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RUNWAY CHARGES – AIRPORT MANAGEMENT PERSPECTIVE

Abstract

Airport charges that make up airports' aeronautical revenue generate more than fifty per cent of total airport revenue. At most airports runway charges are the second largest source of aeronautical revenue making them an important tool for airport managers. Although there are some general rules in force that set out the principles according to which these charges should be set airport managers are given a lot of freedom in terms of particular solutions. In this paper we present various potential applications of runway charges as means of achieving operational and strategic management goals. By analyzing charging schemes of more than 50 airports in EEA countries conclusions were drawn regarding the extent to which this type of airport charge is used as an operations and strategic management tool.

Keywords: airport charges, airport management, strategic management, operations management

JEL: R41, K23

Introduction

Airports' financing is generally dependent on two sources of income: sales of aeronautical services and income from non-aeronautical activities (Graham, Morrell, 2017). Recently, globally the share of these two main revenue sources for airports has been almost evenly split (Halpern, Graham, 2013). Airport charges, as they are levied on aeronautical services, constitute an important part of airport income.

The way of financing airports depends on the business model adopted which can be treated as a reflection of a strategy (Casadesus-Masanell, Ricart, 2007). In this context revenue streams should not be treated solely as a profit generator. Being one of the business model components (Osterwalder, Pigneur, 2009) and taking into consideration dynamic relationships between them, (Casadesus-Masanell, Ricart, 2007) they constitute a part of a complex mechanism that generates value in a company (Chesbrourg, Rosenbloom, 2000). This means that they may also facilitate achieving airport's goals in such areas as implementation of particular strategic goals or environmental protection.

Airport charges are fees collected by airports from airport users (aircraft operators, including airlines) for using airport infrastructure. Traditionally airport charges have been levied in a simple way, narrowed down to landing charge based on maximum takeoff weight (MTOW) and passenger charger calculated according to passenger numbers (Graham, 2008). Currently in Europe at many airports pricelists have evolved into market driven charging schemes, reflecting competitive nature of the airport environment (Starkie, 2008). They not only reflect the cost of development and maintenance of infrastructure but also address such issues as airport strategy and business model and environmental constrains. They may also constitute an effective tool to fight with the congestion at the airport, however it is argued that price list across European airports are inefficient concerning capacity use (Czerny et al., 2008). As a result, they also play a vital role in airport operations, competitiveness and development, being an important tool of airport management. Taking into account different applications of airport charges special attention should be paid to runway charges, as due to their nature they can be used to meet various goals, including traffic stimulation, airport capacity (in terms of both terminal and runway congestion (Wan, Jiang, Zhang, 2015)) as well as noise management among others. It has already been noted in the literature that the ration between per-flight charges (where runway charges have the highest share) and per-passenger charges is vital for airlines and might influence their choices (Czerny, Zhang, 2015), however, other areas of runway charge applications in terms of management are less explored.

The aim of this paper is the analysis of runway charges algorithms at selected airports in Europe. The authors also attempted to classify and segment the solutions used. This approach has not only allowed to recognize different charging systems used in Europe but can also be a basis for further research in this area. Based on this analysis conclusions were drawn as to whether airport managing bodies actively use runway charges as a management tool and if yes what the major goals laying behind pricing schemes are. The research covered over fifty European (EEA) airports. Most of these airports served traffic of more than five million passengers annually. Moreover, the largest airports in EEA states that haven't reached this figure at the time of analysis were included in the study.

Airport charges are defined in the respective regulations on various levels of governance: global regulations or guideline systems as well as national law. The definition provided in EU Directive 2009/12/EC reads as follows: "airport charge means a levy collected for the benefit of the airport managing body and paid by the airport users for the use of facilities and services, which are exclusively provided

by the airport managing body and which are related to landing, take-off, lighting and parking of aircraft, and processing of passengers and freight". It should be noted that this definition fails to mention that airport charges also include all kinds of infrastructure use. Here, the term 'infrastructure' has a narrower meaning than usually, and infrastructure charges are considered charges that are levied for the use of auxiliary infrastructure rather than the basic elements mentioned in the definition. These are generally additional facilities for handling aircraft and passengers and sometimes cargo (e.g. check-in counters, baggage handling facilities, de-icing are etc.).

Landing charge specifically can be described as charge levied for usage of air-side infrastructure of the airport. This includes runways, taxiways, holding bays and areas, airport lighting, markings, aprons, airport aids if not separately priced (Wells et al., 2003).

