



**E/CNMC/0002/14 THE AIRPORT
SECTOR IN SPAIN: CURRENT
SITUATION AND
RECOMMENDATIONS FOR
LIBERALISATION**

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EXECUTIVE BRIEFING
THE AIRPORT SECTOR IN SPAIN: CURRENT SITUATION
AND RECOMMENDATIONS FOR LIBERALISATION

One of the most important sectors for the developed economies since the beginning of the 20th century is the air transport of passengers and goods. The sector's strong links with trade, tourism and business have led to average annual growth rates of 5% to 8% in the developed countries. This is also an extremely dynamic sector, especially since liberalisation, as deregulation has encouraged the emergence of new business models and strong competition, which have led to reductions in air transport prices.

Changes in the air transport sector have inevitably affected the airport sector, which is absolutely necessary for the former's development. As a result, **airports have gone from being considered a natural monopoly to being a potentially profitable business unit.** In general, the evidence shows that the sector does have sufficient profitability rates, which in part explains the general trend toward privatisation. These infrastructures **compete for the demand** of, on the one hand, the **passengers**, who, in addition to being customers of the airlines are also customers of the airport's commercial activities, and, on the other, the **airlines**. With the appearance of low cost carriers (LLCs) and the fall in exchange rates, **the competitive pressure among airports has increased.** However, the stronger competitive pressures that the new business models appearing in the air sector are exerting on the airports are not preventing **some of them from having a strong market power that requires regulation.**

In view of the above situation, **the airport sector has undergone significant changes in recent years** with the introduction of private capital and **private management** models, both total and mixed. Such models are **more flexible**, have **decentralised management** and **regulatory solutions are applied wherever the existence of airports with market power is detected.** An international comparison shows that **Spain is the only country with a centralised, joint management system in the hands of one single manager** with a large number of infrastructures and a high volume of passengers.

Despite the Spanish situation, it can be seen that the **airports are competing**, as evidenced by **changing airport charges** and **their composition**, with a gradual upward trend among those that affect passengers as opposed to those paid by the airlines, which are more price sensitive.

The competition between the airports differs according to the transportation needs that they are fulfilling. On the one hand, therefore, some **airports compete for potential passengers within their catchment areas, if they overlap.** In general terms, it is considered that this area has a radius of some 100 km to 130 km or between one and two hours' driving time. On the other hand, another type of **airport is competing for passenger traffic based on the reason for travelling.** These airports are less sensitive to the effects of

overlapping. In this case, **competition even occurs between airports that are geographically distant from each other when they are competitors for the same types of destinations** (sun and sand, snow, cultural, etc.). Finally, **another type of traffic that differs from either of the above is connecting traffic**, which is **mainly found at the so-called hubs**. In Europe, there are currently five competing hubs: Heathrow, Charles de Gaulle, Frankfurt, Amsterdam and Madrid.

In addition, the air sector is competing with other modes of transport, a factor that also indirectly affects airports.

As has been said, **Spain is an exception** in Europe, as one single operator, **Aena Aeropuertos, is managing 46 airports, with 187 million passengers in 2013**. For Spain, the importance of air transport worldwide, mentioned above, is heightened by the size of its tourist industry, which accounted for over 10% of GDP in 2013.

This sector is highly regulated in Spain, both in regard to safety and operations and economic variables. In regard to the latter, it is noticeable that the current model imposes a **regulatory system** that sets airport charges at a level **guaranteeing that costs are recovered** by all the airports in the network, as well as a return on the capital invested, regardless of whether that infrastructure is profitable or not.

Also, the **rates are set centrally**, as **public charges** that must be established, or at least the major items, through regulations with the status of a law. Therefore, individual airport charges are set for **groups of airports, defined by the number of passengers**. Similarly, the implementation by the airport operator of a proactive **commercial policy** that offers differing rates, customised agreements and economic incentives **faces some legal insecurity**. Finally, the **joint management of all the airports in the network compels all the airports to be sustainable**.

The financial situation of Aena Aeropuertos showed an improvement at the end of 2013 compared to previous years in terms of EBITDA, although it had significant debt as a result of the combination, during the same time period, of prolonged rate control and high investment, over 17 billion between 2000 and 2010.

From the analysis, it can be concluded that there is a **high number of airports in Spain**, compared to other countries with an airport sector of a similar size. However, even though Aena is the world's leading operator and Spain has seven of the major European airports, the number of passengers per airport is below the average.

In addition, even though there is significant over-capacity at the big Spanish airports, there are factors in the Spain airport system, such as the seasonal nature of the traffic, that make it difficult to achieve a perfect correlation between capacity and use. However, an analysis of the **investments made in the smaller airports** shows that the **assessment made of these infrastructures did not coincide with realistic estimates of traffic growth**.

Over-investment by Aena Aeropuertos in recent years has caused the break-even point to be higher in Spain than in other countries, in terms of the number of passengers. In addition, Aena Aeropuertos' **centralised management** and the **current legal framework** have prevented actions such as **closure or reconversion** from being taken to **resize the Spanish manager's network** in view of the reduction in traffic over the last few years.

In the opinion of this Authority, the **current charge regulation methodology has contributed to over-investment in these airports by bringing the airport operator a return on capital, even from loss-making infrastructures.**

It can be concluded from the analysis of the **economic variables of revenue and spending** that, although Aena Aeropuertos had a somewhat below-average airport charge level, especially when all the airports are taken into consideration, **the latest rises have meant that the big airports in the network are at the high end for European airports.** In addition, although Aena Aeropuertos demonstrates **high cost efficiency**, its **revenue-generating capacity** in relation to its non-airport activities has **limitations.** As already noted, the **current regulatory framework, which imposes centralised management on a very high number of airports, leads to rigidity** and prevents any variation in airport charges or customised contracts with the airlines that could increase the efficiency of airport management.

Despite the current legal framework, the analysis made by this Authority shows that **competition would be possible among the airports in the Aena Aeropuertos network**, including those that compete for overlapping geographical areas and destinations, and hubs. For example, in the case of competition for overlapping geographical areas, the **airports in Galicia, the north-centre region and Andalusia could open up to competition through improved cost efficiency, specialisation and the adoption of sales policies designed to attract airlines.**

Similarly, the **tourist airports** already exposed to competition from alternative international destinations **could increase their competitive pressure through the introduction of alternative operators into their areas of overlap.**

Lastly, in the case of **competition among hubs**, although Barcelona could compete with Madrid for this type of traffic, the need to have one airline with a base at that airport for connecting flights limits this competition. It can be concluded from the analysis that Spain, through Aena Aeropuertos, has been able to set up **an airport network that has services with high levels of quality and safety and sufficient capacity to respond to the needs for mobility of the public and of the industries that depend on air transport.**

However, **this report reveals that the model has led to certain inefficiencies in the development of the Spanish airport sector.** In general terms, it can be said that these inefficiencies result from a combination of two groups of factors. Firstly, the **effects and incentives of a rigid institutional and regulatory framework**, which focuses on one centralised management system for the entire airport network. Secondly, the **actions of Aena Aeropuertos are**

constrained by this framework and delineated by its managers and, in the final instance, by political decision-makers.

The **major inefficiencies** found among the first group of factors point to: (i) an **absence of counterbalances** in the institutional design, especially the lack of an independent regulator; (ii) an **inappropriate suitable regulatory model** that provides incentives for unjustified investment; (iii) a **scheme for setting airport charges that is centralised and by group**, preventing the application of individual sales and management policies based on the specific needs of each airport; and (iv) the **existence of legal rigidities that prevent a flexible sales policy**, such as the legal uncertainty surrounding the regulatory treatment of customised agreements and sales incentives.

The second group of factors is responsible for the following problems: (i) an **inappropriate plan for the airport network, not based on the real needs of the market**; (ii) the **lack of a connection between the investment and rate-setting policies**, which has resulted in heavy indebtedness; (iii) **no structural measures adopted for the network**, beyond an operating cost adjustment plan; and (iv) **little development of non-airport revenue**.

