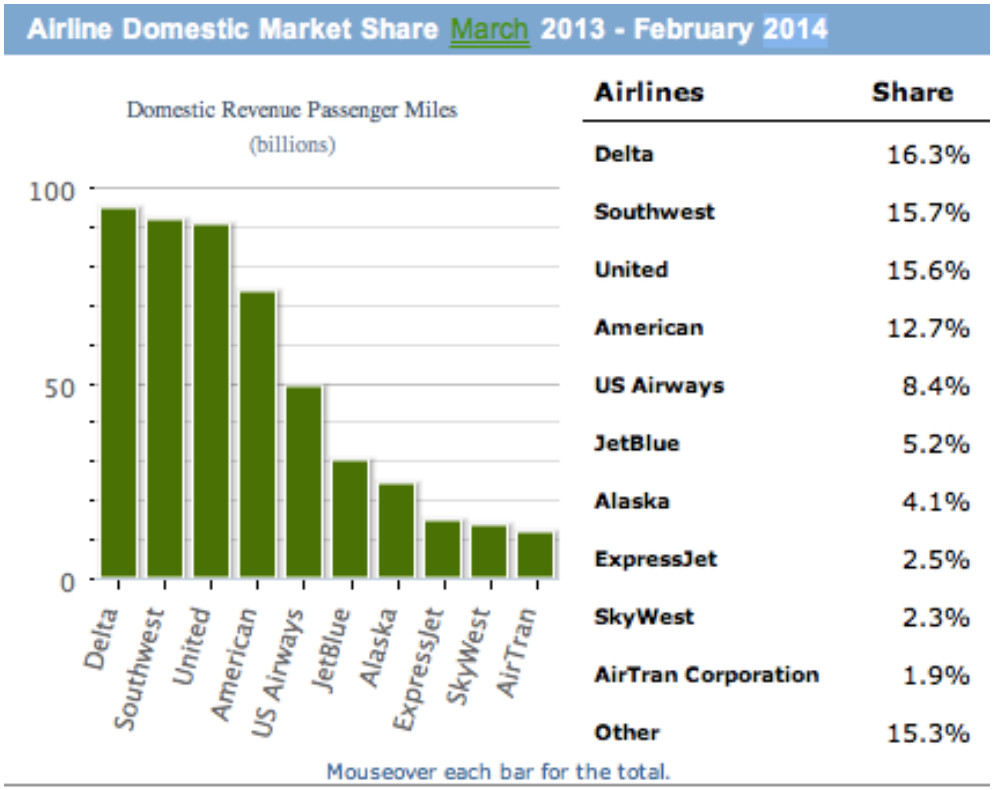
The employment rate in the airline industry is changeable. We can see in figure 6 that during the period 1990 – 2014 there was a big growth in 2001. In that year, more than 500,000 people worked in airline industry. It the same year first big merger happened, American Airlines and Trans Worlds Airlines united. In the same year the terrorist attack on World Trade centre occurred. Both had significant impact on the airline business. Since this year the overall number of employees occupied in airline passenger business has decreased. The oil crisis in 2003 and 2005 with combination of the merger of US Airways with America West Airlines in 2005 contributed to the continued dismissal of employees. Before 2008 the situation of the airlines business was very positive and many airlines invested into new fleet. It required more personnel to operate more airplanes therefore we can see a slight increase in 2007 and beginning of 2008.

In 2008 the financial crisis hit hard the American economy. At the beginning of this year Delta bought Northwest. The lowering of staff was obvious reaction to the difficult situation. The American airlines worked on their employee efficiency. They also focused on buying bigger aircrafts for intercontinental flights where they could transport more passengers with less employees in the same time.

3.6.2. Current situation of American airline industry

Currently there are only 4 big traditional airlines: United, Delta, American Airlines, US Airways. The 6 low-cost carriers are Southwest, JetBlue, Spirit, Frontier, Virgin America and Allegiant and 17 regional. The 4 biggest hold together 68.7% of the market. Even though Southwest is a low cost carrier it has very strong position. Southwest has second biggest market share within the industry as we can see in the figure 7.

Figure 7: American airline market



Source: Bureau of Transportation Statistics

In 2006 745 million passengers were enplaned. The number has decreased to 642 million in 2013. In 2014 it is expected that the number of passengers would rise up by 0.5%. 8,821 departures carried out in 2013 and the forecast for 2014 is negative – decrease by 1.7% due to the merger of two big airlines.

In May 2012, the International Air Transport Association (IATA) released a new Oxford Economics study, *Economic Benefits from Air Transport in the US*. The study proves in 2012 the aviation sector contributed by $669.5 billion in gross added value (4.9 %) to the

U.S. economy. It is also determined that the average air transport services worker generated $105,300 in gross value added, or in other words, 6 % more than the average U.S. worker ($99,200). The United States also enjoys 361 direct connections to cities whose population exceeds 10 million, with more than 900,000 international flights per year to 279 airports in 108 countries, and is one of the world's best connected economies relative to the size of its economy.(Airlines for America, online).

Figure 8: The employment in the air transport industry

MONTH/YEAR	AMERICAN	% CHANGE	SOUTHWEST	% CHANGE
August 2003	88,037		33,162	
August 2004	85,382	-3.0%	31,154	-6.1%
August 2005	81,609	-4.4%	31,711	1.8%
August 2006	78,622	-3.7%	32,340	2.0%
August 2007	78,428	-0.2%	33,877	4.8%
August 2008	77,815	-0.8%	35,644	5.2%
August 2009	72,651	-6.6%	34,996	-1.8%
August 2010	70,297	-3.2%	35,125	0.4%
August 2011	70,773	0.7%	37,152	5.8%
August 2012	67,848	-4.1%	46,482	25.1%

Source: Bureau of Transportation Statistics

It is unquestionable that airline business is beneficial for the American economy. There are 383,610 full-time employees occupied in this industry. They form strong trade unions. As we can see in the figure 8 above, while the number of employees of low-cost carriers rise almost every year, the traditional airlines reduce their staff due to cost savings. Especially Southwest airlines after acquiring AirTran are on the uptrend and needs more employees.
Now when the US Airways merge with American Airlines, only 4 carriers will control almost 70% of the market. Moreover, the new airline will be the biggest airline in the world.

3.7. The European Airline industry

3.7.1. The development of the European airline industry

The British airline Aircraft Transport & Travel was the first company in Europe that could be considered as a first airline. It was in 1919, when the British airlines met all the qualifications to call themselves an airline. The qualifications are:

- Passenger – the transportation of people
- Civil – not just military or diplomatic travels
- Regular – flights operated every day except Sunday
- Sustained – long-term horizon
- International
- Aircraft – the airline has to own at least on plane

There were 28 airlines established between 1918 and 1939. This is almost the same amount of airlines like it was in the USA, but within smaller area of European continent. This is one of the specifics for European air transport. Each country has its own airline and it does not want to loose it. Each state had its own rules to protect the air traffic and market. (Mulder, 2010).
This started to change in 1988 when European Commission introduced "first package". It limited the governments in introducing fares and it gave the airlines more freedom in sharing seat capacity. "Second package" from 1990 widened the rights of airlines in order to provide them flexibility in fares. It also gave them the right to transport unlimited number of passengers and cargo within European area.

In 1993 the "third package" implemented more rights towards market integration of the EU. The free flow of serviced was established which gave the airlines the opportunity to operate routes using the air space of another member state. But the governments of each state had the right to impose some limitations on routes, which are essential for the country. It also harmonized the process and requirements for obtaining an operating license. National authorities used to give approval to introduction of fares but according to the latest package it is no longer required. The airline business was liberated in order to create a competitive market, because the rest of the world, especially American market, was getting stronger.

3.7.2. Current situation of European airline industry

Although the market is completely free, the European Commission still controls the mergers, alliances and any other cooperation that could lead to distortion of the competition within the European area (European Commission, Air Market Integration, website).
While the air traffic is getting busier the carriers have to develop new technologies to maintain the comfort and safety of the passengers. The idea of the Single European Sky ATM Research (SESAR) is to get the European airlines together to work on finding more effective solutions together.

In Europe we do not see many mergers or acquisitions of airlines. The European airlines have chosen another strategy – alliances. Thus the project of Single European sky reaches the highest cooperation possible. The European airlines are more shattered than the American. Here are the European airlines in the biggest alliances:

- StarAlliance:
  - Adria Airways, Aegean Airlines, Austrian Airlines, Brussels Airlines, Croatia Airlines, LOT Polish Airlines, Lufthansa, Scandinavian Airlines, Swiss International Air Lines, TAP Portugal
- SkyTeam:
  - Air France-KLM, Alitalia, Air Europa, Czech Airlines, TAROM
- OneWorld:
  - Air Berlin, British Airways, Iberia, Finnair, Iberia

From this list we can divide the European market into three parts and the most powerfull would be the group of StarAlliance. All the American airlines are member of alliance as well, but for the purpose of analysing only the European market, we will not consider them as members.
Alliances are special agreements between airlines that aiming cost reduction, wider services and routes offered, travellers well being and, naturally, reduce the competitiveness in the industry. Between 2000 and 2010 nine European airlines joined StarAlliance. Six European airlines joined SkyTeam in the same period.

The airlines gathered in the alliance form shared network of routes with connections within the alliance. It other words, they save costs that would be spent on the same route provided by two or more airlines. The alliances usually share catering suppliers, maintenance and personnel at the airports. You can see the same window for check-in that serves for several airlines together. They also share the benefit programme for regular passengers. The flown "air miles" from their travels with the alliance members add up into one. The common marketing is one of the aspects of alliances. They divide the targeted group of customers and their marketing strategies complement each other.

In every alliance you can find big range of airlines, from 5-star luxurious carriers to regular ones. Only the low-cost carriers do not join the group. They operate only locally within the continent and only short distances; therefore the coordinated routes are not essential for them. They also target different kind of customers. The only exception could be Virgin Atlantic. In 2010 Richard Branson, the chairman of the Virgin group, proclaimed that Virgin would form a new alliance, which would consist only of Virgin carriers. But then he has changed his mind and said that Virgin Atlantic would join one of the existing alliances. He did not say which one. It is expected that he will join the SkyTeam. (Quinn, 2012) Until now none of the Virgin Group is a member of any alliance.

The alliances also cause disadvantages for the passengers. When there is less competition on the route the prices of flight tickets rise up and there are less frequent flights, fewer possibilities. These alliances are significant for non-European carriers. As it was mentioned earlier, the national authorities or even the European Commission can apply restrictions on third countries airlines. They can prevent them from using their air space or airports. They can also apply pricing conditions.

Table 1: Top 8 European airlines by intra-Europe seats flown (21/01/2012 – 27/01/2012)

Rank	Airline	Total seats
1	**Lufthansa**	**1,336,927**
2	**Ryanair**	**1,316,196**
3	**Air France-KLM**	**1,248,731**
4	**British Airways + Iberia (IAG)**	**1,018,485**
5	**easyJet**	**978,216**
6	**Turkish Airlines**	**719,552**
7	**SAS**	**618,601**
8	**Norweigan Air Shuttle**	**435,688**

Source: CAPA

There is no official or public available source, where we can find such accurate data about European air industry as we can find about the United States' airlines. The only official data is from the European Commission that in 2012 for the first time, low-cost airlines (44.8%) exceeded the market share of incumbent air carriers (42.4%), a trend that continued in 2013. But for the purpose of this study we can estimate the market shares by counting how many passengers each airline or airline group has carried (only in Europe). We can see the data in table 1.

The group of first four – Lufthansa, Ryanair, Air France-KLM and British Airways+Iberia take together around 40% of European air market share (measured by number of carried passengers). The power between them is balanced. EasyJet is right behind them with approximately 9% of a market share.

