

# The Current Situation and Change in Airport Revenues: Research on The Europe's Five Busiest Airports

Ünal BATTAL

Faculty of Aeronautics and Astronautics, Anadolu University, Eskişehir, Turkey  
E-mail: ubattal@anadolu.edu.tr

Mahmut BAKIR

Faculty of Aeronautics and Astronautics, Anadolu University, Eskişehir, Turkey  
E-mail: mahmutbakir@anadolu.edu.tr

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## Abstract

To receive support is crucial among youth in order for them to achieve success in life as it With the globalization and the Airline Deregulation Act in 1978, there has been a great deal of change and development around the world in airports. Airport revenues and airport commercial activities are among the areas where this development is most felt. Over time, the airport operators went through changes in their commercial activities, with the increase in aeronautical revenues and non-aeronautical revenues, and at the same time proportional change was observed as well.

In this study, based on official data, the structure of aeronautical revenues and non-aeronautical revenues belonging to five of Europe's busiest airports in terms of number of passengers was evaluated by vertical percentage analysis and trend analysis method. In the scope of the study, the financial data of the selected five airport operators for the period between 2008 and 2015 were examined and it was aimed to determine the financial status of the airports and the change by years. Besides, the financial situation of the airports has been reviewed and some suggestions have been made.

**Keywords:** Airport Revenues, Aeronautical Revenues, Non-aeronautical Revenues, Trend Analysis, Vertical Percentage Analysis

## 1. Introduction

With the globalization and the Airline Deregulation Act in 1978, the airports have entered a period of great change (Kim & Shin, 2001). In 2015, 3,545 billion passengers travelled by air around the world (IATA, 2015). It is predicted that this figure will increase by around 4% every year (Boeing, 2015). These developments in aviation are also taking place at airports to meet

increasing demand. Along with this change, airports need to increase capacity and improve infrastructure activities. Therefore, to meet their costs and contribute to future investments, airports need to generate revenues (Halpern & Graham, 2013).

Airport revenues show a great improvement with commercialization. From the mid-1990s, airports began to focus on non-aeronautical revenues. They have started to create opportunities for commercial revenues such as rent, concession, parking and consulting (Francis, Humhreys, & Ison, 2004). In recent years, non-aeronautical revenues have increased significantly (Francis et al., 2004; Bilotkach, Clougherty, Mueller, & Zhang, 2012; Graham, 2009; Fuerst, Gross, & Klose, 2011).

When the studies are examined, it is observed that studies on airport income-cost structures are predominantly investigated, as well as studies emphasizing the importance of non-aeronautical revenues. Some studies have indicated that non-aeronautical revenues have increased steadily and the share of non-aeronautical revenues in general incomes has exceeded the share of aeronautical revenues. In this regard, this study aims to empirically examine the validity of the related detection based on the data for years 2007-2015. In addition, the use of the five busiest airports in Europe as a sample in the study is also very important in that it is the first in the literature.

The rest of the paper is organized as follows. In the section 2, the theoretical knowledge on airport revenues and revenue sources is given. In the section 3, a literature research is given. In the section 4, the methods used in the study are briefly introduced and implemented. In the last section of the study, findings are evaluated.

## **2. Airport Revenue Sources**

Airport is a field that includes land or water-based installations and facilities intended for the use of aircrafts in whole or in part, for the landing, take-off and surface movements (ICAO, 1999). At the same time, the facilities are complex structures designed to serve aircrafts as well as passengers, cargo facilities and other vehicles (Wells & Young, 2004).

Airports are generally divided into two components depending on the functions and facilities involved. These are the air side and the land side. Air side is an area allows for the loading and unloading of aircrafts and is not allowed to enter without permission and the land side is an area that remains out of the air side (ICAO, 2008). It consists of passenger and cargo terminals and the rest areas which do not include the air side. Airport revenues consist of aeronautical (operation related) revenues and non-aeronautical (commercial related) revenues (Doganis, 1992). It can be said that this classification in this way is shaped according to the operating airport and components. While aeronautical revenues are related to aircraft operations, the passenger and freight transport process, non-aeronautical revenues consist of revenues such as ground allocation revenues, leases, parking fees, commercial activities and so on which are not directly related to aircraft operations, mainly at the airport and terminal (Graham, 2008).

Table 1. Airport Operating Revenue Sources

Aeronautical Revenues (RA)	Non-aeronautical Revenues (NRA)
•Landing fees	•Retail
•Passenger fees	•Food and beverage (F&B)
•Aircraft parking fees	•Car hire
•Handling fees (if handling is provided by the airport operator)	•Advertising
•Terminal rental fees (e.g. in USA)	•Car park
•Other aeronautical fees (air traffic control, lighting, air bridges etc.)	•Recharges (for gas, water, electricity etc.)
	•Other non-aeronautical revenue (consultancy, visitor and business services, property development etc.)

Source: Graham, Anne (2013) 'Managing Airports', Routledge, s. 75.

### 2.1. Aeronautical Revenues

Aeronautical activities are activities that take place in areas such as airports and terminals where airlines operate. Traditionally aeronautical revenues include landing fees, passenger service charges, parking and hangar fees, ground service charges if provided and cleaning fees (Doganis, 1992). These fees are often collected by airline operators through the " Airport Use Agreements " (Battal, 2006).

**Landing Fees:** Most airports use the maximum take-off weight to calculate landing fees (Graham, 2008). But apart from this calculation, many different charge formulas are applied from airports around the world.

