

# MESO STUDY SUMMARY: AIR TRANSPORT INDUSTRY

## Introduction

In this report the airport industry of Brazil and the Netherlands will be analyzed by using Porters Diamond. The classes that are included in the airport industry are:

- Class 5110. Passenger Air transport
- Class 5120. Freight Air transport
- Class 5223- Service activities incidental to air transportation

Because the three different classes each include several aspects, not all aspects are covered in this analysis. Special attention was paid to Passenger Air transport and Freight Air transport, because these classes are the core of the airport industry.

## Porters diamond analysis of AIR TRANSPORT sector

### Factor conditions

#### Brazil

*Infrastructure:* Brazil has with 4000 airfields, the second most airfields in the world. But the infrastructure in Brazil is not able to deal with the growth of passengers. According to a report of ACAN, the capacity of the main Brazilian airports will be soon fully utilized, given the high average annual growth rate of air traffic. The worst case is that of São Paulo International Airport, which has already reached a throughput of 17 million passengers annually, with a design capacity of only 12 million.

*Labor and wages & skilled labor & capital:* The wages and working conditions for air traffic controllers are below standards, with long working days and low wages. This was one of the reasons for the Brazilian aviation crisis in 2006. (Brazilian Aviation Crisis). The airport industry requires skilled labor for part of the jobs, especially pilots and air traffic control requires skilled labor. The air traffic control is mostly done by the Brazilian Air Force. They also facilitate the education of these air controllers. ANAC, the Brazilian civil aviation, authority fostered training for pilots, mechanics and flight attendants.

#### Geography

Brazil is the fifth biggest country in the world, which makes the country attractive for national flights. Brazil's domestic airline volumes reached 5.25 billion kilometers in March 2010, that was up from 3.98 billion kilometers in March 2009. Brazil is also a country that contains a lot of natural resources, of which the natural resources, for example fruits, are perishables and are exported to other continents.

#### Netherlands

*Infrastructure:* The infrastructure of the airport industry in Holland is excellent. The airports also have very good connections with other transport systems like railway- and highway systems. This is because the Netherlands has a very extensive and high quality infrastructure throughout the country. But one of the problems is growth of the airport industry, extension of the airport related infrastructure is needed, especially at Schiphol.

*Labor and wages & skilled labor & capital:* The Netherlands is a social country with minimum wages and good social security. This is pleasant for the workers but makes the price for labor also high. Different from Brazil the air control in the Netherlands is not done by the

Air Force, but by the “Air Traffic Control the Netherlands” authority. They also arrange the education of air controllers. In the Netherlands the Joint Aviation Regulations, Flight Crew Licensing (JAR-FCL) organizes the flight training. Training can be done at several flight schools.

*Geography:* Holland is a relatively small country which makes the need for national flight almost superfluous, transportation within the country can easily be done by car or train. The location of Holland in Europe does not make it extra attractive for planes to visit Holland. The import of cargo by airplanes is approximately equal to the export of cargo by airplanes in the Netherlands.

## Demand conditions

### Brazil

Air transportation of cargo and passengers in Brazil has shown explosive growth rates. In 2006, the number of passengers reached almost 40 million, which represents an increase of 150% over 1996. With the trend of the Brazilian economy towards stabilization and the relative increase in the purchasing power of the population in general, combined with the increasing participation of the low cost/low fare companies, air transportation has become available to large sectors of the population. (Figueiredo & Pizzolato, 2009) . The entrance of the LCC (Low Cost Carriers) played an important role in the development of passenger traffic, prices of tickets dropped by over 40 %.

### Netherlands

The result of several studies reveals that many cities are strengthening their position as international air transportation hubs. Among those cities is also Amsterdam. These results show that the air traffic density of three cities, Seoul, Hong Kong, and Amsterdam, is growing at an extraordinary rate. The largest airport of the Netherlands, by far, is Schiphol. In 2009 more than 40 million people used Schiphol.