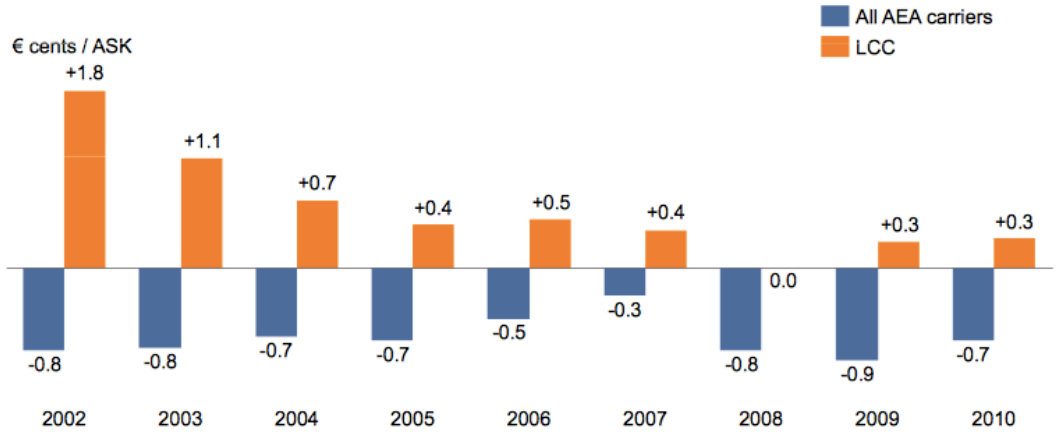
The trend of the last years (after 2008) is more in favour for low cost carriers whose share prices are growing since the middle of a year 2011. The people are more likely to sacrifice the comfort on short-haul flights. EasyJet's shares rose over 90% in 2012. Norwegian low cost carrier's shares rose by 130% in the same year. Ryanair is traditionally on the stable growth. The full service carriers' shares grew in 2012 as well, but not as much as the shares of low cost companies. Lufthansa shares rose by 56%, Air France-KLM shares rose

by 64% and the most astonishing growth was registered for Turkish Airlines, whose shares rose by unbelievable 193%.(CAPA, website, 2014)

The full service airlines have started to implement a new strategy how to compete with the low cost carriers – to have on of their own. They have founded subsidiaries of new airlines, whose flight tickets are cheaper and accordingly, they do not provide same services as at the traditional full service board. Lufthansa has its low cost subsidiary Germanwings, British Airways and Iberia (International Airlines Group) have Vueling and Air France-KLM have Hop. This new strategy allows them to offer their clients long-distance and short-distance full service flights and less services for only short-haul flights. This strategy has already made the low cost carriers react. The Norweigan Air Shuttle bought a big Boeing adapted for long-distances. The services provided on the board or on which route this aircraft would be used remains a mystery until today. The LCC have problem to run the long-haul routes, because the price of fuel burnt on these distances is too big that they are not able to offer the flight tickets for low prices. To overcome this trouble the company needs big aircraft and Norweigan solved it. (CAPA, 2014)

Airline industry is essential for European economy. There were 5.1 million people employed in this industry in 2012. The total contribution of European air transport to the European GDP was estimated at 365 billion of euros. (ATAG, Oxford Economics, 2012). The low cost carriers almost do not contribute to cargo transport and do not connect European region with other world regions. Therefore their contribution to the total value of the European air industry is approximately 10 %, whereas the network and cargo carriers contribute the remaining 90%, split between the network carriers (77%) and the all-cargo operators (13%).

Figure 9: Net margin for median airline in carrier grouping



Source: AEA, 2012

The difference between net revenue and net cost is displayed in the figure 9. The AEA refers to average European airline (a full service airline) and LCC refers to low cost carriers. As the table shows the margin was negative for the AEA carriers since 2002. The LCCs have had positive margin, but even they had to lower the margins due to real yields decrease by 44%, while inflation reached 22.6% and the price of jet fuel (per barrel in USD) increased by 336%. (AEA research, Eurostat, 2012)

The other important issue are European airports, which are the most expensive ones in the whole world. The costs of airports and navigation of an average AEA airline rose up by 56% from 2000 to 2012.

The last big external cost for European airlines are taxes. The average expenditure on an AEA on ticket taxes is 5 billion of euros, which represents 5.3% of total costs. The growth from 2000 is significant – 235%. It is easy revenue for governments, but it contributes to higher price of flight tickets for customers, because the carriers imply this cost immediately to the prices. It also contributes to job losses in the air industry.

The European Commission has noticed the high airport fares and recently introduced new guidelines on how member states can support airports and airlines in line with EU state aid rules. It is a part of the Commission's State Aid Modernisation (SAM) strategy, which aims at fostering growth in the Single Market by encouraging more effective aid measures and focusing the Commission’s scrutiny on cases with the biggest impact on competition. The EC allows the states to invest into the airport infrastructure, where the public and private investment should be in balance. The planned airport capacity Beijing and Dubai will be

more than doubled in few years than it is in London Heathrow or Frankfurt. The small regional airports with the capacity of less than 3 million passengers per year will get operating aid to adapt to the their new business model. Within the 10-year transitional period they will have time to form a model in which they will be able to cover the costs and provide more services to the airlines and customers. The idea here is that even the big carriers can use the small airports and provide new routes. The other objective is to ease the overload of major hubs in Europe. This act will have a positive side effect on public finance of the members, because the small airports are usually publicly owned.

3.8. US Airways and American Airlines merger

American Airlines were the world's biggest airlines five years ago, but because of the crisis, bad investment and other aspects it has suffered heavy losses for last few years. In November 2011 they declared a bankruptcy (Chapter 11) and asked the US government for protection. The management blamed labour unions that forced them into high labour costs. In early 2000s the union workers cut their wages in order to keep the company out of bankruptcy while the top managers received bonuses. This led to several strikes by pilots and flight attendants. The competitive strategy of American was gaining the market share, but they forgot to manage their profitability. AMR lost more than $12 billion between 2001 and 2010. It has lost another $2.8 billion since the bankruptcy declaration.

Chapter 11 is the chapter of the Bankruptcy Code. It allows reorganization under the bankruptcy laws of the USA. Usually corporation use this chapter to avoid liquidation. The organization signs up for Chapter 11 by filling in the petition. The creditors can also submit the business. The entity has to present its debtor's plan of reorganization. After the court's approval to reorganization according to plan and approval of creditors to the plan, the debtor, as "debtor in possession," operates the business and performs many of the functions, but under the surveillance of the court. (United States Courts website)

The American Airlines was the third-largest carrier at the American air transport market with international range. It was dominant on routes to South America and Europe. Its busiest airports were in New York, Los Angeles, Miami and Dallas.

Table 2: The consolidation of American Airlines and US Airways.

	US Airways 2012	Old American 2012	New American
fleet	341	627	900
daily flights	3,100	3,400	6,700
employees	36,500	64,550	95,000
destinations	157	163	339
countries	30	50	54

Source: author's processing

US Airways was half size of American, as we can see in table 2, but in a very healthy financial situation. In the period between 2011 and 2013 it earned around $650 million. It operated mainly in Charlotte in North Carolina, Philadelphia and Phoenix. It was the fifth-largest carrier. Doug Parker was a CEO of US Airways. It was Mr. Parker, the incredible manager, who convinced the stakeholders of US Airways and American Airlines to go into the project of merging two airlines in order to create one big that would be competitive at the American market. He said that the merger is crucial for both airlines to become able to compete with others. The other big merged carriers controlled more than 80% of the US market in that time, he claimed. The people believed in Mr. Parker's dream because he had enough experience from previous merger. He used to be a CEO of American West Airlines, which saved the US Airways from bankruptcy in 2005. Then he became a leader of US airways that will practically vanish like West before.

The American had to make a bankruptcy-exit plan to get the bankruptcy protection and the merger was part of it. The plan had support from the creditors and employees as well. Only the politicians were against the merger. U.S. Republican Joe Barton supported American in self-reconstruction. The lawmakers were afraid of any kind of abuse of American's situation, which could hurt the employees and therefore the economic stability of particular states. But the unions comforted them with the joint statement of complete support of the merger.

The American and US Airways entered negotiations and started to fulfil the Plan of Merger on February 13, 2013. The merger has created the world's largest airline. The representatives of the two carriers said that the new American Airlines would be more competitive in the field of large airlines. They also claimed that it would be beneficial for

the customers. They would be able to offer them more routes, more flight overseas and last but not least they would try keep as many employees as possible and give satisfactory compensation for those who would be dismissed. Tom Horton, who became a CEO of American Airlines the day before the company asked for bankruptcy protection, has done good work with the almost destructed company. The American was on the bottom of the list of on-time performance and customer services. Under Mr. Horton, the company earned operating profits in the second and third quarters of 2012. It had a net loss of less than $300 million in first quarter of 2012. The price of fuel did not help the situation. The American spent $325 million more on fuel than in the first quarter in 2011. There was an increase by 17%.

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Table 3: The costs of American airlines mergers

Year	Merging Airlines	Price of airline merger
2001	American Airlines/TWA	$2 billion
2005	US Airways/America West Airlines	$1.5 billion
2008	Delta/Northwest	$3.1 billion
2010	United/Continental	$3 billion
2011	Southwest/AirTran	$1.4 billion
2013	US Airways/American Airlines	$11 billion

Source: author's processing

This merger is the biggest airline merger the world has ever seen. Its price is three times bigger than any other consolidation in the history (table 3). This case is completely different for the Justice Department and that is why they were not confident to let it go. By giving the approval to other agreements in the history the US Justice Department set a dangerous precedent. They had to consider every case separately but it would not be fair if this merger would not get approval as the others did.

The pilots of American Airways stood behind their employer and supported merger. Their representative Dennis Tajer said that if the merger would not go through the Justice department it would "just confirm the duopoly of Delta and United". The creditors joined the pilots. They were promised to be fully repaid with interest if the merger gets to its successful end. The creditors and shareholders were also promised to receive 72% of the new company even thought US Airways' first proposal was only 49%. US Airways shareholders received 28% of the new company. (Daily Herald, 2013). Considering that

the US Airways is smaller it was a reasonable proposal. European Commission gave its approval to the merger under the EU Merger Regulation demanding only few slots at London's Heathrow Airport that American possessed. There is a monopoly on the route London-Philadelphia operated by British Airways, which is in the same alliance as American. They are also members of Transatlantic Joint Business. That is why the Commission required release of one daily slot pair at London Heathrow to induce other competitors to enter. The Commission was mainly interested in transatlantic routes (66 overlap routes). The investigation led to the decision that the routes would face strong competitors: North Atlantic Joint Venture (Delta, Air France and KLM, Alitalia) and A++JV (Lufthansa, Air Canada, United Airlines).

Transatlantic Joint Business is an alliance of British Airways, American Airlines, Iberia and Finnair (all members of OneWorld). It was founded for the purposes of transatlantic flights between Europe and USA, Canada, Mexico. The alliance promises low prices, common online flight booking, check-in, online boarding and integrated customer support. The reality is that at many connections between big cities those airlines have significant dominance. The example is flight in premium class from London Heathrow or City to New York JFK or Newark. They operate 17 flights both ways every day. These flights are specially customized for businessmen. They have the monopoly to offer first premium class in luxurious environment. There are other routes operates by other airlines (KLM, Air Canada and Lufthansa) but these are regular economy class flights. Virgin offers the cheapest flights, but that is not direct competitor of the Transatlantic Joint Business.

The US Airways used the strategy called Advantage Fares. They offered cheap one-stop fares in order to get the competitive advantage in the market. The prices were dumping prices and forced the other three big airlines to radically drop the prices. The suit said that after the merger this strategy will not be longer applied and the fares will rise rapidly. It also negatively affects passengers at Reagan National Airport where the new American would control 69% of slots, which would cause higher fares. (Wall Street Journal, 2013)

This merger is special in terms of dealing with creditors. Usually the creditors of the company in bankruptcy get just tenth of the amount they should have received. In this case, after the merger the holders of American Airlines common shares will receive one AAL share for every 15 AMR shares that represents 3.5 % of the new company. If the share price stays stable the holders would have hold one third of the new company (**$**5 billion of

equity). US Airways share holders received one share for each one they owned. Mr. Parker from US Airways has gotten 626,000 shares in the new AA. Those shares are worth $15.4 million.

3.8.1. The affect on share prices

Figure 10 : American Airlines Group before the merger

Source: Google Finance, 2014

In the period of 2004 – 2007 the old American was at peak. They invested into new aircrafts, bought slots and started operating new routes. But the financial crisis hit the airlines badly in 2007 and 2008. In the end of 2011 the American officially asked for bankruptcy protection and the reaction on the share price was immediate. We can observe that the impact of it continued to 2012. The American Airlines found themselves in big troubles, but the negotiation with US Airways in 2012 brought trust into their shares. They suffered big losses in 2011 and 2012 and price of fuel just sharply raised from 2.31 dollars per gallon to 3 dollars, which is traditionally the biggest expense of airlines. But the official announcement of upcoming merger reflected positively in stock price although the increase was not significant.

Figure 11: Stock price of US Airways Group Inc, NYSE:LCC

Source: Google Finance, NASDAQ stock exchange

Stock price of US Airways Group is slowly, but steadily growing during past five years. We can observe big increase in 2005 after US Airways merged with American West. They also tried to make a bid in 2006 for Delta Air Lines but they were not successful. Their stocks suffered from general financial depression caused by global financial crisis in 2008. Since the merger was officially announced in 2012 we can observe a continuous rising of the stock price, but the impact is not that significant.

Figure 12: American Airlines Group, Inc. Interactive Stock Chart

Source: NASDAQ

On Monday December 9 the stock of new American started to be traded on the Nasdaq Stock Market. The share of the largest airlines rose by 2.7% in the first day of trading. It

shows the trust in the company, which was in huge debts just few months ago. That was the end of two-years reorganization. The unsecured bonds of value of $1.5 billion were strong argument for the judge's decision. The American kept repaying the secured bonds during the bankruptcy regime, but could not continue with the unsecured because of the regulations of Chapter 11.

After several lawsuits several conditions were settled. Both airlines had to divest slots, gates and ground facilities at seven airports in the USA. (Source Media, 2013).

We can see in the figure 12, the price of the new AAL shares rise up significantly since the beginning of 2014. The stock started to be trade in December 2013 for $22.55 and it has grown to the price of $44 in June 2014. The volume of stocks traded at NASDAG stock exchange remain stable with few deviations in the beginning when people bought the stock for the lowest price, because they believed in the successful future of new American. And they were right. If they still hold their stock its value has doubled. In the middle of June we can see a drop in stock price, which caused bigger volume of traded stocks. Owners divested and other investors felt the opportunity to buy for an attractive price.