1. Charges regulation

From the European perspective airport charges are regulated or dealt with in three documents, two of which have global scope while one is EU legislation. These are as follows:

- Convention on International Civil Aviation (Chicago Convention, 1944),
- ICAO's Policies on Charges for Airports and Air Navigation Services (the latest edition of 2012),
- Directive 2009/12/EC of the European Parliament and of the Council of 11 March 2009 on airport charges.

The so-called Chicago Convention is very general regarding airport charges, but there is one rule set out there which is implemented in other regulations, both international and national. This is the underlying principle of almost all regulations which says that airport charges should be set in an unbiased way, so that no airport user is discriminated. This is a so-called non-discrimination clause.

The next international document that is focused (among others) on airport charges is the ICAO's Policies on Charges for Airports and Air Navigation Services. This document contains guidelines only and is not legally binding. However, it is a framework for other international and national regulations, and its provisions are actually implemented across these regulations, which makes them legally binding.

The key requirements of this ICAO's document are as follows:

- to effectively consult with service users,
- to set out all charges in a transparent way,
- not to discriminate any service user,
- to keep proper relations between the charges and operating costs,
- to avoid encouraging users to compromise security through excessive charges,
- to apply economic and accounting principles.

The most important principles (i.e. those that the regulators put most stress on) out of the abovementioned ones are those that require consultations of airport charges with airport users (consultations need to be held each time airport management plans to amend the pricelist), non-discrimination and cost-relatedness

of the charges. The cost basis should always be taken into consideration when setting airport charges. The underlying cost should be the full cost of providing services to users (including the cost of capital and depreciation). Importantly, airports may produce enough revenue to exceed operating costs, but in case of some charges airport operators are only allowed to recover costs that were born to provide a given service. This means that on some services airports cannot make profit. There is also one important requirement regarding incentive schemes – incentives should be offered on a temporary basis only. Usually it is assumed that five years is the maximum time span within which an incentive should expire.

Another regulation that should be discussed here is Directive 2009/12/EC of the European Parliament and of the Council of 11 March 2009 on airport charges. This directive is a framework based on which EU member states individually regulate airport charges. The directive applies to airports serving more than five million passengers annually and to the airport with the highest number of passengers in each member state. The key provisions of this directive are as follows:

- non-discrimination of airport users (however modulation of charges is allowed provided it meets the master requirement);
- requirement of regular consultations of charges (at least once a year);
- changes in airport charges require informing airport users;
- if in the course of consultations no agreement is reached between airport and its users, users may seek intervention from supervisory authority;
- airport charges are subject to approval from supervisory authority;
- users are required to provide airports with information on: traffic and fleet use forecasts, as well as development plans at a given airport;
- possibility of varying quality of services at different terminals or parts of terminals;
- requirement of independent national supervisory authority.

In some aspects, the directive repeats the ICAO's guidelines, however it is more detailed and more specific as it is a direct basis for executive legislation in member states.

As it was mentioned above the regulations and guidelines of ICAO and of EU regulatory bodies are relatively detailed. In respect to runway charges strict recommendations and regulations can be inferred from them. Runway charge should be based on maximum take-off weight (MTOW) and stage length (distance flown) should not influence the charge. Fixed (or combined fixed and weightbased) charge is allowed, especially at airports with capacity/congestion problems. Modulation of this charge is also allowed.

2. Typology of airport charges

Runway charges can be levied for aircraft take-off, landing or both. Importantly, they are part of complex airport charges schemes encompassing various other services. Airport charges can generally be divided into two categories: airside and landside charges. Airside charges are charges for providing infrastructure

and services connected with aircraft handling. The following charges can be named within this category:

- runway charges,
- environmental charges (noise and emissions charges),
- parking charges,
- infrastructure charges (e.g. air bridge, fueling infrastructure use, etc.).

Landside charges are charged for the use of infrastructure and services for passenger handling. These are:

- passenger charge,
- security charge,
- infrastructure charges (e.g. baggage handling fee, centralized infrastructure use, etc.).

In other words, these are per-aircraft and per-passenger charges. Almost all charges levied by airports follow the above scheme, so it can be considered comprehensive.

3. Methodology of research

The research involved analysis of airport charges schemes applied at 51 airports listed in table 1. The list contains most EEA airports serving 5+ million passengers plus largest airports in EU member states. Moreover, the most popular airports serving low cost carriers were included as were larger regional airports in Poland. Further in the report airports will sometimes be referred to using their IATA codes as indicated in table 1.