- The most commonly used method is to charge the aircraft with a fixed unit price of the weight regardless of the size of the aircraft.

Since large-sized aircraft reduce the number of aircraft that can use the airport, the airports are required to charge more than large-sized aircraft. Some airports use different systems. For instance (Graham, 2008);

- Heathrow Airport has a fixed charge system and a fixed charge is applied to all aircraft over 16 tons. This is a negative situation for airlines that fly to Heathrow Airport with small planes.
- Copenhagen Airport charges at half the unit price per ton in aircrafts that are over 200 tons.

Looking at these examples, it can be seen that the airports have developed different types of remuneration to manage demand. For example, some airports have regulations to keep small planes away from busy airports. Some airports, like Manchester, also differentiated their day-to-day charging mechanisms (Graham, 2008). In some airports, also air traffic control fees and terminal navigation services are included in the landing fees. In some cases, there is a separate charge for this. However, since these services are provided by another institution, the charges are based on company's fee system rather than on aircraft movement (Graham, 2008).

While the landing fees are calculated, they can be charged under the heading of noise as in Germany, Switzerland and Norway. This fee varies with the hours of the day, especially with the nights being very high. It is usually included in the landing fee (Graham, 2008). The main objective of noise charges is to cover the cost of noise reduction measures that airport operators are forced to comply with. These measures include a series of sanctions, such as the installation of noise monitoring equipment, and the provision of noise insulation of airport near structures (De Neufville, Odoni, Belobaba, & Reynolds, 2013).

In addition, emission fares are included in the landing fees in Zurich, Geneva, Arlanda and Brama airports (Graham, 2008). Emission fees will become much more widespread as concerns over air quality become more pronounced in the coming years (De Neufville et al., 2013). This is because of the competitive environment of the changing airports and the new challenges. Because increased demand for services and quality at airports are under ecological, environmental impacts and increased security costs pressure (Graham, 2008).

**Passenger Service Charges:** One of the most important revenue items in aeronautical revenues is service charges per passenger. They are made per outgoing passenger. Different pricing techniques are used when making these charges at world airports. In most airports, domestic flight passengers are lower charged. This is due to the fact that the costs of domestic operations are lower and the domestic carrier is financially easier (Graham, 2008). An interesting application for passenger fee is also seen in some German airports such as Düsseldorf and Frankfurt airports. According to this, if the annual load factor of the airlines exceeds 80%, the airlines are discounted (Graham, 2008).

**Security Charges:** Airport security activities have become a priority issue worldwide, especially after the September 11 attacks, and the security level has been continuously improved. These activities are provided by state, local governments, airport staff or a mix of them (Graham, 2008). Increased security costs, including new security equipment and personnel recruitment, pose a huge burden on airlines and passengers (De Neufville et al., 2013). This situation causes different rates for countries, cities and airports.

**Ground Services and Fuel Charges:** Airports charge airlines for ground handling services, which are separated as passenger, ramp and operation services. Ground handling services can be provided either by the airport authority or by specialized private companies. Or these services can be provided by other airlines. The same is also true in aircraft fuels. Aircraft fuels can be given by fuel companies or airport authority. For Example: in Abu Dhabi Airport the fueling is provided by a state agency which is in cooperation with the state government (Graham, 2008). If the airport operator owns ground handling services and fuel distribution activities in their own right, these can be counted as aeronautical revenues.

**Aircraft Parking Charges:** These charges affect airport revenues at a lesser rate than landing and passenger service revenues. In some airports the parking charges are based on the maximum take-off weight and some on the wing span, while some airports charge according to the size of the parking area while some airports charges a certain percentage of the landing fee (Graham, 2008). Another variable in charging is hourly, daily and monthly parking periods. While there is usually a charge for parking that exceeding 4 hours, such an implementation is not provided to reduce new take off times in London and Frankfurt airports (Graham, 2008).

**Other Aeronautical Charges:** There are other fee items that are not as high as these fees, except for the mentioned fees. They are lighting revenues, fire department revenues, hangar charges etc... Lighting revenues are generally collected within the landing fees.

## 2.2. Non-Aeronautical (Commercial) Revenues

Non-aeronautical revenues are all commercial revenue sources operating on terminal and airport land, which are not directly related to aircraft operations (Doganis, 1992). They are rental incomes, ground allocations, retail sales incomes (gained from Duty-Free sales, catering etc...), car park, renting car, electricity-water-natural gas charges and other commercial incomes. Besides, some airports also carry out different facilities like swimming pools,

bathrooms and karaoke (Kim & Shin, 2001; Geuens, Vantomme, & Brengman, 2004). After the deregulation in 1978, many airports experienced an increase in non-aeronautical revenues. This is due to the fact that many general aviation airports experienced declines in flight numbers and fuel sales, and therefore they tried to create new opportunities to increase their revenues, as a result of the current of globalization and commercialization, the emergence of low cost airlines and the fall of aeronautical revenues with state regulations (Kramer, 2010; Fasone, Kofler, & Scuderi, 2016).

Like in figure 1, there are some transitions in the airport business model. In the 1970s, airports provided infrastructure services to support services and airlines, while in the 1980s and 1990s, airports developed a wide range of activities including retail outlets, restaurants, and ground allocation for customer service activities. In the present case, the airports are diversified and turned into airports which have their revenue stream in their portfolio (Kramer, 2010).