In light of the main conclusions of the study, **the CNMC has made a series of recommendations designed to set up a more efficient airport model** and others dealing with how to handle the privatisation process, should there be one. The main recommendations for the model are:

- i. **A need for a predictable, uncontested regulatory framework**, instituted after a prior process of reflection and consultation in which the different possible scenarios are weighed and one is selected as it most favours competition and efficient economic regulation and is aimed at benefiting the economic stakeholders and consumers. Immediately after the consultation process, the institution of a legal regulatory framework is considered to be essential. Either the current framework will be modified or new legislation will be drafted to determine the main characteristics of the new system.
- ii. **Making the individual management of airports more flexible** One of the main conclusions that can be drawn from the data presented is the fact that, even if the Spanish centralised management model has made it possible to achieve some of its objectives, it has led to a number of results that are economically inefficient and could therefore be improved. The most important reform would permit more flexible, decentralised airport management, ideally at the individual level. The airports would then be able to adapt better to the competitive pressures imposed by the different market forces: the airlines, passengers, other airports and other modes of transport. In regard to charges, the model selected must overcome the rigidity of the public charge scheme, so that the airport operators could autonomously match the level and composition of their charges to their revenue and cost structure and their level of demand.
- iii. **Principle of efficient investment.** The new regulatory model should instil the principle that only efficient investments should be made and

kept in the market. This principle is not incompatible with taking criteria of general interest into consideration and supporting certain infrastructures that are of obvious benefit to society.

- iv. **Removing distortions to private initiative.** The model and the regulations should also take into account the possibility of other private operators developing their own airport initiatives alongside the Aena airports, to prevent the erecting of barriers to entry and activity and to safeguard the neutrality of the market.
- v. **Existence of an independent regulator.** One of the essential elements for ensuring that the system functions correctly is the appointment of an independent regulator that, in combination with a stable regulatory framework, would be able to generate confidence in the market. Among the functions assigned to the airport regulator, in addition to those related to the application of the regulatory framework and conflict resolution, would necessarily be the power to determine the airports with market power and, as a result, to possibly impose economic regulation in this regard.
- vi. **Control over public funding.** The new airport model should oversee proper compliance with the related regulations, both from a theoretical point of view and a basically practical one, starting with the implementation of a proven system of control. The proper functioning of this supervisory mechanism will not be possible without the necessary transparency when obtaining public funding, which the current model lacks. In any case, the receipt of this type of funding distorts airport activity, since it provides a disincentive to operators to seek efficiency.

The foregoing recommendations do not prejudge the nature of the ownership of the capital, public or private, of the airports. However, the dynamism, profitability and ability to adapt to demand of **the entire system would improve if private capital acquired a stake in the management and/or ownership of the airports** based on competitive procedures. For this reason, **the foreseeable acquisition by private investors of a share in Aena Aeropuertos**, even a minority share, merits a positive reception, as it signifies a movement toward the prevailing trends elsewhere in the world that are seeking greater efficiency.

However, the CNMC understands that, so that the presence of private capital can have full, positive effects, it would be necessary to provide the individual airports with more flexible management and to undertake a process to reform the model along the lines indicated in this study. This being said, the comparative analysis and the application of the principles of maximum efficiency lead to a series of recommendations on how the model can better handle the entry of private capital:

- i. **Individual tenders or in lots.** Assuming that the model is subject to a process of decentralisation and the judicious reform of the regulations, the entry of private capital should ideally be carried out individually for certain units in the network, through concession agreements or by privatising the airports, but always safeguarding the public interests

involved. However, it is possible that the rigidities of the legal framework or resistance of varying kinds will make it difficult to undertake a reform that will permit the decentralisation of the airports at the individual level or to find a solution by closing or restructuring unprofitable airports. In this case, the CNMC recommends that the possible privatisation is implemented through the setting up and tendering of lots of airports. These lots, theoretically containing a minimum number of three airports to minimise the possibilities of anti-competitive behaviour in the market, must be made up of airports in different relevant markets, not in close geographical proximity and with different break-even points.

- ii. **Possible enforcement of regulation.** Once the entry of private capital has occurred, the sequence for establishing regulation will require a detailed analysis by the regulator of the possible market power of each airport, or group of airports, and then the enforcement of regulation.
- iii. **Sequence for the entry of private capital.**

Finally, to allow private capital to enter Spanish airports, there could be a gradual shift in focus by putting the different lots out for tender at intervals or, alternatively, all of them could be privatised at the same time.

I. INTRODUCTION

One of the most important sectors for the developed economies since the beginning of the 20th century is the air transport of passengers and goods. The sector's strong links with trade, tourism and business have led to average annual growth rates of 5% to 8% in the developed countries. This is also an extremely dynamic sector, especially since liberalisation, as deregulation has encouraged the emergence of new business models and strong competition, which have led to reductions in air transport prices.

The first requirement that is strictly necessary for the development of air transport is the configuration of an airport system that will serve as a basis for its activities. The defining of key elements, such as the management model for these infrastructures, the public or private ownership schemes and the possible enforcement of financial regulation systems, would then lead to the development of an efficient, high-quality airport system and therefore economic improvements in all air transport-related activities.

These changes are of particular significance in Spain, given the importance of the tourist industry for the economy. The airport system currently in effect in Spain is built around a centralised management model in which the 46 Spanish airports and 2 heliports, with more than 187 million passengers in 2103, are in the hands of Aena Aeropuertos S.A.. It is therefore necessary to analyse whether this is the most appropriate model to ensure that the airport sector, which is, as has already been said, a strategic sector for the economy of the country, is efficient and competitive.

In the opinion of this Authority, this debate is especially relevant in the current context, given the Government's recent announcement that it will sell a 49% stake in Aena Aeropuertos to private investment.

The Authority's study aims to analyse the airport sector, both at the international and domestic levels, to identify the major trends in neighbouring countries and assess how efficiently the Spanish management model has provided airport services. Based on this assessment, a series of recommendations have been made regarding alterations to the current regulatory framework and the possible timing of these changes.

In line with the preceding objectives, the study has been organised as follows:

- **Section two** deals with the importance of the air sector for the world economy and identifies the major trends, such as the appearance of low cost carriers, describing their impact on the airport sector. In addition, in the context of airport management, the section includes an international comparison to identify the formula chosen by each country for its airport ownership (public or private), management model (centralised or decentralised) and economic regulation.
- **Section three** describes the variables on which airports compete and the competitive dynamics that can be observed, both between different types of

airports and with other modes of transport, especially, depending on the distance travelled, high speed trains.

- **Section four** analyses the situation in the Spanish airport sector in terms of both regulations and performance. It describes the major legal provisions that affect both the establishment of airports in Spain and the economic regulations governing Aena Aeropuertos' activities. In addition, it evaluates the efficiency of Aena Aeropuertos, based on the Spanish manager's financial data and a comparison with the data available on other European countries.
- **Section five** analyses the possibilities of competition between the Spanish airports, based on the different types of airports on the Spanish airport map, and the feasibility of this competition based on data for each individual airport.
- Starting from the preceding analysis, **section six** assesses the regulatory framework in Spain in recent years and Aena Aeropuertos' management.
- **Section seven** uses the previous diagnosis to make a series of recommendations that, in the opinion of this Authority, would improve the management of the Spanish airport sector.

II. CHARACTERIZATION OF THE AIRPORT SECTOR

2.1. Economic importance of air transport

The airport sector is one of the sectors with the highest growth rates in recent decades, with annual average figures of around 5%¹ worldwide. Its importance in both economic and social terms will increase in the coming years due to the connectivity that it provides. In the last twenty years, the sector has had an approximate average growth rate 1.8² times that of global GDP. It is also considered to be the only current mode of transport capable of immediately connecting the entire world.

Air transport promotes the growth of a country by creating a global economy, improving access to international markets and permitting the globalisation of its products and investments.

It is also an essential part of tourism, another of the pillars of growth for the developed economies, since it is estimated that 35% of international tourists worldwide travel by plane.

In addition to these direct contributions, the importance of the sector also resides in many indirect contributions, due to its knock-on effect on other markets.

Worldwide, the air sector transported 3.1 billion people in 2013, an increase of 5% over 2012³. Its direct and indirect significance, according to data for 2012, is calculated⁴ at some 2,400 billion dollars, or 3.4% of world GDP and approximately two and a half times Spain's GDP. In terms of employment, it is estimated that in that year it generated 58.1⁵ million jobs with over 1,400 airlines and 173 air navigation service providers at over 4,000 airports. Growth forecasts for 2030 estimate that over 6 billion trips will be made⁶. The importance worldwide of this mode of transport is shown in Figure 1 and Figure 2.

¹ According to the International Air Transport Association (IATA), airline capacity increased by 4.8% in 2013. According to the Official Airlines Guide (OAG), it was 4%.