Table 1. Airports whose charges were included in the research

IATA code	Airport	IATA code	Airport
ARN	Stockholm-Arlanda	MAN	Manchester
ATH	Athens	MRS	Marseille
BHX	Birmingham	MUC	Munich
BRU	Brussels-Zaventem	MXP	Milan-Malpensa
BUD	Budapest	NCE	Nice
BVA	Paris-Beauvais	NYO	Stockholm-Skavsta
CDG	Paris-Charles de Gaulle	OPO	Porto
CGN	Cologne-Bonn	ORY	Paris-Orly
CIA	Rome-Ciampino	OSL	Oslo
CPH	Copenhagen	OTP	Bucharest-Otopeni
CRL	Brussels-Charleroi	POZ	Poznan
DUB	Dublin	PRG	Prague
DUS	Duesseldorf	RIX	Riga
EDI	Edinborough	SOF	Sofia
FCO	Rome-Fiumicino	STR	Stuttgart
GDN	Gdansk	SXF	Berlin-Schoenefeld
GLA	Glasgow	TLL	Tallin

IATA code	Airport	IATA code	Airport
GVA	Geneva	TLS	Toulouse
HAM	Hamburg	TRF	Osl-Torp
HEL	Helsinki	TXL	Berlin-Tegel
KRK	Cracow	VIE	Vienna
KTW	Katowice	VNO	Vilnius
LIN	Milan-Linate	WAW	Warsaw-Chopin
LIS	Lisbon	WMI	Warsaw-Modlin
LYS	Lyon	WRO	Wroclaw
MAD	Madrid		

Source: (www.iata.org)

The research was aimed at identifying runway charges algorithms applied at the abovementioned airports. The above approach was to discover how airports construct their charges in order to encourage airlines to organize their operations in a desired way. Each algorithm was analyzed separately. However, the airports were not analyzed in terms of what total charges they levy, neither were they compared in these terms.

4. Key findings

The research revealed that airports have different approaches to runway charges and some of them use this tool in a well-conceived way while other set their schedules of charges haphazardly. The findings are presented below.

Runway charges are based on maximum takeoff weight (MTOW) of an aircraft, therefore they are employed to encourage and/or discourage flying with particular aircraft categories. The analysis revealed that these charges, when analyzed on unit-basis (per ton of total MTOW[1]), can follow various patterns, thus potentially influencing fleet structure used by airlines at a particular airport. Runway charges can also be used as a tool to encourage airport users to expand on existing routes and/or start flying to new destinations. Generally, the unit rate can be flat, ascending, descending or non-monotonous.

Flat rate has no differentiating impact on airport users since the unit rate is the same for all aircraft types. An example of an airport with such an algorithm is Riga (RIX), where the unit rate is 2,05 EUR per ton of MTOW irrespective of total MTOW. Other airports with this kind of runway charge algorithm are BHX, CPH, EDI, GDN, GLA, HAM, KTW, MAD, ORY, OTP, POZ, SXF, TLL, TXL, and VNO (30% of the total number of airports analyzed) – Figure 1.

[1] Total runway charge for given MTOW level divided by number of tons.

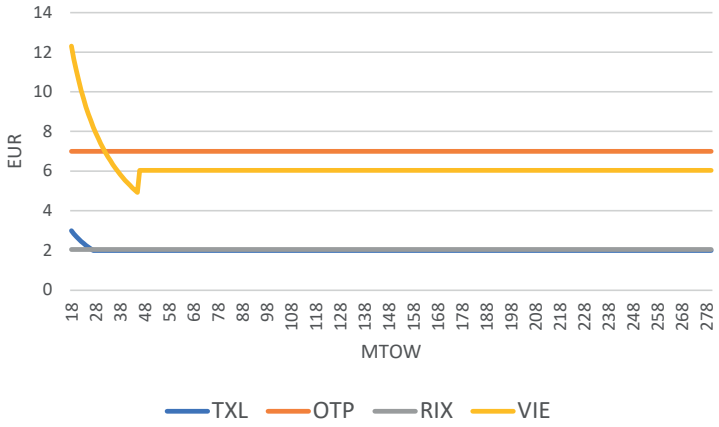

Figure 1. Examples of airports with a flat charges algorithm (EUR per ton of MTOW)
Source: (own calculation on the basis of airports charges schemes)

Ascending unit rate (i.e. lower for light aircraft, higher for larger and heavier aircraft) promotes the use of smaller (usually regional, turbo-prop aircraft) and discourages the use of large, widebody aircraft. Example here are Ciampino and Touluse airports (Figure 2). Apart from these airports this algorithm is also used in three other airports: BVA, MRS, and NCE, making it relatively unpopular. This is understandable since such an airport charge discourages users of largest aircraft that are usually used to serve long-haul routes which in turn are most desired by airports increasing their attractiveness and significance.