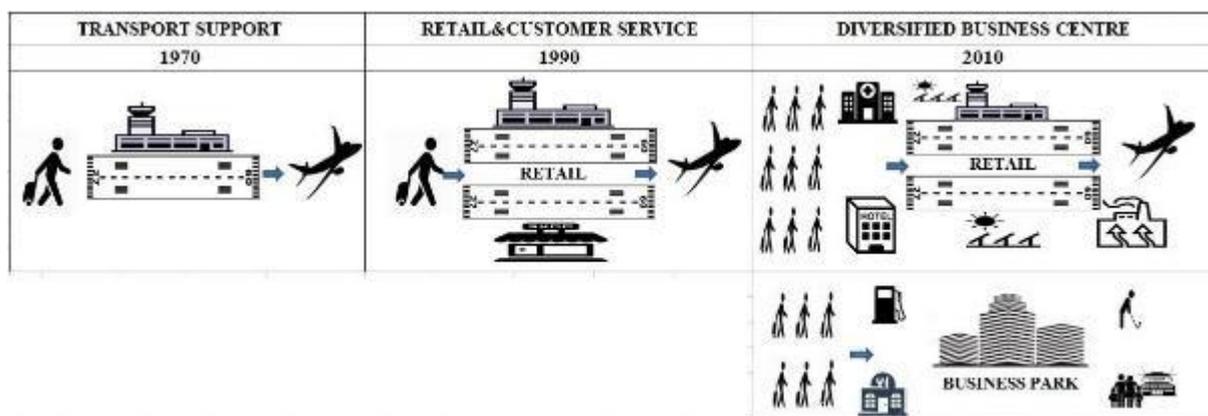


Figure 1. Transformation of the airport business

Source: Kramer, L.S. (2010) 'Airport Revenue Diversification'. Washington: Transportation Research Board, s. 8.

**Terminal Area Concessions:** Airports are home to a range of revenue sources including special product areas (Duty-Free, Souvenir shops, bookstores and banks), food and beverage areas (restaurants, cafeterias), travel services (car rental, insurance services), personal service areas (showers, hairdressers, beauty centers), office rental and advertisements within the terminal (Asford, Mumayiz, & Wright, 2011). Concession fees usually include operating costs for these facilities located at the passenger terminals. These fees may be a fixed amount of rent according to the allocated area or a percentage of the share of the sales (De Neufville et al., 2013).

**Car Parking Areas:** Parking and car rental fees have become an increasing source of revenues for airports all around the world. It is the biggest commercial revenue source in USA. The airport operator can build the parking facility by building it, rent it to a company or evaluate it by build-operate-transfer method (De Neufville et al., 2013).

**Airline Leased Areas:** There can be a considerable income in the terminal and in various parts of the airports by renting to the airlines. These revenue sources include the offices used by airlines, ticket sales banks and ticket control counters, maintenance areas, hangars used, and advertisements for various locations in the airport (Asford et al., 2011).

**Other Leased Facilities:** Airports also generate revenue from a number of sources, including industrial sites, fuel and service facilities, and storage facilities (Asford et al., 2011). Airport

fuel suppliers generally charge concession fees based on a certain percentage of their income (De Neufville et al., 2013).

### **3.Literature Review**

There have been many studies done about airport revenues and revenue resources (Wells & Young, 2004; Doganis, 1992; De Neufville et al., 2013; Graham, 2008; Asford et al., 2011). Gillen and Martin (2014) have examined the balance between airport non-aeronautical revenues and aeronautical revenues in a study where the importance of non-aeronautical revenue of specialized airports is emphasized. If the potential for non-aeronautical (commercial) revenues is not sufficient, airport operators should proceed to improve aeronautical revenues.

Bilotkach et al. (2012) analyzed the factors that determine the aeronautical charges of 61 European airports consider revising 1990-2007 with the panel data analysis by using "German Airport Efficiency Project" (GAP Project) data. The results show that aeronautical charges are lower at airports and private airports that use single-till system. In addition, charges are not falling due to high demand in the airports used as hubs.

It is anticipated that higher aeronautical charges will bring more aeronautical revenue, but lower charges will increase the number of passengers to be converted into commercial revenues thanks to increasing number of flights (Kratzsch & Sieg, 2011; D'Alfonso, Jiang, & Wan, 2013). Kratzsch and Sieg (2011) also concluded that aeronautical charges would be more tolerable as additional non-aeronautical revenues were obtained for airports that were not very busy in operation.

According to Graham (2009), the share of non-aeronautical revenues in all revenues has increased over the years in the study that focuses on the importance of non-aeronautical revenues today. In the study examining 20 European airport data, it was determined that non-aeronautical revenues reached 41% in 1983 and 50% in 1998.

Saounatsos (2007) examined aeronautical revenues of 70 airports around the world. Based on IATA fare schedules, the costs for a flight operation with a Boeing 777-200 were evaluated taking into account each charge rate. This study emphasizes the need to cooperate with airports and airlines and concludes that airports need to improve their non-aeronautical revenues while aeronautical charges need to remain at a certain level for competition.

Van Denver (2007) examined airport charges and revenue structure and conducted an econometric model, and found that non-aeronautical revenues of 55 major US airports were more than half of all incomes between 1998 and 2002.

Graham (2008) examined European airports' revenues and cost structures. In the study, aeronautical revenues and non-aeronautical revenues between 1983 and 2007 were given proportionally and it is seen that non-aeronautical revenues increased.