² IATA

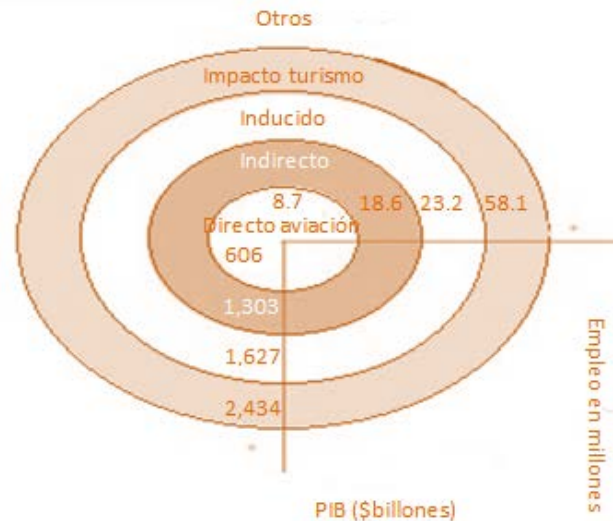
³ According to preliminary data from the International Civil Aviation Organisation (ICAO)

⁴ "Aviation benefits beyond the borders" April 2014. Air Transport Action Group (ATAG) and Oxford Economics. This is the most comprehensive study of the air sector, with data from over 50 countries.

⁵ The data on the sector's contribution to GDP and employment include both direct and indirect contributions.

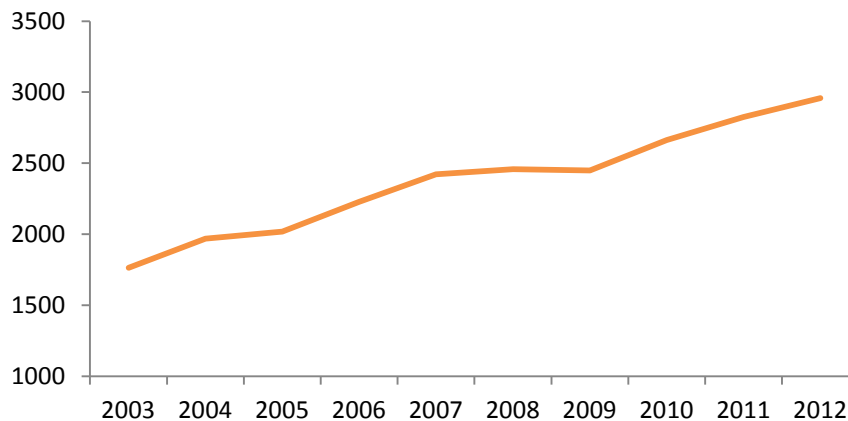
⁶ "Global Air Transport Outlook to 2030 and trends to 2040" (ICAO)

Figure 1. Impact of the air sector on GDP and employment.



Source: "Aviation benefits beyond the borders". Air Transport Action Group (ATAG) and Oxford Economics.

Figure 2. Worldwide Growth in passengers 2003-2012 (in millions)



Source: Compiled by the authors based on data from the 2012 Annual Report. ICAO.

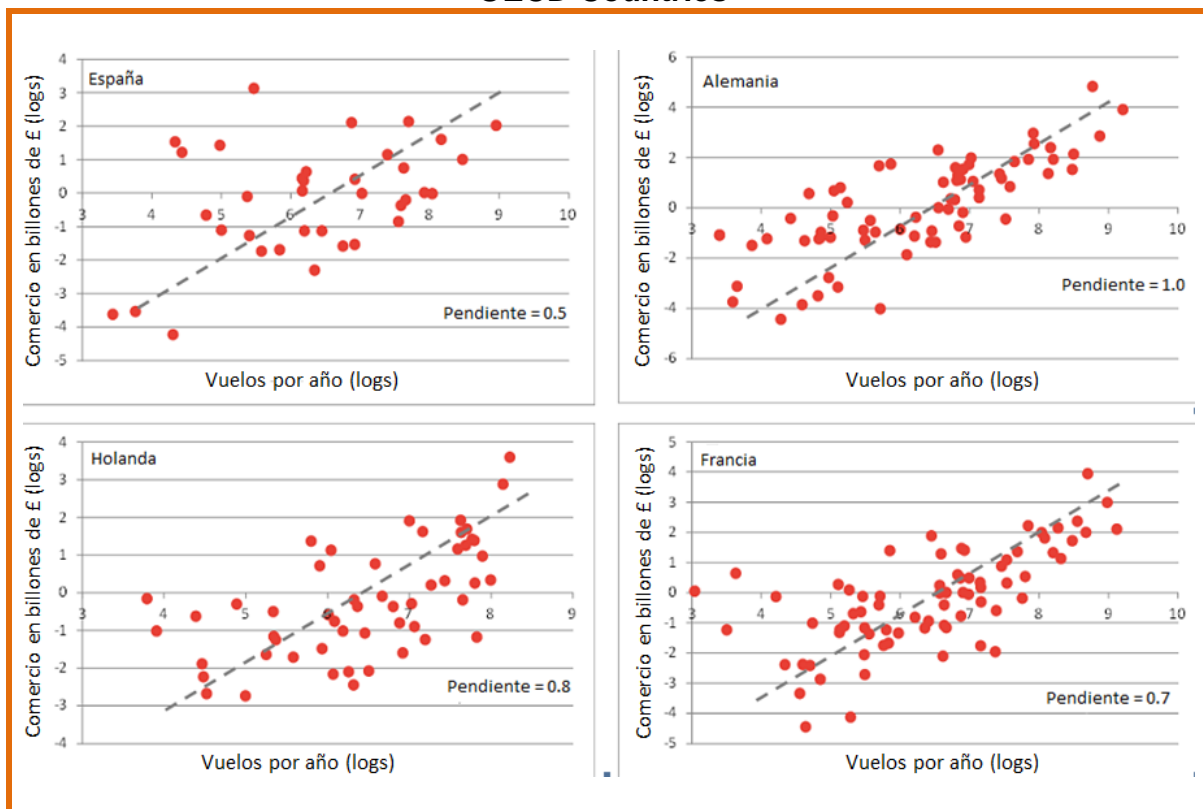
In Europe, this industry plays a vital role in the economy of the European Union, not only because of its financial impact but also because of its implications for territorial connectivity. The figures⁷ for the sector show a market with more than 15 million commercial flights per year, 150 airlines, a network of 440 airports and 60 air navigation service providers. Its importance for Community trade is demonstrated by the fact that the airlines carry 40% of EU imports and exports

⁷ European Commission.

and 822 million passengers annually to and from Europe. In terms of employment, it is calculated⁸ that, directly and indirectly, air transport in Europe was responsible for 5.5 million jobs and 430 billion dollars in 2012.

Finally, as can be seen in the following figure, there is a positive correlation between trade relations between countries and the number and frequency of connecting flights.

Figure 3. Flights and trade between European countries with a hub and non-OECD Countries*



Source: "Missing trade opportunities", Frontier Economics (2012)

* Analysis with data for 2011, excluding OECD countries without direct flights.

2.2. Economic characteristics and the dynamic evolution of the airport sector.

⁸"Aviation benefits beyond the borders". April 2014. Air Transport Action Group (ATAG) and Oxford Economics.

In addition to its above-mentioned economic significance, the air transport sector, and more specifically the portion related to airport infrastructure, has undergone a profound transformation of its characteristics and concept over recent decades.

In the 60s, this sector was characterised by the presence of one single airport per region, owned and managed by the government, state or local authorities, since these infrastructures were considered to be a public utility and to have strategic importance.

The small number of airports meant that they had a wide area of influence, making it possible to assign, or assume, market power and monopolistic behaviours to their operators.

These were also small infrastructures with limited services at the terminals and short, narrow runways, intended for less frequent use and aircraft of a smaller size and less cargo capacity than now.

Today, the market panorama is very different: the number and capacity of airports worldwide has increased and many have been built recently, even in overlapping areas. Existing infrastructure has been demilitarised, connectivity with ground transport has been improved, reducing travelling time, some airports have been privatised and numerous airport operators have appeared, with incentives to make their commercial policies fit the demands of both the airlines and the passengers. In addition, something of vital importance to the entire sector, is that there has been a decided move toward the deregulation of the airline segment, with new business models appearing. For example, low cost carriers (hereinafter, LCCs) are using secondary airports and bringing down flight costs by increasing flight productivity and lowering airport usage time, which ultimately reduces their operating costs and translates into lower costs for passengers. In turn, because of the revolution in information and communication technologies, the passengers' access to the market has improved and they are more aware of the alternatives available for their planned journey. All these factors currently make it possible to state that the air sector is developing into an environment with intense and varied competitive dynamics.