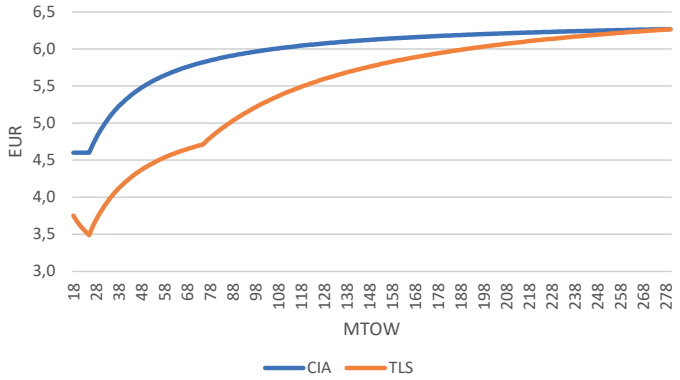

Figure 2. Examples of airports with an ascending charges algorithm (EUR per ton of MTOW)
Source: (own calculation on the basis of airports charges schemes)

A more popular solution is to offer a descending unit rate of runway charge, which – contrary to the previous algorithm – promotes larger aircraft. Importantly approach to this type of quotation differs. There are airports offering descending rates within the full range of aircraft MTOW like Rome Fiumicino and Budapest (Figure 3). There are also airports offering a flat rate per 1 MTOW in certain range

and then descending rate for the larger aircraft (examples: ATH, MAN, OSL, MUC – Figure 4). The descending algorithm may be aimed at promoting two kinds of traffic. Firstly, low cost traffic, operating narrow body aircraft with MTOW of around 80 tons. This might be the case of BUD, FCO and OSL. Airports may also try to stimulate long-haul traffic, like for example ATH, MAN and MUC. Importantly, on the basis of given examples, BUD, FCO and OSL can be focused on promotion both low-cost and long-haul traffic. Other airports offering descending algorithms are: ARN, BRU, CDG, CGN, DUB, DUS, KRK, NYO, PRG, SOF, STR, VIE and WAW.

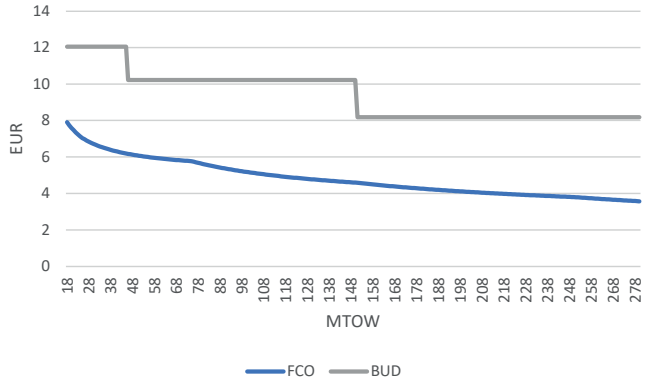

Figure 3. Examples of airports with a descending charges algorithm (EUR per ton of MTOW)
Source: (own calculation on the basis of airports charges schemes)

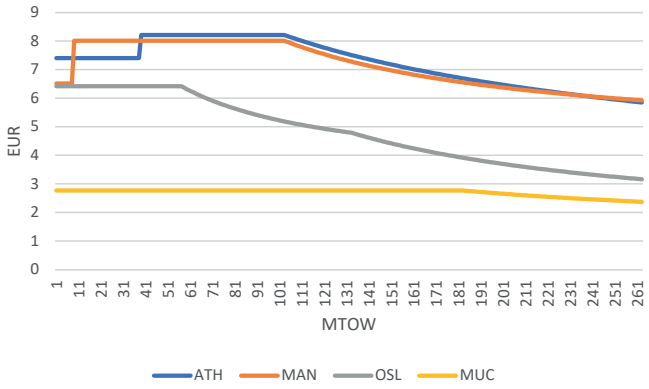

Figure 4. Examples of airports with a flat and descending charges algorithm (EUR per ton of MTOW)
Source: (own calculation on the basis of airports charges schemes)

Some airports offer algorithms with non-monotonous unit rate. Examples include Lisbon and Stockholm (Figure 5), where the rate is first ascending and then descending. With such algorithms preference is given to small and large aircraft while medium-sized planes are 'penalized'. This means that users of the most popular aircraft families, i.e. Airbus 320 and Boeing 737, are discouraged from using

these aircraft. The reason behind that may be relative price inelasticity of the users of these A320/B737 aircraft families at particular airports that makes them vulnerable to inflated airport charges. Clearly, these airports are not interested in incentivising low-cost traffic (Forsyth 2016). On the other hand such algorithms promote local/regional traffic as well as overseas connections. Other airports employing non-monotonous unit rates (in various forms of algorithms) are: LIN, LYS, MXP, TRF, WMI and WRO.