3.8.2. Impact on customers

What is good for the airlines does not have to be good for the passengers. Charles Leocha from the Consumer Travel Alliance states that "the benefits of this deal will go only to the corporations, not to consumers". Less players at the market means less competition that leads to higher prices and less options. The two carriers had 12 overlapping routes, which leaded to presumption that prices will raise on these routes. That is why the competitors asked for giving up some of their landing and departure slots.

Figure 13: The development of American fares

	Q1 2004 - Q2 2013
US Domestic Airfares	2.0%
US Domestic Airfares (inflation adjusted)	(0.5%)
Transportation Wage Index	2.3%
Brent Crude Quarter Close	14.1%

Source: PWC, Aviation perspectives

On the other side, the merger has impact on flight tickets. Many analysts think it would damage the customers, but a study released by Pricewaterhouse Coopers found that during the period of big airline mergers, between 2004 and 2011, domestic US airfares fell by 0.5%. The study explained that phenomena by the expansion of low-cost carriers to North America region. The other aspect has a significant impact. The main costs for airline business are labour and, which is not too dependent on the number of players at the market. Fuel takes part of around 35% of operating expense and labour around 22%. On the other hand, there are several benefits for customers. The happiest customers are the ones who travel from Los Angeles where United Airlines dominated and new American will take more power over it, because it is a key hub for them. It is the nation's third-largest airport. They used to overlap on only one route (LAX – Phoenix). Their strategy is focusing on high-fares customers on flights from Los Angeles to London, Shanghai, Tokyo and New York. On the route to LAX – JFK they become the only airline offering first-class cabins with bars. While US Airways had different strategy and mostly operated domestic flights from the West Coast and European flights from East Coast. The new American will offer more flights to Europe and Latin America thanks to US Airways' routes. But there will be still lack of options on connections to Asia. At the Los Angeles International airport they will compete with United and Delta from which the passengers will profit. (Los Angeles Newspapers, 2013)

3.8.3. Getting the Courts' approval

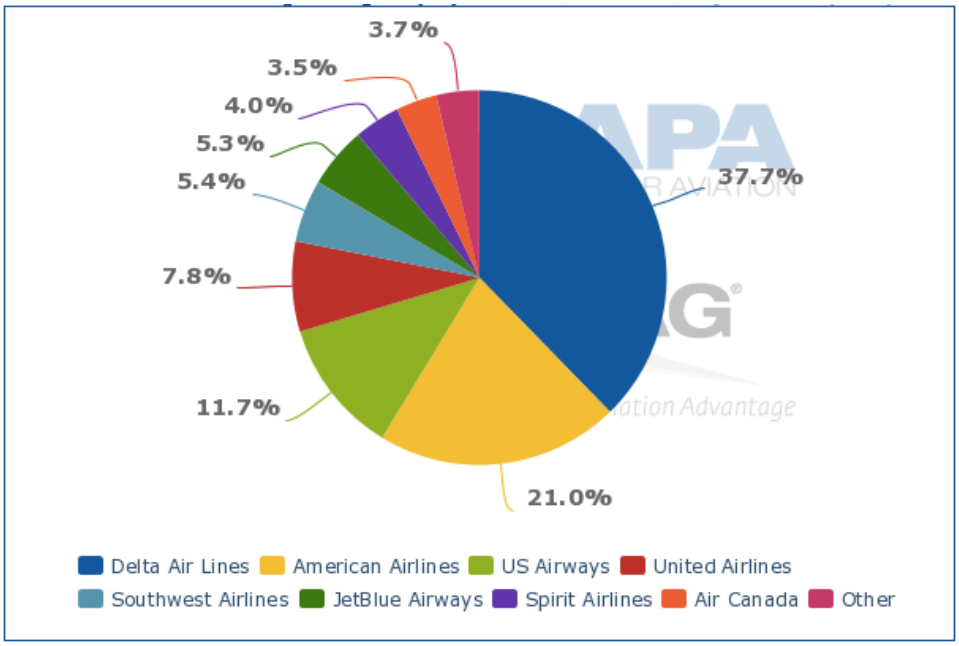
The upcoming merger needed an approval from the bankruptcy court and from the Department of Justice as the anti-trust authority. The planned time for finishing the merger was third quarter of 2013. The airlines used previous big airline mergers in their defence. They were reaching for competitive position at the market.

In the beginning of year 2013 the court gave the approval to AMR to buy hundreds of new planes from Boeing and Airbus, because it would lower the fuel costs. With bigger planes they could offer more seats and less flights.

Even thought the Justice Department had let four big mergers to happen, they blocked this merger in august 2013 explaining that "American – US Airways deal would go too far and hurt competition because it would leave four airlines controlling more than 80% of the U.S. market". U.S. attorney General Eric Holder said that the consumers would pay the price for it in the end. The last agreement, which the Justice Department blocked, was the merger of United Airlines and US Airways in 2001.

The Washington authorities finally approved the merger after rejecting a request by a private group, which demanded rejection of the merger under antitrust laws in December 2013. In return for letting the merger happen the AMR had to divest 17 slot pairs at LaGuardia and 52 pairs of slots at Washington National. US Airways swapped 132 slot pairs at New York LaGuardia, which is the closest airport to Manhattan, with Delta. Then they focused on Washington, where they acquired 42 slots from Delta.

Figure 14: New York LaGuardia Airport capacity by carrier (% of seats): 13-Jan-2014 to 19-Jan-2014



Source: CAPA - Centre for Aviation and OAG

The diagram shows how the merger encourages the competition at LaGuardia, where Delta used to have a dominant position. American combined with US Airways would have offered almost 23% of the seats. Now there are two dominant players, but Delta acquired more slots and American has lost them. Therefore, the position of Delta has strengthened here. The connections from this airport are mostly to other US cities and big Canadian cities. The international flights are very rare.

The situation at the other New York airports looks different. At JFK airport the presence of big players is in balance. But the second carrier with the most seats offered is Delta again. At Newark Liberty airport The United Airlines have total dominance which its 67% of seats offered. Delta has only 4% share at this airport. Overall, Delta and new American

will rise up the competition on other connected routes from LaGuardia airport, which most likely offer passengers more possibilities and flight tickets for lower prices. Even though Newark and JFK are equally far from Manhattan; JFK airport is different. It is more international airport with the prestigious flights to London and other big European cities. The European partners from the airline alliance mostly operate these connections, for example British Airways' route to London. Newark airport is mostly used for domestic flights with connections to Europe and particularly Asia; whose is United's competitive advantage. (CAPA, Centre for Aviation, 2014)

All this actions mean that Star Alliance will loose one the strongest member, because the new American would be part on OneWorld alliance. Now the forces are balanced. There is one big competitor in each airline alliance. Before the merger US Airways was member of Star Alliance with United. For the American air transport market the world alliances are not that important. It is advantageous for offering the customers connections to other destinations, but it does not affect significantly the domestic competition.

After the merger it takes around two years for the merged airlines to get the certificate from the Department of Transportation to operate as a single airline. (USA Today, 2013). In the beginning of January, the two airlines recognized each other's elite flyers. It means when the frequent flier member at one airline is able to earn miles on the other airline's programme. They also combined their airline flight codes, which allow them to sell each other's flight tickets. (Forbes, 2013)

3.8.4. The power of trade unions

Before any merger can even be discussed, the management has to get approval from the unions. The three main unions reached the decision in April 2012 after two months of negotiation. The American planned more then 14,000 layoffs to save $1.25 billion to follow the restructuration plan, but the American's attorneys persuaded the bankruptcy court that merger would save the company and preserve the jobs; therefore they did not have to dismiss the employees. There were rumours at Wall Street and on TV of hostile takeover that would hurt the AMR employees but the unions took a stable position in collective bargaining with AMR and US Airways and negotiated good conditions. In

September 2013 the representatives of Associations of Flight Attendants, Pilots and Communication Workers gathered in Washington D.C. They represented 70,000 employees of AMR and US Airways, which includes dispatchers, call centre representatives, technicians and many others. They met senators and congressmen to show them their appreciation of the merger after the Department of Justice blocked the merger in august. The employees were promised to keep their jobs or be paid out with high interests and that decision threatened their future, their positions. Especially employees of American knew that all of them could loose their job immediately. The merger would preserve at least 6,200 jobs in AMR. They strongly believed in the combined future and showed "unprecedented support". They were also attracted by the idea that they would become employees of the biggest, most competitive airline in the world. This position brings benefits even for employees. The profession like pilot traditionally runs in the family and especially pilots were strong in their conviction, because they wanted to keep the job positions for their children. The new American would be able to compete with big airlines on domestic and international routes. (The Daily Herald, 2012)

The union with the biggest number of workers, which has direct impact on our case, is Transport Workers Union, AFL – CIO, where 26,000 workers of AMR participate. But more important in the Allied Pilots Association (APA) that represents 10,000 pilots of AMR. This union has the biggest impact, because when it comes to cutting the costs, the workers of low-skilled positions are the first in line to be dismissed. They are easily replaceable. That is why they gather in big unions to have predominance in negotiations. The flight attendants are weak in their position as well. The second most valuable workers are aircraft dispatchers, which a job that requires high skilled people that have big responsibility. The most valuable workers are pilots. Their position requires the highest skills. It is not easy to replace a pilot, only by another pilot from the rival airline. They can ask for the highest salaries, because know they are the most precious for the company.

Overall, the employees were driven to support the merger by different motives. The employees of American could have lost their jobs if the merger would not have happened. The employees of US Airways were driven by the idea of strong, big airline that would enhance their position completely. They saw the possibility of more benefits and higher salaries.

The issue is, how to assimilate the former US Airways employees. What positions will be given to US Airways' employees, who will get higher positions, who will be dismissed? The employees of economically stronger but smaller airlines are coming to bigger but

financially weaker organization. The risk being that the employees of old American will feel undervalued and US Airways employees will feel too self-confident and ask for more benefits, because "their company saved American". (U.S. Newswire, 2013)

3.9. Air France KLM merger

AirFrance (formally Société Air France, S.A.) is the French mayor airline with its headquarters in Tremblay-en-France. It was founded in 1933 by merging five French air carriers. Now it is a subsidiary of Air France-KLM Group. The main hubs of Air France are Paris – Charles de Gaulle and Paris Orly. In 2000 Air France was a founding member of SkyTeam, an airline alliance. The shares of Air France were listed on the Paris Stock Exchange in February 1999.

KLM Royal Dutch Airlines (formally Koninklijke Luchtvaart Maatschappij N.V.) in the Dutch mayor airlines with its headquarters in Amstelveen. It was founded in 1919 by young aviator Albert Plesman. It is the oldest airline in the world still operating under its original name. It is also a subsidiary of Air France – KLM Group. The main hub is Amsterdam Airport Schiphol. KLM is also a member of SkyTeam alliance. (Balachandran, 2013)

KLM bought 20% of Northwest in 1989, but this American carrier had lately financial troubles. Therefore KLM tried to find stronger partner but the negotiation with British Airways was not successful. The Pan-American alliance with SwissAir, SAS and Austrian Airlines was established in 1993. They combined had 20% of the European market. In 1996 KLM bought 26% of Kenyan Airways, which was a successful step and revenues doubled within two years. After an approval from the US Department of Justice to guarantee the antitrust immunity to joint venture of KLM and Northwest, KLM has increased its shares in Northwest to 25%. KLM tried to establish a merger with Alitalia, but due to uncertain development of Milano Airport Malpensa, KLM stopped the process. Alitalia then sued KLM for 250 millions of euros. KLM was the first European airline, which made an agreement with Chinese carrier. They share some particular routes.

After September 11, 2001 (the terrorist attack on World Trade Centre in New York City) and on-going wars in Afghanistan and Iraq, most of the airlines fought with downturn in air travelling. Air France was still recovering from near-bankruptcy in the mid-1990's. KLM was in financial difficulties and kept dismissing employees. KLM had revenues in

March 2003 of 6.5 billions of euros comparing to the same period in 2001 when it was 7 billion. (Thomas, 2012) KLM is mostly owned by Dutch government, which allowed the representatives of the government to play important part in merger negotiation.

In 2002 the first unofficial discussion started between Air France and KLM. Jean-Cyril Spinetta, chief executive officer of Air France, was the first one who suggested the merger to his counterpart at KLM, LEO van Wijk. Air France was more financial stable and bigger airline in that time. British Airways were Europe leading airlines. In 2003 the real negotiation started. KLM got the approval from its BU in September 2003 when the French carrier's board agreed on the tie-up with KLM. KLM shareholders were expected to hold 15.5% of the new company, which was worth 3.66 billions of euros. Alitalia, the Air France's partner from SkyTeam did not want to be set aside and some said that the carrier would be part of the merger as well, which as we know, did not happen and Alitalia is in lots of troubles in 2014.