Francis et al. (2004) emphasized that non-aeronautical activities are more advantageous than aeronautical operations in European airports in the study that examined the development of low-cost airlines and their relationship with airport-airline operators. Oum, Adler and Yu (2006) also show that the share of non-aeronautical revenues is much higher than aeronautical revenues in the private airports.

Fuerst et al. (2011) examined aeronautical revenues and the amount of non-aeronautical revenues per passenger by airports in the study based on the leading Europe airports. It is concluded that the amount of aeronautical revenue per passenger was higher in busy airports.

Focusing on non-aeronautical revenues as a strategy to increase airport revenues and the subsidization of aeronautical revenues through non-aeronautical revenues have been proposed many times (Zhang & Zhang, 1997; Niemeier, 2002; Czerny, 2006).

The revenue structure also varies in the continents, even in countries and even at airports. For instance, the proportion of non-aeronautical revenues accounts for more than half of all revenues at airports in North America and Africa / Middle East, 46-48% in all revenues in Asia-Pacific and about 30% in Latin America. Among the non-aeronautical revenues composed of many activity items, the most important sources are retail sales with 22%, real estate with 19% and car park revenues with 18% (Graham, 2008; Fuerst et al., 2011).

When the studies done are examined, it is seen that the airport cost-revenue structures are examined mainly. There are also many studies that emphasize the importance of non-aeronautical revenues and balance between aeronautical revenues and non-aeronautical revenues.

#### **4.Methods and Findings**

In this study, it is aimed to show the annual change of aeronautical revenues and non-aeronautical revenues of airports to examine the structural condition of airport revenues. In this study covering 2008-2015 years, passenger numbers were taken from the Airline Business Magazine (Airports Rankings , 2009; 2010; 2011; 2012; 2013; 2014; 2015; 2016), and aeronautical revenues and non-aeronautical revenues were obtained from annual reports and activity reports of related airports (Heathrow Airport Financial Results, 2016; Aeroport de Paris Financial Information, 2016; Aeroport de Paris AMF Information, 2016; Fraport Annual Reports, 2016; TAV Airports Activity Reports, 2016; Schiphol Airport Annual Reports, 2016).

Within the scope of the study, aeronautical revenues and non-aeronautical revenues of 5 airports with the densest air traffic in Europe (London Heathrow Airport, Paris-Charles de Gaulle Airport, Istanbul Atatürk Airport, Frankfurt Airport and Amsterdam Airport Schiphol), which make up about 27% of the world air traffic (Airport Rankings, 2016) were specified by years and two different analyses were made on the obtained data. In this scope; the percentage change of these revenues in all revenues has been examined by years and also the base year has been selected and analyzed by trend analysis method.

##### **4.1. Percentage Analysis**

The vertical percentage analysis or analysis of percentage method is known as the method by which one of the financial amounts to be analyzed is accepted 100 and the other amounts are included in this whole (Gökçen , 2004). It can be applied for one year or more than one year. As a result of the analysis performed by vertical percentage analysis, it is stated that the financial statement accounts are weighted according to the sum of the groups or classes and it makes it easier for the enterprises to compare with each other according to the financial performance criteria, competing businesses or sectoral basis (Ceylan & Korkmaz, 2006).

It is observed that the passenger traffic has increased since 2008 (Table 2).

Table 2.

Distribution of airport passenger numbers by years (million)

Years	Heathrow	Charles Gaulle	de Frankfurt	İstanbul Atatürk	Schiphol
2008	66,9	60,8	53,4	28,7	47,4
2009	66	57,8	50,9	29,8	43,5
2010	65,8	58,1	53	32,1	45,2
2011	69,4	60,9	56,4	37,3	49,7
2012	70	61,6	57,5	45,1	51
2013	72,3	62	58	51,1	52,5
2014	73,4	63,8	59,6	56,9	54,9
2015	75	65,7	61	61,3	58,2

Source: Data are taken from airports web sites and Airline Business magazine

As shown in Table 2, the number of passengers in all airports increased, while the number of passengers at Istanbul Atatürk Airport increased significantly. In 2008-2015, the number of passengers in Heathrow increased by 12.1%, Charles de Gaulle increased by 8.05%, Frankfurt Airport increased by 12.33%, Schiphol increased by 22.78% and Istanbul Atatürk Airport increased by 113.5%. This situation naturally accompanies an increase in the revenues of the airports. When the changes in airports' revenues are examined by years, it is seen that there is an increase in the number of passengers (Table 3).

Table 3.

Distribution of airport revenues by years (2008-2015)

Airports / Years	Heathrow (m £)		Charles de Gaulle (m €)		Frankfurt (m €)		İstanbul Atatürk (m €)		Schiphol (m €)	
	AR	NAR	AR	NAR	AR	NAR	AR	NAR	AR	NAR
2008	835	693	1352,1	1076,7	1354,5	747,1	446,7	641,6	644	509
2009	961	736	1429,4	1083,3	1304,5	668,1	526	706,2	676	479
2010	991	864	1449,5	1033,4	1352,5	842,1	639,8	778,6	689	491
2011	1150	745	1504,5	1082,7	1430,4	940,8	858,5	1028,5	745	533
2012	1280	942	1581,1	1154,9	1472,7	969,3	849,8	923,7	788	565
2013	1523	951	1644,9	1213,9	1494,6	881,1	996,8	1066,1	816	566
2014	1683	1010	1671	1220	1540,4	854,2	1235,4	1297,5	864	574
2015	1699	1046	1735	1182	1600,4	998,5	1441,7	1525,3	869	554

Source: Data were obtained from airport operators' annual reports and annual financial status reports (AR: Aeronautical Revenues, NAR: Non-Aeronautical Revenues)

As seen in Table 3, five airports have significantly increased both aeronautical revenues and non-aeronautical revenues over the years. The most significant increase is seen in Heathrow Airport and Istanbul Ataturk Airport revenues. As a result, aeronautical revenues have increased over the years and non-aeronautical revenues have increased, but the ratio tended to decrease over the years (Table 4).