This section analyses some of the special economic features of this type of infrastructure. Many airports are in the midst of adapting to the new realities that they must face, as has already occurred in some more advanced countries that are among our major partners and competitors. This analysis therefore makes a theoretical approximation to the productive role of the airports and then notes some of its economic characteristics, before concluding that what is essential and relevant is i) the possible market power of these infrastructures and ii) the possibility of their competing.

2.2.1. The productive role of airports: an approximation

The concept of airports as companies underlies this approximation to their productive role. In fact, as the economic literature has recognised, if airports are understood to be the aeronautical infrastructure that is necessary for the development of air transport, they are true business units that offer a variety of services to different types of users and in turn have their own economic

peculiarities, mainly relating to their cost structure. In recent decades, at least in some cases, the presence of these features has led to these infrastructures no longer being considered examples of natural monopolies, even if there would clearly be revenue to be obtained due to their location and, at times, the possibility of their using their dominant position to continuously increase prices over those of the competition or reducing services without introducing new ones onto the market.

In the first place, the main feature of the airport market is the immovability of the infrastructure that has already been built, which is fixed, so that its assets cannot be used in locations other than their original one. This fact, together with the large amount of initial capital investment needed to make an airport operational and the invisibility of its assets, lead, in great part, to significant amounts of costs being sunk into it. In addition, as will be seen in more detail in later sections, the unquestionable presence of barriers to entry (structural, given the orographic and climatological requirements for the location of an airport, economic, (including legal, such as urban planning limitations) and environmental) make it less dynamic and entry into the market difficult.

This is also a sector with a ratio of fixed to total costs that is obviously high, its invariability even being estimated at some 90%⁹, which significantly affects its economic operability.

One factor leading to great theoretical and empirical debate has been the question of the presence and exhaustion of economies of scale at airports. Firstly, in regard to estimates of individual economies of scale, it is possible to see a wide range¹⁰ of thresholds, both in terms of cargo and passengers, at which point the economies disappear, and a range of results that does not make possible to extract any definite conclusions. In any case, the discrepancies between the estimates tend to point to a very diverse selection of samples, both in the number and type of airports selected, a fact that leads some authors¹¹, when analysing these economies of scale, to advocate studying each of the activities covered by airports separately, differentiating between aeronautical services and the services offered at the terminal.

⁹ *Copenhagen Economics (2012)*

¹⁰ In regard to economies of scale, although there is a relatively widespread consensus as to their being present in airport operations and exhausted after certain traffic levels, there are notable discrepancies as to the point at which they become exhausted. Without aiming to be exhaustive, the European Commission, for example, in its 2002 “*Study on competition between airports and the application of state aid rules*” set this point at half a million units of cargo. This remarkable range can also be noted in studies like “*Airport Competition. The European experience*” by Forsyth, Gillen and Muller (2010). An in-depth review of these different estimates has been given in “*Economies of scale and scope and its application to the airport industry*” M. Lechman (2011), from which it can be seen that these estimates range from authors who set the exhaustion point at 3 million passengers to those who consider that economies of scale never run out. Other authors have noted the possible existence of diseconomies of scale, for example, in the case of hub airports (Kamp et al. 2005).

¹¹ Gillen (2010)

It is also necessary to analyse possible economies of scale not at one individual airport but also in the possible management and/or ownership of them as groups¹². Regardless of the fact that this topic will be discussed in greater depth in the section on sector trends, in a theoretical approximation, the economic literature by and large does not support the economic benefits of the joint management and ownership of two or more airports that are separated geographically¹³ nor the presence of economies of scale in a group of airports. In fact, to correctly perform their role, airports would not need to be under joint ownership or be managed by one single entity, with the exception of the necessary methods for coordinating, for example, safety and air navigation, and therefore these infrastructures would be economically independent of each other.

In this regard, some studies emphasise the possible presence of certain economies of scale arising from the proximity of airports, for example, when coordinating services or relocating capacity. These latter are economic benefits that are of little relevance in any case and insufficient to justify horizontal integration under one single manager.

Finally, in contrast to the vast array of economic literature analysing economies of scale, there are relatively few estimates of the presence of economies of scope in the airport sector, but it can be noted that there are some studies that demonstrate their existence among the aeronautical and non-aeronautical segments of airports.

From all the above, regardless of the threshold at which economies of scale are said to be exhausted and its implications for considering an individual airport to be a natural monopoly or not, it must be recognised that factors linked to the location and the specific size that certain infrastructures have been able to reach, as well as the concentration of flights at these airports and the existence of other barriers of varying types, can grant market power to the management of some services, especially aeronautical services.

It is therefore relevant to analyse the possible market power of each airport infrastructure and, as a result, allow the market to act or, instead, impose the need for economic regulation proportionally on the airports. In any case, regulations must lead to minimal distortion and permit and promote competition in all the segments that allow for competition.

2.2.2. The airports as business units: Revenue and costs

Regardless of the management models implemented at the airports or the percentages of private/public participation in them, one of the major changes in the sector has come from the idea that this type of infrastructure is a business unit,

¹²The necessary difference between the ownership and management of a network and its implications for the concept of a natural monopoly should be noted. Despite the fact that economically even greater efficiency can be hypothesised under a monopoly network ownership scheme, this does not imply that the management of this network must avoid the competitive process, as happens, for example, in the telecommunications market. It must also be remembered that, from the economic point of view, unlike other transport sectors, such as the railways and roads, the airports do not constitute the network, but the airlines' routes.

¹³ Forsyth (2006)

which would need to seek profitability and efficiency through its actions under a predefined revenue and expenditure scheme.

On the **revenue side**¹⁴, international practice, including that of the ICAO¹⁵ itself, draws a dividing line between aeronautical and non-aeronautical revenue, apart from other possible items, such as subsidies and public aid. Among the former¹⁶ is revenue from air traffic operations:

- Landing charges
- Passenger service charges
- Cargo charges
- Parking and hangar charges
- Aircraft security charges
- Noise-related charges
- Other charges for air transit operations

Revenue items from non-aeronautical activities, on the other hand, include airport revenue from commercial activities not related to air transport whose occurrence and structure varies according to the airports analysed. Among the fees and charges collected are:

- Aviation fuel and lubricant concessions (including fuelling charges)
- Restaurants, bars, cafés and food service
- Duty-free shops
- Car parking
- Other commercial concessions and activities
- Renting and leasing
- Other income from non-aeronautical activities

On the other hand, the airport **expenditure** scheme corresponds to the general expenditure scheme of any company, except for certain specific items.

- Operating and maintenance costs
 - Staff costs
 - Supplies
 - Services contracted
 - Fixed administrative expenses
 - Other costs not linked to capital goods
- Capital goods costs
 - Depreciation and amortisation
 - Interest

¹⁴The items presented below do not constitute an exhaustive list of the different sources of income.

¹⁵Airport Economics Manual. International Civil Aviation Authority (ICAO). 2013.

¹⁶ These can in turn be divided into two categories: airline-related charges (runway use, landing, aircraft parking, etc.) and passenger-related charges (linked to their use of the terminal). Despite being in agreement with the ICAO's international policies (document 9082), for the purposes of simplifying payment, these latter are included in the ticket price and later transferred to the airport by the airlines.