Air France's shares were evaluated at 13.52 euros and Alitalia 0.29 euros. According to financial results the two carriers did not believe in Alitalia's surge and did not invite the representatives to merger's negotiation table. The French official pronounced that there would not be any job cuttings, which is a typical declaration of the representatives to persuade the unions to let them proceed in peace. The agreement of Employability guarantee for next 5 years was signed. At the same time, the recommitment to reduce costs on employees by 10% was confirmed.(The Observer, 2003)

Finally, the Air France shareholders received one share in the new holding company for each Air France share, which meant they owned 81% of the company. KLM shareholders received 11 shares in the holding company for every 10 KLM shares. After this declaration, the KLM shares rose by 12% while Air France shares fell by 4%.
The airlines expected the merger to save them 500 million euros, especially in purchasing and administration. During the negotiation it was clearer that the two airlines would create a holding company where both would keep operating under their names. The new company has got the name Air France-KLM Group and both carriers are its subsidiaries. They said they would keep separated names for 8 years, but they keep them until now, year 2014. It looks like none of them wants to give up their unique flag carrier. (The Standard, 2003).

The new holding company Air France-KLM has changed their business strategy from flag carriers of their countries to three core businesses – passengers, freight and aircraft maintenance. The two airlines have remained independently managed. The CEO of Air France became a CEO of the holding company. The CEO of KLM became a deputy of Mr. Spinetta.
The European sky started to unify like it the American airline industry, where fewer but larger carriers compete on more long-distance routes. The short-distance routes belong to low-cost carriers like Ryanair or EasyJet. Therefore the discount airlines were not against the merger, because for them it meant less competition on their routes. But in addition, Long-haul service by European low-cost carriers (LCC) became a reality in 2013 with the delivery of the 787 to Norwegian Air Shuttle and it is expected that this trend will continue.(Boeing.com, 2014)

European sky was shattered into many small national carriers, which suffered losses, mainly because of the entry of low-cost carriers. The traditional full-service carriers had to react and start the period of intensive cooperation and partnership, but none of them merger in a full meaning of this term (Lufthansa + Swiss, British Airways + Iberia, SAS). There is also an assumption that operating airlines were afraid of the year 2004 when the European Union accepted 10 new members. This brought more competitive flag carriers to the European market with wider rights and lower prices.

In February 2004, the European Commission gave its approval to the merger under one condition. The companies had to give up 94 slots on the routes where low competition might occur, especially on the routes Paris – Amsterdam and transatlantic flights. The Commission supported the merger, because the competition within the European union was already in tense. The US Department of Justice allowed this merger in the same time. Air France – KLM became the world's largest carrier by revenue with combined 19.2 billion of euros and 58.8 million passengers a year. They were the third world's largest carrier by the number of passengers after United Airlines and American Airlines. (The Guardian, 2004)

In May 2004 the merger went into force and the airlines revealed their plans for the future cooperation. They have started to fly Paris – Amsterdam 15 times per day, which meant

better services for customers and saving costs on operating. KLM dropped its routes from Amsterdam to Turin and Casablanca and strengthened its position in the Northern Europe while Air France dropped Paris – Bristol and Paris – Glasgow and bolstered its operations in the Southern Europe.

Table 4: The consolidation of Air France and KLM

	Air France, 2003	KLM, 2003	Air France-KLM, 2004
fleet	341	627	500
daily flights	3,100	3,400	6,700
employees	36,500	64,550	100,000
destinations	157	163	220
countries	30	50	54

Source: author's processing

The merger decreased the French government ownership from 54% to 44%. The Dutch government held the majority of shares in KLM.

4. Empirical observation

4.1. Methodology

4.1.1. Econometric model

I have chosen the econometric modelling as a method of empirical observation that could study the impact of mergers and acquisitions on airlines. Econometric model is a mathematical model, which defines the economic hypothesis using mathematics and statistics. It is a perfect method for the purpose of the analysis because it is an impartial, objective method. The econometric models are widely used for prediction of GDP, inflation, unemployment rates and other macroeconomic indicators. The models can be also used to explain the relations between indicators. This method is available also for microeconomic data such as dependence of wage on production. The econometrics is also useful in the financial field for forecasting of stock prices.

The model explains how much are the economic variables determined by other variables. This reliance could be described by one or more equations. The variables from each equation can influence other variables from different equation.

There are two types of variables in econometric modelling. The *exogenous variables* are defined out of the system. They are given by observation. They explain the endogenous variables. *Endogenous variables* are generated within the model they are so-called the explained variables. Predetermined variables are all variables that explain the endogenous variable including exogenous variables, lagged exogenous variable and lagged endogenous variables. If there are values from other time series involved, it is so called "dynamization" of the model and the variables are lagged variables. The other important type of variable for the model is *stochastic variable* whose value is subject to variations due to chance of randomness. It is represented by value 0 or 1. The 1 appears in observations where something unexpected happened, i.e. volcanic explosion, terrorist attack on the plane etc., which could highly influence the results and lower the functionality of the model of the airline industry.

There are structural parameters in the model. These parameters represent random failures such as random behaviour of the economic subjects, inaccuracy in measuring or time aggregation of data. The relations between variables are demonstrated in regression equations. Parameters represent direction and intensity of exogenous variables on the

endogenous (explained) variable. The econometric models are stochastic, which means that they contain stochastic variable, unlike deterministic models, which do not include the random variable.

The econometric models can be written in many forms:

Non-linear structural form

$$f(y, x, \delta) = \varepsilon,$$

where ε is a vector of stochastic disturbance terms (error term), f is a column vector of the function, □ is a vector of endogenous variable, □ is a vector of exogenous variable and □ represents the vector of parameters.

Non-linear reduced form

$$y = \phi\ (x, \delta) + u,$$

where ϕ is the column vector of the function and u is the vector of the stochastic disturbance terms in reduced form.

These one-equation models express the dependence of one endogenous variable on one or more exogenous variables with stochastic variable.

There are also multi-levelled models, where are more than one explained variable. When the endogenous variables are in the model as explained and explanatory variables at the same time, these models are called *simultaneous model.* The economic model could look like this:

$$y_1 = f(y_3, x_3, x_4, x_6)$$
$$y_2 = f(y_3, x_5, x_{10})$$
$$y_3 = f(y_1, x_5, x_9)$$
$$y_4 = y_1 + y_2 + y_3 + x_7$$

4.1.2. Econometric modelling

The traditional econometric approach is divided into following steps:

1. Specification - Economic theory
2. Algebraic Economic theory
3. Econometric model
4. Quantification
5. Economic interpretation

6. Statistical verification
7. Application

Econometric modelling is a process in which we analyse an economic phenomenon by using economic, mathematical and statistical knowledge to confirm or disprove a hypothesis. There can be many hypothesis based on previous observations. We have to study each hypothesis separately.

Specification

First, we set a hypothesis, a *specification* of an economic model. It is better to specify simple model instead of complicated misleading model with many data. Using the economic model we are able to simplify the word formulation into mathematical expression. The model is dedicated to verify the economic theory uses different type of specification than the model with a prognostic utilization.
First step is to set the most simplified model possible. Then we add more variables or dynamize the model with lagged variables. Specification has several steps:

1. Determination and classification of all variables in the model
2. Define the anticipated direction and intensity of all predetermined variables
3. Choice of a mathematical form of a model (for each equation if possible)
4. Identification of a model

The direction of predetermined variables (negative or positive sign) we determine based on our previous knowledge. We can predict on the foundation of previous proved economic theories and analysis. Also the intensity could be anticipated. We can expect the value of intensity in predetermined interval. Or we can predict the differences between various variables. Then we have to choose from linear or non-linear mathematical form. The economic theory does not give us transparent instructions. In general, the linear models simplify the reality. This is so-called *Algebraic economic theory*. By adding parameters and stochastic variable we get an *econometric model*. There are several types of these models:

- One-equation model
- Multi-equation model –independent equations
- Simultaneous model – interdependent equations

It is always better for the interpretation when the model is linear in parameters. If the model is originally non-linear it is useful to transform it into linear using logarithms for example. There are also more types of verification tests for linear model.
The model has to be *identified*. It means that the model has to be consistent with the statistical data and only one economic hypothesis. The model is *unidentified* when it could verify more economic theories we do not know which one is it.

Quantification

In the next step we *quantify* the model using the statistical data. It is a statistical estimation of parameters, which determine the direction and intensity of the variables within the model. For this phase it is very important to choose corresponding data. The types used for econometric modelling are:

- *Cross-sectional data* – data of many subjects in a random order without regarding the differences in time
- *Time series data* – a sequence of data points in time order, e.g. annual, quarter, months etc.
- *Panel (longitudinal) data* – repeated observation of selected subjects (company, industry etc.) over long period of time

Some difficulties can appear. There could be insufficient *Degrees of freedom* indicator. It means there are not enough observations to study the hypothesis properly. The parameters would be estimated inaccurately. Also the multicollinearity appears regularly in time series. *Multicollinearity* is a statistical phenomenon in which two or more variables are highly correlated. It means that one variable is a linear variation of another. If the multicollinearity is not solved the model will be less accurate with big statistical errors. Another problem could by autocorrelation. *Autocorrelation* refers to the correlation of error values in time series with its own past and future error values. This means that an error occurring at period t may be carried over to the next period $t + 1$.

To estimate the parameters we can use different ways. One method is better to use for one-equation models and another for multi-linear models. In these models we can estimate each

equation separately or the model as a whole. The most used method is *Ordinary least squares method (OLSM):*

$$(X^T X)^{-1} X^T y$$

We can use this method if the model meets all Linear Regression model assumptions or so called *Gauss-Markov assumptions*:

- The model is linear
- The expect value term of the error term is zero
- The model is homoscedastic
- No autocorrelation
- No multicollinearity

We cannot estimate the parameters with 100% accuracy. We are able to estimate confidence interval in the given exactness.

Verification

When the model is estimated then we have to verify the model.
There are following verifications:

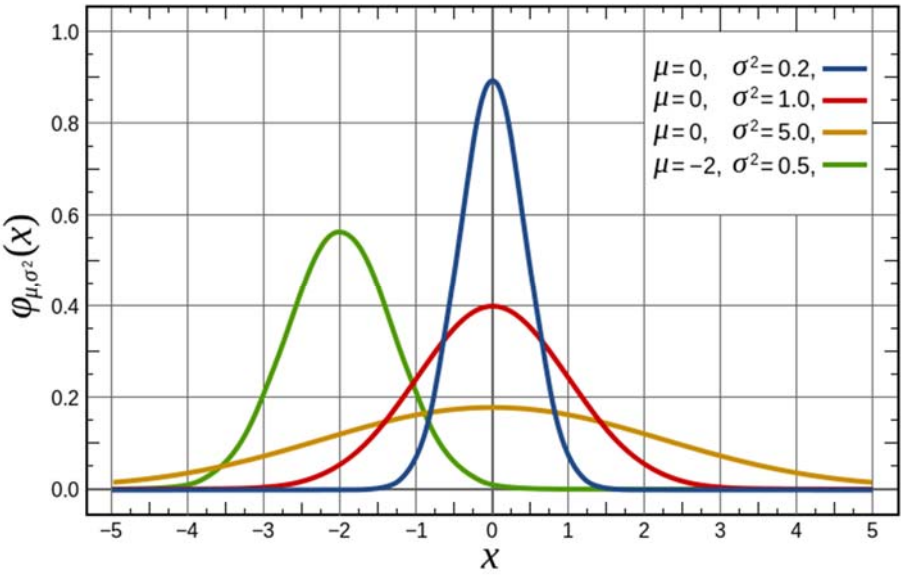
- Economic verification
- Statistical verification
- Econometric verification

In the *Economic verification* we get the first results if the model was well constructed. Based on economic well-known criteria we can recognize if the model was well specified. If the intensity of parameters is too big or the direction should be the opposite way we have to specify the model again, for example with different variables. When we see there is no significant contradiction in the results we proceed to economic interpretation. In the Economic interpretation we translate the numeric results into words.

Statistical verification is a process when we check how much is the model statistically important and useful in economic interpretation. We compare our results with the hypothesis. We examine the parameters if they are within the limits we set at the beginning and we examine the model as a whole by using concrete statistical tests. There are several tests and indicators we use for the verification. For statistical verification of the parameters

we use the *p-value,* which tells us if the parameter is significant on a certain level of significance. Based on *coefficient of determination* we can declare how many per cent of the model explains the dependent variable. The accuracy of the whole model we is even better measured by *adjusted* R^2. The t-test is a statistical method that is used to test the difference between two medians. It also declares the significance of the parameters The assumption for both tests is that the observations have the normal (Gauss) distribution, which is represented in the following graph by the red line. The mean value μ is 0 and variance σ^2 is 1.

Figure 15. Normal Gauss distribution



Source: online

In the *Econometric verification* we verify the conditions under which we can apply the model. The dedicated tests tell us if the model, we have chosen, is appropriate. If the model fulfils all the conditions we can use it for application. When the model is not within the criteria it does not mean that it is wrong, it means that the model is less accurate and it is not suitable for prognosis. The following test are used for econometric verification:

Name of the test	*What is tested?*
Breusch-Pagan test	Heteroskedasticity
Chow test	Stability of parameters
Breusch-Godfrey test	Autocorrelation of random variable
Durbin-Watson test	Autocorrelation of random variable
RESET test	Suitable linear function form
Jarque-Bera test	Normal distribution of random variable
White's test	Heteroskedasticity

Heteroskedasticity can invalidate statistical tests of significance that assume that the modelling errors have a constant and finite variance and it could cause standard errors to be biased.

Application

The last step is *application* of the model. We apply the results of the econometric model in the real life. We can use it for both macro and microeconomic data. It is often use in production function. The model helps us to analyse the observed period and we can use the given data to set up a prognosis for the following periods.

