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The feasibility of intercontinental low cost airlines

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Abstract
In today's airline industry, Low Cost Carriers have become significant market players. Low Cost Carriers successfully compete with established Full Service Carriers on low fares, thereby eliminating frills and service and streamlining the operational cost efficiency. That is, Low Cost Carriers do this on the continental market. When considering the developments in the airline industry, the objective of this research is to analyse whether the successful Low Cost Carriers business model is transferable to the intercontinental market as well. The results show that the introduction of Low Cost Carriers in the intercontinental market is not expected to have such a large impact on the industry as in the case of the continental market, since Low Cost Carriers can obtain less cost advantages over Full Service Carriers in the intercontinental market. Moreover, customers in the intercontinental market are in general less price elastic, which implies that Full Service Carriers seems to have a natural advantage over Low Cost Carriers in this area of the market. However, when identifying the right target group, market opportunities for intercontinental low cost airlines do exist. These opportunities will primarily emerge on pure leisure markets, but also itineraries where leisure as well as business traffic is present could have a high economic potential.

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1. Introduction

The airline industry has gone through several stages of development during the last decades. One of the most recent and important breakthrough developments is the emergence and growth of Low Cost Carriers (LCC's), which altered the business model of the traditional airline industry, at least in the market for continental flights. But when we take a look at the airline industry as a whole, we see an important distinction between the continental market and the intercontinental market. On the continental market, the traditional (network) airlines suffer heavy competition from Low Cost Carriers, using a different business model than the traditional airlines. On the intercontinental market, however, this kind of competition is still absent. The traditional (network) airlines, most of the time even the national flag carriers, still have a dominant market position here. No significant player in the Low Cost Carrier airline branch is serving the intercontinental market yet.

Recently, there are more and more rumors about low cost carriers "going intercontinental". Norwegian for example plans to bring its pared-down low cost business model to the intercontinental market by this summer. Also Ryanair has serious ideas about expanding its network to the transatlantic intercontinental market. The question is if the low cost model is also applicable in the intercontinental market (and to which extent), considering the fundamental differences between the continental and intercontinental market and the fact that until now barely any LCC is operational in the intercontinental market. Subsequently, the following research question appears: ***"Is there economic potential for intercontinental low cost airlines? "***

To be able to come to a well-defined answer to the research question, several steps have to be taken. As just mentioned, Low Cost Carriers can be found predominantly in the continental market. So to be able to explain the Low Cost Carrier concept, a detailed look at the continental market is required. Consequently, the next chapter of this thesis consists of an analysis of the continental market, with special attention to the differences in cost structure between Full Service Carriers and Low Cost Carriers. In this way, we are able to answer the first sub question: "*What is the difference in cost structure between full service carriers and low cost carriers?* ". When the differences between Low Cost Carriers and Full Service Carriers in the continental market are known, the question rises if these differences are also transferable to the intercontinental market. Therefore, the intercontinental market will be analysed in the third chapter, again with special attention to the cost structure, enabling us to answer the second sub question: "*Are the cost benefits of the low cost carriers also applicable in the intercontinental market?*". The transferability of the low cost benefits partly depends on the customer. In chapter four we take a closer look at the customer characteristics, which will lead to an investigation of the market potential for low cost intercontinental flights, taking into account competition. The corresponding sub question is the following: "*Is there the market potential for intercontinental low cost flights?*". Insights in the market potential and transferability of costs advantages enable us to consider possible opportunities for intercontinental low cost flights. These opportunities will be addressed in chapter five, covered by the final sub question "How penetration of low cost carriers in the intercontinental market is possible?", and by an actual case. Finally, the analysis and the answers to the sub questions lead us to the answer of the central research question.

The analysis will make use of literature study combined with desk research. As most important sources, data from airlines, airline agencies (i.e. IATA) and scientific research will be used. The main focus of this thesis lies on the European and U.S. market, where deregulation and liberalization of the aviation market (an essential condition for the development of LCCs) is in a more advanced stage than in other parts of the world.

Outline of the thesis

After this introduction, in chapter two the continental aviation market will be analysed, starting with a brief description of the market history. Subsequently, the type of carriers that can be found on the continental market will be summed up, followed by an elaboration of the differences in (cost) structure between two of these carrier types, i.e. the Full Service Carriers and the Low Cost Carriers. This elaboration will be conducted based on the standard LCC business model.

Chapter three consist of an analysis of the intercontinental aviation market, starting again with a brief description of the market history and a description of the type of carriers that are present. Subsequently, after pointing out some important differences between the continental and the intercontinental market, we will answer the question which of the cost advantages that continental Low Cost Carriers can obtain over Full Service Carriers are transferable to the intercontinental market.

In chapter four, a closer look will be taken towards the market potential Low Cost Carriers have in the intercontinental market. To be able to do so, it is important to select the right customer target group: a price elasticity study will be conducted for this purpose. When the right target group is recognized, the question appears if the characteristics of this target group correspond with the most important market features of the intercontinental market. For answering this question, also competition should be taken into account.

After the market potential is analysed, chapter five search for actual opportunities for Low Cost Carriers in the intercontinental market. First, the question what should be taken into account when one wants to set up an intercontinental low cost service will be answered, focussing on the essential conditions for successful implementation. After these conditions are recognized, two actual market opportunities for Low Cost Carriers on the intercontinental market will be extensively elaborated, followed by a case study about the intercontinental intentions of Ryanair.

Chapter six concludes the thesis by answering the central research question. Furthermore, some limitations of the conducted research will be given, providing an opportunity for further research.

2. The continental aviation market

On the continental aviation market (i.e. flights with a destination within the same continent as the place of departure), various types of airlines can be distinguished. These types will be mentioned in paragraph 2.1, after a brief description of the history of the continental aviation market. In paragraph 2.2, the focus will lie on the difference between two of the airline types in the continental aviation market, namely Low Cost Carriers and Full Service Carriers. Special attention will be paid to the difference in cost structure between them.

2.1. Characteristics of the continental market

2.1.1. Brief history of the market

Liberalization and deregulation are import words in the aviation market history of the past decades. Before the liberalization process, fares, routes and market access where regulated for airlines. This regulation consisted of mainly bilateral agreements between governments. The consequence was a lack of free and fair competition, resulting in an inefficient market with high prices, dominated by mostly state-owned airlines ,the so-called "flag carriers" (Doganis, 2006) . To break down this inefficient markets, deregulation and liberalization of the aviation market was necessary. Deregulation refers to the elimination of government policies to control airline or airport companies to raise or drop prices and enter and exit markets (Neufville & Odoni, 2003).

In the late 1970s, the US was the first nation that liberated their aviation market. It was argued that aviation customers were deprived from enjoying the benefits of a more competitive market by an overload of national and international control on market access, frequencies, capacity offered and pricing freedom (Doganis, 2006). Deregulation was needed to break with these inefficiencies, allowing a movement from protected airlines in a regulated market to a dynamic free-market industry where old (inefficient) carriers are challenged by smaller, more efficient and demand responsive carriers (Doganis, 2006). The US domestic aviation market was finally deregulated in 1978, as part of a broader regulatory reform movement in the US, in which governmental involvement in economic affairs had to be reduced (van der Bruggen, 2008). This deregulation process had serious consequences for the US aviation market. Various carriers (low cost, charter as well as new Full Service Carriers, see for description of these categories paragraph 2.1.2) challenged the existing flag carriers, which resulted in a decrease of market share (in terms of revenue) for the flag carriers from 87% in 1978 to 75% by 1983 (van der Bruggen, 2008). The Low Cost Carriers made up the largest part of the new entrants in the US aviation market. While some of them succeed (like Southwest Airlines), most of them failed. This was partly due by the response of flag carriers trying to find a way to held significant advantages over these new entrants (i.e. trying to keep customers loyal to them). To name a few of these advantages: Yield management, a hub-and-spoke structure and frequent flyer programs.

Yield management, founded by flag carrier American Airlines, allows an airline to make use of price discrimination. By charging different ticket prices to different groups at different points in time (well in advance or close to the departure date), carriers are allowed to sell their seats at an optimum price, thereby maximizing company's revenue and enhancing protection against new entrants in the aviation market (van der Bruggen, 2008). Besides yield management, flag carriers also tried to protect against the loss of market share to new entrants by introducing hub-and-spoke structures.

The usage of a hub-and-spoke network (explained in paragraph 2.2.1) allows flag carriers to channel traffic from a large number of cities (i.e. exploit density economics), thereby increasing possible schedule frequency and the number of destinations. The size of the network and the strength of hub-and-spoke structures encouraged passengers to fly with a legacy carrier rather than a new Low Cost Carrier, because many destinations could be reached (van der Bruggen, 2008). Furthermore, flag carriers also successfully introduced "Frequent Flyer Programs" to create brand loyalty.

In Europe, the deregulation and liberalization of the aviation market took place in the period from 1987 to 1997, in three -sometimes also referred to as four- stages ('packages'). The first package was established in 1987, reducing fare restrictions. Carriers were also provided additional flexibility for cooperation within the existing air service agreements limits (ELFAA, 2004). In 1990, the second package allowed all European airlines to carry passengers to and from their home countries to other EU Member States (3rd and 4th freedoms). Also 5th freedom flights, i.e. intra-European flights with stop-over in a third country and the right to pick-up and drop-off passengers during the stopover, were allowed to a greater extent. Besides, fare and capacity restrictions were limited further. In 1993 the third package was conducted, which included common licensing of carriers and freedom of access to the market. Furthermore, all carriers holding a community license were allowed to serve any international route within the European Union, and carriers were also given almost full freedom to set fares. As part of the third package (sometimes also called fourth package), in 1997 all carriers holding a community license were given the right of cabotage, i.e. the right to operate domestic routes within the whole of the EU (ELFAA, 2004). The result of the liberalization process was the creation of a single market for air transport within Europe, providing carriers freedom to choose their routes, capacity, schedules and fares, thereby reducing interference from national governments (ELFAA, 2004). Competition and consumer choice increased significantly in the European aviation market since 1997, as can be seen for example by the Low Cost Carrier traffic that emerged (see figure below).

Figure 1. *Source: (Lawton, 2002)*

2.1.2. Type of carriers

In today's short-haul aviation market, we see four types of carriers: Full Service Carriers, Low Cost Carriers, Charter Carriers and Hybrid Carriers. These four types of carriers will be explained below. The distinction between Full Service Carriers and Low Cost Carriers will be mentioned in more detail in the next paragraph (2.2), with special attention for the differences in cost structure between these two categories.

Full Service Carriers (FSCs)

Full Service Carriers often are (former) flag carriers, sometimes still (partly) state-owned. Sometimes they are also called 'traditional airlines', 'legacy carriers' or 'conventional airlines'. In this thesis, the term Full Service Carrier (FSC) will be used. Full Service Carriers want to provide, as the name already suggests, full service and quality. This quality includes for example free meals on board and in-flight entertainment systems, but also ground services, pre-arranged tickets and seats, frequent flyer programs, travel agencies, a large number of destinations (including convenient transfers) and flight flexibility (Carmona-Benítez & Lodewijks, 2008). Nearly all Full Service Carriers use hub-and-spoke networks, with high frequencies towards and from the hubs, especially for passengers with a high willingness-to-pay. These kinds of passengers demand high frequencies and flexibility (for example business travellers), so a very important asset for Full Service Carriers is the network it provides. The network is also very important because it serves the intercontinental market, and this is the market where Full Service Carriers make most of their profit nowadays (Pels, 2008). Passengers from various destinations are transported to a central hub by a continental flight, from where they fly to their final intercontinental destination. So a link between a hub airport and spoke airport serves many different (indirect) markets (see paragraph 2.2 for the exact explanation of hub-and-spoke structure). They are sometimes also referred to as "feeder routes". In scheduling their flights, Full Service Carriers have to take into account the transfers and make them for the passengers as convenient as possible (Pels, 2008). Another important feature of Full Service Carriers is the supply of different classes of service and quality (i.e. economy class, business class and first class). Revenue from the premium cabins often subsidizes the cost of the economy cabin, which allows the airline to set the economy class price at a competitive level, at least on the intercontinental market (Wensveen & Leick, 2009). However, the system of different service and quality classes and fares requires an extensive yield management system (Pels, 2008).