- Other capital goods costs

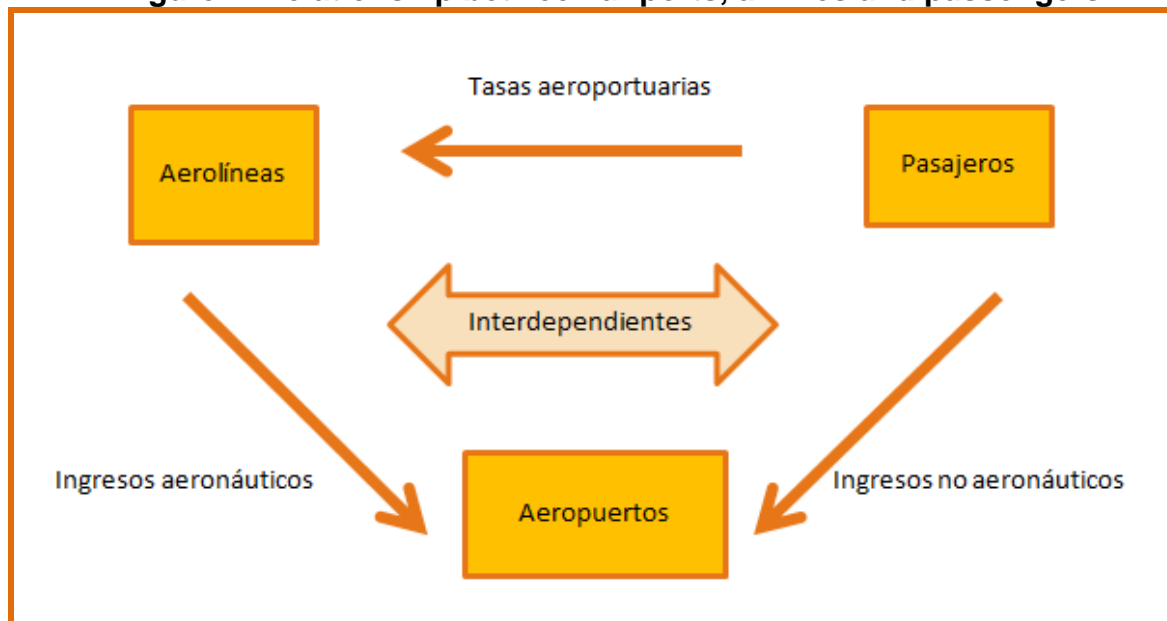
2.2.3. Airport demand. Multi-platform markets

The distinction between income from aeronautical and non-aeronautical activities leads to significant implications when considering who the customers are and therefore how airport demand is made up.

Traditionally, airports have been considered to be fixed infrastructures that were needed so that airlines could implement their business models. A bilateral relationship was therefore established between them, in which the airlines become customers of the airport and the airports another item in the airlines' role as producers. This would be a market with a vertical structure in which the airports are not capable of selling their product to the end consumer and therefore need the airlines to do this.

This relationship omitted passengers as a possible source of income, apart from aeronautical income. However, the dynamics of the sector in recent decades have moved toward a realisation that both the airlines and the passengers, independently, have an effect on an airport's economic situation, as is shown in the following graph.

Figure 4. Relationship between airports, airlines and passengers



Source: "Airport Competition in Europe" 2012. Copenhagen Economics.

In the economic literature, this concept is called two-sided markets or multi-sided platform markets; in other words, markets in which the volume of transactions depends on a variety of factors, particularly related to the interdependence of two sides. They have come to be called cross-sided network economies, and not only because of the prices imposed on each of the platforms. Applied to the airport sector, there would be an interdependency between the revenue obtained from the airlines and that from the business services managed for the passengers. So, regardless of the amount and significance of each of these items, there would be

no commercial revenue if there were no airlines at the airport and no aeronautical revenue without passengers.

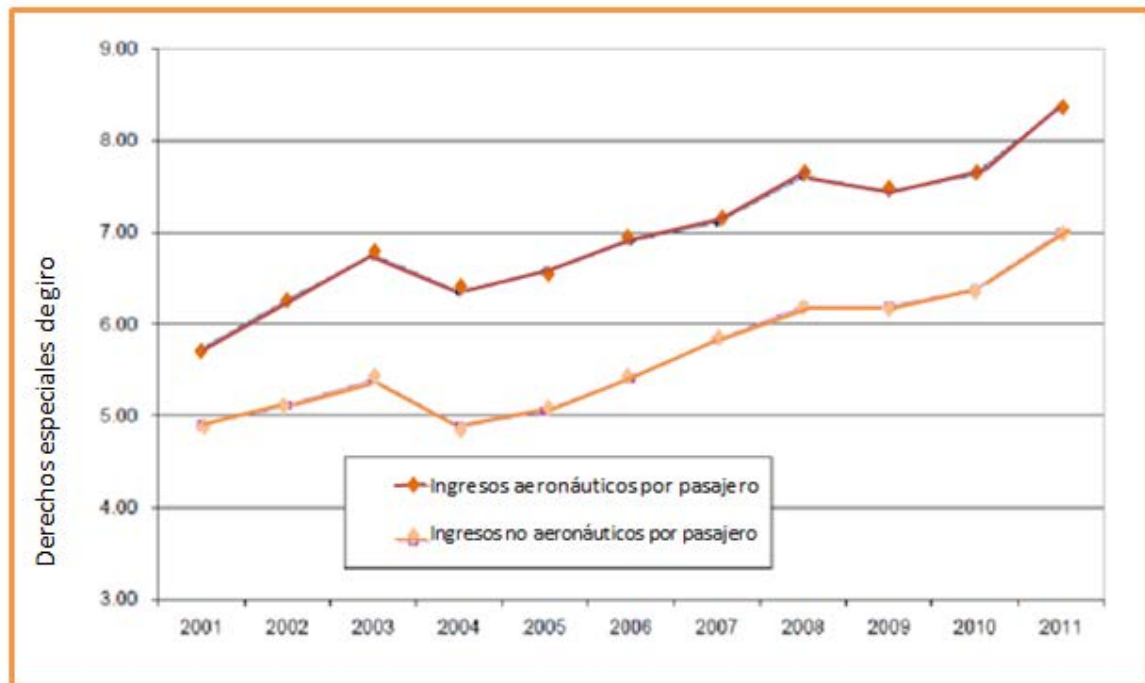
The relationship between the revenue by customer type described in the previous section makes the importance of both sources of financing obvious. In Europe, the latest data available, for 2011, show that non-aeronautical revenue was €11.3 billion, compared to €16.2 billion from aeronautical revenue. Also, Figure 5 shows the growing significance of activities that were previously considered to be residual.

Figure 5. Evolution of revenue distribution at European airports



Source: "The economics and regulations of on board carriage of European airport retail sales"
Bush& Storey 2013

Figure 6. Average income per passenger from aeronautical and commercial services (2001-2011)¹⁷



Source. Leigh Fisher. Airport performance indicators (2013).

The economic implications of defining airports as multi-side platform markets contrasting airlines and passengers are crucial. First of all, this new view places airport in an intermediate position between two groups with positive iterations: the airlines will do better as more passengers pass through the airport and the latter will do better if there are more airlines, more routes and more connections. Secondly, from an economic point of view, both these activities and their interrelationship must be evaluated when assessing the possible market power of the airports. This step is essential when proportionally removing these infrastructures from market dynamics and subjecting them to price, income and investment regulation. Finally, the interdependence of commercial and aeronautical income **means that, from the perspective of airport management, the possible exercise of market power in a segment (aeronautics) on the part of the airports will be limited by a possible decrease in commercial revenue.**

According to the above, the airport sector would face two-sided, interdependent demand, from the airlines and the passengers.

2.2.3.1. The airline segment:

¹⁷ Special drawing rights are a measure commonly used to compare charges expressed in different currencies. In the case of the Euro, the equivalence is 1 SDR = 1.1047 Euros.

As the segment demanding and using airport services, the **airline segment** and, in particular, the changes in the airlines brought about by the relatively widespread liberalisation processes of the 70s can be considered to be one of the main driving forces behind the changes that have occurred in the concept of the airport.

The changes in airline business models have given way to more flexible schemes and, in turn, their increased ease in mobilising their strategic bases has had a notable influence on the airport sector itself, imposing certain restrictions on the development of the airports' commercial policy.

In the first place, there has been an obvious tendency overall toward the development and consolidation of the so-called low cost carriers at the expense of the so-called traditional or flag carriers. This was a phenomenon that originated in the United States but has now expanded to almost the entire sector worldwide.

Although it must be recognised that intermediate solutions exist between the two models and different sub-types within each of these definitions, in general terms, the LCCs can be characterised as airlines that focus on: developing the point-to-point flight segment¹⁸; making extensive use of their aircraft and aircrews; showing a preference for secondary airports that offer easier access to landing and take-off slots; and specialising in passenger transport only, having abandoned the cargo segment. The use of only indispensable infrastructure to operate flights, minimum connection times and low average salaries for staff have implications for the rates that they can then charge their users, setting them at levels below those of the traditional carriers and, in general, not discriminating between the classes of passengers. Table 1 shows the main differences between traditional airlines and this new breed:

¹⁸ Airline connection models can be divided into point-to-point, which connect pairs of cities, and hub and spoke, where destinations radiate from a central airport that serves as a base from which to reach other destinations, permitting cost reductions and taking advantage of economies of scale.