Table 4.

Proportional distribution of aeronautical revenues and non-aeronautical revenues by years

Year	Heathrow		Charles de Gaulle		Frankfurt		İstanbul Atatürk		Schiphol	
	RA	NRA	RA	NRA	RA	NRA	RA	NRA	RA	NRA
	<i>(Percentage)</i>									
2008	54.64	45.35	55.66	44.33	64.44	35.55	41.08	58.91	55.8	44.19
2009	56.62	43.37	56.88	43.11	66.12	33.87	42.69	57.3	58.51	41.48
2010	53.42	46.57	58.38	41.61	61.62	38.37	45.13	54.86	58.38	41.61
2011	60.68	39.31	58.13	41.86	60.31	39.68	45.49	54.5	58.29	41.7
2012	57.6	42.39	57.78	42.21	60.31	39.68	47.94	52.05	58.24	41.75
2013	61.56	38.43	57.53	42.46	62.92	37.07	48.32	51.67	59.04	40.95
2014	62.49	37.5	57.8	42.19	64.32	35.67	48.77	51.22	60.08	39.91
2015	61.89	38.1	59.47	40.52	61.58	38.41	48.6	51.39	61.06	38.93

Source: The data is compiled from information from websites of related airports

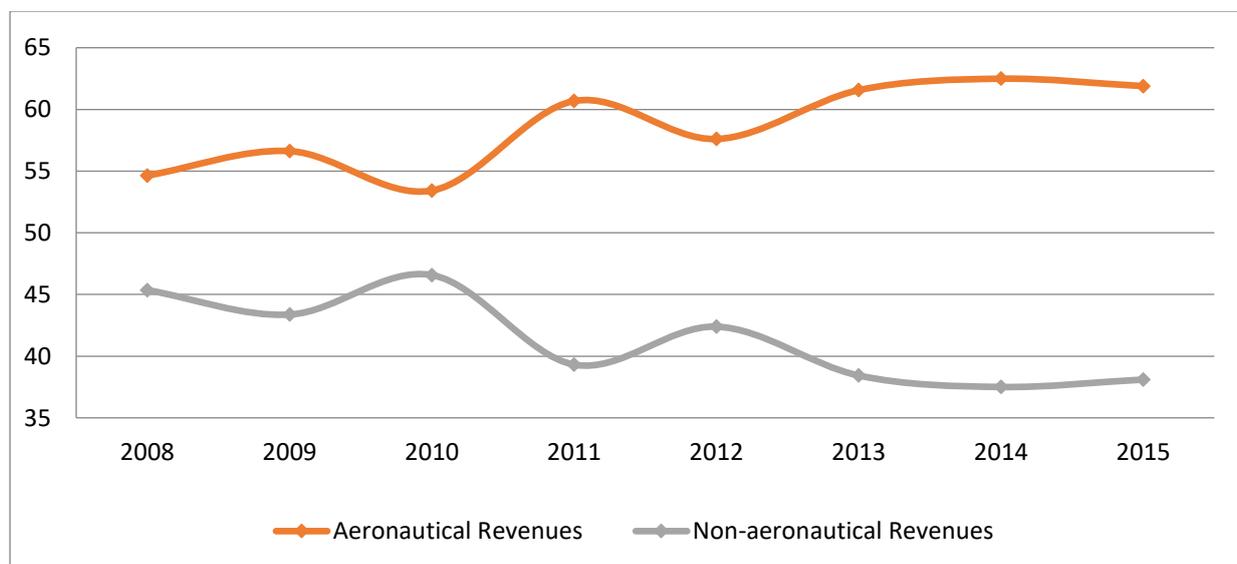


Figure 2. Heathrow Airport Revenues

With approximately 75 million passengers in 2015, the fifth busiest airport in the world and the busiest airport in Europe, Heathrow airport, has a fluctuating structure over the years. At the end of 2015, Heathrow airport increased aeronautical revenues by about 104%. Similarly, non-aeronautical revenues increased by about 51% (Heathrow Airport Financial Results, 2016). In the seven years period, both aeronautical revenues and non-aeronautical revenues followed a fluctuating course. Aeronautical revenues accounted for 54.6% of all revenues in 2008, up to 61.8% in 2015. Non-aeronautical revenues account for 45.3% of all revenues in 2008, down to 38.1% in 2015 (Figure 2).