Low Cost Carriers (LCCs)

As the name indicates, Low Cost Carriers aim to minimize cost, making it possible to offer tickets to the (price sensitive) customer at low fares. Minimizing costs is realized in many different ways. For instance by offering a "no frills" service to the passengers, offering only seats in a single class, with a higher seat density (maximizing the number of seats per plane). Also most low cost airlines make use of one single type of aircraft, extensive outsourcing, flexible personnel and the use of e-tickets only (Carmona-Benítez & Lodewijks, 2008). Besides, Low Cost Carriers try to increase flying hours by minimizing the turnaround time (time that an aircraft needs between the arrival at the airport and the ready for take-off phase/ aircraft ground handling time).Most Low Cost Carriers also make use of less expensive and congested secondary airports, providing a point-to-point network to the passenger (Pels, 2008). This network type will be explained in paragraph 2.2, together with the opposite hub-and-spoke-network.

Due to their ability to reduce costs, Low Cost Carriers were able to attract also completely new customers in the continental aviation market (i.e. passengers who did not fly before the introduction of LCCs). This is one of the reasons that the market share of Low Cost Airlines on the continental market increased dramatically the last years (up to 30%), as the figure below indicates. So Low Cost

Carriers have become a serious player within the continental aviation market, especially in the US and Europe because of the deregulation and liberalization process described earlier. Besides, in recent years the fact that more and more business travellers using LCCs is undeniable. According to various surveys, 71% of the business travellers have already used a Low Cost Carrier (Pels, 2008).

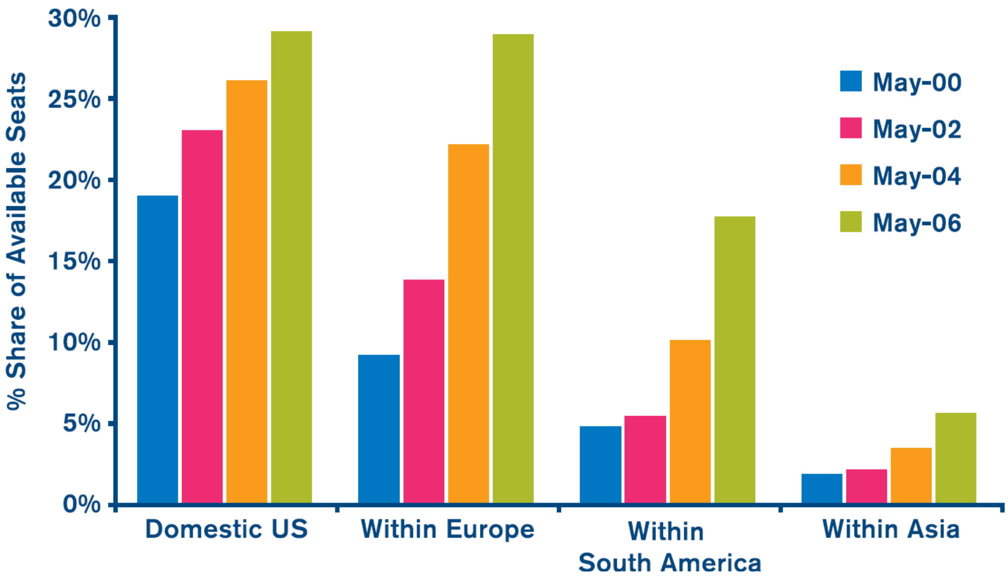


Figure 2. *The Growth in Market Share of LCCs (IATA, 2006).*

Charter Carriers

Charter airlines are sometimes called "the original low-cost airlines", developed to offer leisure travellers low fares to holiday destinations not being served by the full service carriers (Pels, 2008). Because charter airlines had no schedule, they were originally treated different compared to Full Service Carriers in the bilateral agreements, making an early establishment (i.e. before the deregulation and liberalization process) possible. As just mentioned, charter flights do not have a fixed schedule, but operate on behalf of clients, most of the time tour operators in the holiday branch. The flight in this case is a component of a larger holiday package, (including hotel, bus transfer etc.), usually booked in advance (Carmona-Benítez & Lodewijks, 2008). Because the majority of the tickets are sold to tour operators, it is the tour operator that has to sell as much package holidays as possible to recover its costs. A charter airline can thus have a relatively high load factor, leading to lower costs per seat (Pels, 2008). Other reasons why charter airlines can operate at relatively low cost per seat are the following (Doganis, 2006): High aircraft utilisation due to possibility of night flights and not very short haul routes (relatively long time "in the air"), low station costs due to outsourcing of ground handling, fewer necessary cabin staff, saving on ticketing, sales and promotion because tickets are sold by tour operators, and high seat density due to the single class layout of the aircraft. Because of the fact that charter airlines can operate at relatively low cost per seat, nowadays some charter airlines also offer a "seat-only" product, fading the boundary between Low Cost Carriers and Charter Carriers.

Hybrid Carriers

Hybrid carriers are considered as a category just between Low Cost Carriers and Full Service Carriers. They hold characteristics of both models: offering a limited service, and operate from primary airports for a price between Full Service Carriers and Low Cost Carriers (Herremans, 2007). Air Berlin is an example of a hybrid carrier.

2.2. Differences between full service carriers and low cost carriers, with special attention to cost structure

In paragraph 2.2.1, the differences between Full Service Carriers and Low Cost Carriers will be mentioned from a LCCs point of view, following their business model. Besides, the point-to-point network and the hub-and-spoke network will be explained. Paragraph 2.2.2 provides a more detailed insight into the cost differentials.

2.2.1. Standard LCC Business Model: comparison with the FSC Model

As already mentioned in the preceding paragraph, Low Cost Carriers aim to minimize cost, making it possible to offer tickets to the customers at low fares. To be able to do so, Low Cost Carriers follow a business model that is different from the traditional Full Service Carriers model. In the latter, the main assets lay in offering quality, flexibility and interconnectivity/ networks. In the business model of Low Cost Carriers, the assets lay in characteristics that reduce costs, first summed up below and hereafter explained in more detail. The following characteristics can be found in most of the business models of LCCs (Doganis, 2006; Lawton, 2002):

- Low fares
- Reduced service provision
- High seat density
- Use of point-to-point networks instead of hub-and-spoke networks
- Use of secondary airports
- Standardized fleet
- Internet distribution of tickets
- Maximization of personnel productivity

Low fares

The key of every LCC business model is the supply of low fare tickets. To achieve substantial lower ticket prices than FSCs, it is essential that the right type of target customers are selected. The type of customers FSCs serve are often different compared to that of LCCs. While the FSCs focus on the more high demanding type of customers, LCCs in general focus only on the most price sensitive customers. Only when the right target groups are served (i.e. the most price sensitive ones), the cost advantages that can be obtained over FSCs will add value for a LCC.

Reduced service provision

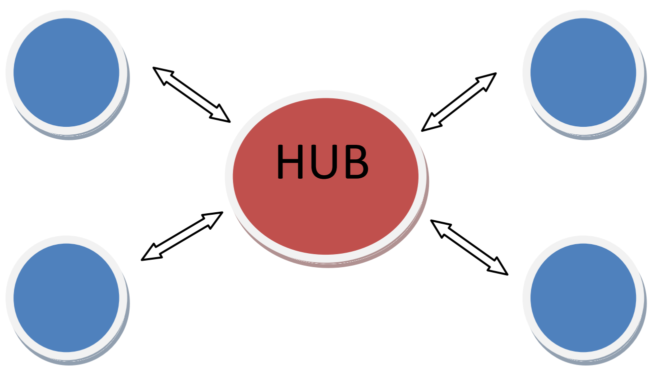
To reduce costs, LCCs offer significantly less services to its passengers than FSCs do. For example, meals and beverage are not provided for free; passengers have to pay for it. The same is true for in-flight entertainment, if it is available at all. LCCs often do not provide frequent flyer programs, refunds or reserved seats either (or against an additional fee). Also luggage is not included in the ticket price anymore. These last two points enhance the speed of boarding, reducing the turnaround time. Because of the lack of (free) services, LCCs are sometimes also called "no frills airlines" (Carmona-Benitez & Lodewijks, 2008; Doganis, 2006). Another point of less service provided to the customer is the 'single class' interior of a LCC aircraft: only Economy class is offered. This allows LCCs to reduce costs in the field of yield management and administration, but also facilitates a higher seat density, as will elaborated in more detail below.

High seat density

An important characteristic of LCCs in order to reduce costs (and increase revenue per flight) is the high seat density within an aircraft. A LCC can offer more seats per aircraft than a Full Service Carrier. For instance, an Airbus A320 aircraft of British Airways has 149 seats, whereas the same Airbus A320 of a Low Cost Carriers could have up to 180 seats. According to the (IATA, 2006), European LCCs typically have 18% more seats placed on the same type of aircraft compared to a network FSC airline. This difference is partly explained by the fact that a LCCs only have one single level of service: the economy class. A Full Service Carrier have to take into consideration the extra space needed for exploiting -besides the economy class- business class and first class. Another reason is the fact that the seat pitch between the chairs is smaller, resulting in more available seats in the aircraft. This comes at the expense of legroom, but on behalf of reducing the fixed costs per seat and revenue per aircraft.

Use of point-to-point networks instead of hub-and-spoke networks

As already indicated, LCCs core business is to provide low fare tickets and minimize the costs. In such a business profile, transfer traffic is usually not accommodated due to the relatively high costs (turnaround times longer, station costs higher and passenger services more expensive). The need for temporal concentration of passengers to guarantee short transfer times -like in the case of FSCs- is thus not present (Pels, 2008). Therefore, LCCs can make use of 'simple' point-to-point networks, instead of the hub-and-spoke networks used by FSCs. In a point-to-point network, flights will bring passengers directly from point A to point B on the shortest and most easy way. The airlines using this system are interested in transporting passengers from A to B, but not in connecting passengers from A to B via point C. In a hub-and-spoke network, an airline will not only transporting passengers between two points, but also connect passengers from A to B via point C (the hub). Both systems will be showed graphically below:



"hub-and-spoke network"

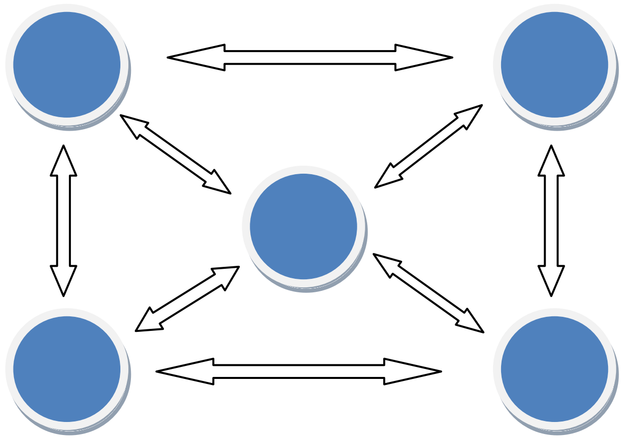


Figure 3. *Own research*

Because of the fact that LCCs do not have to take into account network stemming from indirect travel, they do not have to calculate a delay margin. This is an advantage for LCCs, increasing the possible flight frequency. Another important asset for LCCs using point-to-point networks is that they can enter (when they see a fit) and exit markets (when being not profitable) relatively easily. FSCs cannot do this easily, because this affects the entire network. As mentioned before, a FSC link between a hub and a spoke airport serves many different indirect markets (Pels, 2008).

