



JÖNKÖPING INTERNATIONAL BUSINESS SCHOOL
JÖNKÖPING UNIVERSITY

High flyers

A Study on Competition, Price and Service Quality
in the European Aviation Industry

Master Thesis within Business Administration

Authors: James N. Finklea II

Jakob F. Kegel

Tutor: Helén Anderson

Location: Jönköping

Date: 26 May 2005

Master Thesis within Business Administration

Title: High flyers. A Study on Competition, Price and Service Quality in the European Aviation Industry.

Authors: James N. Finklea II, Jakob F. Kegel

Tutor: Helén Anderson

Date: 2005-05-26

Subject terms: Business Administration

Abstract

Background: Since the airline deregulation was completed in 1997, a new business model has emerged in the European civil aviation industry. It has caused a shift in the way people travel within Europe. The airlines operating under this new business model known as point-to-point, have created a new outlet for commercial passenger travel and raised concerns for established flag carriers.

Problem: This study is of great importance due to the fact that people are traveling more frequently and wish to do so quicker and more efficiently. With so many options to choose from and cost being an important decision maker for both companies and consumers, a study of this industry in terms of competition, price and service quality is of great importance.

Purpose: The purpose of this thesis is to investigate and describe whether or not changes in the competitive landscape of the European civil aviation industry are related to the movement of economy class prices. The thesis also looks at whether or not changes in the competitive landscape are related to changes in service quality in the same industry. Both flag-carriers and low-cost carriers in terms of their business models will be investigated.

Method: The method chosen for this study was of an integrated approach based solely on secondary data due to the sheer size and scope of this industry. This study investigated the two major business models of this industry through routes to the major cities and capitals of Western Europe from Stockholm Arlanda airport and Stockholm Skavsta airport. A literature study coupled with a comparative analysis has also been done.

Conclusions: Dramatic change is occurring in the industry. Competition is increasing not only between companies but between two competing business models. Increased competition is leading to better on-time performance but lower in-flight and ground service quality. Aggregate price level has risen for flag carries with the opposite happening for low-cost carriers. The increased competition is threatening the ill-performing flag carriers and will most likely transform the industry.

Table of Contents

1	Introduction	4
1.1	Point of Departure	4
1.2	Problem Statement.....	5
1.3	Purpose	6
2	Frame of Reference	7
2.1	Competition	7
2.1.1	Five forces model	8
2.2	Price	12
2.3	Service Quality	14
2.4	Business Models	15
2.4.1	Hub-and-spoke	15
2.4.2	Point-to-point	16
2.5	Research Aspirations	17
3	Method	18
3.1	Method Choice	18
3.2	Data Types	18
3.3	Data Collection	19
3.4	Method Credibility.....	20
3.4.1	Reliability	20
3.4.2	Validity	21
3.5	Method Limitations	21
4	Empirical Findings and Analysis.....	23
4.1	Competition	23
4.1.1	Supply and demand of seats	25
4.2	Price Data.....	30
4.2.1	Flag carrier financials	31
4.2.2	Low-cost carrier financials	33
4.2.3	Analysis of relation between competition and price	35
4.3	Service Quality	36
4.3.1	On-time performance.....	36
4.3.2	Flag carrier service quality.....	37
4.3.3	Low-cost carrier service quality	37
4.3.4	Analysis of relation between competition and service quality	38
5	Conclusions	40
5.1	Competition Conclusions.....	40
5.2	Price Conclusions.....	40
5.3	Service Quality Conclusions.....	41
5.4	Connection between Price and Service Quality.....	41
5.5	Business Model Conclusions.....	42
5.6	Suggestions for Future Studies	42

References.....	43
Appendix.....	47

Figures

Figure 2-1. Five-forces model	8
Figure 2-2. Competing airline business models	15
Figure 4-1. "Goodbye Lufthansa"	23
Figure 4-2. Market shares of intra-EU air travel	24
Figure 4-3. SAS market share 2002.....	25
Figure 4-4. Market share in European air travel.....	25
Figure 4-5. Arlanda seat supply	26
Figure 4-6. Arlanda departure volume.....	27
Figure 4-7. Supply and demand spread Arlanda.....	27
Figure 4-8. Skavsta seat supply	28
Figure 4-9. Skavsta departure volume.	28
Figure 4-10. Supply and demand spread Skavsta.	29
Figure 4-11. Operating costs 2002.....	30
Figure 4-12. Rising concerns for airlines.....	30
Figure 4-13. European departure delays.....	36
Figure 4-14. Primary departure delay cause.....	37

Tables

Table 4-1. Flag carrier financial results	31
Table 4-2. Cost of low class operation	31
Table 4-3. Ryanair financial and passenger data	34
Table 4-4. Flag carrier vs Low-cost carrier cost comparison.....	35
Table 4-5. Ryanair service statistics.....	38

1 Introduction

In this chapter, an introduction to the European airline industry will be given. In addition, our specific problem will be stated, as well as our purpose explained. Furthermore, the actors this study will include will be defined, along with a brief overview of the size and scope of the airline industry in Europe.

1.1 Point of Departure

The commercial airline industry in Europe is unique and fascinating at the same time. Before 1997, the effects of government regulation had limited competition among aviation companies within and outside of Europe. Known as flag carriers, the major airlines of Europe all operated under strict controls in their respective nations, for instance, British Airways in the United Kingdom, Air France in France and SAS in Scandinavia. A sense of “conservative nationalistic character” limited the entry of new airlines into the market as well as partially inhibited the progress of full international growth (Chan, 2000). This nationalistic business behavior dates back to the post World War II era, when most airlines were either government-owned or government-controlled. Such controls dictated which airlines could fly where, how many seats they could offer and in many cases, what fares they could charge for routes. Airline regulation imposed by governments in Europe resulted in inefficiency, financial losses and foregone consumer benefits (The Economist, 2003-10-02). Furthermore, these flag carriers represented the nations they operated in, as flying ambassadors who were viewed as symbols of national pride and prestige. As a result, it was very difficult to form international air agreements, contracts and provide services to the flying public between European nations (Chan, 2000).

As time went on and the governments of Europe began to cooperate towards the unification of the continent, government regulations started to slowly lift on airline operations. In 1987 partial deregulation started to take shape, however this process was not fully complete until 1997. In an increasingly global economy, the airline industry was not only serving the flying public at the heart of the travel and tourism industry, but also had a huge impact on other industries since over 25% of the world’s manufactured exports reach their destinations by air (Chan, 2000). The relaxed controls through the European Union’s Open-Sky Treaty (1992) coupled with an increase in passenger demand in the late 20th and early 21st century, led the way for heightened competition and the emergence of new airlines (Riley, 2003).

The new airlines that were emerging in Europe at the end of the 20th century had a new and innovative business model that was very different from that already established by the flag carriers. The newcomers were utilizing similar routes but with cheaper facilities, smaller airports, higher load factors and faster turn-around times resulting in lower operating costs. The result was airlines that could offer much lower fares. The low-cost carriers were born. At present there are some 50 low-cost carriers of different sizes operating all over Europe. The largest and most recognizable is the Irish based carrier, Ryanair. Other low-cost carriers in Europe include Easy Jet, Virgin Express, Wizz Air and Snowflake. In Europe and elsewhere low-cost carriers have begun to accumulate market share from the more expensive flag carriers over the past 5 years. Only at Arlanda airport, 10% of all departing passengers used low-cost airlines in 2004 (Luftfartsverket, 2005).

The increased presence of the low-cost carriers has lead many flag carriers to change the way they operate their economy class. Flag carriers have started to approximate the offer-

ings by the low-cost carriers in terms of service on-board the plane on short haul flights by not offering free food and drinks. Two interesting questions arise: firstly how passengers are defining service quality of air travel and secondly if flag carriers, as a result of the emergence of low-cost carriers, have decreased their service quality?

Economic theory suggests that increased competition will result in lower prices. However the result on service quality is ambiguous and not well researched. The increased presence of low-cost carriers in this industry will most likely result in lower prices, but what about service quality? We feel that both the relations between competition and price, as well as competition and service quality can yield important results for this industry and thus are worth investigating. Therefore, this thesis will focus on the relations between competition, price and service quality in the European airline industry. Theory will be connected to the real world through an empirical analysis of flag carriers and low-cost carriers including their respective business models in an attempt to see how increased competition interplays with service quality and price.

1.2 Problem Statement

The overall research problem of our thesis can be summarized in the following way: *What are the major results and effects of competition within the European commercial airline industry?* In order to adequately address and answer this research problem, an investigation of both flag carriers and low-cost carriers will be conducted. Our aim is to compare and contrast the two business models in terms of price and service quality and see what effects, if any, competition has on European airlines. We will do this by formulating answers to the following research questions:

1. What theoretical framework should be used when investigating competition, price and service quality?
2. Which airlines are important to include in this study?
3. What are the strategies of both flag carriers and low-cost carriers with regards to competition, price and service quality issues?
4. Which business model is proving to be successful for both businesses and their customers in an ever demanding market?

This particular study is of great importance due to the fact that people are traveling more frequently and efficiently than in the past. With so many options to choose from and cost being an important deciding factor for both companies and consumers, a study of this industry in terms of competition, price and service quality is of great importance. Not just to the companies investigated, but also of importance to the general flying public who utilize these air carriers for their travel needs. We would therefore like to see which of the two classes of air carriers, low-cost and flag carriers, are succeeding in meeting the public's wants and needs. In order to achieve this we will be conducting an investigation of both flag carriers and low-cost carriers. Flag carriers for example are airlines such as but not limited to British Airways, Air France, Lufthansa, KLM Royal Dutch Airlines and SAS Scandinavian Airlines.

For low-cost carriers, we will be investigating Ryanair which at present, is Europe's largest low-cost carrier in terms of passenger volume and most important in terms of industry impact (Ryanair, 2004). Low-cost carriers are operating under a distinct business model and it

is therefore appropriate to assume that the operations of Ryanair are good proxy of the operations of low-cost carriers in general. Since much of the data about competition, price and service quality is proprietary, aggregated industry data will mainly be investigated in this thesis.

1.3 Purpose

The purpose of this thesis is to investigate and describe whether or not changes in the competitive landscape of the European civil aviation industry are related to the movement of economy class prices. The thesis also looks at whether or not changes in the competitive landscape are related to changes in service quality in the same industry. Both flag-carriers and low-cost carriers in terms of their business models will be investigated.

2 Frame of Reference

This chapter will begin with an overview of the theories supporting and providing background to competition, service quality and price in the European civil aviation industry. Descriptions will follow of the different business models employed by flag carriers and low-cost carriers.

2.1 Competition

Competition; defined as rivalry between individuals, groups, nations or even organisms has existed as long as our planet, if not longer. Adam Smith (1776) defined competition as the rivalry between sellers to dispose supplies and between buyers to obtain supplies. He explained how changing supply will affect the price. He did this in the theorem on the allocation of resources. According to this theorem, an owner of any productive resource will seek to employ it wherever it yields the greatest return. Under competition, every resource will therefore yield the same return or it will be reallocated, meaning transferred to another industry. John Stuart Mill (1848: p. 3) summed this up very clearly by stating: "There cannot be two prices in the same market." Smith (1776) knew that knowledge must exist about the returns not only within one industry, but also across industries and that the reallocation of resources might take time, but in the long run, he argued, returns would equalize.

As the concept of competition can be applied to any situation where the supply is limited, the definition is not very stringent. Smith's (1776) definition only required a number of buyers and sellers to be present for the concept to occur. The number of suppliers or buyers present changes the intensity of competition, but the definition does not give much help in determining the difference in intensity between markets or industries.

Edgeworth (1881) was the first one to come up with a clear definition of perfect competition. His definition can be summarized in two points: There are an indefinitely large number of buyers and sellers present. Each trader can make tentative contracts with everyone and alter those contracts at will. Even though the author did not address the issue of market failures and perfect information, his definition is still valid.

Today perfect competition is defined by Parkin, Powell and Matthews (2000) as a market where: (1) there are many firms, each selling an identical product; (2) there are many buyers; (3) there are no entry or exit restrictions; (4) firms have no advantage over potential new entrants; and (5) firms and buyers are completely informed about the prices of the products of each firm in the industry.

Despite the clarity of the competition definition in economic theory, it is highly theoretical and not very practical. Perfect competition has not been observed in any real industry or market. Therefore it is not helpful when determining competition from a management perspective. For the partial purpose of this thesis - to determine whether competition has increased or decreased in the European civil aviation industry - the five forces model (Porter, 1979) is more appropriate to utilize.

2.1.1 Five forces model¹

The risk adjusted rate of return should, according to the economic competition theory, be equal between industries (Mill, 1848). However, as Johnson and Scholes (2001) shows this is not always true. There seems to be more variables influencing competition than has been described so far. Using Porter's (1979) five-forces model for industry analysis creates a better understanding of industry competition and the consequent profitability that can be achieved (Figure 2-1). According to the model, buyer and supplier power, barriers to entry, product substitutes and firm rivalry make up the basis for industry rivalry which determines the profitability. Depending on the interaction and individual strengths of the five forces, rivalry in an industry will vary. Rivalry is primarily measured by the industry concentration ratio. High industry concentration ratio means that a few firms have a substantial amount of the market share. Bruce Henderson, founder of the consulting company BCG created the rule of "three and four": a stable industry - an industry with low rivalry - will have no more than three significant players. The largest player will have no more than four times the market share of the smallest. Under such circumstances the rivalry is low. On the other hand, fragmented industries with many players and none with a dominating position will face high rivalry. From a management perspective, the level of rivalry can therefore be understood as the level of competition between companies in an industry.

When using the five forces model, it is important that the researcher is clear of what industry is being analyzed. This is due to the interconnection between the five forces model and the concepts of the value chain and the value systems. The value chain is picturing the company as a unit, inputting raw material, adding value to this material at different stages in the production process and eventually creating an output (Porter, 1980). The value chain of a company is connected to the various value chains of the company's suppliers and buyers. The interconnected value chains make up a value system where every company is both a supplier and a buyer. As a simple example, strong buyer power when analyzing the *car supply industry* will translate into weak supplier power when analyzing the *car industry*.

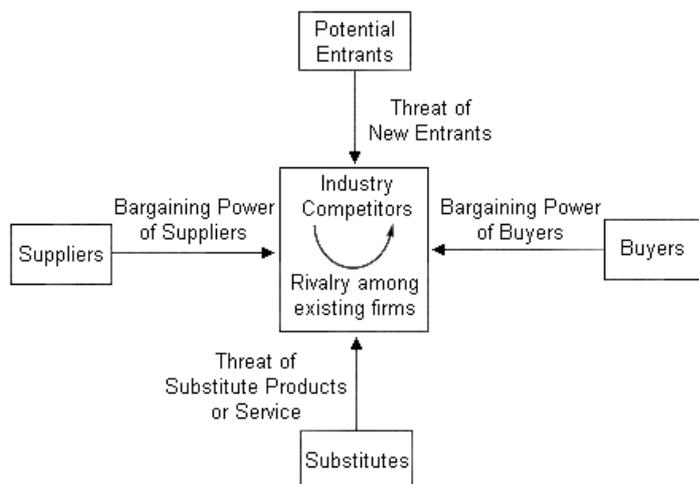


Figure 2-1. Five-forces model (Porter, 1979).

¹ All information in section 2.1.1 through section 2.1.1.5 are referenced from Porter (1979; 1980) if not stated otherwise.