The price of tickets in the Netherlands is changing continuously. With the introduction of the LCC, prices for tickets dropped, but because of several taxes for air transport, prices for tickets have increased again. The increasing price for fuel has also led to a rise in the price for flying. Airlines are increasing the price of tickets with the so called “Fuel Surcharge” (brandstoftoeslag). Important numbers of the Dutch airport industry are the total flights, numbers of passengers and the transportation of cargo. Notable is that most of these numbers are fluctuating, with a peak in the years 2001 and 2007. (CBS), as can be seen in table 1. One of the weaknesses of the Dutch airport industry is that it is very dependent on the global economy.

Airports ↗ ↘	Subjects ↔ ↗	Periods ↗ ↘	1997	1999	2001		
Total regional airports	Aircraft movements	Cross-country flights	number	467 579	503 775	516 229	
	Commercial air traffic	Flights	All flights	Total flights	400 118	442 587	462 194
		Passengers	Total passengers	Total passengers	32 074 513	37 704 030	40 789 564
		Cargo	Total cargo	Total cargo	ton	1 196 780	1 218 568
	Unloaded cargo		Total unloaded cargo		595 921	608 008	578 015
	Loaded cargo		Total loaded cargo		600 859	610 560	639 418

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Airports ↗ ↘	Subjects ↔ ↗	Periods ↗ ↘	2003	2005	2007	2009 *		
Total regional airports	Aircraft movements	Cross-country flights	number	475 608	490 176	529 001	474 512	
	Commercial air traffic	Flights	All flights	Total flights	426 836	442 453	479 506	429 129
		Passengers	Total passengers	Total passengers	41 264 122	46 488 308	50 517 673	46 455 743
		Cargo	Total cargo	Total cargo	ton	1 341 288	1 505 046	1 668 673
	Unloaded cargo		Total unloaded cargo		687 481	819 223	883 374	733 638
	Loaded cargo		Total loaded cargo		653 808	685 823	785 299	607 117

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Table 1: Numbers of the Centraal Bureau voor de Statistiek ([www.cbs.nl](http://www.cbs.nl))

### **Brazil**

There are 32 airlines in Brazil which have an Air Operator Certificate issued by the Civil Aviation Authority of Brazil. The biggest of them is TAM, in February 2010 its shares were of 42.42% for the domestic and 81.95% for the international markets. (TAM Airlines, 2010)

There are two main strategies for firms in the airport industry in Brazil. The first is the tendency to form alliances, there is a lot of merging in the airline business in Brazil in order to handle the competition in this market. The other strategy is the hub-and-spoke model. This model tries to optimize air services and to allow the carriers to obtain good rates of cost reduction by using one central point (the hub) to transfer people from one airport to the other. So instead of having direct flights, passengers have to switch between airplanes. (Figueiredo & Pizzolato, 2009) Good logistic planning is essential for this model.

### **Netherlands**

There are different strategies for companies operating in the airport industry in Holland. First a distinction has to be made between conventional airlines and the new low-cost airlines or low-cost carriers. Low-cost airlines and conventional airlines have distinctly different strategies and network types. Conventional airlines offer 'quality', whereas low-cost airlines aim to keep costs as low as possible. (Pels, 2008)

The biggest airliner of the Netherlands was the KLM Royal Dutch Airlines. But in 2003 KLM merged with Air-France into one airline company: Air France-KLM. In 2008 it was this was the largest airline company in the world in terms of total operating revenues. The airliner does not only transport passengers, but it also transports cargo and does the maintenance of airplanes. But also in the Netherlands (and internationally) there is a lot of merging between firms operating in the airport industry.

## **Related industries**

### **Brazil**

Brazilian air transport is rather dependent on both domestic and international economic conditions on account of derived demand characteristics. In fact this situation is even aggravated by the recurring exchange rate devaluations in the country, which affect both the demand and the cost sides of the profit equation. Revenues suffer because Brazilians travel less internationally due to higher prices, and foreigners attracted by the country's lower prices tend to prefer their own national airlines, which normally can offer better conditions for touristic purchases. (Febeliano, Müller, & Oliveira, 2006)

### **The Netherlands**

Due to Holland's small size, domestic air travel is relatively limited. In the Netherlands, Air Transport Industry is KLM Royal Dutch Airlines is the national airline of the Netherlands and is part of Air France-KLM. KLM operates worldwide scheduled passenger and cargo services to more than 90 destinations. It is the oldest airline in the world still operating under its original name. It has 33,000 employees. (KLM Royal Dutch Airlines, 2010)

## Supporting industries

### Brazil

The air transport industry in Brazil supported by some significant aeronautic companies like Embraer. It is a Brazilian aerospace conglomerate that produces commercial, military, and corporate aircraft, and provides related aerospace services. It is the third-largest aircraft company in the world in terms of yearly delivery of commercial aircraft (behind Boeing and Airbus), and fourth-largest in terms of workforce. From 1999 to 2001 it was Brazil's largest exporter and is still one of the three main exporters in Brazil (Embraer, 2010).