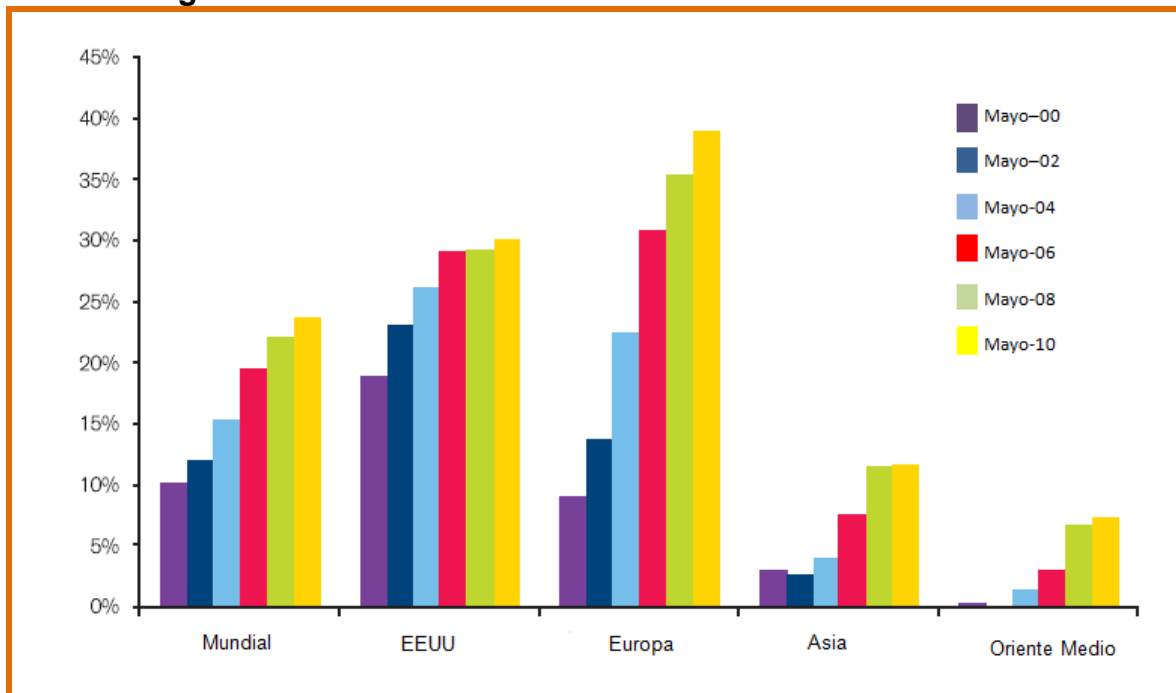
Table 1. Comparison between low cost and traditional carriers

	AEROLINEAS DE BAJO COSTE (LCC)	AEROLINEAS TRADICIONALES
Aeropuertos	Fundamentalmente secundarios. Uso de los servicios indispensables y poco tiempo de estancia	Principales. Mayores servicios y tiempos de estancia
Conexiones	De corto radio. Centradas en el punto a punto	Con posibilidad de escalas y vuelos de interconexión
Tarifas	Un único tipo de tarifa sin diferenciación por clases y sin aplicación de descuentos por canal de contratación. Generalmente de cuantía inferior	Diferenciación de clases de pasajeros y canales de contratación. Tarifas más complejas y generalmente superiores a las de LCC
Alianzas y códigos compartidos	No	Si
Venta	Principalmente vía web y venta directa	Vía web, venta directa y agencias
Aeronaves	Modelo único y extensiva utilización	Varios modelos. Utilización inferior a las de las LCC

Source: Compiled by the authors.

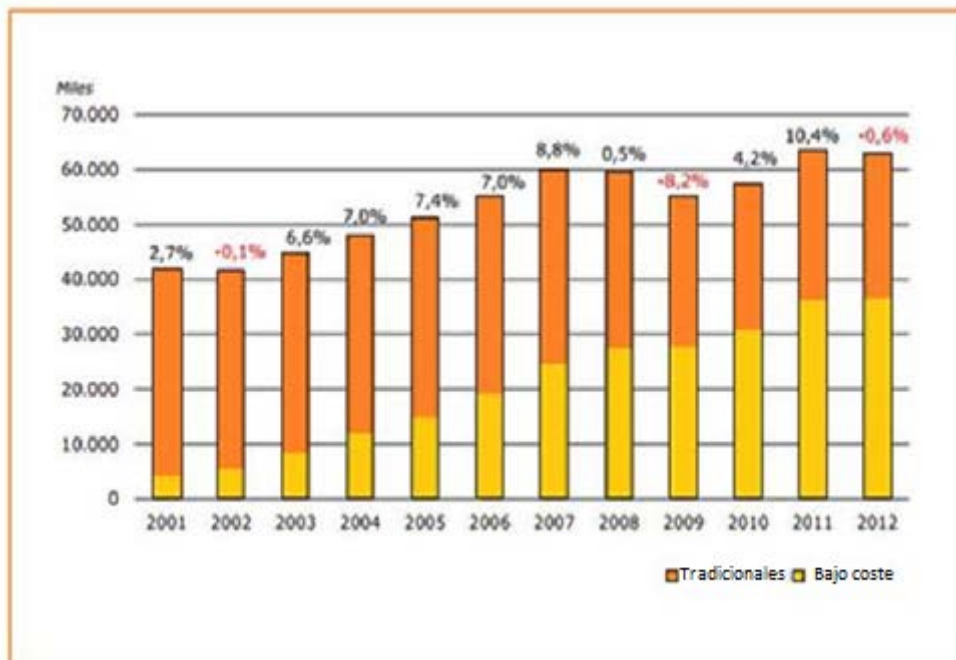
The rise and development of low cost carriers in the Spanish and world markets are shown in Figure 7 and Figure 8. According to data from the European Commission, the evolution of this type of airline has gone from a 1.5% presence in the market in 1992 to be almost on a level with the traditional carriers only 20 years later, and with higher percentages in Europe than in the rest of world. Although the Spanish case differs from that shown in Figure 7 as it only refers to international flights arriving in Spain (omitting internal flights) and has a shorter time frame, it does show a similar trend to the rest of the continent.

Figure 7. Worldwide evolution of low cost carriers 2000-2010



Source: "Vision 2050". IATA February 2011

Figure 8. International air passenger arrivals in Spain. Absolutes and percentage variation



Source: Annual Report on low cost airlines. Spanish Tourism Institute 2012.

The emergence and growth of this new airline model has had implications for airport development and management. The airports have adapted to the new demands from the LCCs by, for example, eliminating the obligation to use certain non-indispensable services (e.g., using "fingers" or buses) and even as an

ultimate step allowing some airports or airport terminals to specialise in this type of carrier.

Another effect of the appearance and growth of this type of carrier can also be seen in the market: they show a greater propensity to change airport location, mainly due to their greater flexibility.

Traditionally, most airlines have set up their operating base at one specific airport, which means that, to some extent, they grow to accept the conditions imposed on them and have little room for manoeuvre in their actions.

The current dynamic has made it easier for the airlines to move their bases. This change of location can be due to an airline's abandoning its operating base, bankruptcy or simply be the result of a premeditated targeting of routes with new origins and destinations (or a reduction in the frequencies of its routes). As a result, the ratio of creation and closure of routes between pairs of cities has also undergone a considerable increase in recent years¹⁹. In addition, these effects have greater relevance for the airports, given the time that it takes for one to recover from the departure of an airline.

However, a change of routes, or, in the more extreme view, the disappearance of an airline from a particular airport also involves certain switching costs for the airline, such as the relocation of its staff, the breaking of long-term contracts, the economic cost of unrecoverable investments or a possible loss of economies of scale if the change involves dividing airline operations between more than one airport.

These new dynamics set a limit to the possible commercial or pricing policy implemented by airport operators, as they are subject to the threat of possibly losing customers (either due to a an airline's reducing its number of flights or the complete disappearance of a carrier from the airport), should these policies not meet the needs of the carriers. Table 2 shows the importance of this "threat" in the restructuring of operations at European airports by different airlines from the year 2000 to date.