2.1.1.1 Buyer and supplier power

The two forces, buyer power and supplier power can be seen as mirror images of each other. According to Porter's (1979) model, every firm is both a buyer and a supplier depending on what industry the researcher is analyzing. Therefore the same conditions will affect the two forces but in opposite directions. However, the researcher must remember that strong buyer power does not, by definition, translate into weak supplier power when conducting an industry analysis. The reason is that the five forces model is applied on an industry having the value system in mind. The industry under investigation will have suppliers supplying the input and buyers buying the output. Therefore an industry can simultaneously experience strong buyer power and strong supplier power.

The clearest case of strong buyer power and weak supplier power emerges in monopsonistic conditions, defined as a market with one buyer and many suppliers. In such conditions, the buyer will exercise power over the suppliers. Even though there are few monopsonies in the real world, there are unbalances between buyers and the suppliers resembling monopsonistic conditions. For instance, the relation between a car manufacturer and the regional suppliers can often display monopsonistic characteristics. The suppliers' dependency on the car manufacturer creates strong buyer power if the analysis is on the supplier industry and weak supplier power if the analysis is on the car industry.

Buyer and supplier concentrations in terms of the market share controlled create both buyer and supplier power. A buyer of consumer goods such as Wal-Mart and a supplier of computer components such as Intel, both exercise strong power due to the market share they control.

The quantity of total output purchased by a buyer increases the buyer power and weakens the supplier power. On the other hand, if the number of buyers is large and what they are buying is critical for their own production process, buyer power tends to decrease and supplier power increases.

Buyer power can decrease if the cost for switching from one industry firm to another is high. For instance, car suppliers developing not only parts but complete components have raised the switching cost for the buyer of the component.

Backward and forward integration refers to the acquisition of a supplier or a buyer by an industry firm. If there is a real threat of forward integration, buyer power tends to decrease. If a buyer is threatening with backward integration – buying a firm in the industry – buyer power tends to increase.

2.1.1.2 Threat of substitute

Threats of substitutes originate from products in other industries that can potentially replace the industry's product.² A substitute product limits the maximum price that can be charged by the industry. This puts pressure on industry profitability and therefore creates competition between the firms in the industry. As more substitutes are created or as a particular substitute increases in importance, the demand elasticity becomes larger for the industry product, meaning that customers become more price sensitive. In the airline indus-

² The five forces model is applicable not only to firms producing products but also to firms producing service. For the purpose of communicative precision, whenever using the term products the authors refer also to services.

try there are few real substitutes as the alternatives such as cars, busses and trains are often not a feasible alternative for long distance travel. However, one could look at the product offered by low-cost carriers as a substitute for an often more expensive product offered by flag carriers. Furthermore, as technology develops, substitutes emerge. For instance, the development of the X2000 train between Gothenburg and Stockholm is starting to emerge as a substitute for air travel, as the total travel time with the train approaches that of the airline when transfers to and from airports are included. The threat of substitutes is hence always present but the risks can be either low or high.

2.1.1.3 Potential entrance

In competition theory, firms are allowed to freely enter and exit the industry depending on the expected returns. This makes the risk adjusted return equal across industries. As returns in an industry increase more firms will enter the industry, driving profits down to a level which causes firms to leave the industry. The reality looks different. Firms already in an industry have no interest in new entrants and will attempt to keep other firms out by establishing barriers to entry. Barriers to entry constitute legal, financial, or organizational hindrances that prevent new firms from entering the industry.

Governments are still important barrier builders in industries they believe should be protected. This has been apparent in the airline industry until the deregulations were initiated in 1987. However, the broad emergence of free trade through the World Trade Organization and the EU is making it increasingly more difficult for governments to protect industries (The Economist, 2003-10-02).

Patents and proprietary knowledge can hinder firms from entering an industry as the necessary assets to operate are not available. This is not an important barrier in the airline industry. More important are instead the distribution channels. In the airline industry airports are seen as the most important distribution channel for the industry's products. For many years the airports were government owned and only firms authorized by the government could utilize them. Since the government was protecting the national carriers, owning the airports was an effective way of keeping all foreign competition away. The deregulation of the industry made airports for-profit organizations accepting any airline, dramatically lowering the barriers to entry.

Internal economies of scale can hinder companies from entering an industry as the investments can be prohibitive. The drawback of high economies of scale is that they also constitute an exit barrier for the firms already involved in the industry. This is the case with the airline industry where several large airlines end up as unprofitable players in a high rivalry industry.

2.1.1.4 Industry rivalry

The four forces discussed above are all indirectly influencing industry rivalry (competition). Industry characteristics will also determine rivalry, but the effect is more direct. The total number of firms in an industry is directly related to the level of rivalry: the more firms competing in an industry, the greater the rivalry. The rivalry can also be enhanced or weakened depending on the over-all growth rate of the industry. The slower market growth, the larger the rivalry as increased turn-over can only be achieved at the expense of a competitor and not simply through an expanding market.

The level of fixed costs influences rivalry as higher levels of these costs increase the dependency on internal economies of scale to reach profitability. Therefore companies in a

high fixed cost industry will try to increase their market share, leading to high rivalry. Storage cost and perishability also have a positive relation to rivalry. The higher storage cost and/or perishability, the higher the rivalry as firms will fight to get rid of their stock.

Switching costs do not only influence supplier and buyer power but also industry rivalry: The lower the switching costs between industry products, the higher the rivalry as firms have to compete harder to keep their customers. One way to avoid this is through product differentiation. If a firm can differentiate its products from the competitors in the same industry, like Caterpillar has done with heavy vehicles, the firm can experience higher profitability and less competition – the rivalry decreases.

Strategic stakes in the form of potentially large gains or losses can increase the level of rivalry. Often technological, economic, or political change can spark the increase in rivalry. Industry shakeout, defined as previously high-growth industries with many firms facing slow growth, increases rivalry. When the industry passes the point of maximum capacity and profits starts to shrink, industry shakeouts may occur. This can also be understood as an increase in the strategic stakes, as firms will survive or die. Exit barriers will also increase the rivalry. Asset specification is a common exit barrier. When the production assets are highly purpose specific, they might in certain circumstances be difficult to sell.

In a low rivalry industry there are often unwritten rules of the industry. When competitors are not directly competing with each other; the industry is said to be disciplined as all companies are behaving according to the unwritten rules of the industry. Explicit collusion in most countries is illegal and the understanding is therefore informal and often based on historical considerations of the consequences of direct competition. Stable industries have always experienced high rivalry and cut-throat competition and are aware of the decreasing industry profitability created by explicit and direct competition. However, firm diversity can increase rivalry due to differences in history, goals, working methods and often a lack of understanding of the unwritten industry rules. The American healthcare business with both profit-making and non-profit organizations is often used as an example by Porter (1979).

Stable industries can be destabilized leading to increased rivalry by newcomers that break the unwritten rules. Destabilization of industries is often coupled with technological development or market deregulation. This has been the case in the airline industry. Four important changes that have a destabilizing effect are: changing prices, improved product differentiation, changing distribution channels and new relationships with suppliers. By changing prices, a firm will change the profitability of the other firms and destabilize the relations. By dramatically changing production processes or product features, firms will have an impact on both pricing and customer preferences through product differentiation. By innovative ways of distribution, newcomers can challenge the incumbents and destroy power structures within industries. Vertical integration will also change distribution channels. By changing relations with the suppliers or creating completely new relations, a firm will have an impact on the input and can therefore dramatically change industry relations.

2.1.1.5 Critique of the five forces model

Porter has a background in industrial economics which is reflected in many of his models. The view of industries is often through the metaphor of an assembly line making his models linear. Two of the biggest critics towards the omnipotent endorsement of Porter, especially in popular press, are Normann and Ramírez (1994). They argue that the metaphor of an assembly line used in the value chain analysis that spilled over to the five forces model, does not belong in today's world dominated by services. They suggest value constellation as

an alternative to the value chain. An analysis using the value constellation concept opens up for new relations and new type of value creation by viewing the relations as more dynamic and flexible compared to the view in the value chain. However, despite the theoretical allure of the value constellation concept, it is still unexplored and has not gone through rigorous qualitative and quantitative testing. Therefore, the authors believe the five forces model and the underlying value chain concept to be more appropriate for this study, despite its linear view of the world.

2.1.1.6 Competition summary

The authors understanding of competition has its base on the classic definition of perfect competition. To make this highly theoretical concept applicable in this study, the authors have used the five forces model of industry analysis to determine the level of competition. Implicitly the authors therefore suggest that rivalry, which is measured by the model and competition are synonyms describing the same phenomenon. Choosing the five forces model is more appropriate considering that the problem under investigation is viewed from a management perspective rather than from an economics perspective.

2.2 Price

Basic macroeconomic theory suggests that whenever free competition is allowed, consumer prices will fall compared to consumer prices in a monopolistic or oligopolistic market situation (Parkin, Powell & Matthews, 2000). The recent deregulation in the European civil aviation industry is the kind of event that according to theory, should increase competition and drive down prices. Below we will expand on the theory of price before empirically investigating if a change in price has occurred.

The major purpose of any science is to explain or understand a phenomenon that is observed. In dealing with prices in the European civil aviation industry, economic pricing theory ought to be able to explain the basis of product prices. This implies that this theory should be able to address issues such as looking at why the price for product A is higher than product B and why the price level for both is where it is. Furthermore, this theory should address why price is stable over a certain time period and how or why it can suddenly change.

In theory, price should be determined as total average cost plus a normal profit (equals opportunity cost) as this would constitute a fair price (Fog, 1994). However, changes in the competitive landscape, such as the deregulation in the airline industry, may cause prices to be below this level. The reason being that companies would be prepared to operate below the opportunity cost and run a loss in order to defend their market position and possible future profits (Fog, 1994).

There are two main types of economic perspectives on price that result in two separate theories. The first is a *macroeconomic* perspective on price. This looks at the full view of the whole economy and focuses on general price level. It paints a broad picture of what is going on in a certain market or area. The aim of this perspective is to explain how prices are formed, why prices change and why some change more frequently or drastically than others. The theory that this perspective leads to is what is known as a normative theory (Fog, 1994). This theory is more or less a guide to the decision maker of a firm or business on how to achieve a desired price and economic position for a certain product or service (Fog, 1994).

The second main economic perspective on price is classified as *microeconomic*. The microeconomic perspective on price focuses on the individual firm or seller. Its main goal is an attempt to explain all problems connected with the determining of specific prices in specific firms. For instance in this study, this theory will explain how airlines adequately determine and justify the fare prices at which they sell seats to customers. The *microeconomic* perspective on price leads to what is known as the descriptive theory which is usually viewed from the outside of a company. The main goal or aim of this theory is to explain why prices are set the way that they are. The descriptive theory has not only a value in itself. It can also be helpful to governments, politicians and others by having a certain predictive value. Descriptive economic theory should be able to address such issues as one, the likely effect on price when a specific tax is imposed on a specific product. A second issue is the likely price effect of a specific increase in labor wages. Lastly, the descriptive theory looks at the effect of prices when a general increase in demand occurs.

This thesis will mostly focus on the microeconomic perspective on prices and the descriptive theory. Furthermore, within that descriptive theory, we will pay close attention to the possible answer to that third question. We will be asking, “if a general increase in demand occurs within this industry, what will be the effect on company revenues and expenses for both flag carriers and low-cost carriers?”

In order to adequately classify price theories, Fog (1994) states that it is convenient to place all different types of pricing into the following three broad categories. The first includes all cases where price is determined by factors on the *demand* side, or at least so that demand considerations are dominant. This is known as Market Price Theory. The second category of price includes all cases where price is determined exclusively or mainly by *cost factors*. The major type is full cost pricing, which is based on allocation of all costs to each individual product, also known as Full Cost Theory. Finally, the last pricing category includes prices that are determined by the interplay between *demand* and *cost factors*. This is called Marginal Theory and prices set according to economic theory will be placed in this group.

To classify pricing theory as well as organize pricing data, we will take calculations and statistical analysis of secondary pricing data from the airlines and from the industry as a whole. According to Fog (1994), such an analysis explains what happens to prices over time. In order to create such an analysis, it will be important to statistically determine the relative demand and cost function either through a regression analysis or through a moving average analysis through the use of Microsoft Excel. Furthermore according to Fog (1994) optimum price is determined by three main factors. The first is when the difference between total revenue and total cost is at maximum. Secondly, the average (gross or net) revenue per unit that is multiplied by the number of units sold is higher than cost. Finally, optimum price can be determined economically when marginal costs equals marginal revenue (Fog 1994).

The relation between price and competition has been extensively researched by economic theorists such as Sanior (1836), Edgeworth (1881), Porter (1979) and Parkin et al. (2000). This relation has been intuitively easy to understand. However, the relation between competition and service quality is less so, due to the complexity and subjectivity of the nature of service quality. All economic policy should be about maximizing utility and thus it is important to investigate how service quality is affected by changes in competition and price, as we believe that service quality increases utility.

2.3 Service Quality

The use of the term service quality in business, academia and daily life is as frequent as there are definitions of it for the simple reason that service quality is defined in the eyes of the beholder. Nevertheless we will attempt to define it more stringently.

In a service company, the term service quality is difficult to measure as service quality is not something absolute, but is determined by an interplay between a customer's perception and expectation. Service quality is perceived to be high if the service satisfies the customer's expectations. Satisfaction is therefore seen as a good proxy for service quality.

Maister (1993) states that customer satisfaction is the result of a mental comparison process between expectation and perception. The process will result in satisfaction if the difference between perception and expectation is zero, or if the perceived value is greater than the expected. This means that customers will be satisfied if the service provided is equal or above their expectations. Maister is however not alone nor the first to have this view on service quality. Grönroos (1983) developed the *Total Perceived Quality Model* that is also based on the interplay between expectation and perception. The same logic is fundamental for SERVQUAL, one of the most successful service quality measurement frameworks (Parasuraman, Zeithaml & Berry, 1988). Often, the reason for pursuing high service quality is customer satisfaction and the resulting positive cash flow. Along with price, service quality can be considered as the only differing factor between competing airlines and thus a determinant for competitive advantage and profitability. Therefore this thesis will follow this stream of research and look at service quality, at the most general level, as customer satisfaction resulting from an interplay between perception and expectations.

The SERVQUAL framework identifies five main criterions namely: tangibles, reliability, responsiveness, assurance and empathy. Parasuraman et al. (1988) found that the most important criterion determining the perceived level of service quality by customers, irrespective of industry, is reliability. This is corresponding to the findings by several authors researching the European civil aviation industry. One of the most commonly cited reason for customer dissatisfaction is the lack of on-time performance which can be viewed as absence of reliability (Mazzeo, 2003; Bowen & Headley, 2001; Dresner & Xu, 1995). The lack of on-time performance also shows positive correlation with customer complains and baggage losses.

In a service quality analysis it is important to distinguish the process element from the outcome element. The process element is the interaction between the service provider and the customer while the outcome element is the actual benefit eventually received by the customer. The process element is often considered to have higher influences on perceived service quality (Blanchard & Galloway, 1994). However, considering the findings that reliability in terms of on-time performance is the most important service quality determinant, it is reasonable to assume that the outcome element has a larger than average impact on total customer satisfaction in the airline industry. If an airline is chronically late (outcome element), the service quality before, during and after the flight (process element) will in most cases not be enough to satisfy the customer. Therefore this thesis will mainly focus on the outcome element of the satisfaction process, more specifically on-time performance.

It is important to look at competition, price and service quality in the light of the two different business models used by flag and low-cost carriers in order to understand how they influence the three areas under investigation. Understanding the business models may shed

some light on the differences in competition, price and service quality between flag and low-cost carriers and in the industry as a whole.

2.4 Business Models

Wikipedia (2005) defines business model as “the mechanisms by which a business intends to generate revenue and profit.” The hub-and-spoke business model employed by flag carriers and the point-to-point business model employed by low-cost carriers, are different in terms of how to transport passengers most efficiently which affects the company’s philosophy about service quality and price. This influences the competitive landscape and therefore the two business models will be presented below.