Use of secondary airports
Most of the Low Cost Carriers have their base on smaller secondary airports, usually further away from the inner city. LCCs choose this type of airport because they are less congested compared to the major primary airports, which reduce the turnaround time of aircrafts and the chance of delay (increase aircraft utilization). This is of great importance for LCCs, because LCCs try to maximize the flight frequency per aircraft to reduce the costs per seat-km (Doganis, 2006). Besides, some important cost benefits are present when using secondary airports. The LCCs have for instance a relatively strong negotiation position: contracting a large airline can increase the size of the secondary airport in question, and can have positive effects for the regional economy as well (remember that secondary airports are not located in close vicinity of major cities). Moreover, the airport related costs of secondary airports are less expensive as they are on the major primary airports (i.e. landing/start fees, station costs, ground handling costs, passenger taxes), which means an important cost reduction compared to primary airports (Doganis, 2006). However, despite of the cost savings by using secondary airports, some LCCs (for instance EasyJet) still make use of primary airports. For example, Amsterdam Airport Schiphol has a special "low-cost gate", with more basic facilities than the normal gates. For FSCs the story is different: nearly all FSCs make use of major primary airports, mainly because they have to maintain their large intercontinental network.

Standardized fleet
The fleet of a LCC consists most of the time of only one type of aircraft, usually a Boeing 737-800 or Airbus A319. By standardizing their fleet, LCCs try to reduce costs further. When ordering just one type of aircraft, the negotiation position is relatively strong (of course depending on the number of

orders placed). Besides, one can reduce maintenance costs by operating just one type of aircraft, thereby also reducing training costs for the crew and maintenance personnel. Moreover, the flexibility of LCCs personnel increases: if only one type of aircraft is used, all personnel can be employed randomly at every single aircraft, which reduces costs even further (Herremans, 2007).

Internet distribution of tickets

An extensive yield management system is only possible with the appropriate software. Internet is hereby an essential feature, it is the most common and often the only way to buy tickets for a Low Cost Carrier. The usage of internet not only gives a more direct insight to customer demands, but also lowers commissions that have to be paid. By providing only online ticket service and e-tickets, LCCs reduce the commissions that otherwise should be paid to travel agents, like Full Service Carriers often have to do (Doganis, 2006). However, the distinction between Full Service Carriers and Low Cost Carriers is diminishing here. More and more FSCs are providing online ticket services, without intermediation of travel agents.

Maximization of personnel productivity

LCCs try to reduce their costs further by achieving as low as possible personnel costs. The number of employees is reduced till the minimum needed, by improving the flexibility of the employees. This flexibility improvement consists of an extended number of tasks for the LCC crew compared to the crew of FSCs. For example, the LCC crew will help with the aircraft cleaning and the supply of provisions after landing. Also the contracts of the crew are often registered in the country with the lowest social taxes. For instance, all Ryanair personnel work under Irish contract conditions. Personnel expenses are reduced even further by Low Cost Carriers, due to outsourcing a lot of (ground-bounded) activities. Everything other than cabin crew, pilots, reservation services, head office functions and to some extent maintenance is often being outsourced. This not only increase personnel flexibility, it also gives a LCC a strong position in contract negotiations with airports and airport service providers, enabling themselves to choose the best priced 'suppliers' (Carmona-Benítez & Lodewijks, 2008).

2.2.2. Cost differentials

As mentioned in paragraph 2.2.1, Low Costs Carriers premium goal is to keep the costs as low as possible. By following the standard LCC business model, the categories where cost reductions are made compared to FSCs where shown. A short recap of this cost reductions will be found below, followed by a table capturing the cost advantages of Low Cost Carriers over Full Service Carriers in a numerical way. Low Cost Carriers reduce costs compared to Full Service Carriers by:

- *Low fares:* Selecting the right specific target group of customers to serve.
- *Reduced service provision:* Reducing costs by no longer free providing of in-flight catering and other frills such as luggage, only against an additional fee. Besides, only economy class is offered, reducing costs in the field of yield management and administration.
- *High seat density:* Reduced fixed cost per seat, and increased revenue per aircraft.
- *Use of point-to-point networks instead of hub-and-spoke networks:* Low entry and exit barriers (no complete network behind a destination), and so an opportunity to only serve the most profitable markets.

- *Use of secondary airports:* A reduced turnaround time and chance of delay increase the flight frequency/aircraft utilization and so reduce the costs per seat-km. Besides, secondary airports are less expensive in their taxes.
- *Standardized fleet:* Strong negotiation position, reduce in maintenance and training costs, increase in personnel flexibility.
- *Internet distribution of tickets:* Cost reduction by avoiding agent commissions.
- *Maximization of personnel productivity:* Personnel cost as low as possible by reducing number of employees, and make them more flexible. Furthermore, cost reduction by extensive outsourcing of (ground-bounded) activities.

As shown by the table below, the most important cost advantages of Low Cost Carriers over Full Cost Carriers are obtained from the relatively high seating density, the relatively low station costs/outsourced handling and the absence of the requirement to pay agents' commissions. The table shows that Low Cost Carriers can reduce costs till 51% compared to Full Service Carriers. According to the IATA, within Europe Ryanair is leading in cost reduction: Ryanair reduced costs compared to Full Service Carriers with a whopping 64%, followed by EasyJet with 40% cost reduction (after adjusting for differences in stage lengths and seat densities). The question may rise if these continental cost differentials are also applicable in the intercontinental market. This topic will be addressed in the next chapter.

Cost saving	Advantage of low cost	Cost index
Total scheduled cost per passenger		100
Higher seating density	−16	84
Higher aircraft utilisation	−2	82
Lower flight and cabin crew salaries/expenses	−3	79
Use of secondary airports	−4	75
Outsourcing maintenance/single aircraft type	−2	73
Minimal station cost and outsourced handling	−7	66
No free in-flight catering, fewer passenger services	−5	61
No agents' commissions	−6	55
Reduced sales/reservation costs	−3	52
Smaller administration costs	−3	49

Figure 4. *Cost advantages of low-cost airlines compared to traditional airlines (Doganis, 2006).*

2.3. Summary and answering sub question

2.3.1. Summary

The liberalization and deregulation process in the US and EU continental aviation markets was an important prerequisite for the introduction of Low Cost Carriers in the continental market space. Nowadays, four main type of carriers can be found in the continental aviation market. The first type is the Full Service Carrier (FSC). This type of carrier wants to provide full service and quality primarily for customers with a high willingness-to-pay, making use of a hub-and-spoke structure to enable convenient transfers. The second type is the Low Cost Carrier (LCC), with as most important goal to minimize cost, enable the offering of tickets to (price sensitive) customers at low fares. Most LCCs make use of less expensive, less congested secondary airports, providing a point-to-point network to its customers. The third type of carrier that can be found in today's continental aviation market is the Charter Carrier. This type of airline do not have a fixed schedule, but operate on behalf of clients, most of the time tour operators in the holiday branch. Finally, the Hybrid Carrier is present on the continental aviation market, with characteristics of both LCCs and FSCs.

As LCCs try to minimize costs, it is important to see where cost differences with FSCs can be made. Following the standard LCC business model, there are eight areas where cost benefits are obtained over FSCs. The first two are low fares and reduced service provision. LCCs provide lower ticket fares and less service than FSCs, but one should realize that LCCs often have a different target group, namely the more price sensitive customers compared to the relatively high demanding customers FSCs try to serve. Furthermore, LCCs have a higher seat density than FSCs, and use point-to-point networks instead of hub-and-spoke networks to reduce costs. The same is true for the use of secondary airports. The last three areas where LCCs obtain a cost benefit over FSCs are the standardized fleet, the internet distribution of tickets to avoid agency commissions, and the maximization of personnel productivity. In general, LCCs can obtain a cost advantage of 51% (in terms of cost reduction) compared to FSCs.

2.3.2. Answering sub question

By now, we return to the first sub question: *"What is the difference in cost structure between full service carriers and low cost carriers?"*. The answer could be stated in the following way: While FSCs primarily focus on customers who are more service demanding and have a relatively high willingness-to-pay, LCCs primarily focus on the more price sensitive type of customers who care less about service. To serve this type of customers best, LCCs try to minimize costs in order to achieve lower ticket fares. LCCs can obtain a cost advantage over FSCs in the continental market by reducing the service provision and enlarging the seat density. Other ways to obtain a cost advantage are the use of a point-to-point network instead of a hub-and-spoke network, the use of secondary airports, a standardized fleet, internet distribution of tickets and maximization of personnel productivity, all to eventually ensure low ticket fares for price sensitive customers. In this way, Low Cost Carriers in the continental market are able to obtain a cost advantage over Full Service Carriers up to 51%.

3. The intercontinental aviation market

To see if the cost differentials between Low Cost Carriers and Full Service Carriers on the continental market (given in chapter two) are transferable to the intercontinental market, the latter should be analysed in more detail. After a brief history and a description of the type of carriers in the intercontinental market (paragraph 3.1), some differences between FSCs in continental and intercontinental markets are addressed, followed by an analysis of the potential transferability of LCCs cost benefits to the intercontinental market (paragraph 3.2).

3.1. Characteristics of the intercontinental market

3.1.1. Brief history

Up to 2007, the intercontinental aviation market between the US and the EU, sometimes referred to as the transatlantic corridor, was still under restriction of bilateral agreements between individual countries and the US (in contrast to the liberalized continental markets within the EU and US). Each European airline for example depended on the bilateral agreement between the country where the airline was licensed and the US, to be allowed to operate this route (from the country of license to US and vice versa respectively). However, after a long period of negotiations, in April 2007 the EU and US signed the so-called "EU-US Air Transport Agreement", entered into force on 30 March 2008 and replacing the large range of bilateral agreements between individual countries and the US. This agreement allows European airlines to fly from any EU airport to any US airport. The same is true for US carriers. The final goal of the agreement is to break down the necessity of bilateral agreements between EU and US countries, and move towards the creation of a single aviation market extending across the Atlantic market, jointly managed by the EU and the US, thereby improving customer freedom which will result in a lower price for transatlantic flights (Lawton, 2002; German Aerospace Center, 2008).

From 30 March 2008, European airlines could indeed operate from bases outside their licensing state, creating the opportunity for -to name an example- British Airways to operate transatlantic flights from outside their home country, so to operate flights from Paris to New York for instance. Besides, airlines now get more freedom to enter into commercial arrangements with other airlines (code-sharing), and get the possibility of antitrust immunity for the development of airline alliances (German Aerospace Center, 2008). However, it is important to notice that the agreement makes a fundamental difference between airlines of the United States and European Union airlines: while US airlines are allowed to operate intra-EU flights, European airlines are not permitted to operate intra-US flights nor purchasing a controlling stake in a United States airline (Herremans, 2007; German Aerospace Center, 2007). So for the creation of a single transatlantic aviation market without any restriction several steps still have to be taken, also in the number of (the in the agreement) participating countries (van der Bruggen, 2008). One final remark should be made: While the Trans-Atlantic market is now 'open', this is not true for most of the other intercontinental long-haul markets: they are still limited to bilateral agreements. This is the main reason why our research to the economic potential in intercontinental LCCs lies on the EU-US market.

3.1.2. Type of carriers

In the existing intercontinental aviation market, there are two main types of carriers yet. By far the largest type of carrier serving the intercontinental market is the Full Service Carrier, explained in chapter two. Another significant type of carrier operating on intercontinental aviation markets is the

Charter Carrier, which focus mainly on leisure/holiday travel on low frequency (Doganis, 2006). To name a Dutch example: ArkeFly operating between Amsterdam and Oranjestad, Aruba. In the recent past, there were also some airlines offering only business class and/or first class seats in an aircraft for intercontinental operations, but many of them failed to succeed (Wensveen & Leick, 2009). The same was true for some new long-haul LCCs, trying to operate an intercontinental low cost airline. Almost all of them failed, like for example the Canadian LCC Zoom which tried to set up low cost long haul transatlantic operations. So unlike the continental aviation market, in the intercontinental aviation market until now no significant LCC succeed. The absence of LCCs is a main difference between today's continental and intercontinental aviation market.

As just mentioned, the Full Service Carriers are yet the most important category serving the intercontinental aviation market. For this category, providing an extensive hub-and-spoke network taking into account connective transfer traffic is essential: For example, 85% of American Airlines' Manchester–Chicago traffic connects at Chicago and even on London–Chicago it is over 60% (Office for National Statistics, 2004). Rather than to enter a competitor's network (which may lead to losses due to retaliation and network effects), the Full Service Carriers increase the scale of their global network through alliance formation, mergers and takeovers. Alliance formation allows airlines to enhance their network scale and efficiency by channelling passengers originating in their alliance partner's network through their own network (Pels, 2008). Today there are three important alliances worldwide, namely Oneworld (i.e. British Airways, American Airlines), Skyteam (i.e. Air France-KLM, Delta) and Star Alliance (i.e. Lufthansa, United Airlines), resulting in the fact that all the main European and US Full Service Carriers are involved in one of these alliances. Even though direct competition between FSCs on the continental market is reduced due to this alliance formation and mergers, on the intercontinental market competition is still intense, mainly between the alliances trying to connect passengers via their offered hubs (Pels, 2008).