Table 2. Restructuring of European hubs since 2000

Airport	Airline	Year	Reason
London Gatwick	British Airways	2000	Reduction in size/restructuring
Basle	Swissair	2001	Bankruptcy
Brussels	Sabena	2001	Bankruptcy and reopening
Geneva	Swissair	2001	Bankruptcy
Zurich	Swissair	2001	Bankruptcy and reopening
Nice	Air Littoral	2001	Bankruptcy

¹⁹According to the ACI's "Economics Report 2012", the opening and closing of routes by European airlines accounted for 15% to 20% of the market.

Birmingham	British Airways	2003	Reduction in size/restructuring
Clermont-Ferrand	Air France	2004	Reduction in size/restructuring
Glasgow	British Airways	2006	Reduction in size/restructuring
Barcelona	Iberia	2007	Reduction in size/restructuring
Milan Malpensa	Alitalia	2008	Reduction in size/restructuring
Athens	Olympic Airlines	2009	Bankruptcy and reopening
Manchester	British Midland	2009	Reduction in size
Barcelona	Spanair	2012	Bankruptcy
Budapest	Malev	2012	Bankruptcy

Note: Spanair ended its operations in Barcelona even though it was not considered a hub in the traditional sense.

Source: “*Airport Competition*”. Copenhagen Economics 2012.

We therefore find ourselves faced with a different scenario of relations between airports and airlines since different carriers, especially the LCCs, which have more flexible management models that are easily adaptable to other bases, have increased their market share. All this leads in end to **a reduction in the market power of the airports**, which increases their sensitivity to the airlines' requirements in terms of developing their commercial policies.

2.2.3.2. The passenger segment

The other element comprising the demand for airport services that comes from the concept of the two-sided market is **the passengers** and the non-aeronautical commercial activities that take place at airport facilities.

First of all, it should be mentioned that the economic literature tends to differentiate between two major types of travellers: those whose purpose for travelling is leisure and holidays and those who are travelling for work-related reasons²⁰. However, as happened in the case of the airlines, the distinction between the two cannot be categorical since it would be possible to define intermediate categories between the one option and the other or, even sub-types within each category of passengers.

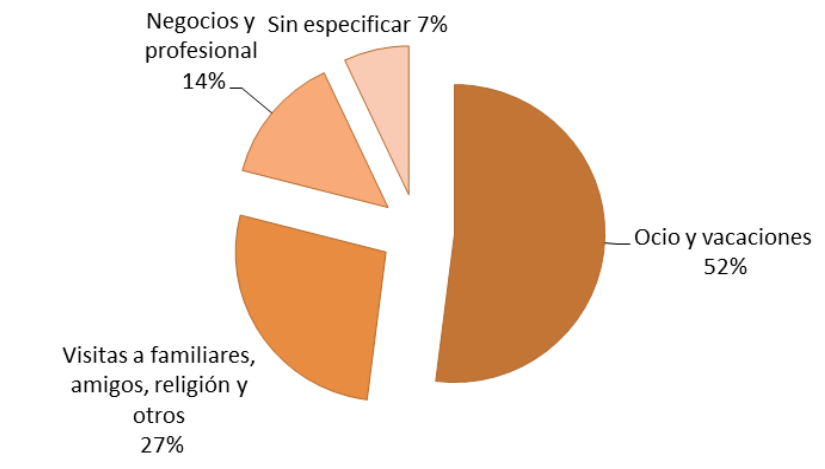
The difference between the two types can be seen in various features. Firstly, in regard to ticket prices, there is greater elasticity in the leisure-motivated passenger segment, which is more sensitive to this variable and is prepared to change the routes between origin and destination because of ticket prices, unlike business-motivated travellers. Similarly, this type of travellers is prepared to travel further to reach origin and destination airports, opting in many cases for secondary airports rather than major ones. They also have greater flexibility in regard to schedules

²⁰ Another type of travellers to be considered is those who are going to visit family and friends, who could form an intermediate point between the two categories and whose flexibility, for example, in terms of origin and departure airports, is less than that of tourists.

than those travelling for work-related reasons, who are prepared to pay more for their ticket to get a particular schedule.

The increase in tourists or leisure travellers as a group that is more sensitive to pricing is in turn related to the increase and consolidation of LCCs and the proliferation of regional airports with less than 3 million passengers per annum in Europe, which facilitates the development of the LCCs. Figure 9 shows the range of values in the development of this tourist segment for five European countries at different times.

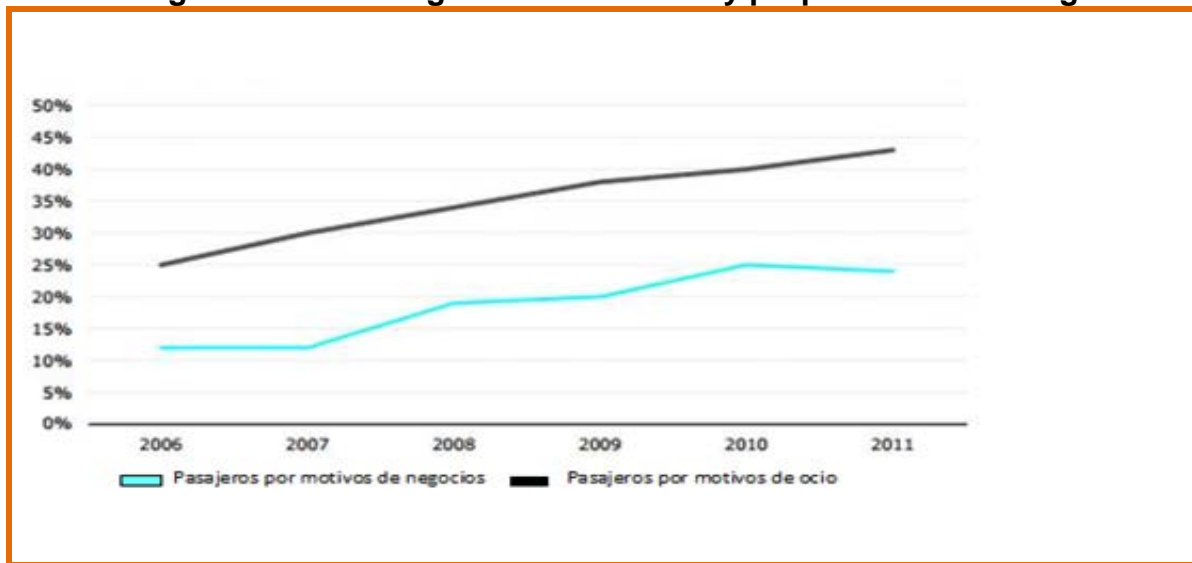
Figure 9. Percentage of tourists worldwide by purpose for travelling (2013)



Source: *World Tourism Organization (UNWTO)*

Regardless of the type of passenger, it is important to highlight the boom in recent decades of online ticket sales, purchased either through intermediaries or directly with the airline. This increase in the range, transparency and access to information by passengers, together with the world economic crisis that started in 2008, have made consumers more price-sensitive and more aware of the various alternatives possible for their travel route. Figure 10 shows the evolution of direct online sales for the European market between 2006 and 2011, linking the greater use of this type of sale with the passengers' purpose for travelling.

Figure 10. Percentage of online sales by purpose for travelling



Note: The data for 2010 and 2011 are preliminary; higher percentages are expected than those shown in the figure.

Source: "Airport Competition in Europe" 2012. Copenhagen Economics.

In short, a broader range, more information and greater access to several different flight options, plus the increased presence of regional airports better suited to offering flexible rates depending on the type of airline, have **added another element of competitive pressure that favours consumers and market efficiency.**

2.2.4. Dynamics of airport market entry and exit

Another of the aspects that has relevance when characterising airport economics is analysing the presence or absence of barriers to entry to and exit from the market.

Analysing the presence of this kind of limitation, due to a multitude of legal circumstances or even those intrinsic to the sector, is considered to be one of the basic conditions when determining the possible current or potential competition in a market.

From a technical perspective, in the case of the airport sector there are many factors that can act as barriers to entry, which can be divided into structural, strategic and legal.

Firstly, the structural barriers are linked to the technical aspects of production, over which the operators have no direct control. For example, the orographic and climatological requirements for the construction of an airport are very important as they limit the number of possible locations. Among these same barriers, there are also some economic features inherent in the sector, such as the presence of significant buried costs in these infrastructures and the economies of scale and scope already mentioned above.