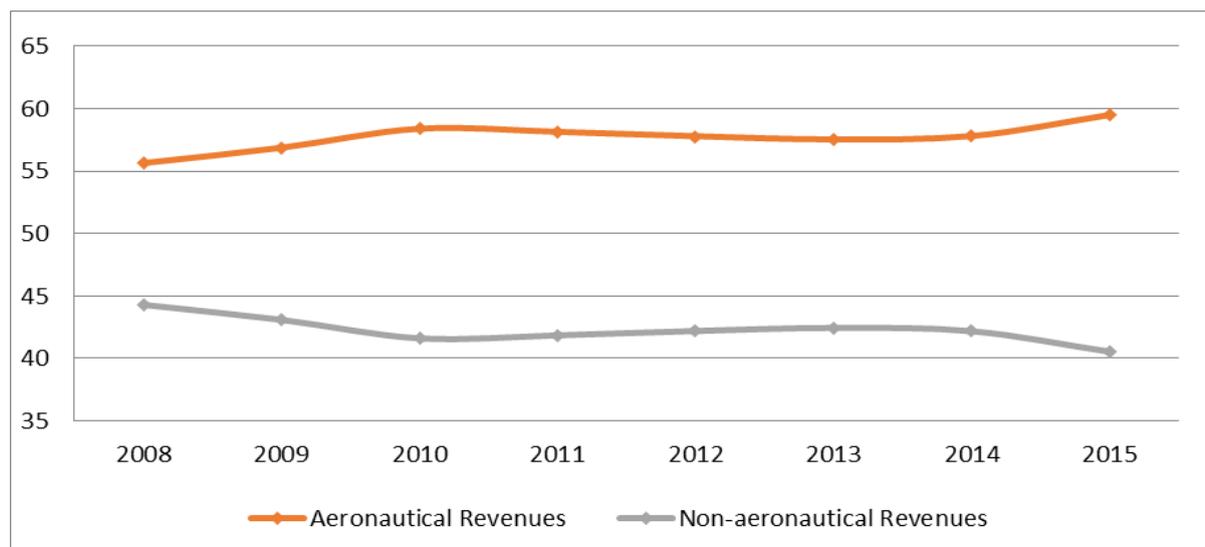


Figure 3. Charles de Gaulle Airport Revenues (CDG + ORLY)

As seen in Figure 3, Charles de Gaulle Airport provides about 56% of its revenues from aeronautical sources in 2008, up to 60% by 2015. Similarly, although non-aeronautical revenues increased by about 8% in 2015 compared to 2008, the share of total revenues declined from 44% to 40% over 8 years (Aeroport de Paris Financial Information, 2016; Aeroport de Paris AMF Information, 2016).

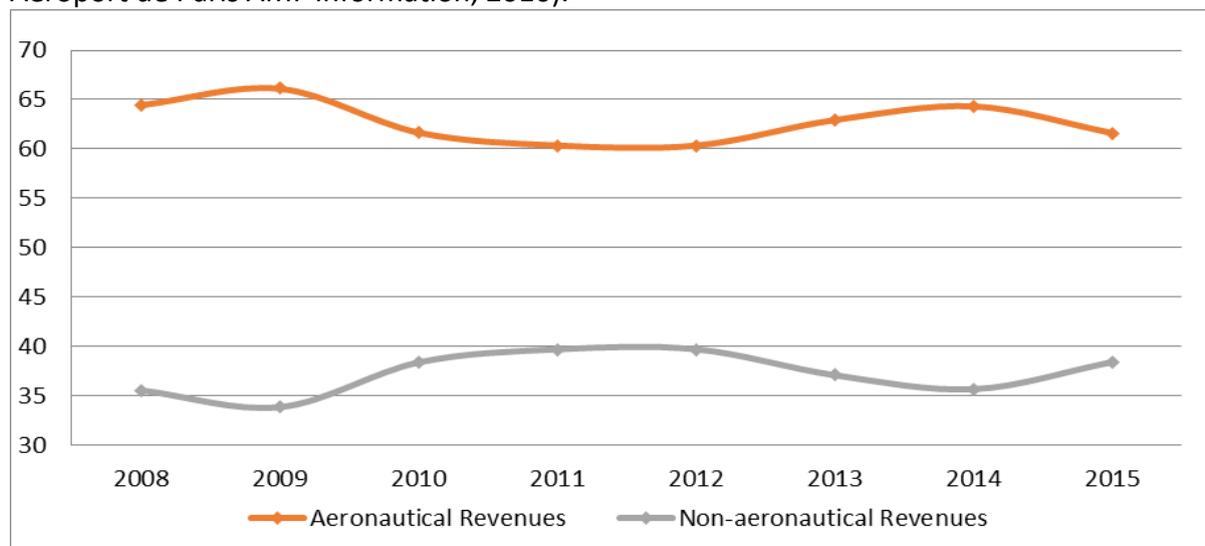


Figure 4. Frankfurt Airport Revenues

As seen in Figure 4, the changes in Frankfurt Airport revenues follows a fluctuating structure. Non- aeronautical revenues, on the other hand, increased by 33.6%. The non-aeronautical revenues also make up the share of all revenues in the course of 8 years from 35% to about 39% (Fraport Annual Reports, 2016).