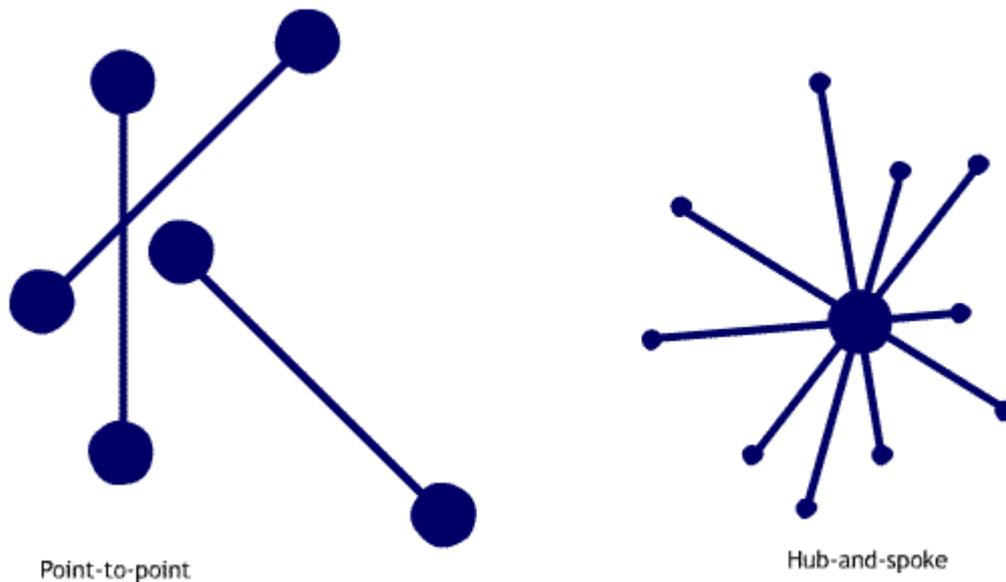


Figure 2-2. Competing airline business models.

2.4.1 Hub-and-spoke

The majority of established, international airlines known as flag carriers operate according to a very specific business model known as hub-and-spoke. The hub-and-spoke system moves passengers from smaller second-tier “spoke” airports (e.g. Göteborg Landvetter or Berlin Tegel) to a larger hub airport (e.g. Stockholm Arlanda, London Heathrow, or Paris Charles de Gaulle). The hub airport acts like a feeder where all connecting passengers will pass through to eventually get to their destinations. For example, when flying from Göteborg, Sweden to St Petersburg, Russia on Lufthansa, one will pass, or connect through Lufthansa’s hub airport at Frankfurt Main, Germany (Lufthansa, 2005).

In general, airlines employing the hub-and-spoke model break-even or take a small loss on at least some of the spoke-to-hub flights, in order to maximize the profits they can create on the lucrative hub-to-hub flights (Doganis, 2001). For example, flying from Göteborg Sweden to New York USA transatlantic on Air France, one will connect through Paris Charles de Gaulle airport. Air France is prepared to make little or no money off the short Göteborg to Paris flight in order to maximize the load factor and profit on the long hub-to-hub flight from Paris to New York. (Air France, 2005). Airlines not only increase the load factor, but also charge a premium on business and first class

on the hub-to-hub routes. On cross-continental and especially on some transatlantic or transpacific routes, higher prices can be implemented by airlines: hence, these routes are disproportionately important to a hub-and-spoke within Europe. This is so because the same higher charges cannot be implemented on flight within Europe which somewhat illustrates where flag carriers are both making and losing money.

Airlines utilizing the hub-and-spoke system are facing strong economic pressure. The costs associated with building a hub-and-spoke system are immense. Different aircraft models, expensive gate and landing rights at hub airports, airport taxes and fees, terminal and office space for both passengers and employees, along with complicated booking systems (Doganis, 2001) create powerful barriers to entry for potential competitors, and make the system less flexible for changing customer demands. This not only makes it expensive for the airline to carry out business, but also makes it expensive for the flying public to purchase tickets and travel (Doganis, 2001).

2.4.2 Point-to-point

A new business model within the airline industry has been emerging around the world in the last two decades. The general public's desire to travel quickly, efficiently and cheaply gave birth to a new kind of airline: the low-cost carrier. These airlines are built on the "point-to-point" business model which has proven very efficient in an ever more turbulent market (Percy, January 2004). The basic premise behind this model is an attempt to fly shorter distances between secondary airports in under-serviced cities and locations. For example, Stockholm Skavsta or London Stansted as compared to Stockholm Arlanda or London Heathrow. These airports are far less congested, enabling low-cost carriers to turnaround aircraft much faster than competitors, which allows for more frequent flights, more efficient aircraft usage and most importantly, increased revenue per aircraft seat. This is done by getting more flights per year out of each plane (Percy, January 2004).

Secondary airports bring with them the benefits of lower airport fees and taxes associated with costs for landing, gate slots, operational rights, wages and property rents. Low-cost carriers can also generate barriers to entry by locking up gate rights at the airports they operate in, thereby keeping particular carriers and competitors out (Percy, January 2004). Airports where low-cost carriers operate are often much smaller than hub airports and as a result, offer fewer restaurants, shops and passenger facilities. According to theory behind the point-to-point business model, passengers are supposed to spend less time within the airport as the point-to-point model does not transfer passengers to a hub but directly to their destination. Therefore there is no need to offer the same facilities as on the hub airports. This greatly reduces the airport costs which airlines and passengers have to pay (Percy, January 2004).

Low-cost carriers are often known as "no-frills" airlines. This means that a passenger will receive basic and bare minimum services when traveling from point A to point B (Percy, January 2004). Typical examples of such services are ticketless traveling, less allowable weight with checked luggage, less cabin luggage allowed on-board and little to no meal or entertainment on-board. In the case where food is offered, it is usually done through an a-la-carte menu for various prices which are paid for by the passenger. Entertainment is usually limited to a free in-flight magazine or newspaper with no movies or television programs. Most low-cost carrier flights don't last long enough to show a full length feature film anyway. This is also cost saving not having to outfit the aircraft with an expensive entertainment system (Doganis, 2001).

Another advantage to the low-cost carrier business model is that most low-cost carriers will only operate one type of medium bodied aircraft (Percy, January 2004). For example Europe's largest low-cost carrier, Ryanair, solely operates a fleet of Boeing B737 aircraft which can hold approximately 190 passengers in a single class configuration and fly a range of 5,425km at a cruising speed of 853km/hr or 0.785 mach (Boeing, 2005). The advantages of operating just one aircraft are reduced maintenance costs coupled with simple, identical training for all pilots and crew. Identical parts and products can be on hand wherever the aircraft flies, making it easier for quick and efficient repairs when needed. This reduces the operating expense for the company. Furthermore, fuel costs become easier to predict and thus hedged for when operating just one model of aircraft (Percy, January 2004). Therefore, most costs for a low-cost carrier can be considered fixed and easier to plan for.

Thus far, we have seen distinct differences between these two business models operating in this industry. Both the theoretical framework and business model overview have lead us to an appropriate basis on which to investigate the relations between both competition and price as well as the relation between competition and service quality.

2.5 Research Aspirations

This chapter provides an overview of the appropriate theories concerning the European civil aviation industry in terms of competition, service quality and price. Along with that, descriptions of the different business models employed by flag carriers and low-cost carriers were also illustrated. Due to all of this valuable and relevant information, in conjunction with the purpose in mind, we have formulated the following research questions we believe will be helpful in fulfilling our purpose. The following questions will be answered and further discussed in our analysis and conclusions;

1. What has been the effect of the point-to-point, low-cost carrier business model on this industry? Who is competing against who?
2. What has Porter's (1979) five forces model helped to tell us about competition in this industry?
3. If a general increase in demand occurs within this industry, what will be the effect on company revenues and expenses for both flag carriers and low-cost carriers?
4. Are low-cost carriers able to outperform flag carriers in terms of cost control?
5. How is service quality defined by both types of carriers? Is there a difference in what both consider service quality to be?

As a general research question to the entire thesis, we will ask and ponder which of the two business models is proving to be more sustainable over time and why. We believe that the answers and discussions to the above questions will serve our problem and purpose through the analysis and conclusions.

3 Method

This chapter illustrates and explains the method chosen for this thesis. It will describe the type of data used, how the data was collected and the way the study was performed. It is concluded with a brief discussion on the reliability and validity of the study.

3.1 Method Choice

The European civil aviation industry and the relation between competition, price and service quality in the industry is a complex situation containing many interacting elements. From a management perspective the interest is not any single element on its own, but the interaction and relation between the elements in the current situation's full complexity. Therefore an integrated research approach as defined by Johns and Lee-Ross (1998) will be used. The authors will use a less structured method to this study, but will still try to take all variables affecting the study into consideration.

In any research, it is imperative to consider what kind of information to gather and how to gather it. There are two main methods of investigating and collecting data, namely qualitative and quantitative. There are several aspects that set these method styles apart and it is therefore important that the chosen method fits the purpose of the study (Curwin & Slater, 2002).

The term *quantitative* implies an indirect or abstract approach that treats experiences as similar by adding or multiplying them together, or “quantifying” them (Sherman & Webb, 1998). In quantitative research the majority of the data is collected or coded into numbers and not individual comments, reflections, or interpretations (Punch, 1998). A quantitative study relies on sample data representing the population and is usually perceived as a gathering of facts (Blaxter, Hughes & Tight, 2001).

Qualitative research on the other hand puts an emphasis on understanding of meanings rather than measures. Phenomena are not measured in terms of quantity, intensity, or frequency, but understood in terms of their meaning in the world they are observed in. In other words, the qualitative method is applied on non-statistical data that focuses on in-depth understanding with a fairly small number of samples investigated (Befring, 1994).

Using an integrative approach allows the authors to combine qualitative and quantitative research techniques to obtain multiple data about the investigated phenomenon. Hence competition is treated using a quantitative approach in both data collection and analysis while price and service quality are investigated using qualitative techniques.

3.2 Data Types

Data used for scientific studies can be classified as either *primary* or *secondary* (Hardy, 2004). The term primary is associated with data that is collected first hand by the researchers conducting a specific study, or in other words, data collected for a specific purpose. This is usually done through the use of surveys, interviews, experiments and observations that are specifically designed to suit the objectives of a particular research project (Hardy, 2004). Secondary data refers to data that has already been collected for another task. Examples of secondary data include publications like annual reports, journals, academic papers, dissertations or statistics published by governments and organizations (Hardy, 2004).

Secondary data is considered more reliable in this study compared to primary data collected by the authors due to the complexity and scope of the research objective. A vain initial attempt by the authors is a case-in-point. Additional advantages of using secondary data are saved time, money and effort spent in acquiring it (Hardy, 2004).

Problems associated with secondary data include the difficulty of making sure that the data is accurate, relevant and fits appropriately into the study (Churchill, 1996). Multiple definitions of the same expression are also a potential problem when using different secondary data sources (Saunders, Lewis & Thornhill, 2003). These problems can result in numerous errors in the collection and analysis process as well as influence the results.

One way to minimize the risk of the problems mentioned above, was to only collect data from sources considered trustworthy, that published neutral data with no specific observational intent other than illustrating actual events. The main sources include the Swedish Civil Aviation Authority (Luftfartsverket and Luftfartsstyrelsen), the International Air Transport Association (IATA) and the European Organization for the Safety of Air Navigation, Eurocontrol. The “multiple definition problem” was addressed by not combining data from separate sources before the analysis.

3.3 Data Collection

The collected data can be separated into theoretical and empirical data. The former will be used as a base for understanding the industry while the latter to empirically investigate the questions spelled out in the purpose.

The theoretical data came from books, journals, newspapers, publications and the Internet. The main goal when researching the theoretical data was to find theories on price, service quality and competition while simultaneously, finding information about the two business models used in the industry in order to acquire an understanding of the industry. Information soon proved to be in abundance but still presented challenges. The first challenge was to decipher what was relevant to this study and avoid using useless information. After extensive reading and researching it became easier to make appropriate judgments on what was relevant. The second challenge was to place the material in the right context and understand relations between theories, business models and industry events. This required further reading and numerous discussions between the authors.

The empirical data was on price, competition and service quality. The competition data was not hard to obtain, but it was challenging to organize due to the amounts. The data came from the websites of the Swedish Civil Aviation Authority, (Luftfartsverket and Luftfartsstyrelsen) or through email contacts with employees at the said authorities. The data represented the number of seats per route per week supplied and demanded from all Swedish airports between years 2000 and 2004. This time frame incorporates both downward and upward trends in the industry making it less likely for the data to be biased. Data on seats from Arlanda and Skavsta airports was extracted. From these figures quarterly data was derived and the moving average was calculated to clean the data from seasonal patterns.

Data on service quality was obtained from the Central Office for Delay Analysis (CODA), a department within the European Organization for Safety of Air Navigation (Eurocontrol). Eurocontrol regularly publishes reports analyzing the air traffic delays in the European Civil Aviation Conference Area. The area includes all countries that are within the geographical boundaries of Europe, with the exception of Turkey that is also

included (Eurocontrol, 2005). Airline websites were also a source for service quality data. Furthermore, articles from *The Financial Times* and *The Economist* were extremely helpful in gaining understanding of what was currently occurring within the industry.

Obtaining pricing data represented the first major obstacle in this study. Data that was needed was clear from the beginning, however the data was not readily available. Pricing data as well as revenue and expense data was considered confidential in the eyes of the airline who would therefore, not release such information. Repeated attempts to get data from Lufthansa, KLM, SAS and Air France gave no result. If confidentiality was not the problem, then funding was. After extensive searching, data was found from the International Air Transport Association (IATA) whose website gave a synopsis of a report containing pricing data. The full report could be obtained, however for a hefty fee of \$400us.

Repeated phone and email contacts with the association did not make them more willing to give the report away for free despite the character of the research project. After additional research, the report was found in the flight school library of Embry Riddle Aeronautical University in Arizona, United States. With the tremendous help of Ms. Christine Scott along with the trust and assistance of the university, the pricing data needed eventually found its way to JIBS.

Taking into consideration the size and complexity of the European civil aviation industry, the authors will look at price through revenues and expenses for flag carriers in Europe. The pricing data has been collected from the years 2001 and 2002 on an aggregated level for flag carriers operating the hub-and-spoke business models. The flag carrier's data collected concerns only the region of northern Europe. The International Air Transport Association (IATA), includes the following countries in that region: Austria, Belarus, Belgium, Bulgaria, Czech Republic, Denmark (incl. Greenland and Faroe Islands), Estonia, Finland, France, Germany, Hungary, Iceland, Ireland, Latvia, Liechtenstein, Lithuania, Luxembourg, Moldova, Netherlands, Norway, Poland, Romania, Russia Federation (west of Urals) Slovakia, Sweden, Switzerland, Ukraine and the United Kingdom.

Ryanair, along with the other low-cost carriers operate in a different business model than that of the flag carriers. Their operations are based on the point-to-point business model, described in chapter two. Even though there are many low-cost carriers within northern Europe, this study will look at the financial performance of Ryanair due to the fact that it is the largest and most influential low-cost carrier in Europe. We will use the financials of Ryanair as a proxy to show how low-cost carriers operate in Europe.

3.4 Method Credibility

Alongside of fulfilling the purpose of the study, the authors' main concern must be to produce credible results. Credibility can be achieved by attempting to maximize the reliability and validity of the study.