There are two types of application: analytical (*ex post*) and prognostic (*ex ante*). Using the application ex post we analyse the observed period and verify the significance of the estimated parameters. In ex post application we decide whether the economic theory matches with the real situation. We can run an experiment and imply different explanatory variables and observe the different results that we predicted on the basis of the econometric model.

In the ex ante application (or prognosis) we predict the endogenous variables for future periods. The only model, which is suitable for prognosis is a model that fulfils all the verification criteria. We have to estimate with high accuracy the exogenous variable for future period. There is also an inverse model where we set the endogenous variable and try to estimate the parameters for exogenous variables.

The most important type of application is *coefficient of elasticity*, which compares the influence of each exogenous variable on the endogenous variable. The elasticity is a measurement of how responsive every explanatory variable is to change the explained variable.

The most important parts of the econometric modelling are specification and verification. If have to be well familiar with economic theories to set up a relevant hypothesis and select the corresponding data. The verification tells us if have chosen wrong variables, non-relevant variables or if the whole model (based on the theory) is applicable in real situations. If the verification shows bad results, we have to change the variables or start all over with a new model.

4.2. Observations

The research question is formulated as follow:

Is the airline more profitable after the merger?

What are the main variables influencing the profitability of an airline?

The most objective way how to evaluate a company, whose stocks are traded on the stock exchange, from the point of view of its shareholders or investors, is to follow the price of its stocks. How does the price develop over the time, how many stocks are traded (volume) and if the company pay out dividends and how much.

For the model of airlines I have chosen the Linear Regression Model. I will use the program called GRETL, which is a free statistical program for researchers. I worked with GRETL last year in my classes of econometrics. I found it very useful and regarding a big amount of data it saves time and it is able to execute many verification tests, which is crucial for our model.

In the two separated models we have analysed two airlines. In the first we have observed the American airline share price development before the merger. In the second model have examined how the Air France – KLM performs after the merger. We put ourselves in the position of a shareholder or an investor who is thinking about buying the stock of the airline, which had declared merger. There are several ways how the investors decide. For this study we used the analytical (technical) approach, we used statistics, mathematics and economics to find out if the company is doing well and if it is profitable after the merger.

For the purpose of our study we have chosen the time series data, which can objectively describe the situation of the airlines before and after merger over long period of time. We gathered the data of the period 2002 – 2013. In this period we can observe the situation of the companies before and after the merger in two separated models.
The first model examines how American Airlines performed before the recently happened merger, meaning the period 2002 - 2013. In the second model we have applied the econometric model on the case of AirFrance-KLM to analyse how whether the company is more profitable after the merger in the period 2003 - 2013.

To make an econometric model we first need an economic theory. It means we have estimate which factors influence the stock price the most. Based on the theoretical part we have chosen several variables, which could affect the stock price: net income, cash, revenues, stockholders equity, price of fuel, long-term debt, number of slots at the airports, number of destinations, number of passengers, number of aircrafts and number of employees. The purpose of the model is to estimate which ones are the most influential and measure how much and whether it affects the stock price in positive or negative way.
We were forced to abandon the model where development of the flight tickets price and how is it affected by the merger, but the required data, prices of certain flight tickets during the time, is confidential and all the airlines refused to give us an access to these data. Therefore, the impact on the customers is not an objective of this thesis.
While working on the model, most of the variables turned out to be insignificant. Here are the descriptions of the relevant and most influential variables.

Revenues (operating revenues), or so-called turnover is the amount of money that the company has received in a certain period (usually a year). It is used in as a variable in the first model. The revenues are generated by sale of goods and services. In the case of airlines the main product they sell is the seat in an aeroplane, the experience, the possibility to transportation from one place to another. Big revenues indicate big growing company with sufficient number of customers. The problem is that the revenues have to cover losses, which can be higher. It is certain that decreasing revenues are bad sign. The airlines are big companies and they operate on a long-term basis, which means that they have to predict costs in advance and set the margin appropriate to the future costs. The predicted revenues can vary depending on the many external influences.

The net income (net earnings) is calculated by deducting costs of goods or services, operating expenses, interest and taxes from revenues It is used in both models.. It is one of the most important indicators of profitability of a company. The negative number (loss) indicates that the company has lost money and has not performed well in a period. It determines if the company is able to cover its costs and still have enough to produce profit. When the company has profit it is more likely that it will pay out dividends.

Cash is another variable in both models. Cash is the most liquid asset. Cash flow movements during the year determine the amount of cash. More cash means better solvency. A sufficient amount of cash ensures the creditors, employees and others can be paid on time. Cash builds trust in the company. Shortage of cash is better indicator of coming bankruptcy than small net income or loss. Even the company big profit could have solvency problems.

Number of passengers carried includes both domestic and international aircraft passengers. It was used as variable in both models. More passengers mean more revenues. The most expensive flight for an airline is a plane where not all seats are sold. The analysis prove that business and first class are the most profitable, but it is still better to sell the rest of seats in economy class than have no passengers.

While working on the models it has appeared that there are many variables that do not have such an influence on the stock price as it was assumed. The variables that were not significant for the model are: number of employees, stockholder's equity, price of oil, fleet, long-term debt, number of destinations offered and number of countries routes where operated to. All these variables were omitted from the model.

4.3. Econometric model of American airlines before the merger

4.3.1. Economic model

We will examine the hypothesis:
The share price is influenced by net earning, cash and number of carried passengers.

4.3.2. Assumptions

- Net earnings increase causes increase of stock price.
- Cash increase causes increase of stock price.
- Passengers increase causes increase of stock price.

$$y = f(x_1, x_2, x_3)$$

4.3.3. Econometric model

$$\beta_{1t} y_{1t} = \gamma_{1t} x_{1t} + \gamma_{2t} x_{2t} + \gamma_{3t} x_{3t} + u_{1t}$$

4.3.4. Declaration of variables

y_{1t} share price of the airline in euros

x_{1t} net earnings in millions of euros

x_{2t} cash in millions of euros

x_{3t} passengers in millions

Based on the theories the data were gathered. The endogenous and exogenous variables are depicted in table in the table 9 in Supplements part of the thesis.

In this part me test the presence of multicorrelation. We have used the correlation matrix, which is symmetric by its diagonal. Multicorrelation determines the dependence of the two variables on each other that is why the same variables have the correlation of 1. When there is high correlation between two variables (the value is higher than 0.8), it is difficult to separate the influence of these two on the dependent variable. The high correlation in the model makes the estimation of parameters inaccurate. We eliminate the high correlation, for example, by adding dummy variable or replace the affected variable with its difference. In the extreme case of high correlation we remove that variables from the data set.

There is one exception, when high correlation is desirable. It's the correlation between the dependent and depending variable.

Table 5: Correlation matrix

	Net_earning	Cash	Passengers	Share_price
Net_earning	1.0000			
Cash	-0.2202	1.0000		
Passengers	0.3719	-0.4307	1.0000	
Share_price	0.3005	0.0918	0.6923	1.0000

Source: author's processing

In this matrix we can see that there is no high correlation between any exogenous or endogenous variables.

4.3.5. Estimation of parameters

For the estimation of parameters we will use the Ordinary Least Square Method (OLSM). We also have added a constant variable x_0.

Figure 16: Model of American Airlines

```
Model 10: OLS, using observations 2003-2013 (T = 11)
Dependent variable: share_price

                 coefficient    std. error    t-ratio   p-value
  ------------------------------------------------------------------
  const          -54.5230       25.5047       -2.138    0.0699  *
  net__earnings    0.00477443    0.00161417    2.958    0.0212  **
  cash             0.0150737     0.00383462    3.931    0.0057  ***
  passengers       0.754325      0.264428      2.853    0.0246  **

Mean dependent var   13.61909   S.D. dependent var   7.227798
Sum squared resid    74.19816   S.E. of regression   3.255724
R-squared            0.857970   Adjusted R-squared   0.797099
F(3, 7)              14.09508   P-value(F)           0.002371
Log-likelihood      -26.10697   Akaike criterion     60.21393
Schwarz criterion    61.80551   Hannan-Quinn         59.21066
rho                 -0.036438   Durbin-Watson        1.970387
```

Source: author's processing

$$y_{1t} = -54.52\, x_0 + 0.005\, x_{1t} + 0.015\, x_{2t} + 0.75\, x_{3t} + u_{1t}$$

4.3.6. Economic verification

If the net earnings increase by one million dollars the share price will increase by 0.005 dollars.

If the cash increase by one million dollars the stock price will increase by 0.015 dollars.
If the number of passengers increases by one million dollars the stock price will increase by 0.75 dollars.
All our assumptions of direction of the parameters were met.

4.3.7. Statistical verification

The Adjusted Coefficient of determination is 0.797099, which means that **80%** of the changes of share price is explained by changes of selected explanatory variables. Although it is not as much precise us the previous mode we can declare this model as highly relevant as the other. It is appropriate to explain the relations.

The Rule: p-value < $\alpha \rightarrow$ reject null hypothesis

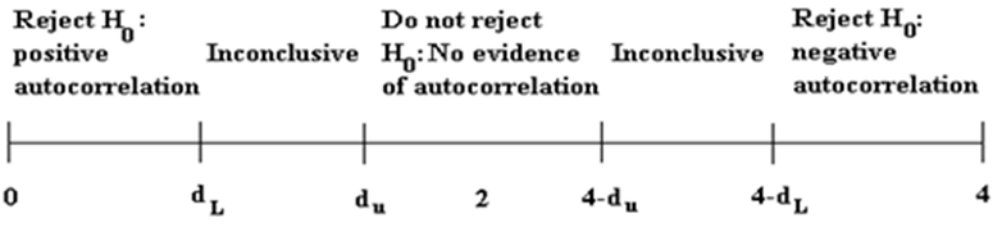
According to the given p-value, all the parameters are significant, but on different level of significance. Parameter for cash would be accepted as significant on the level of significance 99% (*** in the table). The parameters of net earnings and passengers on the level of 95% (**) and parameter of intercept term on the level of 90%(*).

4.3.8. Econometric verification

In this part of econometric modelling we will test the relevance of the whole model.

Durbin-Watson test is used to test the autocorrelation of residuals. The given value is 1.970387, while d_l is 0.75798 and d_u is 1.60439.

Figure 17: Durbin-Watson thresholds



Source: ExpertsMind institution, author's processing

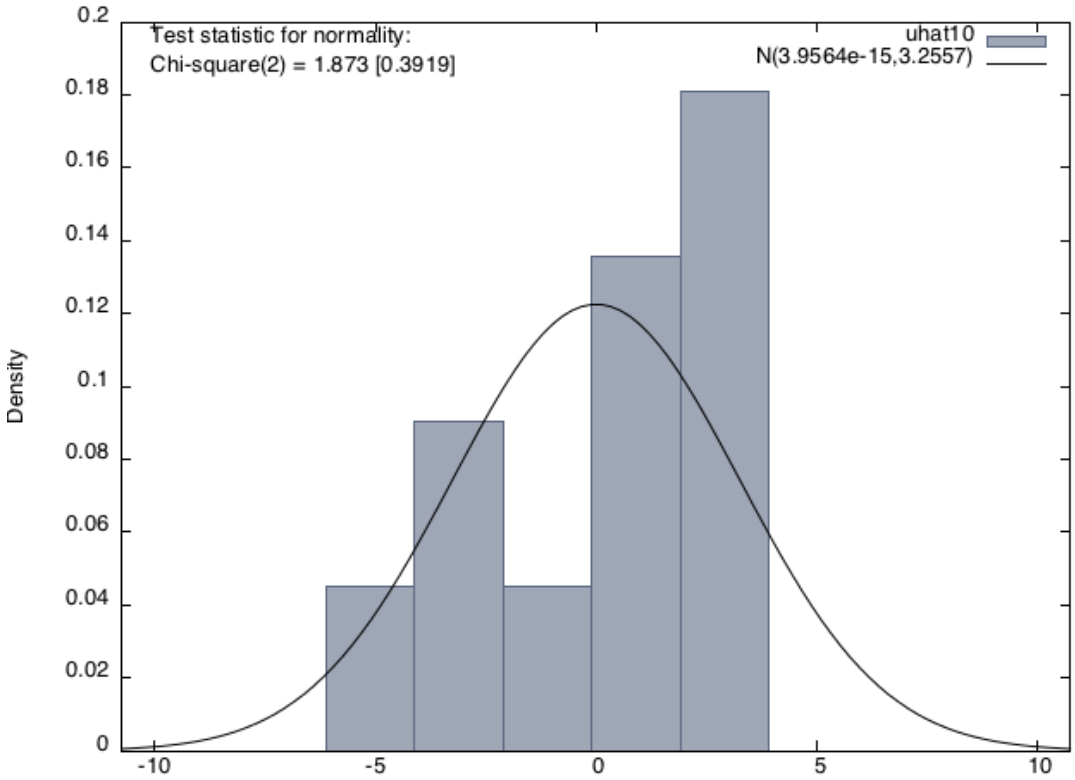
The Durbin-Watson test confirms that there is no evidence of autocorrelation; therefore there is no need for further autocorrelation tests.