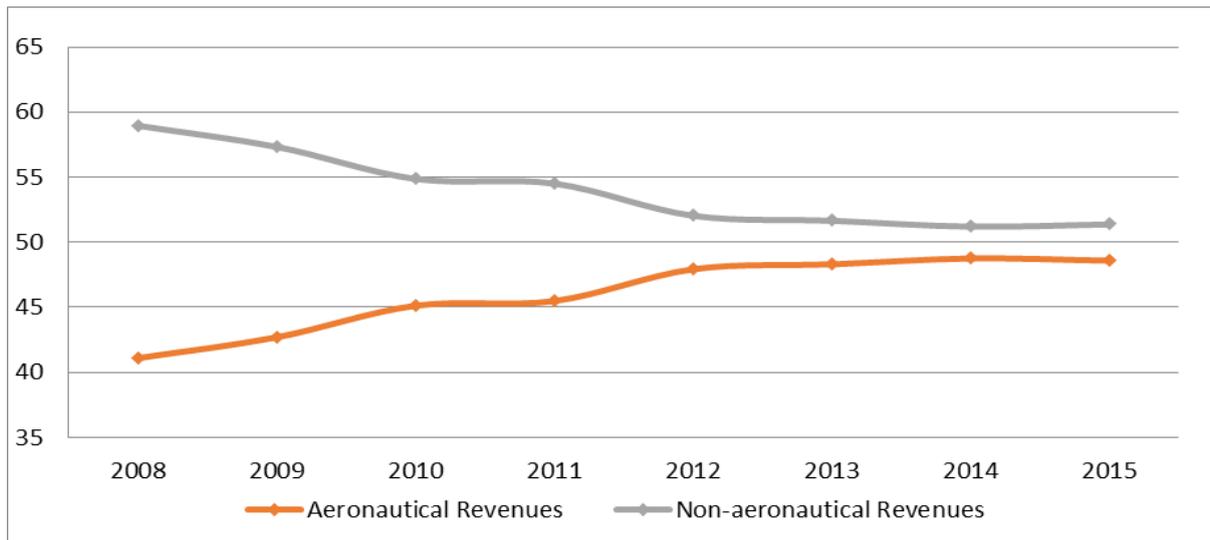


Figure 5. Istanbul Atatürk Airport Revenues (TAV General Activities)

As seen in Figure 5, Istanbul Atatürk Airport has started to increase the number of passengers seriously with the development of Turkish Airlines in 2008, such as membership of Star Alliance, new aircraft purchases and increasing number of flight points. It was used by 28,7 million passengers in 2008 and 61,3 million passengers in 2015. In this period, aeronautical revenues increased by 28.3%. By contrast, the ratio of non-aeronautical revenues to all revenues declined from 59.3% in 2008 to 51% by the end of 2015 (TAV Airports Activity Reports, 2016).

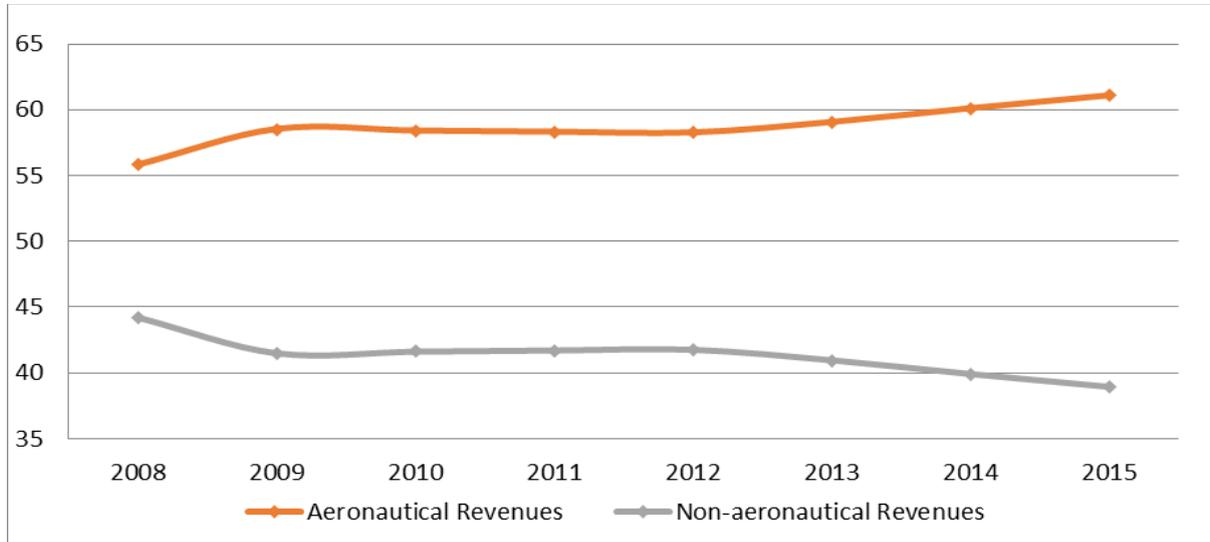


Figure 6. Schiphol Airport Revenues

Figure 6 shows that Schiphol Airport, which has increased its number of passengers by more than 10 million since 2008, has increased its aeronautical revenues by 35% and non-aeronautical revenues by about 9%. In 8 years from 2008 to 2015, the ratio of non-aeronautical revenues to total revenues decreased by 0.2% (Schiphol Airport Annual Reports, 2016).

## 4.2. Trend Analysis

Trend analysis is a financial analysis using firms long running data to identify business' progress or worsening in financial situations (Weston, Besley, & Brigham, 2004). With a trend analysis used in the analysis of financial statements, any year is selected as a base year and the account values of that year regarded as 100. In the following years, the values in the same heading are divided by the base and percent changes are calculated (Akcanlı, Soba, & Kestane, 2013) If the base year value is smaller than the value of following year, trend percentage is above 100%; whereas if greater than following year, trend percentage is smaller than 100% (Akgüç, 2013).

Table 5 was prepared when the revenue structure of the airports between 2008 and 2015 was analyzed by trend analysis method.

Table 5.