3.4.1 Reliability

Reliability refers to how reliable the chosen measuring instrument is. It gives a measurement of how resistible the instrument is towards random influences and biased judgments from external factors. In order to achieve the highest level of reliability, a method or approach should be completely independent from the researcher (Eriksson & Widarsheim-Paul, 1999). Another researcher employing the same method should, independently from

the authors, be able to replicate the finds. If this is the case the method can be deemed reliable, just as a scale is considered reliable if it shows the same weight in repeated attempts to measure your weight.

To increase the reliability of the study the authors have used models and definitions designed for and used in previous and similar investigations. For instance, the five forces model has been used for the analysis of industry competition and microeconomic theory for the analysis of pricing. The authors have also attempted to increase the reliability of the study by using data from trustworthy sources. Competition data was collected from the government agency Swedish Civil Aviation Authority (Luftfartsverket and Luftfartsstyrelsen). Price data was collected from the International Air Transport Association (IATA) while service quality data was collected from the European Organization for Safety of Air Navigation (Eurocontrol).

3.4.2 Validity

Eriksson and Widersheim-Paul (1999) define validity as the ability of the measuring instrument; or theories and models in this case; to measure what they are intended to. Validity is an extremely important service quality of a measuring instrument since it does not matter how well an investigation is performed if the instruments used are unable to measure what they are intended for.

The authors have attempted to increase the conceptual validity (Wallén, 1993) of this study by defining and explaining the most important concepts, namely competition, price and service quality. Other authors have used similar concepts when investigating the airline industry and therefore the authors are confident that these are important concepts increasing the validity of the study.

Svenning (1996) suggests that the validity of a study can be increased if there is a clear connection between the theoretical concepts and the empirical research. The authors have used well known and accepted theories to describe and understand competition, price and service quality. The empirical results have been interpreted in the light of those theories and thus, the authors believe higher validity has been achieved.

3.5 Method Limitations

The integration of the different research techniques raises questions about academic rigor (Johns & Lee-Ross, 1998). The qualitative phenomenological approach is very different from the hypothetico-deductive quantitative approach. But management studies often require a broader problem definition compared to pure scientific studies where a hypothesis can be tested on a narrowly defined problem. Therefore a decrease in the academic rigor can be justified for an increase in scope (Johns & Lee-Ross, 1998).

Generalizations of the findings to other industries will not be attempted. This would require a pure scientific study using one method, one world view and a completely different research focus.

Flag carriers and low-cost carriers will, in this study, be treated as companies offering the same basic product, namely similar flights between the same city areas. For example, a flight on Air France from Stockholm Arlanda to Paris Charles de Gaulle and a flight on Ryanair from Stockholm Skavsta to Paris Beauvais is, for simplification, considered to be the same basic product. Specific aspects such as ticketing regulations and rules will be omit-

ted. Business and first class offerings by flag carriers will also be omitted, wherever possible. Low-cost carriers typically operate a one class (economy) configuration in all aircraft. The inclusion of business and first class offerings would unfairly influence the study, not only in terms of fares paid, but also in terms of the services and service quality offered. The very simplified assumption will be made, that people who traveled on flag carriers before the emergence of low-cost carriers were mostly concerned with getting from point A to B.

The use of Ryanair as the proxy for other low-cost carriers is done under the risk that the performance of Ryanair is not representative of that of other low-cost carriers. Ryanair might in theory be a “random error” not reflecting the true nature of low-cost carriers. However, the financial success of Southwest Airlines, considered the first low-cost carrier in the world and the stark growth in the number of low-cost carrier operating in Europe suggests otherwise. Economic theory (Parkin et al., 2000) proposes that a successful industry will attract new companies and therefore this thesis works under the assumption that Ryanair and its success is not a random error.

4 Empirical Findings and Analysis

This chapter presents the empirical findings and relates them to the theories presented in previous chapters. The findings are presented together with an analysis of the relation between competition and price as well as competition and service quality.

4.1 Competition

Investigating the airline industry through the five-force model reveals dramatic changes in the last decade. Prior to the 1997 deregulation, there were very few or no potential entrants as governments controlled who could operate an airline, from where and under what conditions. Buyer power (customer's power) was weak as travel agents controlled all flight information and only national flag carrier offered the service. As the industry concentration ratio was very high, there was no rivalry to talk about.

The deregulation completed in 1997 and the public advent of the Internet around 1995, completely changed the competitive landscape of the airline industry. Slowly but surely, the barriers to entry in the form of government regulation vanished and a flood of new entrants began to set up business. Switching cost disappeared as several carriers started to offer flights to the same destination. The previous protective regulations that de facto made it impossible to buy a one-way ticket with one airline and another one-way ticket with another airline disappeared, creating even more rivalry both among the old and between the old and the new players in the industry (Figure 4-1).



Figure 4-1. “Goodbye Lufthansa” Anecdotal evidence of the increased rivalry.

Many of the new airlines are operating using a new business model effectively challenging the old way of doing business. This has profound effects on the industry as the new players can offer lower fare prices which drives down the profitability of airlines using the hub-and-spoke business model. High fixed cost and task specific assets such as airplanes creates large exit barriers, forcing the old airlines to compete in an industry with profit level below what is sustainable given the hub-and-spoke business model.

The amount of information customers can get through the internet increased their negotiating power. Customers can instantly compare ticket prices between airlines and choose the service that fits their needs. The attempt by the airlines to increase switching costs for consumers by introducing frequent-flyer miles has until now been quite successful at retaining customers. It has actually been so successful that the value of all unredeemed frequent flyer miles is greater than the value of all dollar bills in circulation, effectively making frequent flyer miles the world's largest currency (Economist, 2005-01-06). However, the low prices

offered by low-cost carriers are making it increasingly more difficult for the flag carriers to compete with even the best frequent-flyer program.

Looking at cabin crew and pilots as the suppliers for the airline business, the low-cost carriers have managed to decrease the supplier power by managing to keep cabin crew and pilots away from trade unions. This has made it possible for the low-cost carriers to pay them less compared to their flag carrier colleagues while at the same time, working more. However pilots, cabin crew and baggage handlers at flag carrier airlines have, through their trade unions, resisted the necessary structural change leading to an even more difficult competitive position. The new way of thinking about government bail-outs has put additional pressure on the established airlines, as the bankruptcy of Swiss Air in 2001 proved.

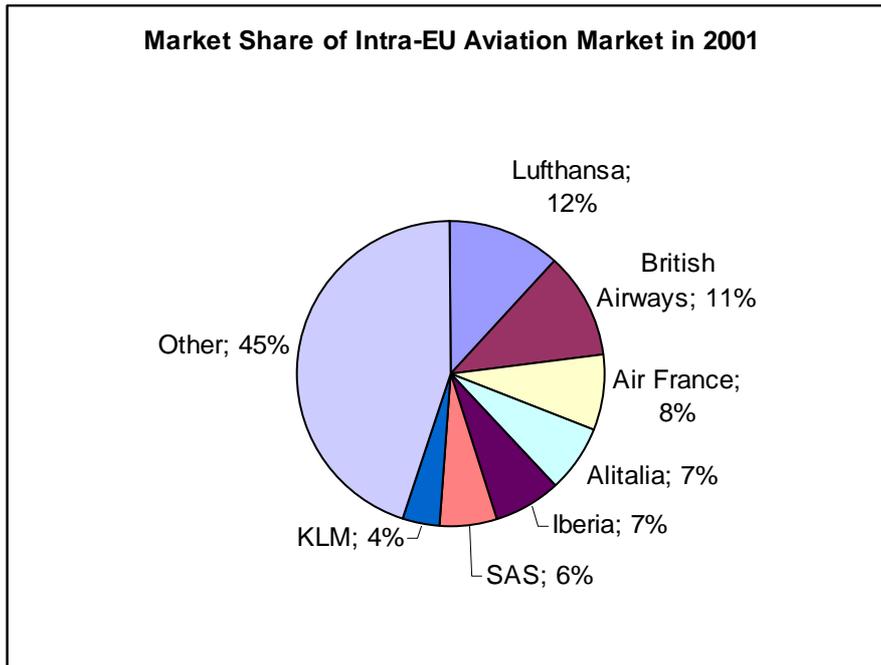


Figure 4-2. Market shares of intra-EU air travel (Jacob & Jakešová, 2003).

Data from 2001 shows that the four largest airlines in Europe only control 38% of the intra-EU market share suggesting low industry concentration and thus high rivalry. What is not reflected in Figure 4-2 is the fact that most airlines are regionally very dominant. Figure 4-3 shows that SAS for instance in 2002 reached a domestic market share of 80% in Sweden, 89% in Denmark and 97% in Norway (Jacob & Jakešová, 2003).

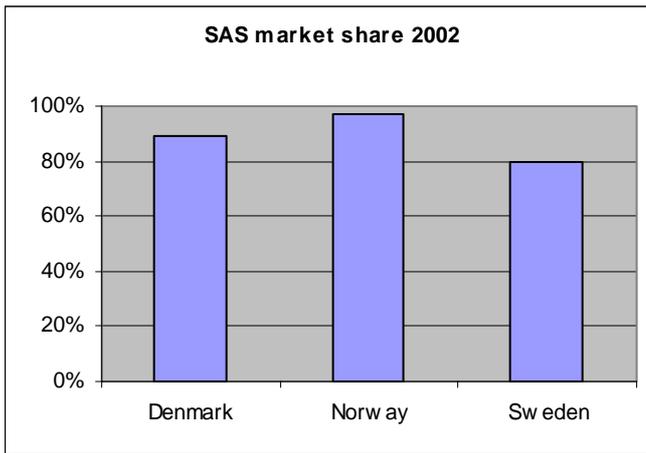


Figure 4-3. SAS market share 2002 (Jacob & Jakešová, 2003).

But this domination is now under attack. Swedish Civil Aviation Authority showed in recent news that 10% of passengers departing from Arlanda airport choose low-cost carriers. What we are witnessing is only the beginning of a massive industry transformation. In 1998 flag carriers accounted for 75% of all European air travel while low-cost carriers accounted for 2%. In 2001 the flag carriers accounted for 72% while low-cost carriers managed to achieve a 7% market share (Figure 4-4). This occurred during a time when total passenger travel in Europe increased by 19% between 1998 and 2001 (Riley, 2003). Clearly, competition in the airline industry has increased dramatically in the last decade.

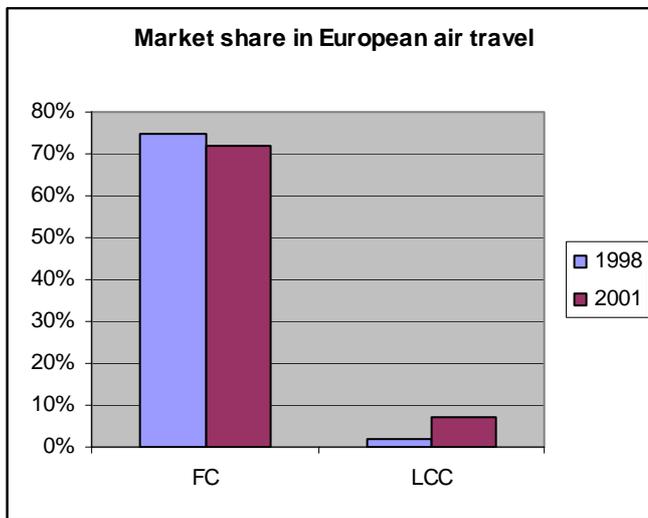


Figure 4-4. Market share in European air travel (Riley, 2003).

4.1.1 Supply and demand of seats

Based on data presented by the Swedish Civil Aviation Authority (Luftfartsverket and Luftfartsstyrelsen) the authors have derived the projected supply of seats, actual demand and spread between the two considering all European destinations from Arlanda airport and

Skavsta airport (see Appendix). Arlanda is the preferred airport for all flag carriers flying to and from Sweden while Skavsta airport is the primary location for low-cost carriers operating in the Stockholm area, especially Ryanair.

Due to the fact that travel data contains strong seasonal variation with a peak in the second quarter and a low in the first, the authors have taken the weighted average of sixteen quarters of data to identify the trend line. Looking on the trend line for the supply of seats from Arlanda airport and considering the possible impact of September 11th on the industry, it is not surprising to see a slow growth until the 3rd quarter in 2001 followed by a strong drop until the 3rd quarter 2003. The cumulative fall of seat supply was more than 25% in that two year period. Since the 3rd quarter 2003 there has been a small growth of around 2% per year on the supply side. If one compares the 4th quarter 2000 with the 4th quarter 2004 there has been a 10% drop in the supply (Figure 4-5). This drop can actually be considered beneficial for the flag carriers as the spread between the demand and supply of seats is decreasing, effectively increasing the load factor for the airlines and in theory the profitability (Figure 4-7).

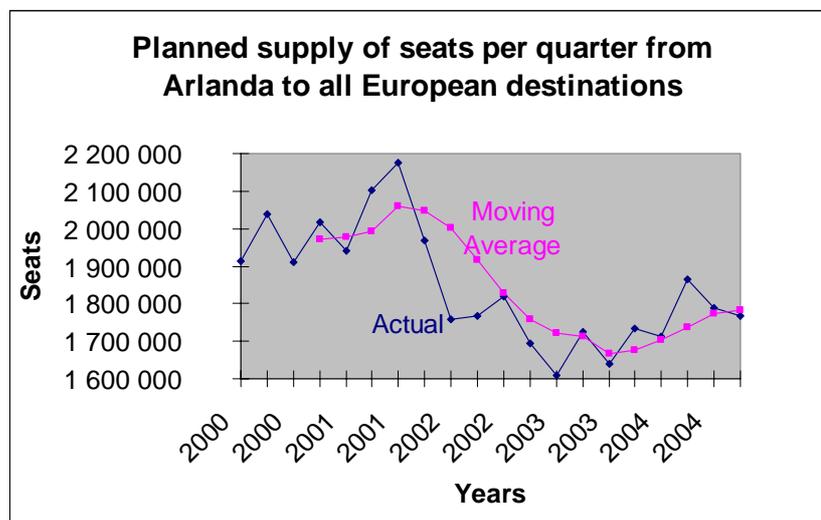


Figure 4-5. Arlanda seat supply (Luftfartsstyrelsen, 2005).

Looking at the demand side the picture is less volatile, but follows the same pattern. There is a slight growth until the 3rd quarter 2001 followed by a decrease in demand until the 4th quarter 2003 where the trend goes back to the slow growth. Between 4th quarter 2000 and 4th quarter 2004 the total drop in demand is 5.7% (Figure 4-6). The total number of passengers traveling by air in Europe grew by 1.4% between 2000 and 2003 (Datamonitor, November 2004). Hence the demand at Arlanda is dropping at a slowly growing market. Part of the drop might be explained by the exceptional growth at Skavsta airport.

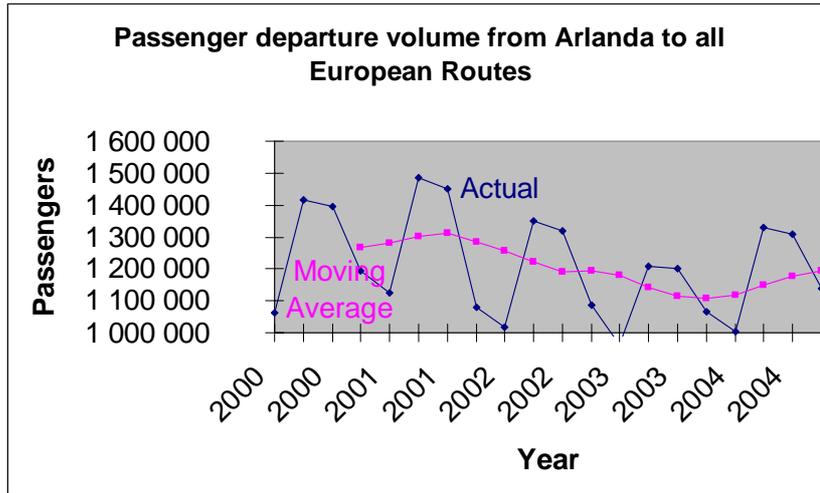


Figure 4-6. Arlanda departure volume (Luftfartsverket, 2005b).