3.2. Cost structure compared to continental market

3.2.1. Specific features of the intercontinental market

Within the intercontinental aviation market, unlike in the continental market, Full Service Carriers (network airlines) are already able to offer economy class seats against relatively competitive prices. These relatively competitive prices are partially the result of Full Service Carriers nearly all offering three different types of comfort classes on their intercontinental flights: besides the 'normal' economy class, also business class and first class. With passengers ('collected' from the feeder routes) at the business class and first class paying many thousands of Euro's for their ticket, the margin of the airline increases and the marginal costs of supplying the economy class seats falls (Francis et al., 2007). The supply of different comfort classes is a primary reason why airlines can reduce economy class ticket prices on intercontinental markets. On the continental markets FSCs cannot reduce ticket prices in this manner, because on continental markets the load factors and aircraft utilization are in general significantly lower than on intercontinental flights. Full Service Carriers can achieve high load factors on intercontinental flights due to operating their flights in a hub-and-spoke manner, thereby collecting at the central hub passengers from feeder routes (spokes). Aircraft utilization can reach higher levels on the intercontinental compared to the continental market because of the duration of intercontinental flights. Aircrafts in the intercontinental market make more pure flight hours per day, i.e. less time is spend on the ground at airports. On the continental market, aircraft usually make several flights per day, but this also means that more time is spend on the ground at airports. The higher load factors and aircraft utilization in the intercontinental market results in a decrease in seat-miles costs for FSCs, enabling them to charge more competitive fares for intercontinental economy class seats. Figure five below shows the differences in load factors and aircraft utilization in more detail. Another (contrasting with the continental market) reason why Full Service Carriers are able to offer relatively competitive prices can be found in the area of air freight. Low Cost Carriers avoid cargo on continental routes as it complicates the operation and slows down turnaround times. On intercontinental markets, cargo is a significant source of revenue, particularly when flying with larger aircrafts with large belly hold capacity (Francis et al., 2007).

Carrier	Short-haul daily utilisation (hours)	Short-haul load factor (%)	Long-haul daily utilisation (hours)	Long-haul load factor (%)
Air France	7.6	65	14.1	81
British Airways	7.6	62	12	75
KLM	7.1	71	15	82
Lufthansa	7.1	62	15.3	83
Virgin Atlantic			14.6	81
Air Berlin	10.5	74		
easyJet	11	81		
Ryanair	9.8	78		

Figure 5. *Aircraft Utilization and Load Factors (van der Bruggen, 2008).*

3.2.2. Transferability of continental LCC cost benefits to the intercontinental market

In paragraph 2.2., the most important cost advantages Low Cost Carriers can reach over Full Service Carriers were discussed. However, these cost advantages were reached in the area of the continental aviation market. As already mentioned, the intercontinental aviation market is not fully comparable to the continental market, raising the question if the cost advantages from the continental market can be transferred to the intercontinental market. While some of them are indeed transferable, the most of them are not or only partially transferable. This is being reflected in the expectation of the possible cost advantage Low Cost Carriers can reach over Full Service Carriers in the intercontinental market: 20-25% cost advantage, compared to 40-60% cost advantage in the continental market (van der Bruggen, 2008; Francis et al., 2007). This 20-25% cost advantage indication is largely based on the fact that FSCs on the intercontinental market can offer already low competitive ticket prices, due to their ability to enlarge load factors and increase aircraft utilization. While the latter is relatively straightforward on the intercontinental market (flight duration is often much longer, leading to more flight hours per aircraft per day), the ability to enlarge load factors is the result of the hub-and-spoke structure FSCs use. By using (continental) spokes as feeder routes for the intercontinental flights departing from the hub, FSCs are able to increase the load factors of the intercontinental flights, resulting in a reduction of seat-miles costs and thus ticket prices. The effects are even stronger due to the fact that the first and business class of intercontinental flights are consequently also more high-loaded, decreasing marginal costs of supplying economy class seats further (Francis et al., 2007; Wensveen & Leick, 2009). The ability of FSCs on the intercontinental aviation market to offer already competitive prices makes it hard for LCCs to gain a large cost advantage over them. Otherwise stated, the cost advantages that LCCs obtain over FSCs in the continental market are not fully transferable to the intercontinental market. Below follows an explanation of which cost advantages of the standard LCC business model are transferable, and which are not.

Low fares

Because in the intercontinental market FSCs are already able to offer relatively competitive ticket fares, it will be more difficult for LCCs to achieve substantially lower ticket prices. Competition for low ticket prices between LCCs and FSCs will be more fierce in the intercontinental market. To ensure sustainable low ticket fares as an intercontinental LCC, it will be even more important to select the most price sensitive target group of customers (more about this in chapter four).

Reduced service provision

The no frills concept of LCCs will be difficult to apply in the intercontinental market. Even when passengers have to pay a fee for their meals and luggage for example, extra space, time, ground handling and personnel is needed. In general, the possible cost advantages obtainable in this category will not be as large as they are in the continental market space, even when passengers are willing to pay a premium for frills.

High seat density

To some extent, it is possible to transfer this cost advantage (high seat density of LCCs compared to FSCs) to the intercontinental market (Pels, 2008). Although it is questionable if passengers are willing to give up some leg room on intercontinental flights, for instance charter carriers fly to intercontinental destinations with a relatively high seat density successfully. On the other hand, intercontinental airlines make a large part of their profit by providing business and first class, which limit the number of seats possible in an aircraft (IATA, 2006). Therefore, a higher seat density (compared to FSCs) seems to be only partially transferable to the intercontinental market.

Use of point-to-point networks instead of hub-and-spoke-networks

In the continental market, the absence of transfer passengers and so the use of a point-to-point structure is a main advantage to reduce costs for LCCs. In the intercontinental market, however, the lack of transfer passengers (i.e. feeder traffic) could be a serious disadvantage, reducing the ability to obtain high load factors from profitable transfer passengers in the intercontinental market (where larger aircrafts have to be used -and thus filled- to cover the longer flight distance, which are more difficult to fill on a frequent base by using only a point-to-point network; more on this in chapter four). Only on very dense itineraries or itineraries where low frequency is demanded, point-to-point networks might still be applicable (chapter four and five will give more information about these possibilities).

Use of secondary airports

While in the continental market secondary airports are of primary importance for reducing the (LCC) costs, this is not really the case in the intercontinental market. Reduction of turnaround times and airport tariffs are less important intercontinental, because of the fact that on intercontinental itineraries aircrafts are a longer time per day in the air, reducing the number of visited airports per day. Airport costs are intercontinental thus a relatively small part of the total operating costs. Furthermore, one should realize that by far not all secondary airports are able to handle intercontinental flights in terms of infrastructure (i.e. more passengers and luggage to handle in short time period , larger aircrafts, extensive number of safety instructions), causing implications for the use of secondary airports at intercontinental operations (Francis et al., 2007). However, the use of secondary airports in the intercontinental market might still be necessary for LCCs due to the existence of airport slots on the major airports. More about this in chapter four.

Standardized fleet

Operating a standardized fleet is difficult to achieve in the intercontinental market (for a LCC which already operates continental activities). Because the number of seats need to be high to recover all cost, it may be necessary that large aircrafts are used (i.e. larger than the current aircrafts used by low-cost airlines). If such aircrafts (and flight crew) cannot be leased, the single aircraft strategy is no longer feasible, which will lead to additional costs for purchasing the aircrafts, but also for personnel (i.e. crew and maintenance) training (Pels, 2008).

Internet distribution of ticket fares

A field were cost advantages might be transferable from the continental to the intercontinental market is the usage of the internet. Through internet sales, continental LCCs gain a competitive cost advantage. This advantage can be transferred to the intercontinental market, avoiding agents' commissions and reducing sales and administrative costs (Pels, 2008).

Maximization of personnel productivity

By improving flexibility, LCCs in the continental market can enhance personnel productivity and so reduce labour costs. However, personnel flexibility on the intercontinental market cannot be as high as it is in the continental market. On long distances, airlines are for example forced to offer the cabin crew overnight accommodation. Also, more cabin crew is required on intercontinental flights. While possibilities for reducing labour costs by contracting and outsourcing are still possible within the intercontinental market, the possibility for reduction of labour cost in this market space is rather limited compared to the continental market.

To summarize: while most of the cost advantages LCCs obtain over FSCs in the continental market are not or barely transferable to the intercontinental market, some important ones are transferable. These are the higher seat density which is partially transferable, and the internet distribution of tickets (and probably also -to some limited extent- the maximization of personnel productivity). According to figure four in chapter two (Doganis, 2006), these two main transferable categories are along the three most important cost advantages for LCCs, which might create possibilities for transferring the LCC concept to the intercontinental market. As a remark one should realize that cost advantages in the intercontinental market do not have to be achieved in the same way as in the continental market.

3.3. Summary and answering sub question

3.3.1. Summary

In April 2007, the EU and US signed the so-called "EU-US Air Transport Agreement", providing US and EU carriers more freedom to fly the transatlantic corridor. Nowadays, two main types of carriers are present in the intercontinental market. The first and by far the largest type is the Full Service Carrier. For this category, providing an extensive hub-and-spoke network taking into account connective transfer traffic is essential. Full Service Carriers increase the scale of their global network mainly through alliance formation, and while this reduce competition in the continental market, on the intercontinental market competition is still intense. The second type of carrier operating on intercontinental aviation markets is the Charter Carrier, which focus mainly on leisure/holiday travel on low frequency. Notable is the absence of Low Cost Carriers in the intercontinental market yet.

An important difference with the continental market is that on the intercontinental market, FSCs are already able to offer economy class seats against relatively competitive prices. The supply of different comfort classes (i.e. economy, business and first class) is an important reason why airlines can reduce ticket prices on intercontinental markets. Furthermore, on intercontinental flights FSCs can reach relatively high load factors and utilization rates, resulting in a decrease in seat-miles costs which enable them to charge more competitive fares for intercontinental economy class seats. The ability of FSCs on the intercontinental aviation market to offer already competitive prices makes it hard for LCCs to gain a large cost advantage over them. By far not all cost advantages LCCs obtain over FSCs in the continental market are transferable to the intercontinental market. While LCCs can obtain 40% up to 60% cost advantage over FSCs in the continental market, this advantage is considered to be only 20-25% in the intercontinental market. The main cost advantages which are (partially) transferable are the high seat density and the usage of the internet for ticket sales. The cost advantages which are less likely to hold in the intercontinental market space are the reduced service provision, the use of point-to-point networks (this could even be a disadvantage in the intercontinental market), the use of secondary airports, the standardized fleet and the maximization of personnel productivity, where the latter maintains a few options to transfer. Because existing FSCs are thus already able to offer relatively competitive ticket prices, it will be more difficult for LCCs to compete solely on low fares in the intercontinental market. However, there are possibilities for transferring the LCC concept to the intercontinental market though.

3.3.2. Answering sub question

Now it is time to return to the second sub question: "*Are the cost benefits of the low cost carriers also applicable in the intercontinental market?*". The answer could be stated in the following way: While some important cost advantages LCCs can obtain over FSCs in the continental market are transferable to the intercontinental market, the most are not. The cost reduction LCCs can achieve over FSCs in the intercontinental market is considered to be around 20-25%; considerably lower than the 40-60% in the continental market. The main cost advantages which are (partially) transferable are the high seat density and the usage of the internet for ticket sales. The cost advantages which are less likely to hold in the intercontinental market are the reduced service provision, the use of point-to-point networks, the use of secondary airports, a standardized fleet and the maximization of personnel productivity. The use of a point-to-point structure could even be a disadvantage in the intercontinental market space. Even though a few important cost advantages are transferable, for LCCs in the intercontinental market it will become more difficult to compete solely on low fares than it was in the continental market. In the intercontinental market, FSCs are already able to offer relatively competitive ticket fares, reducing the possibilities for LCCs to obtain a cost advantage over them.