Distribution of Airport Revenues by Trend Analysis Method (2008-2015)

Airports		2008	2009	2010	2011	2012	2013	2014	2015
<b>Heathrow</b>	AR	100	115.08	118.68	137.72	153.29	182.39	201.55	203.47
	NAR	100	106.2	124.67	107.5	135.93	137.22	145.74	150.93
<b>Charles de Gaulle</b>	AR	100	105.69	107.17	111.24	116.93	121.67	123.59	128.32
	NAR	100	100.55	95.91	100.55	107.24	112.72	113.27	109.74
<b>Frankfurt</b>	AR	100	96.3	99.85	105.61	108.78	110.41	113.73	118.16
	NAR	100	89.42	112.71	125.97	129.71	117.93	114.32	133.6
<b>İstanbul Atatürk</b>	AR	100	117.67	143.17	191.94	190.15	223.04	276.28	322.59
	NAR	100	110.14	121.37	160.37	143.99	166.3	202.34	237.9
<b>Schiphol</b>	AR	100	105.12	106.98	115.68	122.36	126.7	134.16	134.93
	NAR	100	94.11	96.27	104.5	110.78	110.98	112.54	108.62

Source: The data is compiled from information from websites of related airports

When trend analysis of airports is examined, it is seen that Heathrow Airport regularly increases aeronautical revenues. With no decline in any year, by 2015, this revenue has increased by about 103% compared to 2008. Non-aeronautical revenues also continued to rise in the process despite a decline in 2011. At the end of the 2015, Heathrow Airport increased its non-aeronautical revenues by about 51%. When Charles de Gaulle Airport data was analyzed, there was no decline in aeronautical revenues between 2008 and 2015, and it continued to increase every year. At the end of 2015, it is seen that the growth rate of 7 years is about 29%. However, the development shown in non-aeronautical revenues has remained at 9%. There was a decline between the years 2008-2011; in 2011, it reached 2009 level, and from this year non-aeronautical revenues increase continued every year.

Despite the fact that aeronautical revenues have been steadily increasing in both examples, this has not happened to all airports. Frankfurt Airport, for example, experienced a decline in its aeronautical revenues in 2009, however this situation has recovered and by the end of 2015 has achieved 18% growth in seven years. It may be said that the situation in those years is related to the economic stagnation in Europe. When the non-aeronautical revenues are

examined, it seems that there has been a similar decline in the related years. However, this situation began to change in 2010, and even though there is a decrease compared to the previous year in 2013, the growth rate in seven years is 33.6%.

Istanbul Ataturk Airport became an important transfer point in 2008 with the developments of Turkish Airlines' Star Alliance membership, making new aircraft purchases and increasing the number of flight points, and has experienced a serious passenger increase in this period. Istanbul Ataturk Airport increased its aeronautical revenues every year in the period between 2008 and 2015 and recorded a record growth of 223% at the end of 2015. The same trend has been observed in non-aeronautical revenues. At the end of the seven-year period, non-aeronautical revenues grew by 138%.

There is no decline in aeronautical revenues when Amsterdam Schiphol Airport is examined. On the contrary, this rate has increased steadily. By the end of 2015, growth was 35% compared to 2008. When it comes to non-aeronautical revenues, it has followed a fluctuating course over the years. After the downturn in 2009, revenues started to rise again and the level of 2008 was overcome in 2011. After the increase in 2014, revenues fell again and the 7-year growth rate was measured as 8.6%.

When all the airports are evaluated, it is seen that the revenues of the airports increase. Despite the decline in passenger traffic at other airports except Istanbul Atatürk Airport in the 2008-2009, this situation was hardly felt when it comes to revenues. The decline has only been experienced at non-aeronautical revenues at Frankfurt Airport and Schiphol Airport.

## **5. Conclusion and Evaluation**

There were limitations in obtaining data in this study. It was difficult to obtain data when the proportion of aeronautical revenues and non-aeronautical revenues of Europe's five busiest airports were analyzed by years. Since the airports that are the subject of the study are owned by the airport groups (such as TAV - Atatürk Airport), their revenues could not be reached therefore the general financial status of the airports operating within the company has been examined. In the same way, two airports have been reviewed together because the company has been providing financial data revenue structure of Charles de Gaulle Airport. However, it is thought that this study will contribute to the future study despite the limited data of this study.

As a result, the airports have undergone a structural transformation with liberalization, commercialization and globalization. In these transformation phases, both the revenue sources and revenue types of the airports have increased and the revenue they have earned has increased. In this period, there has been a serious development in the increase of non-aeronautical revenues.

Studies conducted so far indicate that non-aeronautical revenues have increased steadily, and they have exceeded aeronautical revenues on a proportional basis. However, as seen in this study, when the growth rates and proportional changes of the revenue sources for the five airports are examined, it is noteworthy that the increase rate of non-aeronautical revenues is lower than the ratio of aeronautical revenues between 2008 and 2015. As seen in the study, the airports increased their revenues every year, but the share of aeronautical revenues in all

revenues was found to be higher in the five busiest airports in Europe. As non-aeronautical revenues rise every year, the proportion of non-aeronautical revenues has gradually decreased since the amount of increase is lower than the increase in aeronautical revenues.

Considering the increase in passenger numbers at airports, this would be great benefit in meeting the financial resource needs of businesses if it is evaluated the non-aeronautical revenues and creating new source of revenues. In addition, with the increase in non-aeronautical revenues, aeronautical revenues can be subsidized through increasing non-aeronautical revenues and the load factor of airline companies can be increased. Thus, airports may increase the number of passengers by increasing load factor, and the contribution of increasing passengers to non-aeronautical revenues may be much larger.

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