A comparison of the supply of seats with the demand – often referred to as spread – shows a surprisingly small increase in the 3rd quarter 2001. On average the spread is hovering around 34% (± 2) with the exception of the two quarters following 9/11. Also surprising is that the total number of airlines operating European routes from Arlanda airport has been stable between 2000 and 2004 at 36 (Figure 4-7).

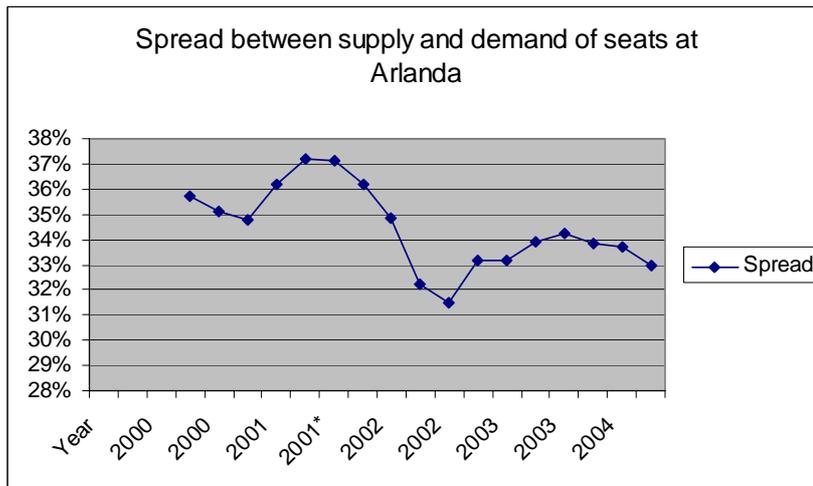


Figure 4-7. Supply and demand spread Arlanda (Luftfartsstyrelsen, 2005 & Luftfartsverket, 2005b)

Looking at the data for Skavsta airport shows a remarkably different picture. With the exceptions of three quarters, the supply of seats has been continuously growing, some years with double digit numbers. The demand for seats seem to be unaffected by the events of 9/11. The cumulative increase in seats supplied between 4th quarter 2000 and 2004 has been 334% (Figure 4-8).

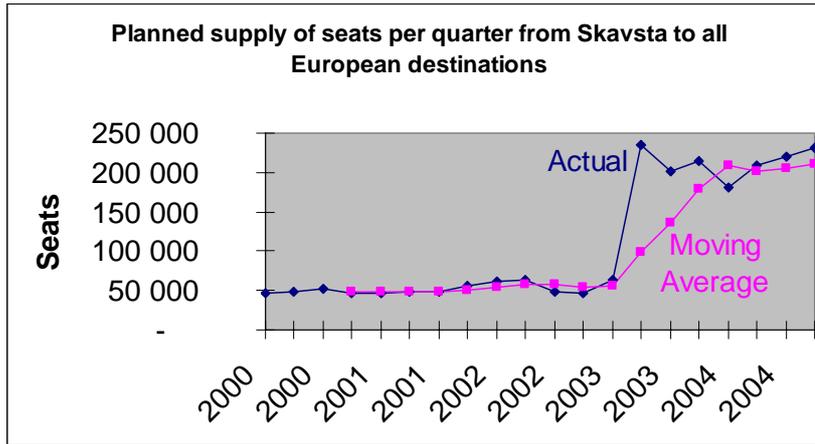


Figure 4-8. Skavsta seat supply (Luftfartsstyrelsen, 2005).

The demand of seats has grown even faster with a cumulative increase of 413% for the period 4th quarter 2000 till 4th quarter 2004. Only three quarters, (2nd, 3rd and 4th 2001) showed negative growth. The sudden rise in the second quarter 2003 can be explained by Ryanair’s sudden increase in the number of destinations offered. The faster growth rate resulted in a fall in the spread from 32% in 2000 to 20% in 2004 (Figure 4-10). Whether this has been a conscious attempt by Ryanair to increase the load factor or simply very strong demand growth is difficult to determine. The number of airlines operating from Skavsta airport has increased from 1 to 3. The passenger volume in 2004 however is still only 14% of the volume at Arlanda airport (Figure 4-9).

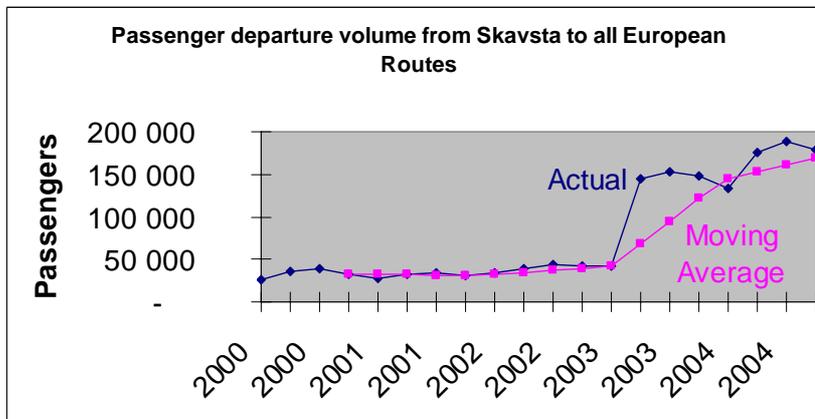


Figure 4-9. Skavsta departure volume (Luftfartsverket, 2005b).

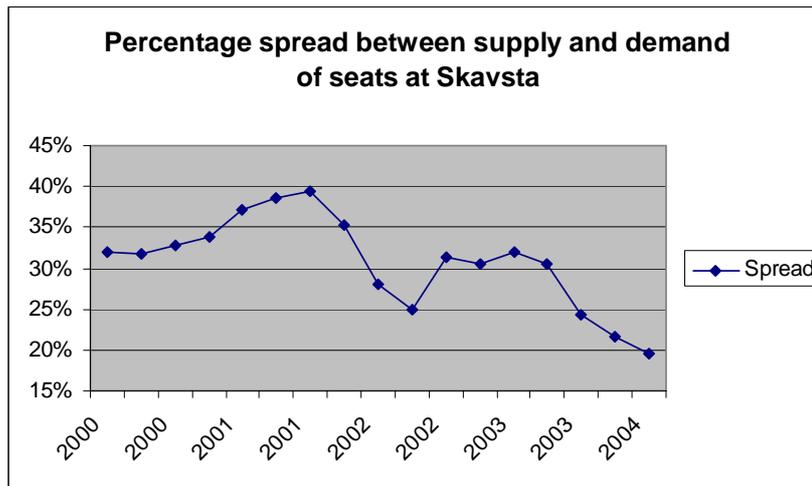


Figure 4-10. Supply and demand spread Skavsta (Luftfartsstyrelsen, 2005 & Luftfartsverket, 2005b).

Comparing and contrasting the data from both Arlanda and Skavsta airports indicates that the flag carriers are facing massive competition from the low-cost carriers. This is supported by a report published by the Swedish Civil Aviation Authority stating that one in ten passengers at Arlanda airport are traveling with a low-cost airline (Luftfartsverket, 2005). Also the number of low-cost carriers operating from Skavsta airport has increased from one to three in the period 2000 to 2004. The market share for flag carriers has decreased while it has increased for low-cost carriers (Figure 4-4) indicating a possible increase in competition between the two business models. The growth of both supply and demand at Skavsta airport has been astonishing, even though it started from very small levels at the same time as Arlanda airport has been facing a decreasing demand and supply. The overall demand of travel has at the same time had a cumulative average growth rate of 1.8% between 1999 and 2003 (Datamonitor, November 2004)

4.2 Price Data

To operate a flight generates expenses in many different areas. Figure 4-11 provides an overview of the average cost structure for flag carriers operating in the region northern Europe for the year 2002 (International Air Transport Association, 2003).

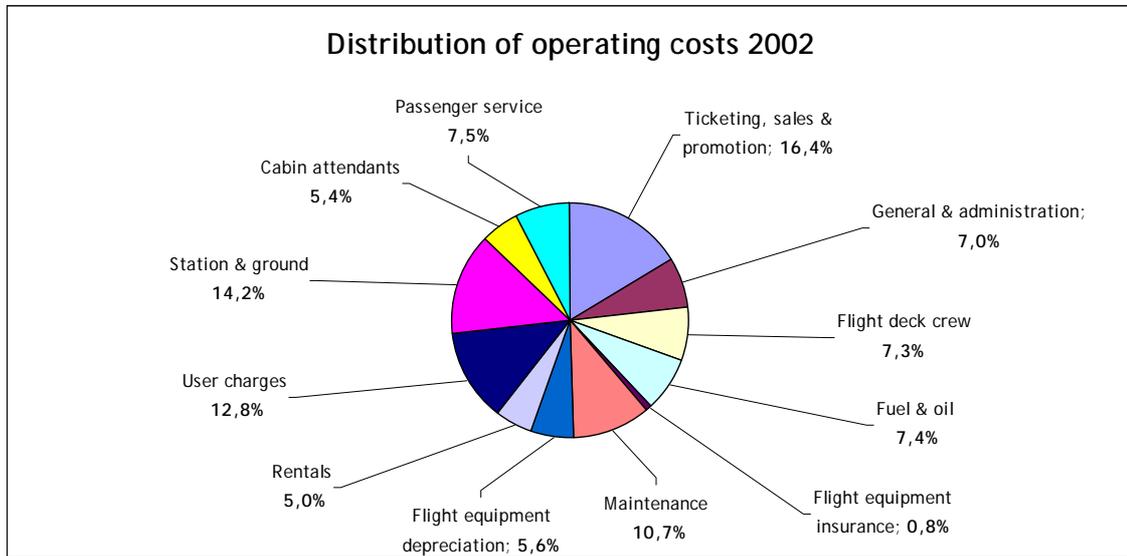


Figure 4-11. Operating costs 2002 (International Air Transport Association, 2003)

Direct operating costs within this chart are classified as flight deck crew, fuel and oil, flight equipment insurance, maintenance, flight equipment depreciation, rentals and user charges, adding up to 49.6% of total expenses. Indirect costs are the rest which is station and ground, cabin attendants, passenger services, ticketing sales and promotions and general/administrative costs (International Air Transport Association, 2003).

According to the International Air Transport Association (2003) costs to operate the major European airlines increased since 2000 due to the rising expenses associated with new security concerns and regulations due to an ever-present terrorist threat. Furthermore costs of jet fuel have increased with rising oil prices on the world's commodity markets (Miller, 2005-04-04a) (Figure 4-12). According to Miller (2005-04-04a) EU is not an economy that is geared to deal with the reality of \$60us for a barrel of oil. The continuous increase in the price of oil and fuel, as illustrated in figure 4-12, has affected all the major airlines of Europe in some way, shape or form. (International Air Transport Association, 2003).

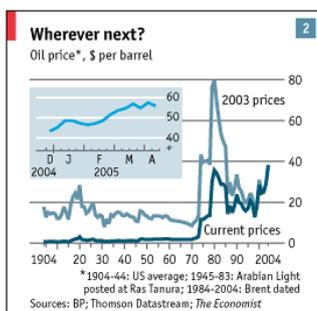


Figure 4-12. Rising concerns for airlines (The Economist, 2005-04-28).

4.2.1 Flag carrier financials

The flag carriers of northern Europe operate using the hub-and-spoke business model. They are considered to be “high service” airlines by most industry experts. This means that these companies will offer such amenities as high service quality in-flight services (food, movies and duty free shopping), many different booking and rebooking options, printed tickets, flexible networks, greater scheduling options, use of larger primary airports and the advantages of partner alliances. As a consequence, flag carriers usually demand superior prices for their tickets. Table 4-1 below illustrates the financial and operating performance of major flag carriers from 2001 to 2002.

FINANCIAL RESULTS: Northern Europe		Total Scheduled Service		
		2001	2002	Change
1. Operating Revenue	US\$ Millions	4978,4	5453,0	9,5%
2. Operating Expenses		5325,3	5450,8	2,4%
3. Operating Results		-347,0	2,1	
4. Net Interest Payments		121,0	148,2	22,5%
5. Net Results		-468,0	-146,0	

Table 4-1. Flag carrier financial results (International Air Transport Association, p. 78, 2003)

As shown in Table 4-1, flag carriers operating in northern Europe have been able to increase their operating revenues 9.5% in a two year period, despite the events of September 11, 2001 and the rise in fuel costs. Their operating expenses have followed suit increasing almost 2.5%. The net results were better than in previous years, however the industry is still in a state of loss as their books remain “in the red” (International Air Transport Association, 2003). Even though the passenger departure volume is on the rise from both Stockholm Arlanda and Stockholm Skavsta (see Figure 4-6 & Figure 4-9) and the industry revenue increased 23.4% due to an overall increase in traffic of 3.7% in economy class, the industry still is unable to turn a consecutive, yearly profit (International Air Transport Association, 2003).

ECONOMY CLASS		2001	2002	Change
1. Capacity (ASK)		31742,3	32346,9	1,9%
2. Traffic (RPK)	US\$ Millions	20919,5	21699,4	3,7%
3. Passenger Load Factor		65,9%	67,1%	1,2pts
4. Pax Operating Expenses/ASK		10,8	11,5	6,8%
5. Passenger Yield/RPK	US\$ cents	11,8	12,8	8,4%
6. Required Load Factor to Cover Pax Op. Exp.		91,6%	90,3%	-1,3pts

Table 4-2. Cost of low class operation (International Air Transport Association, p. 80, 2003)

Table 4-2 illustrates the changes in economy class capacity (supply), demand, revenue and expense from 2001 to 2002. The Passenger load factor (RPK/ASK) increased by 1.2 points or 1.8% at the same time as the required load factor to cover operating expenses slightly

dropped. This means flag carriers are coming closer to breaking even. The table also shows an 6.8% increase in the cost of operating the supplied capacity³.

Passenger yields have increased by 8.4%⁴, meaning that revenue generated by each available seat kilometer flown has increased. This can be interpreted as an increase in the average fares of flag carriers in northern Europe in 2002 compared to 2001. One may intuitively think, due to economic theory, the increased competition would decrease the revenue per flown kilometer (RPK) as prices, according to theory, fall with increased competition. However the increase in operating costs for flag carriers and their dire financial situation, has not allowed for such a decrease as companies struggle to cover operating expenses.

Rising oil prices has proved troublesome for established flag carriers who operate a variety of aircraft within Europe ranging from very small turboprop craft designed to carry 60 passengers to medium haul jets like the B-757, A320 and MD80 designed to carry hundreds of passengers at greater speeds for longer distances. Routes and flight times vary among flag carriers and with such diverse fleets in operation, it is very difficult for these companies to predict and hedge the cost of fuel for the future. The fact that not the same plane type flies the same route leads to fluctuating fuel expenses. For example within Europe, British Airways operates a fleet of 17 aircraft models of differing size, weights and ranges (BA, 2005). SAS operates around 10 differing models for their intra-European services (SAS, 2005) and Lufthansa runs eight different models across Europe (Lufthansa, 2005). While these companies claim to have very comfortable aircraft, Lufthansa even boasts of having, “one of the youngest fleets in the world” (Lufthansa, 2005), the cost incurred to operate them is out-running the earnings from ticket sales.