### The Netherlands

Regarding the air transport supporting industries, it is remarkable the involvement of the Netherlands with Airbus since 1970. Airbus is a leading aircraft manufacturer with the most modern and comprehensive family of airliners on the market, ranging in capacity from 100 to more than 500 seats.. (Airbus official website, 2009)

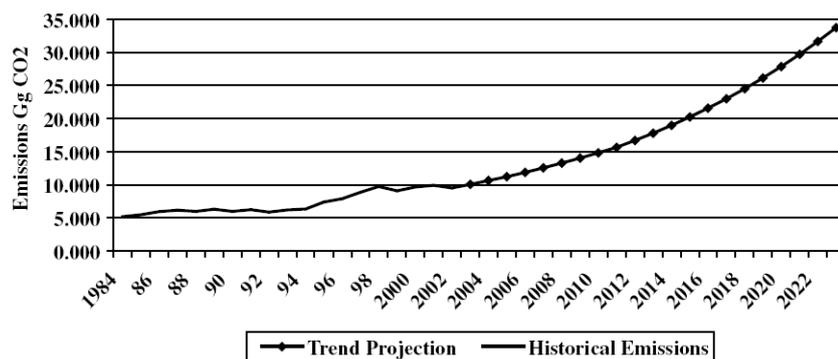
## Government

### Brazil

The growing Brazilian domestic consumer market for aviation is part of a general expansion of domestic demand across various sectors that has driven Brazil's notable emergence on the world economic stage. Brazil's aviation sector is unique and unprecedented for foreign players, giving the urgent needs and the tight calendar for improvements and expansion. (Nevistas, 2010)

Until recently, one of the most relevant characteristics of the Brazilian air transport industry was the gradual and continuous process of economic liberalization that had been initiated in the early nineties by DAC, within a broader governmental program for deregulation of the country's economy. (Febeliano, Müller, & Oliveira, 2006)

Brazilian air traffic volumes continued to grow in March 2010 as Latin America's largest economy rebounded from recession and greater competition reduced fares. Brazil's aviation sector began to expand at quite significant rates from 1994 onwards in terms of energy consumption. It is suggested that the introduction of positive structural alterations in the Brazilian economy (ushering in economic stability) was the main factor behind the recent expansion of the nation's air transportation sector. In its wake, this expansion necessarily increases concerns over environmental issues (Simões & Schaeffer, 2004).



**Figure 1 Historical evolution of CO<sub>2</sub> emissions by the air transportation sector in Brazil and trend projection for these emissions (Simões & Schaeffer, 2004)**

The next figure shows the evolution of CO<sub>2</sub> emissions in a trend projection (until 2023), based on the increase in Brazil's gross domestic product (GDP), reflecting nation's expectations.

Policies of Brazil regarding sustainable issues:

- Based on the success of the air traffic flow management (ATFM) system in the USA, Brazil has been developing its own version (GTFA- Gerenciamento de Fluxo de Tráfego Aéreo). Through sophisticated computerized methods for processing data, with high levels of accuracy on all aeronautical operations conducted in Brazil, this would also result in fine tuning the use of aviation kerosene and aviation gasoline. Consequently, an important aspect of this system is the generation of data on ideal flight altitude from the standpoint of ensuring optimum fuel consumption. (Simões & Schaeffer, 2004)

- Between 1980 and 1984 Brazil developed PROSENE, an alternative combustible lipofuel (vegetable oil) used as an alternative to aviation kerosene. Brazil ceased its National Biodiesel and Biokerosene Program because of lack of interest by energy and economic authorities. (International Civil Aviation Organization , 2007). Brazil should re-launch the PROSENE project as soon as possible. It is estimated that this strategy should result in a drop in CO<sub>2</sub> emissions by Brazil's air transportation sector of around 7.8% a year (compared to the trend projection if the blend used were 90% aviation kerosene and 10% PROSENE). Based on interviews at Brazil's Aerospace Technical Center, it is estimated that PROSENE could be fully developed by 2018 (for fuelling large commercial jets). (Simões & Schaeffer, 2004)