4. Market potential for Low Cost Carriers in the intercontinental market

In this chapter, a closer look will be taken towards the specific market potential LCCs have in the intercontinental market. To be able to do so, more information about potential customers is necessary, enabling LCCs to understand which customers to serve in the intercontinental market. This information will be given in paragraph 4.1. Furthermore, the potential market should be analysed, taking into account the possible reaction of existing competitors. These issues will be addresses in paragraph 4.2.

4.1. Customer characteristics in the intercontinental market

For Low Costs Carriers, the supply of low fare tickets is essential in the core business. Within the standard business model of LCCs (described in the preceding chapters), the characteristic of 'low fares' has a central role. Therefore, it is of primary importance for LCCs trying to enter the intercontinental market to select the type of customers in this market that fits the LCC business model best**.** Due to the conditions in the intercontinental market, where the cost benefits of LCCs cannot be as large as in the continental market (as being described in chapter three), it becomes even more important to select the right target group to be able to operate effectively as a LCC. A proper manner to investigate which customers to serve is the analysis of the (demand) elasticity of the different customer groups in the market, as will be addressed below. First a general overview of the concept of elasticity will be given, followed by a specification of the concept to the intercontinental aviation market.

4.1.1. The concept of price elasticity

In economics, elasticity measures the response or sensitivity of one economic variable to the change in another economic variable (InterVISTAS Consulting Inc, 2007). Because elasticities allow decision makers insight into the impact of different economic actions, it is a useful feature, also to determine the effect of price changes to the market. A common elasticity concept is the *price elasticity of demand*, measuring the change in quantity demanded of a particular good or service as result of changes to other economic variables, such as the price of that good or service (Frank, 2010). The price elasticity is a measure economists use to capture consumers’ sensitivity to price changes for a particular good or service, defined by the following formula:

$$\text{Price Elasticity} = \frac{\text{\% Change in Quantity Demanded}}{\text{\% Change in Price}}$$

Since the quantity demanded generally decreases when the price increases, this ratio is usually expected to be negative (InterVISTAS Consulting Inc, 2007). For instance, assume that a good has a price elasticity of -0.4; a 10% increase in the price will result in a 4% decline in the quantity demanded. For a good with a price elasticity of -1.4 for example, a 10% increase in the price will result in a 14% decline in the quantity demanded. Therefore, it is said that when elasticity has an absolute value less than one, the demand is price insensitive or inelastic. In this case, an increase in the price will increase the revenue, since the revenue lost by the relatively small decrease in quantity demanded is less than the gained revenue resulting from the higher price (InterVISTAS Consulting Inc, 2007). Conversely, when a good has an absolute elasticity larger than one, demand is elastic or price sensitive (i.e. the proportional change in quantity demand will be greater than the proportional change in price). In this situation, an increase in price will result in a revenue decrease, due to the fact that the revenue loss from the lost quantity sold is larger than revenue gain from the price increase (Frank, 2010).

Various factors affect the price elasticity, and a few of the most important ones will now be mentioned (InterVISTAS Consulting Inc, 2007):

- Availability of substitutes: the more possible substitutes, the greater the elasticity. Important to notice here is that the number of substitutes depends on how broadly one defines the product. For instance, KLM tickets have a high price elasticity as these tickets can be substituted by tickets of other carriers (British Airways, Lufthansa etc.). But if one considers the aviation market as a whole the elasticity for a flight is lower, because there are less substitutes for flying, especially in the intercontinental market. In the continental aviation market the elasticity will be larger than in the intercontinental market, because there are more substitutes available (car, train).
- Degree of necessity or luxury: Luxury products usually have a larger elasticity. A flight ticket for example is less necessary for daily life than a piece of bread, so has a greater elasticity.
- Proportion of the purchaser's budget consumed to a specific item: Products that involve a large part of the purchaser's budget tend to have a larger elasticity. For example, for a Dutchman a flight on a three weeks holiday to the Caribbean will count for less of the total budget than a flight for a two-day city trip to London. Therefore, the elasticity on short haul destinations is likely to be higher than on long haul destinations.

4.1.2. Low fares: Elasticities and potential target groups

A Low Cost Carrier trying to enter the intercontinental market have to find the right target group(s) to serve, and the concept of price elasticity is a favourable tool for determining those groups. The customer target group should be relatively price sensitive in order to let their preferences be in line with some of the most important features of the Low Cost Carrier business model, namely the supply of low fare tickets (Wensveen J. , 2007). The figure below (figure six), retrieved from the meta-study conducted in 2002 by Gillen, Morrison, Stewart, *Air Travel Demand Elasticities: Concepts Issues and Measurement*, will address the most important travel groups present in the worldwide aviation market, including their corresponding price elasticities of demand. Gillen et al. point out several groups in the worldwide aviation market in their study, of which the following two are of main importance for intercontinental flying: Long-haul international business and Long-haul international leisure. Besides these two groups for intercontinental flying, another four groups within the worldwide aviation market are pointed out, namely Long-haul domestic business, Long-haul domestic leisure, Short-haul business and Short-haul leisure.

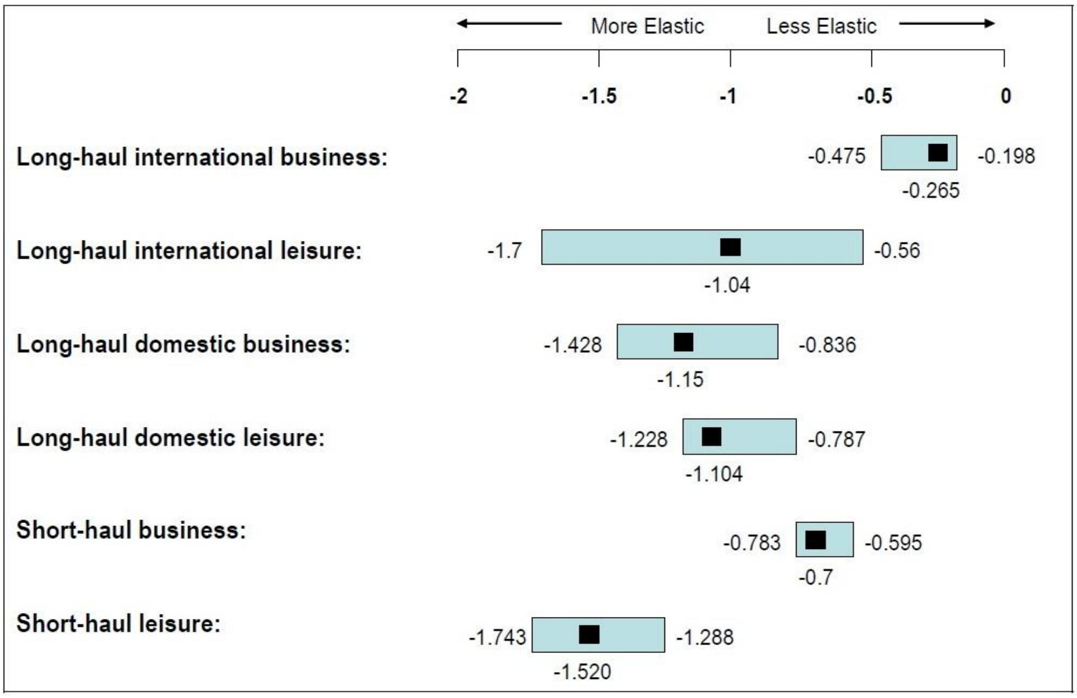


Figure 6. *Own-Price Elasticities of demand (Gillen et al., 2002; InterVISTAS Consulting Inc, 2007)*.

For all of the six groups mentioned, estimations about price elasticities of demand are made. Gillen et al. argue that the black dot in the elasticity range is the most likely value of the elasticity per category, after reviewing twenty-two other research papers. According to their research, some interesting findings can be conducted. First we address the difference in elasticities between short and long haul flights. In the short haul market, consumers are, generally speaking, more price sensitive (higher elasticity) than in the market for long haul flights. This is quite obvious because the opportunity for substitution on short haul routes is larger than on long haul routes, like intercontinental itineraries (i.e. travellers in the short haul market can switch to rail or car in response to air fare increases). Besides, people are likely to accept more inconvenience on short haul flights (like continental flights) than on long haul intercontinental flights, for instance in terms of less private space (lower seat pinch) and less frills like no free meals, so on short haul flights the customers are more sensitive to price than to other features (Francis et al., 2007; Kouhpaei, 2011). Secondly, the results of the research of Gillen et al. show that, all else being equal, business travellers are far less sensitive to changes in ticket price (less elastic) than leisure travellers. This result seems to be plausible, because business travellers in general are less flexible in their travelling schemes than leisure travellers. Nevertheless, the study does show that even business travel will decline in the case of a fare increase, but not to the same extent as with leisure travel.

However, some caution is in the above is necessary, because the research of Gillen et al. was conducted considering the worldwide aviation market. In our research, we are primary interested in the European and US market, which is in general more price sensitive than other markets in the world. For example relatively high price elasticity was found in the transatlantic market (InterVISTAS Consulting Inc, 2007). This market has also been well developed by charter carriers, which is consistent with a relatively high price elasticity. Price is likely to be more important than frequency in this market than for instance in the Intra North America market, providing opportunities for LCCs on the transatlantic market which are often unlikely to operate on a very frequent scale (there are possibilities though, see chapter five). So for the intercontinental transatlantic market we are interested in, consumers in general are more price elastic than according to the worldwide Gillen et al. study conducted in 2002, allowing for relatively lower ticket prices in this market. This is made possible by the extended deregulation process specific for the transatlantic market (since 2007), enabling the possibilities to increase competition and so price elasticity (compared to the rest of the world).

When analysing the above research, we can say that on intercontinental flights people in general are less price elastic, making it more difficult for potential LCCs to compete purely on low ticket prices than in the case of the continental aviation market. FSCs thus seems to have a natural advantage over LCCs in the intercontinental area. The group for which perhaps the most of the opportunities for LCCs on the intercontinental territory remain are the leisure travellers, who still has a relatively large price elasticity, especially in the nowadays more price elastic transatlantic market. In this transatlantic leisure market frequency is less important than price, providing opportunities for LCCs on the intercontinental market (see paragraph 4.2 and 5.2). Even though the leisure travellers are thus the most likely ones to be served for intercontinental LCCs, business travellers do not have to be excluded ex ante. While business passengers are not very price elastic in general, they are very sensitive to time, even when flight duration is relatively long (Frank, 2010; Gilbert & Morris, 1995). Possibly, here lies an opportunity for LCCs when they are able to fly to and from less congested airports. Also a combination between leisure and business might be possible on a limited number of dense point-to-point routes, such as London - New York where a lot of leisure as well as business traffic is present (more about this option in paragraphs 4.2 and 5.2). However, the leisure travellers seems to be the best fit for intercontinental LCCs, especially in the area for 'Visiting Friends and Relatives' (VFR), because in this part of the leisure market air travel is a major part of the trip costs for the travellers, and products/services that involve a large part of the purchaser's budget tend to have a larger price elasticity (Francis et al., 2007; InterVISTAS Consulting Inc, 2007).

Reduced service provision and High seat density

For the relatively price elastic intercontinental leisure travellers, the question might appear if the no-frills concept of LCCs in the continental market is (partly) applicable. High seat density for example could probably also be reached in the intercontinental (pure) leisure market, as there is no need for business class seats. However, it is questionable if people are willing to give up leg room for the sake of a lower ticket price. The same is true for catering and entertainment. Nevertheless, the success of intercontinental charter airlines with less frills and less leg room proves that there are possibilities, especially when one realizes that VFR markets are more price elastic than the pure leisure (holiday package) markets that charter airlines serve. Passengers in the leisure segment are argued to be less sensitive to frequency and do less care than business passengers when frills are reduced, that is, on relatively short intercontinental flights. A flight from London to New York for instance is judged different by passenger than a flight between London and Los Angeles (Airneth, 2007). Another chance exists in the fact that airport accessibility is less important in the intercontinental market for non-business passengers (Kouhpaei, 2011), allowing for secondary airports (but one might remember from chapter three that the cost advantages of secondary airports over primary airports are smaller on the intercontinental market).