The Breusch-Pagan test for heteroscedasticity gives us p-value of 0.732813. The null hypothesis is that there is a *homoscedasticity* of a random variable in the model. P-value is higher than 0.05, therefore we cannot reject the null hypothesis. There is no heteroscedasticity in the model.

The RESET test with the p-value of 0.0593889 determines the model as suitable for the linear function form.

For the test for null hypothesis of *normal distribution* the p-value is 0.391937, therefore we do not reject the null hypothesis that there is normal distribution of random variable. The following graph proves the statement.

Figure 18: Normality of residuals 1



Source: author's processing

The results of all test performed declare that the model fulfils the assumptions of a linear regression model. The model is suitable for application.

4.3.9. Application

To interpret the results in general, it was decided to use the mean values of variables to calculate the elasticity. The values are depicted in table 6.

Table 6: Elasticity

Variable	Value of elasticity
Net earnings	0.43
Cash	0.28
Passengers	4.87

Source: author's processing

If the net earnings increase by 1% the share price will increase by 0.43%.
If the cash increases by 1% the share price will increase by 0.28%.
If the number of passengers increases by 1% the share price will increase by 4.87%.

The elasticity coefficients show that number of passengers has the biggest influence on the stock price.

4.4. Econometric model of Air France-KLM after the merger

4.4.1. Economic model

We will examine the hypothesis:
The stock price is influenced by revenues, net income, cash and number of carried passengers.

4.4.2. Assumptions

- Revenues increase causes increase of stock price.
- Net income increase causes increase of stock price.
- Cash increase causes increase of stock price.
- Passengers increase causes increase of stock price.

$$y = f(x_1, x_2, x_3, x_4)$$

4.4.3. Econometric model

$$\beta_{1t} y_{1t} = \gamma_{1t} x_{1t} + \gamma_{2t} x_{2t} + \gamma_{3t} x_{3t} + \gamma_{4t} x_{4t} + u_{1t}$$

4.4.4. Declaration of variables

y_{1t} stock price of the airline in euros

x_{1t} revenues in millions of euros

x_{2t} net income in millions of euros

x_{3t} cash in millions of euros

x_{4t} passengers in millions

Based on the theories the data were gathered. The endogenous and exogenous variables are depicted in table in the table 10 in Supplements part of the thesis.

Table 7: Correlation matrix

	revenues	Net_income	cash	passengers	Stock_price
Revenues	1.0000				
Net_income	-0.3829	1.0000			
cash	**0.8136**	-0.3069	1.0000		
passengers	**0.9500**	-0.5657	0.7743	1.0000	
Stock_price	0.0405	0.5426	0.3083	0.0368	1.0000

Source: author's processing

In this matrix we can see high correlation between cash and revenues and between passengers and revenues. Despite high value of correlation coefficient of revenues with cash and passengers, all three variables were significant, for which the multicollinearity problem was ignored in this case.

4.4.5. Estimation of parameters

For the estimation of parameters we will use the Ordinary Least Square Method (OLSM). We also have added a constant variable x_0.

Figure 19: Model of Air France – KLM

```
Model 8: OLS, using observations 2003-2013 (T = 11)
Dependent variable: stock__price

                coefficient    std. error    t-ratio   p-value
  ------------------------------------------------------------------
  const         -173.682       39.3588      -4.413    0.0045   ***
  revenues        -0.00584861    0.00112869  -5.182    0.0021   ***
  net__income      0.00925449    0.00130846   7.073    0.0004   ***
  cash             0.00580074    0.00149124   3.890    0.0081   ***
  passengers       4.19070       0.855942     4.896    0.0027   ***

Mean dependent var   14.22545   S.D. dependent var   8.693857
Sum squared resid    62.64732   S.E. of regression   3.231288
R-squared            0.917115   Adjusted R-squared   0.861858
F(4, 6)              16.59730   P-value(F)           0.002136
Log-likelihood      -25.17626   Akaike criterion     60.35253
Schwarz criterion    62.34201   Hannan-Quinn         59.09844
rho                 -0.510596   Durbin-Watson        2.947592
```

$$y_{1t} = -173.7\, x_0 - 0.006\, x_{1t} + 0.009\, x_{2t} + 0.005\, x_{3t} + 4.2\, x_{4t} + u_{1t}$$

4.4.6. Economic verification

If the revenues increase by one million euros the stock price will decrease by 0.006 dollars.

If the net income increase by one million euros the stock price will increase by 0.009 dollars.

If the cash increase by one million euros the stock price will increase by 0.005 dollars.

If the number of passengers increases by one million euros the stock price will increase by 4.2 dollars.

The economic verification surprisingly shows that higher revenues actually decrease the stock price.

4.4.7. Statistical verification

The Adjusted Coefficient of determination is 0.861858, which means that **86%** of the changes of stock price is explained by changes of selected explanatory variables. The model is appropriate to explain the relations.

The Main Rule: p-value < α → reject null hypothesis

According to the p-value, all parameters are significant on the level of significance 99%.

4.4.8. Econometric verification

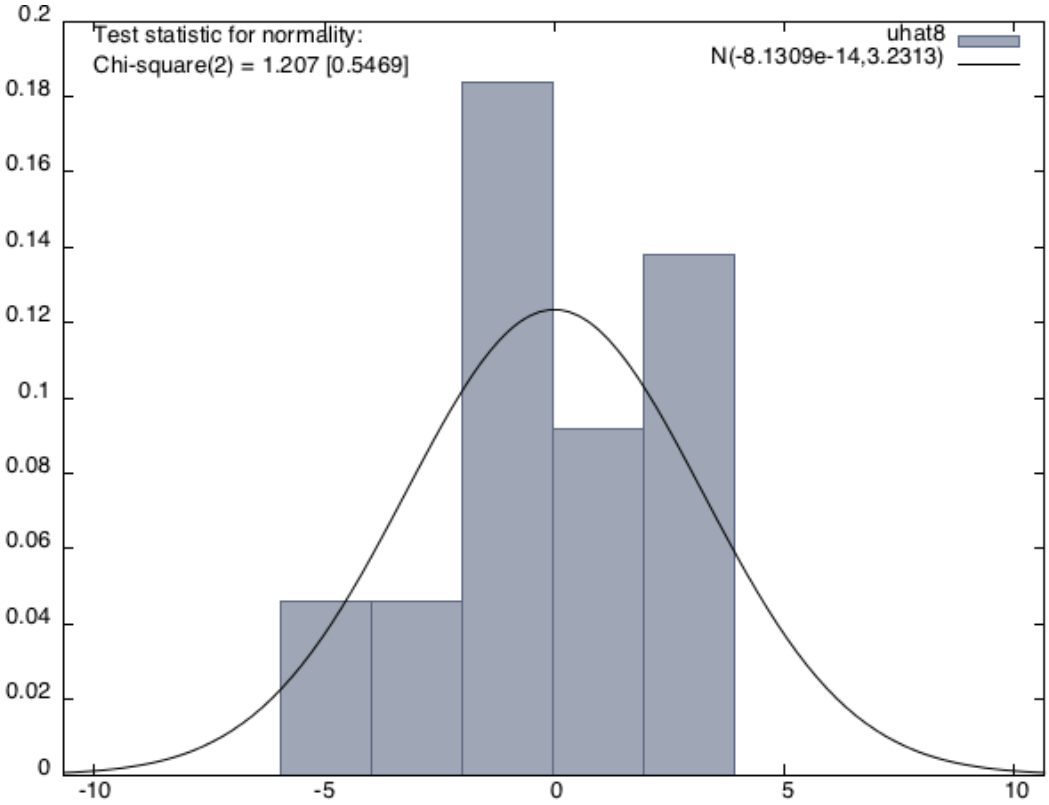
In this part of econometric modelling we will test the relevance of the whole model.

Durbin-Watson test is used to test the autocorrelation of residuals. The given value is 2.947592 while d_l is 0.59477 and d_u is 1.92802.

The Durbin-Watson test is inconclusive. Therefore the conclusion is that we cannot prove that there is an autocorrelation in this model. We have to run another autocorrelation test.
The Breusch-Godfrey test was concluded and GRETL has given us a p-value of 0.077, which is higher than 0.05, therefore we can proclaim that there is no autocorrelation of residuals.

The Breusch-Pagan test for heteroscedasticity has given us p-value of 0.618794. The null hypothesis is that there is a *homoscedasticity* of a random variable in the model. P-value is higher than 0.05, therefore we cannot reject the null hypothesis. There is no heteroscedasticity in the model.
The RESET test with the p-value of 0.598011 determines the model as suitable for the linear function form.
For the test for null hypothesis of *normal distribution* the p-value is 0.546932, therefore we do not reject the null hypothesis that there is normal distribution of random variable. We can see it also in the following graph.

Figure 20: Normality of residuals 2



Source: author's processing

The results of all test performed declare that the model fulfils the assumptions of a linear regression model. The model is suitable for application.

4.4.9. Application

Table 8 : Elasticity

Variable	Value of elasticity
Revenues	-9.13
Net income	0.06
Cash	1.219
Passengers	21.18

Source: author's processing

If the revenues increase by 1% the stock price will decrease by 9.13%.

If the net income increases by 1% the stock price will decrease by 0.06%.

If the cash increase by 1% the stock price will increase by 1.22%.
If the number of passengers increases by 1% the stock price will increase by 21.18%.

The elasticity coefficients show that number of passengers has the biggest influence on the stock price.

4.5. Summary of findings

The two models have both proved that number of employees, stockholder's equity, price of oil, fleet, long-term debt, number of destinations offered and number of countries routes do not have big influence on the price of stock of an airline. This finding was very surprising. Even though the fuel and employees are two two biggest costs of an airline they do not have significant effect on the moving stock price.
The technical indicators such as fleet, slots, countries and destinations determines the size of an airline, which are indicators that are most visible and important for the customers, are not important for the shareholders or investors. Even the airline with big fleet like American Airlines can have shares, which worth almost nothing.
The stock price does not change according to long-term debt. The airlines traditionally have big but stable long-term debt due to purchasing big assets like aircraft and slots at the airports.
The biggest surprise was that the stockholder's equity was not significant parameter. Stockholders' equity (owner's equity) represents so-called "book value of the company". It is calculated as owner's equity assets less liabilities. It is the capital, which is in shares (owned by shareholders) and retained earnings (net income from previous years). It does not include external income such as loans, accounts payable etc. A strong owner's equity indicates that the company is reinvesting in its own growth It shows how much power do the shareholders have over the company. This indicator did not appear as significant either.

It has to be said that all the omitted variables were removed from the model under very strict conditions. The level of significance was set at 99%, which many variables could not meet. The linear regression model may not be the best for the case of airlines' stock prices, but it turned out that four variables have big influence on the stock price in this model.

Unfortunately, the revenues did not turn out as significant variable in the American Airlines model. Therefore we cannot compare those two models under the very same

conditions. But the model of Air France-KLM has shown that revenues have surprisingly negative effect on the stock price of an airline after the merger. It means that according to the observation between 2003 and 2013 while the revenues were growing the stock price was decreasing and the other way round. The finding from the results is that if the airline after the merger rises up its revenues it does not mean that its stock price will go higher but it is more possible that it will decrease.
When we have a look at the development of stock price of American airlines before the merger the revenues behave the same way as in the case of Air France-KLM. But the influence of it is not significant for the model. This discovery can help the shareholders or investors decide about their investment. The revenues do not really reflect the performance of an airline before or after merger. In fact, if the revenues rise up after the merger it is not a good sign for the stock price.

The other variables, net income (earnings), cash and passengers were common for both models. We can compare their influence on the airline companies before and after the merger. They all have the same direction on the explained variable, they are all positive. But the intensity varies. In both cases when the net income increases the stock price slightly increase by tenths or cents of per cent. The results show that the net income has bigger influence on the stock price before the merger. But the difference is very small.

On the other hand cash has bigger influence on stock price after the merger. For the company after the merger the cash is more significant than net income, which confirms the assumption that net income is just an accounting result that could be manipulated easily. Cash is derived from cash flow, which reflects the solvency of the company, which is very important signal of healthy growing company. Cash before merger is not that significant. When the airline announces the official statement of entering the merger, the merger is considered as already in the process of negotiating that it will most probably happen. The cash can be used to pay out debts to have better negotiating position.

The most influential variable in both models was the number of passengers. In the model before the merger the elasticity was 4.87%, it means when the number of passengers raises up by 1% the stock price rise up by 4.87%. It has five times bigger influence after the merger with 21.18%. Apparently, all the financial and technical indicators do not create such a trust in an airline as the passengers carried. The airline cannot make any profit

without sufficient number of passengers. Passengers are their only customers. With passengers comes revenues, with revenues comes profit, with profit comes higher price of shares, and with profit comes dividends.

As a conclusion, we can say the shareholders or investors should follow the variable of number of passengers. If the number increases there is a high probability that the stock price increases significantly. Before the merger, the number of passengers carrier decreases, because of cutting costs. The airline, which is in debts before merger sells the slots (voluntarily or under courts' decisions), aircrafts and other assets in order to pay out debts. As a side effect they loose their customers, because they do not have the same capacity as before. But merging airline can afford that, because after the merger it will create bigger airline with its merging partner. This strategy is just temporary. The already merged airline increases the fleet and offer more routes therefore it has more customers.