Flag carriers use very large airports filled with numerous terminal buildings, parking facilities, transportation options, etc. For example, Lufthansa’s main hub airport is Frankfurt Main in Germany. This airport has been classified as one of the world’s largest and busiest airports in operation. Airlines from all over Europe as well as the world utilize this airport which means that space for takeoffs, landings and gates are being bought and sold at a premium price (International Air Transport Association, 2003). The airlines are supposed to pay these premiums to operate in these large and popular complexes. This causes ticket prices to rise for passengers as operating expenses rise for the company.

Favorable progress has been made on traffic levels and fares in an attempt to make the business profitable. However, the current load factor is still far below the required load factor to cover operating expenses, explaining the chronic financial losses presented by flag carriers. Events in recent years, such as the 9/11 and the upward pressure on crude oil has made life more difficult for airlines, but are not the root causes to the difficulties flag carriers are facing. A comparison of the above data with the Ryanair data (see Table 4-5) shows that Ryanair has a higher actual load factor *and* a lower required load factor to cover operational expenses. This clearly reveals the need for flag carriers to restructure their businesses in order to be able to compete with low-cost carriers such as Ryanair. Blaming 9/11 or high oil prices is based on a superficial analysis of the flag carriers’ current problems.

³ Cost of operating supplied capacity is measured by dividing passenger operating expenses with Available Seat Kilometers (ASK). ASK is the number of seats an airline provides multiplied by the number of kilometers they are flown; a measure of airline capacity.

⁴ Passenger yield is measured by dividing total revenue with revenue passenger kilometers (RPK). RPK is the revenue generated by each kilometer flown by each passenger. The measure show how much every passenger is contributing to total revenue.

4.2.2 Low-cost carrier financials

Ryanair and most low-cost carriers have managed to minimize the costs associated with operating an airline to such extent that profits have increase while prices have decreased. An example is the reduction in costs associated with fuel, aircraft maintenance and aircraft insurance.

A fundamental principal in the point-to-point business model, utilized by low-cost carriers, is to operate only one type of aircraft. This enables the airlines to predict and hedge fuel costs and thus treat it almost as a fixed expense. For instance, Ryanair is using the Boeing B737 (Ryanair, 2004) while Easy Jet operates Airbus A319, similar to the B737 in terms of capacity, range and fuel efficiency (Easy Jet, 2005). Wizz Air operates another similar jet, the Airbus A320 (Wizz Air, 2005). The benefits to operating just one medium-haul aircraft is not just the forecasting of consumption and hedging of fuel costs, but also the type of routes flown. Most of the aircraft utilized by the low-cost carriers fly the same routes. For example, one B737 of Ryanair will take off from London Stanstead in the morning, land in Stockholm Skavsta at noon, continue to Riga International Airport in the afternoon before returning to London via Stockholm in the evening (Ryanair, 2004). That aircraft will fly only that route day after day making the distance and flight time constant, resulting in relatively constant fuel consumption. This is how low-cost carriers like Ryanair are able to make reliable consumption predictions and purchase fuel in the futures market.

Ryanair has adopted a “fuel risk management policy” (Ryanair, 2003). The company’s goal is to hedge 70% - 90% of the forecasted annual gallons required for operations to ensure that the future cost per gallon of fuel is locked in at a fixed rate. This policy has been adopted by Ryanair to avoid the risks of sudden surges in oil price.

“Our disciplined policy of hedging fuel has also provided certainty and savings over the past 6 months. The continued uncertainty in the Middle East has caused airlines that were buying fuel at spot rates on the markets to pay substantial penalties. Ryanair has continued to purchase forward fuel at discounts to current spot rates and we have 80% of our fuel requirements to the end of September 2003 fully hedged at a lower cost than what we paid over the past year. As ever, these cost reductions will be passed on to our customers in the form of lower fares.”

Ryanair CEO Michael O’Leary (Ryanair, 2002, p. 8)

A single type of aircraft also makes it easier and cheaper to complete maintenance and repair work when necessary. Furthermore insurance and training costs are less for low-cost carriers who operate one type of aircraft because all of their flight crews know how to safely operate every plane, in contrast to flag carriers that might have more than a dozen different aircraft types. Even though insurance is 0.8% of the total cost to operate a flight, every cent saved in operations will still benefit a company long term.

Low-cost carriers utilize secondary, less congested facilities where space is not sold at a premium. For example, Ryanair in Sweden uses Swedish military air fields as their airports in Gothenburg and Stockholm. These airports are rather small and located further away from city centers than hub airports, but adequately serve the needs of these companies and their passengers. The results are lower airport taxes, lower operating costs for the airline and lower fares for the passengers. Even though secondary airports play an important role in the cost saving strategy of low-cost carriers, the benefits of this strategy may be shrinking with time. Until recently, governments partially subsidized secondary airports and their tenants to attract new businesses and boost local economies. However in 2004, the EU Commission ruled against a subsidy Ryanair received from the Brussels Charleroi airport.

This subsidy which totaled €4 million was considered state aid and therefore illegal under EU competition regulations, making it less likely for future subsidies to occur (The Economist, 2004-02-04).

Passenger services, which make up 7.5% of the operating expense of a flag carrier, are almost non-existent for a low-cost carrier. The fact that Ryanair and most low-cost carriers are “no-frills” airlines with minimal to no in-flight services greatly reduces those costs. Both passenger services and cabin attendants as percentages of total expense are brought down considerably by Ryanair decreasing the operating expense. Of the average total cost to operate a flight, an estimated 32% is eliminated in the case of Ryanair (Ryanair, 2004), explaining the lower load factor required to break-even.

During the period September 2001 to September 2002 total passenger traffic for Ryanair grew 37 % to 7.84 million. Load factor increased by 6 percentage points to a new high of 88 %. Average fares declined by 2 %, however costs per passenger fell at even a faster rate resulting in increased operating margins (Ryanair, 2002). The company’s post tax profits rose in this period by 71 % to a new record of €150.9m resulting in their earnings per share jumping over 60% in a time of turbulence for the majority of the airlines in the industry (Table 4-3).

FINANCIAL RESULTS: Ryanair

		2001	2002	Change
1. Passengers	€ Millions	5,30	7,84	48%
2. Load Factor		83%	88%	5pts
3. Revenue	€ Millions	344,2	464,6	35%
4. Profit After Tax	€ Millions	88,0	150,9	71%
5. Earnings per share	€ cents	12,16	19,99	64%

Table 4-3. Ryanair financial and passenger data (Ryanair, 2001; 2002)

Ryanair’s CEO Michael O’Leary’s comment in the annual report clearly sums up the reason for Ryanair’s success:

“The most important feature of these results is our success in continuously driving down airfares and operating costs. Over the past 6 months, Ryanair’s average fare has declined over 2%, but our operating costs have fallen 11% on a per passenger basis. Ryanair’s fares continue to be over 50% lower than our nearest competitor and up to 80% lower than Lufthansa and British Airways. Our increased profitability at these lower fares gives Ryanair even more capacity to reduce airfares and further stimulate load factors, traffic and growth. At the core of our cost reduction program is the addition of more Boeing 737 aircraft. These aircraft have delivered 45% more seats per flight than existing aircraft while maintaining 25 minute turnarounds.”

Ryanair CEO Michael O’Leary (Ryanair, 2002, p.2)

As stated above, Ryanair is able to drive down fares through aggressive cost-cutting while at the same time, sustainably operating at 40% to 50% of the total unit cost of the average flag carrier. According to table 4-4, the average cost difference between the two business models is five euro cents per available seat kilometer (ASK) favoring the low-cost carriers. Five euro-cents may not seem like a lot however that is per seat, per kilometer. Take a flight on Ryanair for example, from Stockholm to Paris flying 189 seats a distance of about 1,300km at a savings rate of 5c /ask. This means that every seat flies 1,300km

yielding a total ASK of 245,700. Multiply that by the cost savings of 5 eurocents per ask and the estimated cost savings on that one flight totals €12,285 one way or €24,570 roundtrip (Hansson, Ringbeck & Franke, 2003; Ryanair 2004).

The cost difference and savings can only be partially explained through lower wages and the “no-frills” approach to operations. More specifically however, there are three main areas where costs can be reduced: labor, sales and other miscellaneous expenses. For example, labor costs are reduced due to different work rules and the “reduced service concept” where there is minimum check-in time for passengers and fewer personnel required to work. Sales costs can also be slashed due to direct internet bookings thus reducing the need for call center agents and employees which is sort of a mix of sales and labor costs being reduced. Finally the miscellaneous category included costs associated with the elimination of on-board services, along with reduced fuel costs due to hedging in the futures market coupled with aircraft fleet efficiency. Maintenance, ground operations and landing fees are the remaining cost savers. They help to cut costs due to the system of using only one aircraft model, having quick turn-around times and using secondary airports. Table 4-4 illustrates how this is done and how low-cost carriers like Ryanair are able to consistently return profits year after year in an industry where most flag carriers are presenting negative earnings quarter after quarter, year after year.

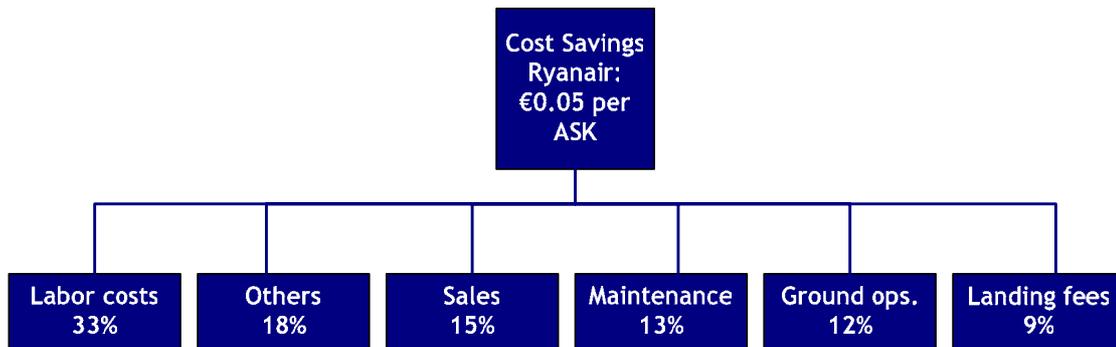


Table 4-4. Flag carrier vs Low-cost carrier cost comparison (adjusted from Hansson et al., 2003).

4.2.3 Analysis of relation between competition and price

Looking at data from Skavsta airport and Arlanda airport reveals that the passenger departure volume has dropped at Arlanda by 5.7% or 54,310 passengers between 4th quarter 2000 and 4th quarter 2004. During the same period passenger volume increased by 413% or 146,518 passengers at Skavsta airport. The number of airlines flying to Europe from Arlanda has been constant during the period at 36. At Skavsta the number increased from 1 to 3 airlines. The overall European market has grown only 1.4% between 2000 and 2003. There is no reason to believe the figure is different for Sweden, therefore passenger growth at Skavsta cannot only be explained by market growth, but is a result of passengers switching from other airlines to Ryanair. Hence rivalry in the industry as measured by the five forces model (Porter, 1979) is increasing and competition is on the rise.

Prices of Ryanair flight are falling but prices for flag carriers, on an aggregated level, have risen between 2001 and 2002. This doesn't reveal anything about the individual routes but tells something about the two competing business models. Flag carriers in contrast to low-cost carriers are unable to generate enough revenue to cover their operational costs. When Ryanair decreases their air fares, flag carriers are probably forced to do the same on com-

peting routes. However, the decrease in revenue must be off-set by an increase in other revenues or the losses will increase. As the hub-and-spoke business model proved, it is difficult to cut costs to the same extent as in the point-to-point business model. Price increases are the only other way for flag carriers to increase revenue in an attempt to offset losses and become profitable.

Whether the increase in prices can be sustained is a question of competition. If a low-cost carrier decides to compete on a route where a flag carrier is dominating, prices will fall. However, the routes where flag carriers can charge high prices are either long-haul flights or small volume routes. This brings the analysis to an interesting question: will flag carriers be outperformed on all but long-haul routes? The answer is maybe. More importantly, the question reveals how low-cost carriers have severely damaged the hub-and-spoke business model.

4.3 Service Quality

Service quality will be discussed both in terms of on-time performance and amenities on-board the plane and on the ground.

4.3.1 On-time performance

On-time performance is in this thesis consider a key aspect of service quality. Figure 4-13 illustrates the consolidated development of departure delays in the industry. The figure shows the percentage of flights delayed, the average delay in minutes and the percentage of delays caused by airlines. Clearly delays are on the way down, however from very high levels. Still 2 out of 5 flights are delayed. There is also a steady rise in the percentage of delays caused by airlines. Data for specific airlines was impossible to find with the exception of Ryanair that is regularly publishing on-time performance data. Below the authors will compare industry delay with Ryanair data.

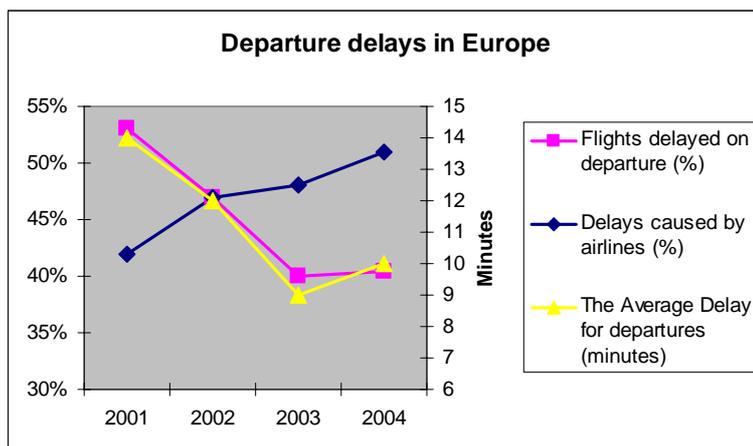


Figure 4-13. European departure delays (Eurocontrol, 2002;2003;2004;2005).

Interesting to notice in is the relatively small amount of delays caused by security despite the unprecedented increase of security both on the ground and in the air. Figure 4-14 clearly shows that the single most important reason still is bad management from the airlines side.

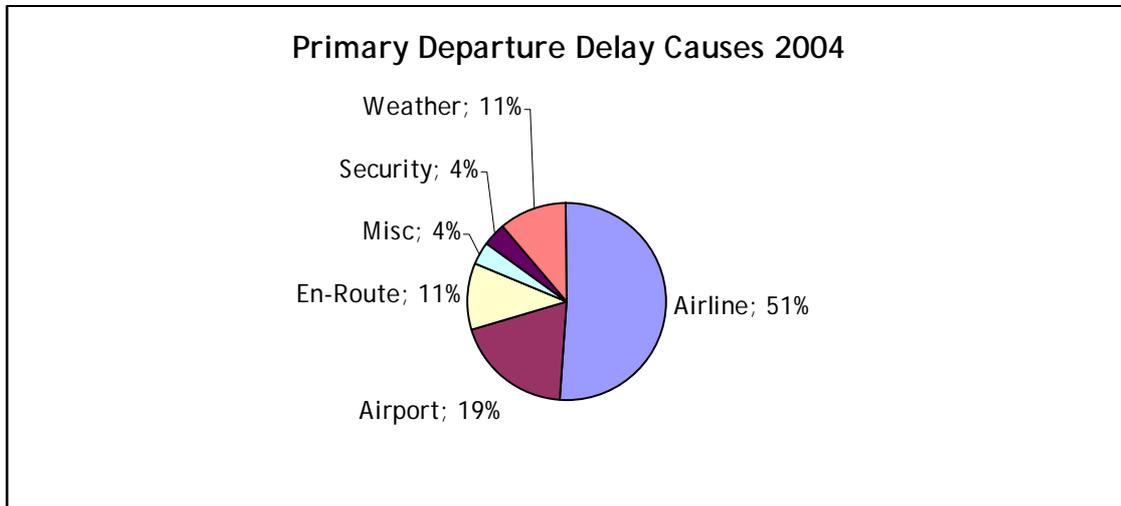


Figure 4-14. Primary departure delay cause (Eurocontrol, 2005).