4.2. The market and competition

As just mentioned in paragraph 4.1, the leisure travellers (especially VFR) are considered to be the most likely target group to serve for Low Cost Carriers trying to set up an intercontinental service, but the question is if this corresponds with the most important market features of the intercontinental market, also taking into account competition.

4.2.1. Point-to-point vs. Hub-and-spoke

On the intercontinental market, it is in general more difficult to fill an aircraft on a frequent base. Aircrafts which are suitable for the flight distance needed in the intercontinental market are much larger than the standard aircraft used in the continental market in terms of number of available seats, so much more seats have to be filled per flight. This higher number of passengers needed per flight is necessary to recover the higher costs (think of fuel for instance) compared to a continental flight. The consequence of the larger planes is that lower frequencies in flight schedule are possible in the intercontinental market to operate profitably, making it more difficult to operate frequent point-to-point routes, simply because there is to less demand to fill large aircrafts on a regular base (de Wit & Zuidberg, 2012). To be able to operate still at relatively high frequencies, the existing legacy carriers on the intercontinental market use a hub-and-spoke structure, bringing together demand. Only a few very dense markets, such as London - New York, are able to generate enough passengers by themselves (so without need for transfer passengers) to operate point-to-point at a relative high frequency. So, in general, transfer passengers are needed in the intercontinental market to be able to operate at a high frequency, which causes difficulties for transferring the point-to-point structure to the intercontinental market (Wensveen J. , 2007).

Low Cost Carriers have no transfer network to rely on, just because in the continental market one of the main assets for LCCs is that they do not have to count for transfer traffic (ensuring a short turnaround time). However, in the intercontinental market the lack of a transfer network could even be a disadvantage. For LCCs it becomes much more difficult to fill aircrafts in the intercontinental market on a frequent point-to-point base, only the most dense markets probably provide an opportunity for a relatively high frequency. But in general, at least when a LCC intends to stay to the main points of the standard LCC business model used in the continental market, operating intercontinental point-to-point flights is thus only possible for a LCC at the expense of frequency (van der Bruggen, 2008). These findings will lead LCCs in the intercontinental market primary towards the leisure market (were less frequency is demanded by the passengers), consistent with the elasticity research findings of the most favourable type of target passengers (i.e. the most price sensitive ones) for LCCs in the intercontinental market, namely the (VFR) leisure passengers.

4.2.2. Secondary airports

For intercontinental LCCs, opportunities will thus at first glance lie on the leisure (VFR) market. Passengers in this market are, as mentioned before, less sensitive for airport access, enabling LCCs to operate from secondary airports. Even though the use of secondary airports will not lead the same cost advantages as in the continental market, the use of secondary airports will often be necessary for intercontinental LCCs, due to difficulties for LCCs to obtain so-called 'airports slots' on the major hub airports (van der Bruggen, 2008). Airport slots place a limit to the number of flights that are allowed to make use of an airport when this airport has a capacity insufficient to meet the demand for start and landing requests of all the airliners (IATA, 2014). On large congested hubs, the slots are usually already allocated, resulting in possible difficulties for LCCs to get access to major airports.

Secondary airports are thus more likely to be operated from, but one should realize that by far not all secondary airports have the right facilities to handle intercontinental traffic (Francis et al., 2007).

4.2.3. Potential markets and competition

As can be derived from the market features mentioned above, the market with the most obvious potential for LCCs in the intercontinental area is the leisure (VFR) market, indeed consistent with the elasticity findings of the most appropriate target group (i.e. leisure passengers). An additional advantage of the pure leisure market is that the existing Full Service (network) Carriers do not have much opportunities to out price a LCC (i.e. drive a LCC from the market by introducing dump prices for the economy class), because the percentage of business passengers on the leisure based routes is too limited to drop the economy prices considerably for a certain period, in contrast to routes were also lot of business traffic is present. On these routes FSCs do have the opportunity to drop the prices of the economy class considerably for a certain period in order to drive a LCC from the market, due to the fact that by far the most of the profit of the intercontinental FSC is derived from business and first class passengers and not from the less important economy class (Francis et al., 2007). So at routes were also a lot of business traffic is present, it is much more difficult for a LCC to operate an intercontinental flight then on leisure based routes, where competition of the existing FSCs will be less fierce (Francis et al., 2007). However, one should realize that in the intercontinental market the scope for stimulation of new traffic is more limited than in it was in the continental market. Dutch people for instance who now go to Barcelona for a weekend will not go to Chicago just because it is cheap (time constraint), so there is less likely to be a large new generation of trips as there was in the continental market during the introduction of the LCCs, limiting the possibility for operating flights on leisure markets further.

Because the possibilities for extension of flight operations on intercontinental pure leisure markets seems to be rather limited, it is tempting to look at possibilities in other at first glance less obvious markets. For instance the market where, besides leisure passengers, also business passengers are present. This area of the intercontinental market is the most profitable one for FSCs nowadays (Pels, 2008). Because of its level of profitability, it seems to be tempting for LCCs to try to obtain a part of this profit, although the lack of business passengers is one of the advantages that LCCs have over FSCs in the continental market. However, for LCCs on the intercontinental market it will be very difficult to enter this area of the market, because the FSCs will do everything in their abilities to keep their most profitable market in their own hands. When entering the market where business as well as leisure passengers are present, fierce competition of FSCs can be expected: FSCs will try to out price the new entrants, i.e. drive the new entrant from the market by temporary offering dump prices for the economy class (as mentioned before). Furthermore, one should remember that business passengers are less price sensitive and more frequency demanding than leisure passengers. Despite all of the difficulties just mentioned, when altering the standard LCC business model, there are possibilities for intercontinental LCCs on itineraries where both business and leisure passengers are present as well (more about this in chapter five).

4.3. Summary and answering sub question

4.3.1. Summary

In the core business of Low Cost Carriers, the supply of low fare tickets is of primary importance. For LCCs trying to enter the intercontinental market, it is therefore essential to select the customer target group that fits them best, i.e. the customer group who is the most price sensitive. According to the elasticities research, continental passengers are, generally speaking, more price sensitive than passengers in the market for intercontinental flights. So FSCs seem to have a natural advantage over LCCs in the intercontinental market, meaning that it is more difficult for LCCs to compete purely on low ticket prices than in the case of the continental aviation market. The group for which perhaps the most of the opportunities for LCCs in the intercontinental territory remain are the leisure travellers, who still have a relatively large price elasticity (especially within the VFR area). Furthermore, passengers in the leisure segment are less sensitive for airport access, and do less care than business passengers when frills and leg room are reduced. Moreover, they are argued to be less sensitive to flight frequency as well. When we take a closer look to the intercontinental market features, we see that these leisure traveller characteristics can indeed provide LCCs an intercontinental market opportunity. Because lower frequencies in flight schedule are possible in the intercontinental market, it is more difficult to operate (frequent) point-to-point routes, simply because there is to less demand to fill large aircrafts on a regular base. In general, transfer passengers are necessary in the intercontinental market to be still able to operate at a relative high frequency. But LCCs do not have a no transfer network (i.e. hub-and-spoke network) to rely on; operating intercontinental point-to-point flights is thus only possible for a LCC at the expense of frequency. Customers will only accept this reduction if they are not sensitive to frequency. Hence, the leisure passengers are most appropriate when a LCC wants to remain its point-to-point structure. These passengers are also less sensitive for airport access, enabling LCCs to operate from secondary airports. Consistent with the elasticity findings, the leisure travellers seems to be the most appropriate target group, leading LCCs in the intercontinental area primary towards the leisure market. An additional advantage of the leisure market is that the existing Full Service (network) Carriers do not have much opportunities to out price a LCC here, mitigating competition.

However, in the intercontinental market space there is less likely to be a large new generation of trips as there was in the continental market during the introduction of the LCCs, limiting the possibility for operating flights on (pure) leisure markets further. Because the possibilities for extension of flight operations on intercontinental (pure) leisure markets are thus rather limited, it is tempting to look at possibilities in other at first glance less obvious markets. For example the market where, besides leisure passengers, also business passengers are present. This is also the most profitable area of the intercontinental market for FSCs nowadays, making it even more appealing to serve. But for LCCs on the intercontinental market it will be very difficult to enter the market for these types of passengers: fierce competition from the existing intercontinental FSCs can be expected. Moreover, serving business passengers as well is not consistent with the standard LCC business model, meaning that quite radical changes are needed to get sustainable access to this profitable part of the market. However, besides the pure leisure market, for LCCs there might be possibilities to serve this part of the market as well (more about this in chapter five).

4.3.2. Answering sub question

It is now time to return to the third sub question: "*Is there market potential for intercontinental low cost flights?*". The answer could be stated in the following way: Yes, there is market potential for LCCs in the intercontinental market, but not to the same extent as in the continental market space. In the intercontinental market, people are in general less sensitive to price and are less willing to accept inconveniences (i.e. frills reduction), meaning that it is more difficult for potential LCCs to compete purely on low ticket prices than in case of the continental aviation market. Furthermore, in the intercontinental market space generation of new traffic is less likely, meaning that LCCs will often have to compete for passengers of existing intercontinental FSCs. The group for which perhaps most opportunities for LCCs remain are the leisure travellers, who still have a relatively large price elasticity and do not demand a high frequency. When serving this group of travellers, it is possible to stay close to the familiar standard LCC business model (i.e. no radical changes are needed). However, most intercontinental profit can be made on itineraries where, besides leisure travellers, also business travellers are present. But entering this area will be tough: fierce competition from the existing intercontinental FSCs can be expected. Besides, serving business passengers as well is not consistent with the standard LCC business model. So when a LCC wish to serve these nowadays very profitable itineraries as well, it has to alter its current standard LCC business model.

5. Possibilities for low cost carriers on the intercontinental market

In the first paragraph of this chapter, a closer look will be taken to the essential conditions necessary for the implementation of Low Cost Carriers in the intercontinental market. In other words, the question what should be taken into account when one wants to set up an intercontinental low cost service will be answered. After these conditions are recognized, we are able to search for the actual opportunities that exist for LCCs in the intercontinental market. These opportunities will be addressed in chapter 5.2. In chapter 5.3, a case study of a LCC trying to go intercontinental (Ryanair) will be conducted.

5.1. Essential conditions

5.1.1. Costs

Because the total cost advantages that LCCs can obtain over FSCs in the intercontinental market will be smaller than in the continental market, it is important that at least the cost advantages that were considered as (partially) transferable in chapter three will indeed be transferred in practice, in order to achieve substantially lower ticket prices. Those advantages were the high seat density, the internet distribution of tickets and to some extent also the possibility to decrease labour costs by using flexible contracts based in low wage countries, alongside with outsourcing of ground based activities. Furthermore, for a successful introduction of intercontinental LCCs one should realize that in case distance increases, operating costs rise while unit costs decrease. Especially when it comes to fuel burn, crew cost, maintenance cost, passenger services and over-flight this is particularly true. This has implications for the possible cost advantages that intercontinental LCCs are able to remain over FSCs: these cost advantages will be larger on the relatively short distance intercontinental routes (i.e. 6-10 hours). On these relatively short distance intercontinental routes, the emergence of LCCs will thus be more likely than on the relatively long distance intercontinental itineraries (Wensveen J. , 2007).

5.1.2. Low fares

In order to achieve sustainable lower ticket fares in the intercontinental market, it is important that the right target group is served by LCCs. On the intercontinental market, customers are in general less price sensitive. This means, as mentioned before, that it will be more difficult for LCCs to compete on this market solely with low fares. For example, intercontinental travellers are less willing to give up leg room in return for a lower price, allowing only partial transferability of high seat density. So in order to become successful, new entrant airlines may have to keep intact some of the product features of the traditional FSCs to attract customers, i.e. more than was the case in the continental market (Francis et al., 2007). To ensure that at least some cost advantages can be (partially) transferred to the intercontinental market, it is necessary to find type of passengers who care the less about frills and frequency, i.e. who are the most price sensitive. According to the elasticities research of chapter four, this turned out to be the leisure passenger. Only when this type of passenger is served, it is possible for a LCC on the intercontinental market to stay close to the familiar standard LCC business model.