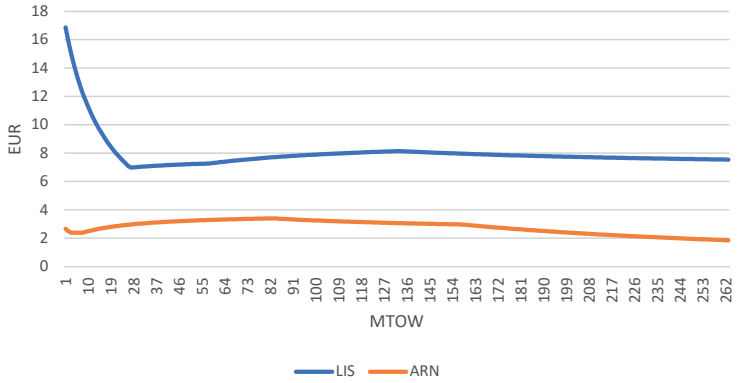

Figure 5. Examples of airports with non-monotonous charges algorithm (EUR per ton of MTOW)
Source: (own calculation on the basis of airports charges schemes)

Runway charges may also be an effective tool to fight against congestion which is becoming a problem at more and more airports nowadays. The most straightforward way is to set a minimum runway charge which makes landings and take offs of small (light) aircraft relatively expensive and may potentially discourage operators of such aicraft from using these airports. The analysis revealed that airports suffering from congestion usually set high minimum runway charges. Figure 6 shows runway charges for very light (MTOW of 1 ton) aircraft. The steepest fees are charged mostly at hub (connecting) airports with a lot of traffic like VIE, CDG, ORY[2].

Airports may also differentiate runway charges depending on part of the year, like for example MAN and OPO. The charge may also be dependent on the time of the day (e.g. BRU, CDG, EDI, MAN, NYO, MUC). This approach most probably is focused on stimulation of traffic in off-season and off-peak hours. Some airports also modulate charges by factors deriving from noise emission (e.g. BRU, CDG, STR). This is clearly focused on promoting operations of quieter aircraft.

[2] Airports use different algorithms to calculate charges for light aircraft and the comparison for 1 MTOW do not show the full scope of different charges at different MTOW levels.

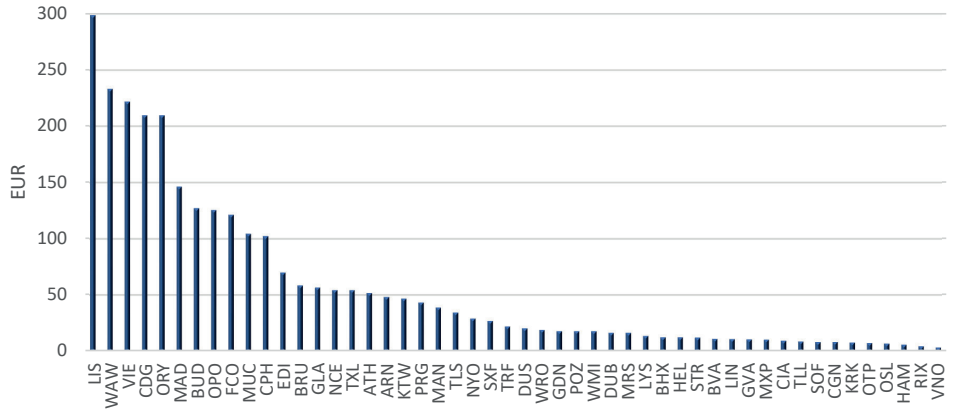

Figure 6. Runway charge in EUR for 1 MTOW
Source: (own calculation on the basis of airports charges schemes)

Conclusions and further research

As can be concluded from the research most of the examined airports use runway charges as a strategic tool. They develop charging schemes focused on stimulation of certain operators or traffic, like long haul flights. They also use charges in operations management to steer traffic into preferable seasonal and daily patterns. Runway charges are also used to fight congestion, however this cannot always be clearly recognized in airport charges schemes. Finally, some airports use runway charges as a noise management tool, which complements noise charges.

In this paper only runway charges were analyzed. To get a wider and more comprehensive picture of airport charges being used to achieve operational and strategic goals a similar analytic approach should be taken regarding other airport charges. It would also make it possible to obtain a holistic overview of what is the role of the charges in managing airports. However, it should be noted that with regard to some charges, especially those for using supporting infrastructure, a comparative analysis will be much more difficult as these charges are less homogenous across airports and their coverage in airport charges schemes is usually more concise and often selective.

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