5. Discussion

The airline market is saturated. The airlines try to adapt to the situation as fast as possible. The competition is big and the companies need sustainable growth. But sometimes is a question of survival. The contemporary situation requires consolidation among players at the market. In the globalized world it is not enough to be competitive in the region considering that international (long distance) routes are the most profitable. Although there is a long-term competition between American and European air transport carriers, nowadays, the American airlines compete more with the Asian and the European airlines are threatened by the Middle East competition.

Due to the current conditions the horizontal merger is the most common type of airline merger, but only the airlines with the close strategy merger. For instance, the full service provider such as Lufthansa will not merge with low cost carrier. The vertical merger in airline is not possible in the close future. The airline cannot buy its customers, the passengers, but theoretically it can have an agreement with the suppliers, e.g. aircraft provider, catering companies, maintenance. Currently, there is no such agreement on these levels. It is most probable that antitrust authorities would not give an approval to these actions, because all of the airlines mergers reach the thresholds set by European Commission or US Justice Department.

5.1. How do the merger theories apply in airline business?

All merger theories presented in the literature review appear in the airline industry. There are self-confident managers in charge of the airlines who want to prove their power (Behavioural theory), but they cannot act hastily in the air transport industry. Every small mistake is punished big loss of passengers. The media can inform about the negotiation and selfish behaviour of managers can cause bad reputation of the company. In the time of free instant information on Internet the managers cannot even take advantage of over valuated shares like it was suggested in the theory of Shleifer and Vishny (2003). To manage a merger takes a long time in which the partner would discover the real situation of the company. Powerful leader, Mr.Horton, which affected the whole process a lot, led the American merger. He was a CEO of smaller but profitable US Airways and became a

CEO of a new American. Without his vision and effort to make the merger happen, the American would be probably in liquidation soon. The strong leader builds trust, which increases the value of shares of the firm.

The conflict between shareholders, managers, employees (unions) and antitrust in the process of synergies are well known (Agency theory). The shareholders demand profits and dividends. In the times of economic growth and excess capacity the managers want to show some results and invest into assets rashly. They also buy low-value assets that can become a burden in the future, e.g. Czech Airlines. The managers are driven by the idea that when the airline is very big it is less likely it would be taken over by another airline as it is happens. The company will become "too big to buy". The merger of American Airlines and US Airways has disproved this theory. Even though the American had almost double fleet and twice as many employees, the number of daily flight they were able to manage was almost the same as US Airways. While American suffered from big losses since the proposal of bankruptcy protection in 2011 – they lost $2.8 billion, the US Airways made a profit of $650 million in the same period. During the negotiation the managers of US Airways were taken as rescuers of the big American. They could establish better conditions, the shareholders of US Airways had gained better exchange rate for their shares. Gorton, Kahl and Rosen theory of a high possibility of mergers after big shock occurs has proven to be right in an airline industry. Especially the American market is marked by these situations. The reaction to the economic downturn is slow, especially in the case of big companies as airlines. It takes months to restructure the company, change strategy or even negotiate an agreement with a partner. After terrorist attack in 2001 the American Airlines merged with TWA. The merger was worth $2 billion, one of the biggest mergers in the history of American airlines industry. The European airlines were hit by downturn as well and the events contributed to Air France KLM merger. The oil crisis in 2003, 2005 contributed to two mergers in the US. The financial crisis hit deeply the American industry, which led to three big mergers with the American Airlines US Airways as the last one. The explosion of the Icelandic volcano Eyjafjallajökull in 2010 had serious impact on the European airline industry. It costed the airlines extra 200 million euros, but did not lead to any merger or significant acquisition.

The airline industry is a nice example of an industry where the mergers mostly happened for economical reasons (Neoclassical theory). The merging airlines benefit from

economies of scale and economies of scope. They share assets, flight network, costs etc. They also increase their debt capacity and most importantly taxes deductibles. Usually it is that the big company buys the smaller one, but in case of the American airlines, it was truly the opposite. Doug Parker, the CEO of US Airways, stands behind the whole business. Therefore it is not always a question of size but a question of profitability or indebtedness. In the airline industry the bigger usually takes the smaller one over, but only in case that the acquiring airline is in good financial situation. In the time of growing market the big airlines naturally buy the smaller ones. But in the time of crisis and followed decline of economy, the size does not really matter. What matters is the financial power.

5.2. Which legal system is more favourable for mergers, the system of the European union or the United States?

The airline mergers at American market or European market always meet the thresholds set in Jurisdictional Thresholds for Section 7A of the Clayton Act or by the European Commission. When the merger affects or can affect the market it requires the approval of the authorities in that area. All merger cases in the history of airlines had to get both approvals, because the merger affected both regions.

The American and European method of measurement of size of the merger is different. The US introduced the legislation for antitrust actions 60 years before Europe and that is reason why their system is more adjusted to real situation at the market to measure the competition. The SSNIP technique measures the dominance on the market. For the mergers both regions use thresholds, which are set and adjusted every year. The difference is the in the units they use. The American system measures the size of the merger by voting securities, assets and net sales while the European is interested in worldwide and European turnover and turnover made in a member state.

In general, it is easier to get the European permission to make a merger than the American. The American air transport market is more saturated. In the US, US Department of Justice and Federal Trade Commission investigate mergers. The matter is brought to the federal level and that brings more attention and it is very controlled by the authorities. They use special methods to predict the future behaviour of the market, which do not have be good for the airlines. While in the EU, when the merger meets the thresholds, the European

Commission can delegate the investigation to the affected member state (usually the place of bidding airline headquarters). Also the penalties for late notification of upcoming merger are higher in the US.

5.3. Is the airline merger employee friendly?

The negotiations about the mergers can take months until both sides reach the decision. The main issues discussed in these negotiations are employees, resources, costs and shares. The trade unions have their stable positions. The last thing the airline before merger wants is the strike of the employees, because it causes big losses and the company looses trust of the shareholders, investors, but more importantly, the merging partner. One of the main reason for merging is to save some costs. The carriers have no power to control the world price of petrol, but they can control the number of employees. It is known that people are the most expensive "asset", but the company cannot work without them. There are various positions in the airline company. Many of them do not require any special technical knowledge, e.g. administration, flight attendants. In both cases, which were studied in this thesis, the number of employees has decreased. In the case of American Airline (before the merger) during last 10 years 50,000 people were dismissed while Air France-KLM dismissed only 5,000 during the same period. But it has to be mentioned that Air France KLM did it in 2012 and 2013, therefore it is not directly connected with the merger. The observations have confirmed that the promise of managers of not firing people is kept. The merging companies have also agreements with the unions about staff. Worse situation is in the airline, which is economically weak before the merger. After 2001 the American started to dismiss people by thousands every year. The American had to follow the restructuring plan since 2011 and it kept dismissing employees until 2013. The unions could not go against the plan, but it surprising that they did not intervene into previous dismissal. The last time the American had such a low stuff was in 1959. The Wages, salaries and benefits represented approximately 41% of the Company's operating expenses in 2002 while in the other airlines it was around 30%. The American has lowered this expense down to 21% in 2013. The protection from the US government gave the airlines an argument to dismiss employees without remorse. In the same period Air France KLM has lowered the portion of salaries and related costs in the overall costs from 34% to 29%. In fact, three years after merger the airlines recruited new personnel but the proportion of expenses on employees was decreasing.

We can say that to be employed in the airline before the merger is highly unstable position. We have come to the results than merger is employee friendly, but this issue has to be written down in the agreement between the company and the unions. The agreements cannot ensure jobs forever. If the big crisis hits the airline, the number of employees will decrease in order to save declining business and at least some jobs. If the unions stop it or even organize the strike, the company might get into financial difficulties. All the actions can lead to the point of the nearly bankruptcy. In this point, the company can ask for the court for protection and the Reorganizational plan, where the dismissal of people is obligatory.

5.4. Does the stock price of the company increase with the announced merger?

Forbes (1994) carried out a research to find out how is the shareholders' wealth affected by bid announcement, the UK Monopolies and Mergers Commission referral and MMC decision dates using a sample of 53 UK bids and daily returns. It appeared that MMC referrals are not significant, but the approved decisions of MMC has positive impact of 0.3% on bidders' returns within 3 days and 0.81% within 21 days. The target shareholders lose their wealth by 0.8 – 0.9% in the referral month. In the MMC report month it is slightly better, 0.3% off the targets' returns.

Yunkai Guo in his master thesis studied the influence of the mergers and acquisitions on the capital market reaction over the period 2000-2010 within the airline industry. He proved that the shareholders of bidding firms experienced cumulative abnormal returns of 0.45% and 0.71% over the periods of three days and five days around the M&A announcement date, while the shareholders of target firms experienced a greater impact with significant cumulative excess returns of 8.14% and 13.37% under the same event windows.

In the first case study it is presumed that American Airlines was a bidding company considering that the shareholders of old American gain 81%. The targeted company was US Airways, whose shareholders received 19% of the new company. US Airways share holders received one share for each one they owned. AAL share were exchanged for 15 AMR shares.

In the second case study, the Air France shareholders held also 81% of the new company. It makes Air France the bidding company and US Airways the targeted company. Air

France shareholders received one share in the new holding company for each Air France share. KLM shareholders received 11 shares in the holding company for every 10 KLM shares.

After the announcement of the merge, the KLM shares rose up by 12% while Air France shares fell by 4%, which is in contradiction with Yunkai Guo's study and in favour of Forbes research. The announcement of American Airlines on stock prices was hardly significant. The US Airways shares continued growing but we cannot observe any significant change around the announcement date. In this case, both airlines experienced growth in stock price, but it was not due to the merger announcement.
The share of the largest airlines in the world rose by 2.7% in the first day of trading. Thereafter the stock price of new American increased from December 2013 for $22.55 to $44 in June 2014.

5.5. What are the most influential factors of a stock price?

The two econometric models have proved that if we want to recognize an airline, whose business performance is defined by its stock price, we have to observe indicator of the number of passengers. The two mergers, which have been analysed and used for the model have different scope. The American used to transport around 90,000 passengers, while Air France KLM transports 70,000 on average. But the value of stock price was almost the same. Only American shares are in dollars and Air France KLM in euros. More importantly, the percentage change is the observed symbol.
In both cases (airline before merger and after) it has been proved that passengers are the most influential indicator regarding stock price. The stock price of the bidding airline before merger decreases in a long term. Towards the merger the price goes up a little, but it is not a significant increase. On the other hand, the stock price of already merged airline increases sharply. When we take a look at the number of passengers, we can say that the econometric model was right. The airline, which is about to merge, transports less and less passengers. In American case it was a drop by 7,000 passengers since 2002. The French Dutch merger cause increase by 17,000 passengers a year.

As a conclusion from the empirical observation, we can declare that airline after merger has better business results than before the merger, when it is measured by stock price. The shareholders should control the quantity of passengers, which should never decrease, only in extreme cases of external intervention. The success of the business is tightly connected with passengers. The investors should not buy shares, which are on growth when the airline is loosing customers. The shares of an airline right before merger or right after can be very profitable for the holder.

In the question of dividends, the American has not paid out dividends since 2002. It means it did not pay out dividends in the time of profitability and success. Instead of dividends the company buys more assets according to agency theory. The new assets consist mainly of slots, aircraft, routes or shares in other airlines. All these actions are actually a reasonably approach, because all these assets will lead to more customers. But the managers should be careful not to buy too much that the firm would not be able to cover the costs. Air France KLM paid out quite a big amount of dividends first 5 years after merger. The company was strong and profitable and paying dividends was a sign to shareholders that the merger was successful.

It has to be mentioned that price of shares are influence by many other variables. In the econometric modelling we omit many of them. In the models, the costs of personnel and price of fuel were covered, but it turned out not to be significant. The data are clear, fuel takes part of around 35% of operating expense and labour around 22% in these days. Back in 2002 it was only 12.3% for jet fuel, but 41% for employees. Nevertheless, both items are very important for air industry. But these expenses do not directly influence the stock price of particular airline, because when the price of jet fuel rise up it hits all the airlines around the world and not just the airlines. It is a difficult task for airlines to estimate the price of fuel one year ahead so they can make a pricing plan. They anticipate the worst scenario; therefore the price is reflected in flight ticket in advance. But if the fuel price stay stable or even decrease the airlines do not change their prices. The customers pay for it at the end. The important finding is that it is not significant variable to evaluate airline's shares.

6. Conclusion

In the saturated industry such as airline industry, the companies, due to natural growth, tend to create alliances, joint ventures and holdings to diminish the pressure. In addition to agreement of alliances they take the step further and they acquire the competitors or merge with them. If they do not choose this strategy they can take another path like we can see especially within the European air carriers. There have not been significant merger as they happened in the US. The European full service carriers have bigger competitors in low cost carriers that it occurs in the US. Instead of full merger they gather in alliances, create commercial and administrative mergers. But they also found their own low cost subsidiaries. The full service branch is getting specialized in long distance hauls and low cost on short. The American full service airlines tend to take over the competitors totally when the time is convenient. They also fight directly with low cost carriers, but in the US these types of airlines are not that successful as in the EU. The American market is more concentrated. The four biggest carriers now hold together 68.7% of the market. In the EU it is not clean from the official statistics, because the airlines do not create a fully merged company, but they practically share everything. In the lights of knowing the connections, in reality, four European carriers hold 40%. It is likely that we will witness more airline mergers in the EU, but it is high not probable that it will occur in the US.