However, while it seems plausible to stay close to the familiar standard LCC business model, it does not have to be a goal by definition. Besides the leisure market, there might be other interesting options for an intercontinental LCC, such as on profitable itineraries where leisure as well as business passengers are present. But in order to achieve sustainable low ticket fares for leisure passengers on such itineraries, it seems to be necessary to also include (alongside economy class) a limited number of business class seats (see paragraph 5.2). The problem with business class passengers is that they are less price sensitive and more high demanding (i.e. frequency and frills), implying that the standard LCC business model should be changed. However, as a LCC it is important to realize that serving business clients will not be the primary goal; it will only be a way to offer leisure passengers low ticket fares on itineraries outside the pure leisure market as well. More about this can be read in paragraph 5.2.

5.1.3. Point-to-point vs. Hub-and-spoke

The use of a for LCCs familiar point-to-point structure is only possible on the intercontinental market at the expense of flight frequency, for reasons described in chapter four. This is not a problem when only serving price sensitive leisure passengers, who are less frequency demanding. However, when at some itineraries also high frequency demanding passengers have to be served (i.e. business passengers), a LCC should realise that the use of only a point-to-point structure is no longer feasible. Paragraph 5.2 will tell more about this.

5.1.4. Secondary airports

Another issue that should be taken into account when considering options for the introduction of intercontinental LCCs is the fact that at most major hubs airport slots are present, forcing new entrants to look at options to operate from secondary airports (as already mentioned in chapter four). But to be able to operate intercontinental flights from secondary airports, those airports need a large range of additional facilities (longer runway, safety, luggage ground handling etc.). By far not all secondary airports are suitable for this type of traffic nowadays, putting a constraint to the possibilities.

5.2. Possible opportunities for successful introduction of low cost carriers

Now the most important issues that should be taken into account when a LCC wants to set up an intercontinental service are known, we can consider the actual opportunities that exists for LCCs in the intercontinental market space. As mentioned in the preceding paragraph and in chapter four, the most straightforward option for LCCs on the intercontinental market exists in the area of (pure) leisure passengers. Leisure passenger care less for a reduction of frills and care more about price than business passengers do (Airneth, 2007). The same is true for the frequency requested (i.e. leisure travellers care less about frequency). Hence, for this group it is more easy for a LCC to reduce provided frills and so costs, providing an opportunity for intercontinental LCCs to maintain a large part of the standard LCC business model they are used to in the continental market (so for instance with less frills, higher seat density, single class division of aircrafts, and point-to-point operations). The market for leisure passengers, and especially at routes where the majority of the passengers are the more price elastic VFRs, is thus most likely to be served by intercontinental LCCs. An important advantage for the viability of LCCs in this (pure) leisure market is the fact that, as the name already suggests, almost no business passengers are present at this kind of itineraries, ensuring that the existing FSCs are not able to out price a LCC from the market by offering temporary dump prices for the economy class (because the fundament to be able to do this, the presence of business and first class passengers, does not exist here). This enlarges the opportunity to exploit this leisure market further. A disadvantage of the market for leisure travellers is that these kind of passengers usually want to carry relatively more luggage with them, increasing fuel burn (unless a premium can be charged for luggage).

Another market opportunity for LCCs in the intercontinental market exists in the market for relatively dense routes, such as London - NY, where FSCs make a lot of their profits. But since these kind of flights carry besides leisure passengers also a lot of business passengers, the existing FSCs do have the opportunity to out price by introducing temporary dump prices for economy class seats. To be able to withstand this fierce kind of competition, a LCC will probably also have to serve a limited number of business clients (who account for a large part of the intercontinental market profitability, ensuring a lower economy class fare) in this market, even though this is at first glance not consistent with the existing standard LCC business model. However, the intercontinental market is different from the continental one, and to be able to offer sufficiently low economy class ticket fares in a sustainable way, business passengers will be needed here. For example Ryanair intends to incorporate a business class for its future intercontinental flights (Frankfurter Allgemeine, 2014), as will be described in more detail in the next paragraph. Business class passengers request for a large frequency, and by using a point-to-point structure this high frequency can only be achieved in the most dense markets, such as London - New York (i.e. high load factors can be obtained here). With a point-to-point structure it is possible to obtain a 'high' frequency of one flight per day here (Francis et al., 2007). But to enlarge frequency in a serious way, feeding traffic is required (Morrell, 2008). Transfer passengers will normally be 'centralized' at the major hub airports, but due to airport slots these congested hub airports are often inaccessible for new entrants. Furthermore, enabling transfers is not consistent with the standard LCC business model in the continental market, which do not supply transfer facilities to reduce the (for the continental market important) turnaround times. So when a LCC decides to facilitate transfers serving intercontinental flights, it must not go at the expense of turnaround times in the continental market. A way to achieve this is by offering so-called 'do-it-yourself transfers', in which passengers should check-in again for their transfer flight after arrival at the hub, being responsible for their own transfer (Francis et al., 2007). In this manner, LCCs do not have to take into account transfers in their continental flight schemes, ensuring to keep short turnaround times. Of course this increase the transfer time for passengers, but because the long haul leisure traveller is less sensitive to time if it comes at the expense of lower prices (Kouhpaei, 2011), opportunities for LCCs exist. The risk to miss the connecting flight is than carried by the passenger, who is intuitively only willing to carry this when the probability to miss the connection is negligible. To assure connection, delay times should be reduced to the absolute minimum, and because delay times are generally lowest at less congested secondary airports, an opportunity appears here: By using secondary airports, not only the punctuality is increased, it also provide an opportunity to evade the airport slots at major hubs.

The just mentioned do-it-yourself transfers (or feeders) are only applicable to the less time sensitive leisure passengers. For business passenger, who are time sensitive, it is not a realistic option. Besides, it is also not obvious to include business seats in low cost continental (feeder) flights, because this will reduce the seat density on those flights and thus the cost advantage obtainable over FSCs. So continental flights that lead to the LCC hub (secondary airports where a do-it-yourself transfer to an intercontinental low cost flight is possible) remains to their single class structure, that is, no business class is included. Only at the intercontinental operations, LCCs are able to include a limited number of business seats (thus for business passengers intercontinental LCC flights are point-to-point), meaning that to attract intercontinental point-to-point business passengers, it is required that the LCC hubs are located close to important business centres. The main reason for a LCC to attract also intercontinental business passengers is to ensure the possibility to offer sustainable lower economy class fares (to leisure passengers), without having to fear for being out priced from the market by existing FSCs with their temporary dump prices for economy seats. When a part of the market for profitable (point-to-point) business passengers is captured by LCCs, they are able to decrease the tariffs for LCC intercontinental flights further, reducing the possibility for existing FSCs to out price the new LCC entrant from the market. The possibility to out price can be reduced even further when (point-to-point) business clients obtain a preference for the less congested secondary airports from which LCCs operate their intercontinental flights. Time and comfort/accessibility are the key words to achieve this preference (Airneth, 2007). However, it is questionable if business passengers could be attracted so easily by LCCs. Not only the level of (ticket) service should be increased, also reputational affairs play a role. LCCs are used to reduce costs by improving their personnel flexibility, but the ways by which some LCCs try to achieve this could be conflicting with the values of business clients. When employment conditions are violated at an airline in order to reduce costs (for example within Ryanair, see paragraph 5.3), business clients may wish not to identify themselves with such practices, afraid for their own reputation. LCCs should take this into account when evaluating the opportunity to serve itineraries where business passengers are present as well (Brandpunt Reporter, 2012; Poingt, 2008).

To summarize, there are opportunities for LCCs trying to explore the intercontinental market. At dense itineraries where leisure as well as business traffic is present an opportunity exists, even though it is not easy to implement a low cost structure in this area of the market. Due to the strength of the FSCs actually serving these itineraries and so the expected intensity of competition, it is necessary for LCCs at this type of itineraries to serve also (besides the leisure passengers) business clients, in order to enable sufficiently low economy class ticket fares and withstand competition. However, when serving business passengers as well, one should realize that more frills and reservation services are necessary, and a less high seat density can be obtained within an aircraft. In general, it might be more difficult to convince businesses to use a Low Cost Carriers due to reputational affairs and the lack of additional (ticket reservation) service (Poingt, 2008; Mason, 2001). Furthermore, it is important to balance the costs and benefits of providing more (business)frills, ensuring the LCC to stay focussed on the core of its business model, namely the supply of low cost economy fares to mainly leisure/economy passengers. However, leisure passengers cannot only be found at the itineraries just mentioned, but also at (pure) leisure markets, providing a perhaps more easy accessible opportunity for low cost carriers. At these markets, less business traffic is present (so less fierce competition) and less frequency is required, resulting in less aircrafts that need to be filled. This does not mean that the pure leisure market cannot be an appealing long term option just because low frequencies can be reached. In fact, this could also be an advantage: less frequency and less frills are necessary to operate efficiently, enabling LCCs to stay more in line with their familiar standard LCC business model in the continental market (i.e. less radical changes are needed). A new long-haul low-cost entrant does not have to achieve a large impact on the market per definition to become successful; they can already gain success by hurting the established legacy carriers on a certain route (Airneth, 2007).

5.3. Actual case: Ryanair

As mentioned in the introduction of our research, there are more and more rumours of LCCs trying to go intercontinental. One of them is Ryanair, founded in 1985 by Tony Ryan, and nowadays the largest and most profitable European Low Cost Carrier (Johanson, 2014). Below Ryanair's intercontinental plans will be exposed. On top of that, we will consider if these plans are consistent with our opportunity findings in the preceding paragraph, and place some (critical) notes on Ryanair's intercontinental intentions. (Morrison & Learmount, 2007)

While the first announcements of Ryanair CEO Michael O'Leary about intercontinental expansion date from 2007, it never came to such an expansion so far. In May 2014, O'Leary gave his updated vision on intercontinental flying: In 2019 at the earliest, Ryanair wants to be operational on transatlantic flights, starting with a ticket price as low as ten euro’s (!). For the intercontinental operations Ryanair intends to set up a subsidiary, with fifteen to twenty aircrafts, and expending to 30 to 40 aircrafts five years after introduction. On this way, eight to ten European destinations can be connected with ten to fifteen destinations in the US, according to O'Leary. The new airline will be run entirely separate from Ryanair with its own executives and board, and a different name. There would be no cross-ticketing or connecting luggage. Running the long-haul operation as a subsidiary "would be a distraction for Ryanair", O'Leary says. "The minute you put a long-haul business on top of a short-haul operation you kill it". The intercontinental services will be mainly operated from secondary airports. That is, the airports with the best offer for Ryanair. O'Leary expects these services, from and to secondary airports such as Baltimore, Providence (Rhode Island) and New York Long Island Islip Macarthur (instead of JFK) "to be full'' (Morrison & Learmount, 2007; Frankfurter Allgemeine, 2014).

The ten euro ticket fares just mentioned will only be a starting price, according to O'Leary. Extra fares will be charged for luggage, meals and entertainment. Some caution is needed here: taxes are not included, and these taxes are about 85 Euros for a flight between the UK and the US (British Airways, 2013). An important feature of the intercontinental version of Ryanair will be the incorporation of a business class, contrasting with Ryanair's continental LCC policy. O'Leary says the following about this incorporation: “Not every seat will be €10 of course, there will also need to be a very high number of business or premium seats. Five percent of the public who will pay for the frills help subsidize ultra-low fares for the rest of the passengers''. To serve business clients as well, additional services should be provided. O'Leary names fast boarding and safety checks, flexible tickets and a frequent flyer program as examples (Frankfurter Allgemeine, 2014). But besides all these ideas, the Ryanair CEO does not expect to be operational within five years. The reason is the intense competition for new aircrafts right now, driving up the prices. This is caused by the rapidly expanding Gulf (flag) carriers, meaning that it could take up to five years before O'Leary's dream becomes a reality. So Ryanair has to be patient, waiting for the right moment to start its intercontinental operations (Johanson, 2014; Frankfurter Allgemeine, 2014).