4.3.2 Flag carrier service quality

Flag carriers have witnessed reduced service quality levels over the last couple of years (The Economist, 2002-09-19). This is linked to the growing presence of the low-cost carriers and the introduction of low fares. The low-cost carriers ability to offer very cheap tickets to similar city pairs as the flag carriers have force the flag carriers to approximate the low-cost carriers in terms of pricing and service level. As a result, flag carriers have decreased amenities on-board and on the ground (International Air Transport Association, 2003) effectively taking away one of few remaining differences between flag carriers and low-cost carriers. Some flag carriers have introduced food for purchase programs on shorter flights eliminating complementary in-flight meal service in the economy cabin, in an attempt to cut costs.

When it comes to priorities of customer satisfaction, the flag carriers are pursuing three main objectives; flight safety, punctuality and service. Safety is the main concern of any airline. Flag carriers have taken great steps and measures to enhance safety issues; expand maintenance and conduct periodic evaluations of equipment and crews. Regarding on-time performance, every airline attempts to boast numbers signifying that their company is either number 1 or number 2, even though Figure 4-13 clearly shows that there is still a long way to go to reach punctuality. What some flag carriers are not paying attention to are issues dealing with delayed or damaged baggage. A report in the Financial Times discussed the rise in baggage complaints at both British Airways and Air France. According to the article more bags were either being delayed, or ending up in separate destinations than the passengers who owned them (Miller, 2005-04-04b).

4.3.3 Low-cost carrier service quality

Low-cost carriers such as Ryanair are known as “no-frills” airlines. This means that a passenger will not be privileged to all the frills a flag carrier may offer. Such services may be in

the form of food, entertainment or duty-free shopping. Eliminating such amenities means increasing the space for more seats per aircraft but also lowering the total weight and thus lowering fuel consumption (Pender & Baum, 2000). Furthermore, low-cost carriers do not operate in large airports where amenities like business alliance lounges would be found. Low-cost carriers do not participate in alliances at all. Even though flag carriers would consider this to be a low level of service, low-cost carriers have a different philosophy on service well illustrated by the following quote:

“Ryanair believes that any customer service commitment must involve a commitment on pricing and punctuality and should not be confined to less important aspects of “service” which is the usually excuse that high fare airlines use for charging high fares. We believe we can do better, that’s why the Ryanair pricing, punctuality and service commitment is a far superior passenger service commitment. We provide all of the essential customer services, but clearly we do not provide all of the backup services (“expensive frills”) that these high fare carriers promise, but then with our lower prices and punctuality, 99.9% of all our passengers won’t need them” (Ryanair, 2005)

Low-cost carriers view on service quality can be summed up in on-time performance, low-cost and safety, disregarding the definition of service quality put forward by flag carriers. Beginning in September 2002, Ryanair started publishing passenger statistics on on-time performance in their annual reports. This statistic, illustrated in Table 4-5, show constant improvement from the period 2001 through 2004 (Ryanair, 2001;2002;2003;2004). The data on complains could not be found after 2002. No reason for the lack of data was given.

PASSENGER SERVICE STATISTICS: Ryanair

	2001	2002	2003	2004
1. On-time flights in %	65	81	91	93
2. Complaints (per 1000 passengers)	0.77	0.53	na	na
3. Baggage complaints (per 1000 passengers)	1.19	1.21	na	na
4. Complaints answered within 7 days	na	99.7%	na	na

Table 4-5. Ryanair service statistics (Ryanair, 2001;2002;2003;2004).

Among all EU airlines, the on-time performance data placed Ryanair among the very best for customer services in the European civil aviation industry. Comparing Ryanair’s on-time performance figures with the industry average clearly shows that Ryanair is an industry leader. While on average 40% of flights in the industry are delayed, only 7% of Ryanair’s flights are delayed. Ryanair is supporting an EU initiative to have all commercial airlines operating in this industry to publish similar data on customer service (Ryanair, 2003).

4.3.4 Analysis of relation between competition and service quality

The deregulations between 1987 and 1997 liberalized the intra-European market and allowed EU carriers to freely operate within the union. The level of air travel has since increased and the number of low-cost carriers operating from Sweden has grown. This has created problems for flag carriers running operations with generally higher operating costs due to the business model employed. To approximate the cost leadership of low-cost carriers, flag carriers have started to offer short-haul flights stripped from services traditionally associated with flag carriers. This has by some observers been a sign of decreasing service quality in the industry (The Economist, 2002-09-19). However, the increased competition has been coupled with a decline in the percentage of delayed departures. Ryanair is pioneer-

ing on publishing on-time performance data to fend off the accusations and general belief that the airline is offering low quality service. The general public seems to confuse the term no-frills with low service quality. Ryanair has tried to redefine the term service quality from being a question about comfort, on-board entertainment and food, to being a question of on-time performance. Looking at service quality in terms of on-time performance the industry is actually seeing an increase in service quality. Between 2001 and 2004 the percentage of delayed departing flights dropped from 53% to 40% and the delay in minutes dropped from on average 14 minutes to 10 minutes. This finding is supported by Mazzeo (2003) who could show that increased competition on routes in the US domestic air travel market had a positive correlation with increased competition.

5 Conclusions

In this chapter, conclusions on competition, price and service quality will be presented along with some final thoughts on the differences between the two business models utilized by low-cost carriers and flag carriers. Suggestions for future studies on this topic will also be given.

5.1 Competition Conclusions

Low-cost carriers are here to stay! An analysis of the competitive landscape in the European civil aviation industry reveals dramatic change. Actors virtually unknown five years ago, are today setting the agenda of the aviation industry for the next decade. The number of departing passengers at Skavsta airport has risen by 413% over four years while passenger departures are falling at Arlanda airport. Ryanair is showing profit year after year while flag carriers in northern Europe cannot break-even. This presents an opportunity for Ryanair to continuously cut prices and under-cut flag carrier profitability even more. But what is the reason for this fundamental difference between flag carriers and low-cost carriers?

Flag carriers and low-cost carriers are running different business models. The number of flag carriers has stayed the same at Arlanda airport between 2000 and 2004. At Skavsta airport the number of low-cost carriers have increased from one to three during the same period. The rivalry in the industry is on the increase given the number of companies operating in the region and the tremendous increase in passengers during modest market growth. But what is occurring is not as much competition between companies but it is competition between business models. It seems unlikely that the flag carrier business model will survive in its current form due to its inability to compete with short-haul flights. Maybe the flag carriers will eventually only operate long-haul flights according to some kind of extended point-to-point business model?

The five-forces model cannot give much guidance to the question above. As has been shown in the method chapter, there are serious limitations with the model due to its linear view of industries. When a new industry emerges from within an old industry it is difficult to utilize the model to determine the competition between the two industries. This phenomenon should be investigated in its own right.

5.2 Price Conclusions

Contrary to what economic theory suggests, the passenger yields for flag carriers have increased between 2001 and 2002. This increase in the aggregate price levels can be interpreted as an increase in average ticket prices as this measure is looking at the revenue generated per flown kilometer. This has happened during a period of increased competition within the industry. However, the increased yield does not tell anything about the pricing on individual routes. A possible explanation is that prices on routes with high competition have decreased at the same time as prices on routes where flag carriers are dominating have increased.

The emergence of the point-to-point business model challenges the traditional way of operating an airline. This has been done by offering lower prices, under-cutting the revenues of the flag carriers and thus sparking an increased competition and rivalry within the indus-

try. Flag carriers have been able to curb expenses slightly over the past 4 years, however are still unable to produce profits (International Air Transport Association, 2003). The point-to-point business model has proved more sustainable than many analysts expected. There are no signs that Ryanair's crusade against the flag carriers is stopping anytime soon. On the contrary, if Ryanair continues to generate profits and the flag carriers continue to sustain losses, there is a risk that many of the flag carriers will go into bankruptcy.

5.3 Service Quality Conclusions

The increased competition seems to decrease service quality on-board but increases service quality in terms of on-time performance. The average delay time is decreasing and the percentage of flight delayed is dropping.

In section 2.5 the following questions were put forward: How is service quality defined by both types of carriers? Is there a difference in what both consider service quality to be? Results from this study reveals that there is a silent war going on between the flag carriers and the low-cost carriers of how to define service quality. What they are quietly fighting about is what quality literature calls outcome element and process element of a service offering. Flag carriers are defending their position that amenities on-board and on the ground are what constitute good service quality – the process element. Low-cost carriers with Ryanair in the forefront, are fighting to make on-time performance the determinant of good service quality – the outcome element. Looking at the passenger departure numbers at Arlanda and Skavsta airports, it seems as if Ryanair is winning the war.

These findings are also confirming previous research that the most important criterion when determining perceived level of service quality is reliability. Reliability in the airline industry is understood as on-time performance and thus no matter how good your service will be on-board and how much frequent flyer miles you will earn; if the airline cannot achieve good on-time performance customers will abandon it.

5.4 Connection between Price and Service Quality

The purpose of this thesis was to investigate the possible relation between competition and price as well as the relation between competition and service quality. Even though it is outside the scope of this thesis it is appropriate to mention something about the undefined and discovered connection between price and service quality.

Between 2001 and 2002 the price for travel with northern European flag carriers increased while service quality in terms of traditional amenities like food and on-board entertainment declined. This can be viewed as an attempt to curb operating costs and return to profitability. An assumption could therefore be that higher operating costs coupled with price pressure from low-cost carriers force flag carriers to approximate their offering to that of low-cost carriers by phasing out on-board services. Another assumption could be that flag carriers are making a strategic mistake by abandoning an important, differentiating factor. More in-depth research is needed to make any conclusions.

While there seems to be a negative connection between price and quality in terms of in-flight services, there seems to be a positive connection between price and service quality in terms of on-time performance. The cheapest airline is the least delayed. The obvious reason seems to be that Ryanair is operating from less crowded secondary airport while flag carriers are operating at some of the busiest airports in the world. Maybe taking away in-

flight amenities on flag carriers operating intra-Europe had allowed these companies to develop better schedules, faster and more efficient turn around times? It is clear that Ryanair is attempting to redefine quality from on-board service to on-time performance. But could it be that price is unrelated with service quality?. More in-depth research is needed to make any conclusions.

5.5 Business Model Conclusions

The hub-and spoke business model will always have a lower load factor compared to point-to-point model due to the nature of the business. People are picked up on smaller secondary airports, transported to the hub airport and than placed on the hub-to-hub flight. With the current required load factor to cover operating expenses at above 90% it seems unlikely that flag carriers will reach sustainable positive results under their current way of operating. The problem is not in the business model itself but in the competition from low-cost carriers. Ryanair, operating under the point-to-point business model, is profitable at a load factor below 80% due to a higher and more efficient plane turnaround time and lower operating expenses. So which of the two business models is proving to be more sustainable over time? It is clear from the flag carriers financials that they cannot operate like they do for long. Low-cost carriers utilizing the point-to-point business model are more profitable and are delivering better service quality than the flag carriers. This business model is here to stay and will in a sense, dictate the rules of the game as the low-cost carriers are consistently making money at the present time.

5.6 Suggestions for Future Studies

During the course of this study a number of interesting relations have been encountered and should be dedicated to a more in-depth study. One of the most interesting discoveries has been the question about the two business models. It would be of interest to study if the hub-and-spoke system is “dying.” An investigation into the sustainability of this business model could prove useful for the entire commercial airline industry and possible conclusions or recommendations could be made about how to possibly revolutionize the hub-and-spoke system.

A future study of the connection and relation between price and service quality would be of interest. Is price a determinant of service quality or is there simply no relation? Anecdotal evidence suggest that if service quality is defined as on-time performance there is no relation.

Applying the ideas and theories used in this thesis to the civil aviation industry in the United States would be of interest. That industry has gone through much more turbulent times, especially following the events of September 11th, 2001, than here in Europe. Maybe this could spell out more clearly the situation in the industry and more clearly could reveal the fundamental problems of the flag carriers? It would be of interest to investigate if competition is increasing and the reasons behind that increase as well as possible impacts on service quality with in the commercial airline industry in the United States.

References

- Befring, E. (1994). *Forskningsmetodik och statistik*. Lund : Studentlitteratur.
- Blanchard, R. and Galloway, R. (1994). Quality in Retail Banking. *International Journal of Service Industry Management*, 5(4), pp. 5-23.
- Blaxter, L. Hughes, C. and Tight, M. (2001). *How to Research, Second Edition*. Buckingham, Philadelphia: Oxford University Press.
- Bowen, B. and Dean, H. (2001). *The Airline Quality Rating 2001*. Wichita State University Publications.
- Chan, D. (2000). Development of the Airline Industry from 1978-1998; A Strategic Overview. *The Journal of Management Development*, 19(6), pp. 489-514.
- Churchill, G. A. (1996). *Marketing research, third edition*. USA: The Dryden Press.
- Curwin, J. and Slater, R. (2002). *Quantitative methods for business decisions*. London : Thomson Learning.
- Doganis, R. (2001). *Airline Business models for the New Millennium, The Airline Business in the Twenty-First Century*. Washington State: Routledge Publishers.
- Dresner, M. and Kefeng, X.. (1995). Customer Service, Customer Satisfaction and Corporate Performance in the Service Sector. *Journal of Business Logistics*, 16(1), pp.23–40.
- Edgeworth, F. (1881). *Mathematical psychics : an essay on the application of mathematics to the moral sciences*. London: Kegan Paul, 1932.
- Eriksson, L. and Wiedersheim-Paul, F. (1999). *Att utreda, forska och rapportera*. Malmö: Liber ekonomi.
- Fog, B. (1994). *Pricing in Theory and Practice*. Copenhagen: Munksgaard International Publishers.
- Grönroos, C. (1983). *Marknadsföring i tjänsteföretag : en introduktion*. Malmö : Liber Förlag.
- Hansson, T., Ringbeck, J. and Franke, M. (2003). Flight for survival: a new business model for the airline industry. *Strategy + Business*, 31, pp. 78–85.
- Hardy, M. (2004). *Handbook of Data Analysis*. Sage Publications; London, United Kingdom.
- International Air Transport Association (2003). *Airline Economic Results and Prospects, Summary Report*. IATA Airline Economic Task Force, Aviation and Research Department; Montreal, QB, Canada.
- Jacob, M. and Jakešová, Z. (2003). Emerging Tendencies in the European Airline Industry - an investigation of SAS and Ryanair. *Thesis from International Master Program – Strategy and Culture*, Linköping, Linköping University.
- Johns, N. and Lee-Ross, D. (1998). *Research methods in service industry management*. London : Cassell.
- Johnson, G. & Scholes, G. (1999). *Exploring corporate strategy*. (5th ed.) London: Prentice Hall.