### **The Netherlands**

In a small European country like the Netherlands, air transport policy making by excluding the international context is very difficult. For most (European) countries, air transport is an international industry by definition. The more boundaries airplanes cross, the more international the associated air transport policy becomes. Air transport policy making in the present global industry is very complex. Not only the national and foreign governments have a say, non-governmental agencies and supra-national bodies (the EC and ICAO) also hugely influence air transport policies. (Roos, 2007)

European policies regarding sustainable aspects:

Some relevant laws and directives are mentioned here, most of them have been reviewed in some way to meet for example new emission standards for air pollution and noise, mostly due to international regulations of the EU, IMO of ICAO (United Nations, 2001):

- Plan Act Traffic and Transport (delineating procedures and division of responsibilities among different authorities with regard to traffic and transport planning);
- Passenger Transport Act (1 Jan., 2001) (new measures to introduce market principles);
- Air Traffic Act (measures on emissions and noise);
- Infrastructure Fund Act

- In terms of fuel related to air transport industry, the Netherlands is joining new European programs. In an effort to tackle aviation's small but fast-growing contribution to climate change, the EU has decided to impose a cap on CO<sub>2</sub> emissions for all planes arriving

at or departing from EU airports. Airlines would then be allowed to buy and sell 'pollution credits' on the EU 'carbon market' (Emissions Trading Scheme) (Gutierrez, 2010).

#### **Relationship between EU and Brazil in terms of Air Transport (COMMISSION OF THE EUROPEAN COMMUNITIES, 2010)**

With 4.4 million annual passengers travelling between the EU and Brazil and high growth rates of air traffic between the EU and South America, Brazil is a strong candidate for a new-generation air transport agreement on EU level.

In 2007, Brazil and the EU agreed to establish a strategic partnership. Brazil is an important partner for the EU sharing not only close historic, cultural and commercial ties, but also sharing a capacity to make a difference in addressing many global challenges such as climate change and others. Strengthening air transport links between the EU and Brazil will be essential to facilitate trade, investment, tourism and personal exchanges with one of our strategic partners.

An air transport agreement between the EU and Brazil would reinforce high standards of safety, security and environmental protection for air services. In the field of aviation safety, a specific agreement is currently being negotiated aiming at close regulatory cooperation and in particular the reciprocal recognition of certification findings in the field of aviation safety and environmental compatibility.

#### **Chance Brazil**

The factor chance can have a big influence in the Air Transport industry. When analyzing industry divisions, this factor has to be taken into account. Some positive influences for Air Transport Industry are:

- Incoming events in Brazil

Air travel will be the main transport method for most of the World Cup fans in 2014. The number of passengers using the air network is expected to double during the month of the World Cup from about 4 million to about 8 million, but demand for air travel in general is increasing in Brazil at a rate of around +5% a year, so any investment is beneficial in the long term development of Brazil as well (World Cup Brazil 2014, 2010).

- Economic Boost

The capacity of the main Brazilian airports will be soon fully utilized, given the high average annual growth rate of air traffic (approximately 15% in the 2004–2006 period). The worst case is that of São Paulo International Airport, which has already reached a throughput of 17 million passengers annually, with a design capacity of only 12 million. indicates that there is a lack of planning structure to support long-term investment in the air transport infrastructure.

#### **The Netherlands**

- New environmental policies (United Nations , 2010)

Innovative transport policies with an integrated approach can turn the challenges of the financial crisis into opportunities, also in the Netherlands. They are expected to adopt action points for policy-makers that help address the key challenges to the economy, health

and the environment. They are looking at the Transport, Health and Environment Pan-European Programme (THE PEP) as a platform for making proposals:

- to advocate and stimulate economic investment in energy-efficient and low-emission vehicles and technology, and environmentally friendly transport modes and infrastructure, particularly in urban settings; and
- to make health and environmental considerations a more explicit criterion for decision-making on transport.

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