O'Leary ideas in essence are consistent with our own research findings. Even though opportunities in the pure leisure market seems not to be considered or revealed as yet by Ryanair, on itineraries where business as well as leisure passengers are present, the intensions seems to correspond. O'Leary mentioned the necessity of business clients (incorporating a business class), the fact that intercontinental operations must not go at the expense of continental assets (i.e. separate intercontinental from continental operations), and the use of secondary airports. These aspects are in line with our findings in the preceding parts of chapter five. But O'Leary does not explicitly mention our assumed necessity of (do-it-yourself) transfer passengers for enlargement of load factors and so frequency. When a large number of the intercontinental business seats in an aircraft can be filled, high load factors are probably indeed less necessary: sustainable frequent flying could than by realised solely by the business class passengers, who have the largest share in the in the profitability of intercontinental flights. Ryanair apparently presume that do-it-yourself transfers are not necessary to enlarge load factors, because the business customers make it already viable to operate intercontinental flights on a frequent scale.

However, it is questionable if Ryanair will be able to fill the business seats that easily, even on the dense routes. Intercontinental business passengers are less sensitive to price (less price elastic), so require numerous additional assets in terms of service to be convinced. Furthermore, the reputation of Ryanair could become a disadvantage in attracting the necessary business clients, especially in the fields of personnel treatment and customers service (Poingt, 2008). The extremely low ticket prices of Ryanair namely come at an expense: for instance pilots are put under high pressure to take lower amounts of fuel than they actually would like to take (denied by Ryanair itself). Ryanair maintains a list where the fuel burning of each pilot is noticed, the so-called "fuel league", with on top of the list the 'winners': pilots who take the fewest amount of fuel on their journeys. Pilots who are in the bottom half of the list have a problem, with their names marked in red, meaning less flights in the nearby future. On top of that, Ryanair pilots are employed as contractors, meaning no social security for them at all (Brandpunt Reporter, 2012). Nowadays criticism on this kind of policy swells, which could imply that business clients do not want to identify themselves with such practices at all, afraid for their own reputation (Poingt, 2008). O'Leary might overlook these potential bottlenecks by not taking into account the necessity of changing image (and so personnel circumstances) to attract business clients. The question here is if O'Leary really does not take these bottlenecks into account, or not mention them because in a competitive environment such as the airline business, he does not wish to unfold all his plans in advance.

5.4. Summary and answering sub question

5.4.1. Summary

When taking into account the essential conditions necessary for the implementation of Low Cost Carriers in the intercontinental market, two types of market opportunities seems to exist: the market for (pure) leisure passengers and the market for relatively dense routes, where leisure as well as business passengers are present. The advantage of the first one is that leisure passengers care less about a reduction of frills and frequency, and care more about price than business passengers. Hence, for this group it is more easy for a LCC to reduce frills and so costs, providing an opportunity for intercontinental LCCs to maintain a large part of the standard LCC business model they are used to (i.e. no radical changes are needed). Moreover, due to the lack of business passengers on this type of itineraries, competition will be less fierce, reducing the risk of operation in general. For the second market opportunity, it is hardly possible for LCCs to remain at the standard LCC business model they are used to in the continental market. Since on this type of profitable itineraries leisure as well as business passengers are present, the competition of FSCs will be fierce (i.e. FSCs will try to out price new entrants by offering dump prices for economy seats). To withstand these practices, a LCC will probably also have to serve a limited number of business clients on its intercontinental flights. The margins obtained from these profitable passengers will then ensure the LCC's possibility to offer sustainably low economy class fares for the leisure passengers in this part of the market. But attracting business passengers will not be easy: not only significant changes to the standard LCC business model should be made (serving also business passengers who require more frills and personal space), also the required flight frequency is much higher than for leisure passengers. With the for LCCs familiar point-to-point structure it is only possible to obtain a 'high' frequency of one flight per day. But to enlarge the frequency in a serious way, feeding traffic is required. However, one of the main cost advantages for LCCs in the continental market precisely is the lack of transfer passengers, decreasing turnaround times. So when a LCC decides to 'facilitate' transfers to feed intercontinental flights, it must not go at the expense of the continental operations. By offering so-called "do-it-yourself transfers", feeding traffic can still be achieved, without going at the expense of continental LCC operations. These type of transfers are time consuming, and therefore only applicable to the less time sensitive leisure passengers. For Business passengers it is not a realistic option. Only at the intercontinental operations itself, LCCs are able to include a limited number of business seats (so for business passengers intercontinental LCC flights are only point-to-point). However, one should realize that offering only higher frequency and more frills may not be enough. It will be difficult to convince businesses to use a Low Cost Carrier due to reputational affairs. Furthermore, for a LCC trying to go intercontinental it is important to balance costs and benefits of providing more (business)frills, ensuring that the LCC to stay focussed on the core of its business, i.e. the supply of low cost economy fares to leisure/economy class passengers.

Despite the second option requires much more effort for LCCs (i.e. altering the standard LCC business model), the possible gains could be significant. It is not without a reason that Europe's leading LCC Ryanair wants to become operational at these dense (combined business and leisure) itineraries in the nearby future. Ryanair intends to offer intercontinental tickets starting from only 10(!) Euro's, backed by the incorporation of an intercontinental business class. Ryanair's CEO Michael O'Leary argue that incorporating a business class on intercontinental flights is an absolute necessity, because "five percent of the public who will pay for the frills help subsidize the ultra-low fares for the rest of the passengers". This is consistent with our research findings, i.e. with the second market opportunity. The same is true for O'Leary's intentions to operate from secondary airports, and for the separation of the intercontinental activities from continental ones.

5.4.2. Answering sub question

Now it is time to return to the fourth sub question: "*How penetration of low cost carriers in the intercontinental market is possible?*". The answer could be stated in the following way: Penetration of low cost carriers in the intercontinental market is possible in two market segments. The first is the market for (pure) leisure passengers, the second is the market for relatively dense routes, where leisure as well as business passengers are present. The first possible market segment is probably the most easy accessible for LCCs due to the lack of business passengers, resulting in less fierce competition and less passenger needs for frills and frequency. No radical changes to the familiar standard LCC business model are required in this environment, contrasting to the situation in the second possible market segment. In this second segment by far the most profit is made by serving business clients. Significant changes to the standard LCC business model are necessary here to be able to serve business class passengers as well. Business clients should be served by LCCs to enable sufficiently low economy class ticket fares and withstand the fierce level of competition. Despite the required effort for altering the standard LCC business model, the possible gains could be appealing.

6. Conclusion & Limitations

6.1. Conclusion

Now all sub questions are answered, it is possible to complete our research by answering the central research question: *"Is there economic potential for intercontinental low cost airlines?"*. The answer to the research question could be formulated in the following way: Yes, there is economic potential for low cost airlines on the intercontinental market, but not to the same extent as on the continental market. On the intercontinental market, LCCs can gain less cost advantages as they are used to in their standard continental LCC business model. When a Low Cost Carrier wants to become sustainably operational on the intercontinental market, it is important that at least a few of the most important cost benefits that LCCs have in their successful standard continental LCC business model can be (partially) transferred, in order to achieve ticket prices below the level of existing intercontinental FSCs. These transferable benefits are the higher seat density, the usage of internet to avoid agent commission, and the possibility to decrease labour costs by using flexible contracts based in low wage countries, alongside with outsourcing of ground based activities. However, passengers on the intercontinental market are in general less sensitive to price (i.e. more price inelastic), making it more difficult for LCCs to compete solely on low fares. So FSCs seems to have a natural advantage over LCCs in the intercontinental market, reinforced by the fact that they are already able to offer relatively competitive prices for intercontinental economy class seats. To become successful as a LCC in the intercontinental market, it is therefore of primary importance to select the right target group of customers to serve. This group should be the most price sensitive (price elastic) one, i.e. the leisure passengers. These type of passengers also care the less about frills, airport access and high frequency. Especially the latter is important, because it is difficult to fill the much larger intercontinental aircrafts on a frequent base when using a standard LCC point-to-point network. That is, using a point-to-point network on the intercontinental market implies a lower possible flight frequency. But a lower flight frequency will only be accepted in markets where the passengers care less about this frequency, such as in the market for leisure travellers. Therefore, the pure leisure market (especially for VFR passengers, who are the most price elastic) turns out to be the most straightforward market segment to serve for LCCs on the intercontinental market. When serving this market segment, it is possible for LCCs to stay close to their familiar standard LCC business model.

However, price-sensitive leisure passengers cannot only be found on pure leisure markets, but also on dense itineraries where business passengers are present as well. These itineraries provide LCCs, besides the pure leisure market, a second market opportunity to serve in the intercontinental area. But when a LCC wants to enter such itineraries where business as well as leisure travellers are present, fierce competition of established intercontinental FSCs (in terms of low economy class fares) can be expected. FSCs gain most of their profits at these type of itineraries due to the presence of business and first class passengers, enabling them to offer relatively low economy class fares. So for a LCC, in order to ensure sustainable lower ticket fares for economy class seats (i.e. leisure passengers) at these highly competitive itineraries, the only possibility is to also include a limited number of business class seats. Incorporating business passengers as a LCC will not be easy, however. Several changes to the familiar standard LCC business model will be necessary. For example the reduced service provision and single class aircraft layout will not be feasible anymore. On top of that, business passengers require a high frequency, implying that the use of only a point-to-point structure will no longer be viable. Feeder traffic will be necessary to seriously increase flight frequency, but this may not go at the expense of the continental LCC operations: only "do-it-yourself transfers" are thus possible, resulting in the fact that solely leisure passengers will make use of this 'transfer facility'. When the flight frequency is eventually increased (by including feeder traffic), LCCs are probably able to include a limited number of business class clients, but only at the intercontinental flights itself (i.e. not at the feeder flights, do-it-yourself transfers are too much time consuming for business passengers). This implies that the airports where intercontinental LCCs will operate from - usually secondary airports due to the existence of airport slots - should be located relatively close to important worldwide business centres and at dense air routes, in order to ensure that the demand for business class seats is large enough.

Despite the fact that the second market option for LCCs (i.e. dense itineraries with both leisure and business traffic) requires much more effort in terms of altering the standard LCC business model, the possible gains could be appealing. However, serving the pure (VFR) leisure market will be more easy to realize for a LCC trying to go intercontinental, requiring less radical changes to the standard LCC business model. Even though the possibilities to expand flight operations are larger at itineraries where leisure as well as business traffic is present, this does not mean that the pure leisure market option is not an appealing one. A new intercontinental low-cost entrant does not have to achieve a large impact on the market per definition to become successful; they can already gain success by hurting the established FSCs on a certain route.

6.2. Limitations

Two important limitations of the conducted research should be taken into account. The first limitation deals with the 20-25% cost advantage range that is mentioned for LCCs in the intercontinental market (obtainable over FSCs). This estimation is based on possible cost advantages that could be obtained when the standard LCC business model is used in the intercontinental market as well. But what will happen to this estimation when the standard LCC business model is changed, for example when a LCC serves itineraries where leisure as well as business passenger are present? Because precise data about how the cost advantage estimation is quantitatively build-up are not available, we cannot answer this question without further (quantitative) research. So here an opportunity for further research appears.The second limitation of this research is attributable to the potential customers. Because leisure passengers are the most price sensitive ones in the intercontinental market, they are assumed to be the type of passengers that are most likely to use intercontinental Low Cost Carriers. But would they really choose for a LCC on intercontinental itineraries? To answer this question, further research have to be conducted, possibly by means of extensive surveys within the potential target group.

In general, one should realize that the aviation market is sensitive for external shocks. The recent past has learned us that political instability could have serious consequences for the aviation market. For new entrants, it will become even more difficult to recover from external shocks, because their (financial) buffers are expected to be rather limited in the start-up period. So for new entrants on the intercontinental aviation market, a relatively stable environment is a prerequisite to become successful. However, in this research the ceteris-paribus condition is adopted: the possibility of external shocks is thus not taken into account.

7. References

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