- Maister, D. (1993). *Managing the professional service firm*. London : Free Press.
- Mazzeo, M. (2003). Competition and Service Quality in the U.S. Airline Industry. *Review of Industrial Organization*, 22(4), pp. 275–296.
- Mill, J-S. (1848). The Principles of political economy. Book II. In J. M. Robson (Ed.) *Collected Works*, Toronto, University of Toronto Press, 1965.
- Normann, R. and Ramírez, R. (1994). *Designing interactive strategy : from value chain to value constellation*. Chichester: Wiley.
- Parasuraman, A., Zeithaml, V. and Berry, L. (1988). SERVQUAL: A Multi-item Scale for Measuring Consumer Perceptions of Service Quality. *Journal of Retailing*, 64(1), pp.12-40.
- Parkin, M., Powell, M. and Matthews, K. (2000). *Economics* : European edition. 4th Edition. Harlow : Addison-Wesley.
- Pender, L & Baum, T. (2000). Have the Frills Really Left the European Airline Industry? *International Journal of Tourism and Research*, 2, pp. 423-436.
- Porter, M. (1979). How competitive forces shape strategy. In M. Porter (Ed.), *On Competition* (pp. 21-38). Boston, Mass.: Harvard Business School.
- Porter, M. (1980). *Competitive advantage : creating and sustaining superior performance*. London: Free press.
- Punch, M. (1998). *Introduction to social research: Quantitative and Qualitative Approaches*. London: Sage Publications.
- Riley, G. (2003). *The European Airline Market, an Economics Case Study*, Tutor2u Limited Publishers.
- Sanior, N. (1836). *Political Economy*. London: W. Clowes.
- Saunders, M., Lewis, P. and Thornhill, A. (2003). *Research methods for business students*. Harlow: Financial Times/Prentice Hall.
- Sherman, R. and Webb, R. (1998). *Qualitative Research in Education: Forms and Methods*. Lewes: Falmer Press.
- Smith, A. (1776). *Wealth of Nations*. Glasgow Edn, Oxford University Press, 1976
- Svenning, C. (1996). *Metodboken*. Lund: Lorentz Förlag.
- Treatheway, M. (2003). Distortions of airline revenues: why the network airline business model is broken. *Journal of Air Transport Management*, 10, pp 3-14.
- Wallén, G. (1993). *Vetenskapsteori och forskningsmetodik*. Lund: Studentlitteratur.

Internet References

- Air France (2005). *Timetable, Pricing and Schedule Information*. Retrieved 2005-03-03 from <http://www.airfrance.com/se>

- Boeing (2005). *Background of the Boeing 737 Family*. Retrieved 2005-03-03 from <http://www.boeing.com/commercial/737family/background.html>
- Datamonitor (2004, November). *Airlines in Europe. Industry Profile*. Retrieved 2005-05-23 from <http://dbic.datamonitor.com/industries/profile/?pid=7404AC1D-2435-48FA-A938-315F0F97F7E4>
- Easy Jet (2005). *Aircraft fleet information*. Retrieved 2005-04-24 from http://www.easyjet.com/EN/About/Information/infopack_fleetinfo.html
- Eurocontrol (2002). *Delays to Air Transport in Europe. Annual Report 2001*. Retrieved 2005-04-26 from: http://www.eurocontrol.int/eCoda/portal/media-type/html/user/anon/page/default.psml/js_pane/P-f34d5a3b6f-10007
- Eurocontrol (2003). *Delays to Air Transport in Europe. Annual Report 2002*. Retrieved 2005-04-26 from: http://www.eurocontrol.int/eCoda/portal/media-type/html/user/anon/page/default.psml/js_pane/P-f34d5a3b6f-10007
- Eurocontrol (2004). *Delays to Air Transport in Europe. Annual Report 2003*. Retrieved 2005-04-26 from: http://www.eurocontrol.int/eCoda/portal/media-type/html/user/anon/page/default.psml/js_pane/P-f34d5a3b6f-10007
- Eurocontrol (2005). *Delays to Air Transport in Europe. Annual Report 2004*. Retrieved 2005-04-26 from: http://www.eurocontrol.int/eCoda/portal/media-type/html/user/anon/page/default.psml/js_pane/P-f34d5a3b6f-10007
- Luftfartsstyrelsen (2005). *Destinationsutbud*. Retrieved 2005-03-15 from http://www.luftfartsstyrelsen.se/templates/LFV_InfoSida_70_30___35560.aspx
- Luftfartsverket (2005a). *Arlanda: Fler än var tionde valde lågprisflyg*. Retrieved 2005-03-05 from http://www.lfv.se/templates/LFV_Listing.aspx?id=36153
- Luftfartsverket (2005b). *Trafikstatistik från svenska flygplatser*. Retrieved 2005-03-20 from http://www.lfv.se/templates/LFV_InfoSida_70_30___36426.aspx
- Lufthansa (2005). *Timetable and Schedule information*. Retrieved 2005-03-03 from https://www.lufthansa.com/aerodyn/tt_main.aero?l=en&pos=DE&p=fly
- Miller, L. (2005-04-04a). Airline Service Worsened in 2004, *The Financial Times*. Retrieved 2005-09-04 from www.ft.com
- Miller, L. (2005-04-04b). Overall quality of airline service deteriorating, *The Financial Times*. Retrieved 2005-09-04 from www.ft.com
- Percy, M. (2004, January). *Changing Airline Business Models & Urban Economic*. Retrieved 2005-03-02 from http://buzzsponge.typepad.com/blog/2004/01/of_changing_air.html
- Ryanair (2001). *Annual report 2001*. Retrieved 2005-02-09 from <http://www.ryanair.com/site/EN/about.php?sec=download&ref=2001>
- Ryanair (2002). *Annual report 2002*. Retrieved 2005-02-09 from <http://www.ryanair.com/site/EN/about.php?sec=download&ref=2002>
- Ryanair (2003). *Annual report 2003*. Retrieved 2005-02-09 from <http://www.ryanair.com/site/EN/about.php?sec=download&ref=2003>

References

- Ryanair (2004). *Annual report 2004*. Retrieved 2005-02-09 from <http://www.ryanair.com/site/EN/about.php?sec=download&ref=2004>
- Ryanair (2005). *Ryanair's Passenger Service and Lowest Fares Charter*. Retrieved 2005-05-20 from <http://www.ryanair.com/site/EN/about.php?sec=charter>
- The Economist (2002-09-19). *So many planes, so few passengers*. Retrieved 2005-05-23 from http://www.economist.com/displaystory.cfm?story_id=1337468
- The Economist (2003-10-02). *Open Skies and Flights of Fancy*, Retrieved 2005-01-27 from http://www.economist.com/displayStory.cfm?story_ID=2099875
- The Economist (2004-02-04). *Turbulent times for the low-cost king*. Retrieved 2005-05-25 from http://www.economist.com/agenda/displaystory.cfm?story_id=2403309
- The Economist (2005-01-06). *In terminal decline?* Retrieved 2005-04-27 from http://www.economist.com/displaystory.cfm?story_id=3536178
- The Economist (2005-04-28). *Oil in troubled waters*. Retrieved 2005-05-17 from http://www.economist.com/displaystory.cfm?Story_ID=3884623
- Wikipedia (2005). *Business Model*, Retrieved 2005-04-23 from http://en.wikipedia.org/wiki/Business_model
- Wizz Air (2005). *Aircraft fleet information*. Retrieved 2005-04-24 from http://wizzair.com/aboutus_fleet.shtml

Appendix

Planned supply of seats from Arlanda to all European destinations

<i>Year</i>	<i>Quarter</i>	<i>Actual</i>	<i>Moving ave</i>
2000	1	1 914 341	#N/A
2000	2	2 039 375	#N/A
2000	3	1 910 194	#N/A
2000	4	2 018 185	1 970 524
2001	1	1 939 886	1 976 910
2001	2	2 102 737	1 992 751
2001	3	2 177 006	2 059 454
2001*	4	1 968 113	2 046 936
2002	1	1 759 160	2 001 754
2002	2	1 766 973	1 917 813
2002	3	1 818 219	1 828 116
2002	4	1 694 186	1 759 635
2003	1	1 608 919	1 722 074
2003	2	1 724 307	1 711 408
2003	3	1 640 379	1 666 948
2003	4	1 732 965	1 676 643
2004	1	1 712 074	1 702 431
2004	2	1 863 706	1 737 281
2004	3	1 789 606	1 774 588
2004	4	1 766 869	1 783 064

Source: Luftfartsstyrelsen (2005).

The presentation of the supply of seats in Luftfartsstyrelsen report is on a weekly basis. Our quarterly numbers have been derived by multiplying the weekly number with 13 as on average a quarter consisting of 13 weeks.

*Supply in quarter 4 2001 is an estimation as data is not available. It is derived by taking the average between q1 2001 and q3 2003.

Actual Passenger departure volume from Arlanda to all European destinations

<i>Year</i>	<i>Quarter</i>	<i>Actual</i>	<i>Moving ave</i>
2000	1	1 063 764	#N/A
2000	2	1 414 702	#N/A
2000	3	1 395 667	#N/A
2000	4	1 193 564	1 266 924
2001	1	1 124 914	1 282 212
2001	2	1 486 802	1 300 237
2001	3	1 450 058	1 313 835
2001	4	1 078 076	1 284 963
2002	1	1 017 166	1 258 026
2002	2	1 349 465	1 223 691
2002	3	1 319 114	1 190 955
2002	4	1 086 528	1 193 068
2003	1	962 212	1 179 330
2003	2	1 206 681	1 143 634
2003	3	1 199 679	1 113 775
2003	4	1 065 538	1 108 528
2004	1	1 003 833	1 118 933
2004	2	1 328 517	1 149 392
2004	3	1 307 972	1 176 465
2004	4	1 139 254	1 194 894

Source: Luftfartsverket (2005b).

Supply and demand spread from Arlanda to all European destinations

<i>Year</i>	<i>Quarter</i>	<i>Supply</i>	<i>Demand</i>	<i>Spread</i>	<i>No of Airlines</i>
2000	1	#N/A	#N/A	#N/A	36
2000	2	#N/A	#N/A	#N/A	
2000	3	#N/A	#N/A	#N/A	
2000	4	1 970 524	1 266 924	36%	
2001	1	1 976 910	1 282 212	35%	
2001	2	1 992 751	1 300 237	35%	
2001	3	2 059 454	1 313 835	36%	
2001*	4	2 046 936	1 284 963	37%	
2002	1	2 001 754	1 258 026	37%	
2002	2	1 917 813	1 223 691	36%	
2002	3	1 828 116	1 190 955	35%	
2002	4	1 759 635	1 193 068	32%	
2003	1	1 722 074	1 179 330	32%	
2003	2	1 711 408	1 143 634	33%	
2003	3	1 666 948	1 113 775	33%	
2003	4	1 676 643	1 108 528	34%	
2004	1	1 702 431	1 118 933	34%	
2004	2	1 737 281	1 149 392	34%	
2004	3	1 774 588	1 176 465	34%	
2004	4	1 783 064	1 194 894	33%	36

Source: Luftfartsstyrelsen (2005) & Luftfartsverket (2005b).

The presentation of the supply of seats in Luftfartsstyrelsen report is on a weekly basis. Our quarterly numbers have been derived by multiplying the weekly number with 13 as on average a quarter consisting of 13 weeks.

*Supply in quarter 4 2001 is an estimation as data is not available. It is derived by taking the average between q1 2001 and q3 2003.

Planned supply of seats from Skavsta to all European destinations

<i>Year</i>	<i>Quarter</i>	<i>Actual</i>	<i>Moving Ave</i>
2000	1	46 683	#N/A
2000	2	49 140	#N/A
2000	3	51 597	#N/A
2000	4	46 683	48 526
2001	1	46 683	48 526
2001	2	49 140	48 526
2001	3	49 140	47 912
2001*	4	55 712	50 169
2002	1	62 283	54 069
2002	2	62 595	57 432
2002	3	48 191	57 195
2002	4	46 683	54 938
2003	1	63 882	55 338
2003	2	235 872	98 657
2003	3	201 474	136 978
2003	4	214 318	178 887
2004	1	180 869	208 133
2004	2	209 807	201 617
2004	3	219 245	206 060
2004	4	231 530	210 363

Source: Luftfartsstyrelsen (2005).

The presentation of the supply of sets in Luftfartsstyrelsen report is on a weekly basis. Our quarterly numbers have been derived by multiplying the weekly number with 13 as on average a quarter consisting of 13 weeks.

*Supply in quarter 4 2001 is an estimation as data is not available. It is derived by taking the average between q1 2001 and q3 2003.

Actual Passenger departure volume from Skavsta to all European destinations

<i>Year</i>	<i>Quarter</i>	<i>Actual</i>	<i>Moving Ave</i>
2000	1	26 443	#N/A
2000	2	35 002	#N/A
2000	3	38 223	#N/A
2000	4	32 345	33 003
2001	1	26 881	33 113
2001	2	33 116	32 641
2001	3	34 458	31 700
2001	4	31 519	31 494
2002	1	33 768	33 215
2002	2	39 437	34 796
2002	3	43 468	37 048
2002	4	41 597	39 568
2003	1	41 659	41 540
2003	2	144 422	67 787
2003	3	152 712	95 098
2003	4	147 887	121 670
2004	1	133 384	144 601
2004	2	176 151	152 534
2004	3	188 589	161 503
2004	4	178 863	169 247

Source: Luftfartsverket (2005b).

Supply and demand spread from Skavsta to all European destinations

<i>Year</i>	<i>Quarter</i>	<i>Supply</i>	<i>Demand</i>	<i>Spread</i>	<i>No of Airlines</i>
2000	1	#N/A	#N/A	#N/A	1
2000	2	#N/A	#N/A	#N/A	
2000	3	#N/A	#N/A	#N/A	
2000	4	48 526	33 003	32%	
2001	1	48 526	33 113	32%	
2001	2	48 526	32 641	33%	
2001	3	47 912	31 700	34%	
2001*	4	50 169	31 494	37%	
2002	1	54 069	33 215	39%	
2002	2	57 432	34 796	39%	
2002	3	57 195	37 048	35%	
2002	4	54 938	39 568	28%	
2003	1	55 338	41 540	25%	
2003	2	98 657	67 787	31%	
2003	3	136 978	95 098	31%	
2003	4	178 887	121 670	32%	
2004	1	208 133	144 601	31%	
2004	2	201 617	152 534	24%	
2004	3	206 060	161 503	22%	
2004	4	210 363	169 247	20%	3

Source: Luftfartsstyrelsen (2005) & Luftfartsverket (2005b).

The presentation of the supply of sets in Luftfartsstyrelsen report is on a weekly basis. Our quarterly numbers have been derived by multiplying the weekly number with 13 as on average a quarter consisting of 13 weeks.

*Supply in quarter 4 2001 is an estimation as data is not available. It is derived by taking the average between q1 2001 and q3 2003.

Supply and demand spread from Skavsta to all European destinations

<i>Year</i>	<i>Quarter</i>	<i>Supply</i>	<i>Demand</i>	<i>Spread</i>	<i>No of Airlines</i>
2000	1	#N/A	#N/A	#N/A	1
2000	2	#N/A	#N/A	#N/A	
2000	3	#N/A	#N/A	#N/A	
2000	4	48 526	33 003	32%	
2001	1	48 526	33 113	32%	
2001	2	48 526	32 641	33%	
2001	3	47 912	31 700	34%	
2001*	4	50 169	31 494	37%	
2002	1	54 069	33 215	39%	
2002	2	57 432	34 796	39%	
2002	3	57 195	37 048	35%	
2002	4	54 938	39 568	28%	
2003	1	55 338	41 540	25%	
2003	2	98 657	67 787	31%	
2003	3	136 978	95 098	31%	
2003	4	178 887	121 670	32%	
2004	1	208 133	144 601	31%	
2004	2	201 617	152 534	24%	
2004	3	206 060	161 503	22%	
2004	4	210 363	169 247	20%	3

Source: Luftfartsstyrelsen (2005) & Luftfartsverket (2005b).

The presentation of the supply of sets in Luftfartsstyrelsen report is on a weekly basis. Our quarterly numbers have been derived by multiplying the weekly number with 13 as on average a quarter consisting of 13 weeks.

*Supply in quarter 4 2001 is an estimation as data is not available. It is derived by taking the average between q1 2001 and q3 2003.