In this thesis we have answered to all given research questions. In the literature review we analysed the merger theories in the airline industry. We have come to a conclusion that all the theories somehow occur in each airline merger case, but the most applicable theories are agency theory and neo-classical theory. We can observe the conflict between shareholders (owners), managers, unions and representatives of customers and of state anti-trust authorities. The managers are afraid that the company will be taken over, so they buy lots of assets during fruitful years to become to big to buy. But as we can see in the example of the American Airlines, event the big company in big financial difficulties is actually acquired by smaller one. Airlines primarily merge for economical reason. To reduce costs, gain more assets, get better management, get bigger market share, tax deductibles etc.

In the second part of the literature review we have proven that the merger face less legislative obstacles in the EU than in the US. It may be caused by the concentration on the market, which is higher in the US and longer history in anti-trust law. The issue of airline mergers is always brought to the federal level and that requires more institutions involved. In the EU European Commission is more likely to delegate the investigation of merger to the member state. After member authorities the EC confirms or not the decision. Also getting airline licence process is different. In the EU a member state give a licence to the airline, which has its headquarters in the particular country. In the US, the Federal Aviation Administration provides certificates.

We also have analysed both case studies and discovered that airline mergers are employee friendly. The airline typically merge for economical reasons and because it is in financial difficulties. Since the salaries are one of the biggest expenses it seems reasonable that the management makes the decision of lowering this expense. If they can negotiate with unions it can happen without strikes as it happened in the old American Airlines. In order to save the company, the employees agreed to decrease their salaries and they could keep the job. In the case of American there was also the court who ordered dismissals in the Reorganizational plan for bankruptcy protection. It is more likely that the airline would dismiss employees before the merger when it tries to survive and cut costs. After the merger, due to agreements with unions, the number of employees actually increases. The airlines have to be very careful about cutting jobs, because strike organized by unions is a very expensive thing for an airline. On the other hand, the merged airline will dismiss personnel if some external impact hit the business hard, e.g. the financial crisis in 2008.

In the empirical part of the thesis we have answered the main research question whether the merged airline company is more profitable than it was before the merger. To answer the main question, we had to divide it into two small questions. The observations gave us a clear result that in the case of airline mergers Forbes magazine theory is right when it declared that the announcement of merger had positive impact on bidders' returns and the target shareholders lose their wealth by the same time. This theory applies in the airline industry. To measure the profitability of an airline we have chosen the most objective indicator, the share price. The other question was about the most influential factors of share price. Using the econometric modelling we found out that the revenues, net income, cash and number of passengers have significant impact on the stock price. Surprisingly, the

rising revenues have negative impact. All the other factors have positive influence. The most influential in both econometric models was the number of passengers. Therefore we use this indicator to measure the profitability of airlines before and after the merger. If the number of passenger increase the airline is more profitable. As a result of the research we have to a conclusion that airlines are more profitable after the merger.

It turned out to be difficult to find trustworthy and official information about European airline industry and European airlines. We were forced to change the main research question, which was supposed to analyse also the impact of airline mergers on customers. But to execute this task we needed detailed information about prices of flight tickets and the airlines refused to cooperate in this matter saying that it is confidential information.
We propose a research opening. The upcoming thesis could analyse the merger of airline from the state point of view. There are many airlines, e.g. Air France, whose majority of shares are held by the state. What are the interests of the government as an owner, does it have different objective than the private shareholders? The government should represent all citizens of the country, but how does it make decisions to satisfy the customers, suppliers, employees, other shareholders and company as itself? The other proposition for research is the analysis of the impact on suppliers. What the shrinking competition means to Boeing, Airbus, catering companies? We hope that these suggestions will be discussed in the future.

7. References

The art of capital restructuring: creating shareholder value through mergers and acquisitions. Editor H Baker, Halil Kiymaz. Hoboken, N.J.: Wiley, c2011, ix, 590 s. The Robert W. Kolb series in finance. ISBN 978-0-470-56951-1

GAUGHAN, Patrick A. *Mergers, acquisitions, and corporate restructurings: creating shareholder value through mergers and acquisitions*. 5th ed. Editor H Baker, Halil Kiymaz. Hoboken, N.J.: Wiley, c2011, xvi, 655 p. The Robert W. Kolb series in finance. ISBN 04-705-6196-3

GAUGHAN, Patrick A. *Readings in mergers and acquisitions*. Cambridge, Mass.: Blackwell, 1994, xiii, 364 p. ISBN 15-578-6409-8

SUDARSANAM, P. *The essence of mergers and acquisitions*. New York: Prentice Hall, 1995, xv, 303 p. Essence of management series. ISBN 01-331-0889-9

UCHITELLE, Louis. *The disposable American: layoffs and their consequences*. 1st ed. New York: Knopf, 2006, xi, 283 p. Essence of management series. ISBN 978-140-0041-176

Articles

Air France agrees to acquire KLM: Airlines say merger will save $500M US a year. (2003, Sep 30). Standard Retrieved from http://search.proquest.com/docview/349453324?accountid=17203

Association of professional flight attendants; association of flight attendants-CWA; flight attendants at New American reach agreement on representation, bargaining. (2014). Journal of Transportation, , 23. Retrieved from http://search.proquest.com/docview/1473591294?accountid=17203

Delta Air Lines; delta responds to AA-US merger settlement. (2013). Journal of Transportation, , 74. Retrieved from http://search.proquest.com/docview/1459739571?accountid=17203

American airlines and US airways team members say: 'let us compete. together.'. (2013, Sep 18). U.S.Newswire Retrieved from http://search.proquest.com/docview/1433695179?accountid=17203

Belgium: Mergers: Commission approves proposed merger between US Airways and American Airlines' holding company AMR corporation, subject to conditions. (2013). MENA Report, Retrieved from http://search.proquest.com/docview/1418030350?accountid=17203

AHLES, A. (2012, Apr 21). *American airlines unions throw support to US airways takeover bid.* The Herald Retrieved from http://search.proquest.com/docview/1008670434?accountid=17203

CAREY, S. (2013, Dec 09). *American airlines, US airways complete merger; American Airlines steps out of bankruptcy and forms the world's largest airline by traffic*. Wall Street Journal (Online) Retrieved from http://search.proquest.com/docview/1465961853?accountid=17203

CAREY, S., KENDALL, B., & NICAS, J. (2013, Aug 13). U.*S. moves to block US airways-american airlines merger; antitrust regulators say deal would hurt consumers*. Wall Street Journal (Online) Retrieved from http://search.proquest.com/docview/1419793400?accountid=17203

DUNN, G. (2004, May). *Air France/KLM revise services after merger*. Flight International, 165, 9. Retrieved from http://search.proquest.com/docview/225128116?accountid=17203

JONES, C. (2013, Jul 12). *US Airways shareholders OK American Airlines merger*. Gannett News Service Retrieved from http://search.proquest.com/docview/1399999514?accountid=17203

KOENIG, D. (2013, Feb 14). *American Airlines, US Airways to merge*. The Charleston Gazette Retrieved from http://search.proquest.com/docview/1287707173?accountid=17203

MILNER, M. (2004, Feb 12). *KLM-Air France merger cleared*. The Guardian Retrieved from http://search.proquest.com/docview/246136669?accountid=17203

QUINN, James. (2012, Oct 26). *Virgin Atlantic to join global airline alliance, says Branson.* The Daily Telegraph Retrieved from http://www.telegraph.co.uk/finance/newsbysector/transport/9636203/Virgin-Atlantic-to-join-global-airline-alliance-says-Branson.html

SHIELDS, Y. (2013, Dec 10). *Combined American Airlines/US airways now official*. Bond Buyer Retrieved from http://search.proquest.com/docview/1466272712?accountid=17203

SUMERS, B. (2013, Feb 14). *American airlines, US airways merger means change in Los Angeles market strategy*. Daily Breeze Retrieved from http://search.proquest.com/docview/1287848365?accountid=17203

TAGLIABUE, J. (2003, Oct 01). *Air France and KLM to merge, Europe's no. 1 airline.* New York Times Retrieved from http://search.proquest.com/docview/432511076?accountid=17203

WACHMAN Richard, C. E. (2003, Sep 28). *Air France-KLM merger threatens BA dominance*. The Observer Retrieved from http://search.proquest.com/docview/250516440?accountid=17203

Official websites

Annual reports of Air France-KLM
http://www.airfranceklm-finance.com/en/Financial-information/Annual-documents

Consolidated financial statements of Air France-KLM
http://www.airfranceklm-finance.com/en/Financial-information/Results2

Annual reports of American Airlines
http://phx.corporate-ir.net/phoenix.zhtml?c=117098&p=irol-reportsannualAMR

International Civil Aviation Organization (ICAO)
http://www.icao.int/Pages/default.aspx

Air Transport Action Group
http://www.atag.org

Airlines for America
http://www.airlines.org

Bureau of Transportation Statistics
http://www.rita.dot.gov/bts/

Air Transport Association (IATA)
http://www.iata.org/Pages/default.aspx

The World Bank
http://data.worldbank.org/indicator/IS.AIR.PSGR

EUROPEAN AIRLINES – Rob Mulder
http://www.europeanairlines.no

Association of European Airlines
http://www.aea.be

IMAA – Institute of Mergers, Acquisitions and Alliances
http://www.imaa-institute.org/statistics-mergers-acquisitions.html#TopMergersAcquisitions_Europe

Stock exchanges – Google Finance
https://www.google.com/finance

Federal Trade Commission
http://www.ftc.gov

The United States Department of Justice
http://www.justice.gov

NASDAQ Stock Market
http://www.nasdaq.com

European Commission – Competition
http://ec.europa.eu/competition/index_en.html

European Union Law
http://eur-lex.europa.eu

Merger guidelines 1968, 1982, 1984, 1992, 1997, 2010
http://www.justice.gov/atr/public/merger-enforcement.html

Commentary on Horizontal Merger Guidelines, 2006
http://www.ftc.gov/sites/default/files/attachments/merger-review/commentaryonthehorizontalmergerguidelinesmarch2006.pdf

The Sherman Antitrust Act of 1890
The Clayton Act of 1914
The Hart-Scott-Rodino Antitrust Act of 1976
The Federal Trade Commission Act 1914

The Treaty of Rome 1958
The Regulation (EC) No 4064/89
The Regulation (EC) No 1008/2008

Research studies

Aviation perspectives: The impact of mega-mergers: a new foundation for the US airline industry, available at:
http://www.pwc.com/en_US/us/industrial-products/publications/assets/airline-industry-merger-impact-on-customers-operations.pdf

BALACHANDRAN, Sreedhu *(2013, Dec 26) Merger Between AIR FRANCE & KLM*
http://www.slideshare.net/sreedhubalachandran/air-france-klm-29496401

FORBES, William (2006, Dec 6). *The shareholder wealth effects of monopolies and mergers commission decisions,* available at:
http://onlinelibrary.wiley.com/doi/10.1111/j.1468-5957.1994.tb00348.x/abstract

GUO, Yunkai (2011, Aug 30), *An analysis of the influences of European airline mergers and acquisitions on shareholders' wealth*, available at:
http://essay.utwente.nl/62661/1/European_airline_mergers_and_acquisition_13_09.pdf

ROUZIES, Audrey. *Processus d'identification dans les Fusions et Acquisitions,* 2007,
http://www.chaire-competences.uqam.ca/pdf/conferences/presentation_rouzies.pdf

THOMAS, Ranjith (2012, May 25) *The Air France – KLM Merger,* available at:
http://www.slideshare.net/renjipthomas/the-air-france-klm-merger-13068168?qid=634f4039-7325-40ef-9316-ffdd4d690819&v=default&b=&from_search=1

8. Supplements

Table 9: Data set for American Airlines US airways model

Year	Share price	Unit vector	Net earnings	Cash	Passengers
	y1	x0	x1	x2	x3
2002	21.020	1	-3511	104	95.14
2003	11.715	1	-1228	120	89.70
2004	11.045	1	-751	120	92.25
2005	12.715	1	-893	138	98.82
2006	25.715	1	189	121	99.04
2007	27.316	1	456	148	99.22
2008	9.479	1	-2118	191	93.62
2009	6.345	1	-1468	153	86.48
2010	8.190	1	-469	201	86.98
2011	6.240	1	-1965	280	86.98
2012	0.49	1	-1876	474	87.13
2013	7.90	1	-1834	1140	87.48

Table 10: Data set for Air France-KLM model

Year	Stock price	Unit vector	Revenues	Net income	Cash	Passengers
	y1	x0	x1	x2	x3	x4
2003	11.60	1	12377	292	330	60.3
2004	13.14	1	19078	1696	2047	64.1
2005	13.17	1	21452	913	2046	70
2006	27.53	1	23077	891	3497	73.5
2007	33.45	1	24127	775	4381	75
2008	15.43	1	23975	-817	3748	74.5
2009	9.99	1	20999	-1559	3751	71.4
2010	11.08	1	23622	612	3717	71.3
2011	9.89	1	24402	-809	2283	75.8
2012	4.34	1	25633	-1220	3420	77.4
2013	6.86	1	25530	-1818	3684	77.3