It should also be noted that other structural barriers to the development of new airports include the location of the airport, a factor that generally determines its success, and the benefits of established airports that are already operating as hubs. In this last case, the fact that an existing airport is currently operating as a hub for a particular airline will make it difficult for new airports to enter the market, bearing in mind that, after centring their operations on one single airport, airlines prefer to take advantage of the buried costs that this move involved at the time²¹.

Airports also face strategic barriers, which should be understood as those that are essentially related to airport pricing or capacity policies that incumbent airports can implement to prevent a new competitor from entering the market.

Finally, it is necessary to highlight the legal barriers. These arise from, for example, the legal difficulty or impossibility of building an airport due to urban planning restrictions or opening new infrastructure, or the establishment of certain environmental restrictions.

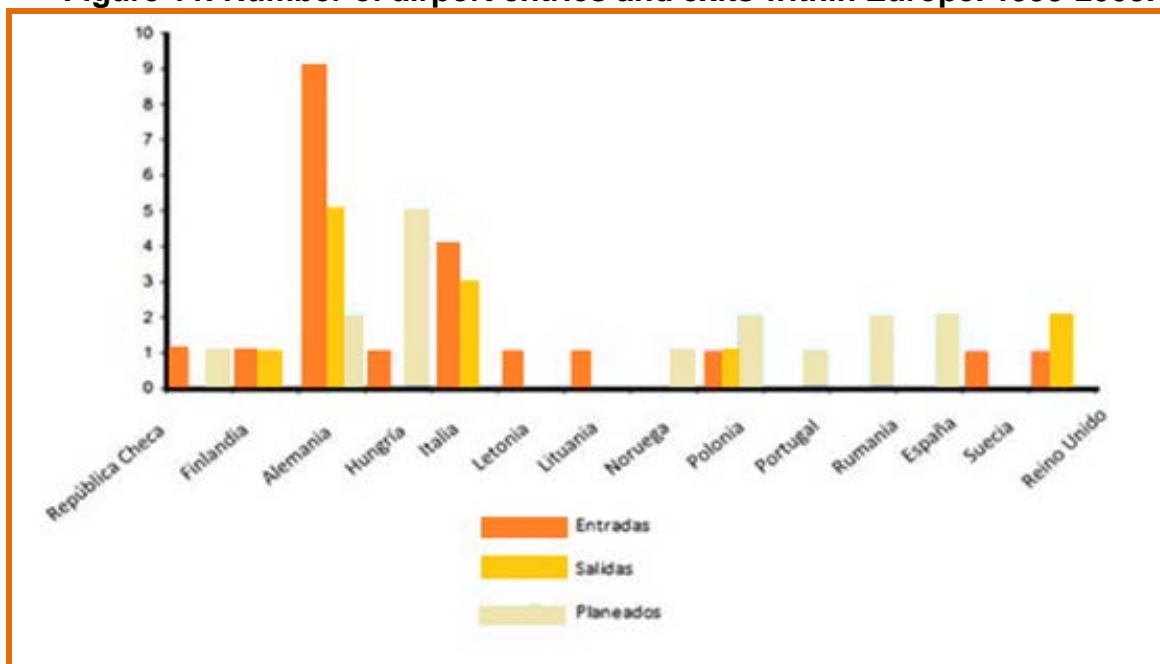
As barriers to exit, in addition to the fixed nature of the infrastructure, which does not permit assets to be transferred, the substantial costs buried in the construction of these infrastructures may be highlighted.

From a practical perspective, the following figure shows the number of airports that opened and closed in Europe in the period 1995-2005²². Spain is a case that should be highlighted since it is the one country with a large airport sector (currently, 46 airports) in which no infrastructures of this type have exited while new ones have opened up in the public network. In Belgium, Bulgaria, Estonia, France, Lithuania, the Slovak Republic and the Netherlands, there were no entries or exits during that time.

²¹ Australian Productivity Commission, 2002

²² In aggregate terms, between 1996 and 2008, the number of new airports in Europe rose to 81. *Airport Competition in Europe*. Copenhagen Economics. (2012)

Figure 11. Number of airport entries and exits within Europe. 1995-2005.



Source: "Airport Entry and Exit: A European Analysis". Christiane Müller-Rostin, Hans-Martin Niemeier, Plamena Ivanova, Jürgen Müller, Ignaz Hannak and Hansjochen Ehmer. 2010.

In conclusion, although the entry and exit data for the sector differ from those for other sectors with similar economic characteristics, the market has a certain dynamism, mainly due to the appearance of new airports (either with new infrastructure or because of the conversion of military aerodromes into commercial airports) and to closures in almost all the surrounding countries.

2.2.5. Market power of the airports

A company has market power when the offerer of a product has the ability to consistently influence its price, quality or speed of innovation without this particularly affecting the demand for that product, at times due to economic or legal barriers to entry faced by other offerers or, ultimately, by being in a monopoly situation as the only supplier of a particular service.

According to the preceding definition, from a theoretical standpoint, airports would only have market power in the aeronautical activities segment. However, this statement must be qualified.

Firstly, as the LCCs have increased their market share, a greater proportion of air traffic is subject to greater flexibility in its management, so that the very possibility of airlines moving elsewhere is a limitation on the possible market power of the airports.

Secondly, although the intrinsic existence of market power can be attributed to the fixed geographical location of airports, it must also be recognised that this market power is limited by the competition from other airports or other modes of transport faced by airports and airlines.

In addition, as has been noted, the growing importance of non-aeronautical revenue for airport finances and the interdependence between non-aeronautical and aeronautical revenue means that even in situations where an airport could enjoy a certain market power in the aeronautical segment, the exercise of this power is limited by its effects on the total income of the airport.

In conclusion, the current dynamics of the market have led to a transfer of part of the market power of airports to the airlines, so that the latter are exerting more and more influence on the decision-making processes of the airports and have lessened the possibility of the airports acting as "price setters", especially in the aeronautical segment.

In spite of the above, there are certain situations in which the existence of market power at an airport and the possible exercise of this power would justify the need for imposing efficient economic regulation. Regulation would therefore attempt to obtain similar results to those arising from competition in a controlled manner and with the least distortion. However, at the same time, it could lead to certain costs, for example, by reducing the incentives for the operators to improve efficiency, because, since they could not take advantage of possibly cutting costs through pricing, there would be no incentive for them to introduce productive efficiency into their processes. Due to these issues, whether or not to enforce efficient economic regulation must be decided after carefully weighing the possible advantages and drawbacks of limiting competition and setting up mechanisms that would guarantee the need for and the proportionality of the regulations, including ex-post reviews carried out at suitable intervals. This exercise must also start from an individual basis²³ and pay attention to the different types of competition that the airport could face, focusing solely on those segments that are necessary and in proportion to the market power of the airport in question.

Case study: The regulation of airports in the United Kingdom

The case of the United Kingdom, as well as being the first example of airport liberalisation in Europe, is a paradigm for the analysis of economic regulation.

Until it was privatised, the British Airport Authority²⁴ (BAA), which reported to the central government, was responsible for managing three airports in London, three in Scotland and the one in Southampton²⁵. With the aim of increasing the operating efficiency of the airports in order to lighten the economic burden on those that were making a loss, the BAA was privatised in 1987 and the remaining airports with a significant volume of traffic were corporatised. With the exception of the BAA airports, the airports were owned by local governments, although private investors had the option of becoming shareholders of these authorities.

The privatisation of these airports was accompanied by the regulation by the *Civil Aviation Authority* (hereinafter, CAA) of maximum prices at four of them

²³ There is broad agreement on this point, both from the airports (ACI) and the airlines (IATA).

²⁴ Since 2012, *Heathrow Airport Holdings Limited*

²⁵ The airports were London Heathrow, London Gatwick, London Stansted, Glasgow, Edinburgh, Aberdeen and Southampton.

(Heathrow, Gatwick, Manchester and Stansted), as it was considered that in these cases competition would not be enough to guarantee the protection of passengers' and users' interests. A possible abuse of market power would increase prices prejudicing the two groups and would eliminate the potential benefits of innovation and efficiency.

The main competition issues here stem from the fact that the BAA controlled the three most important London airports and the two Scottish airports, thereby creating overlapping territories at airports under the same manager. After a long economic and legal saga, the problems identified (mainly disincentives to lowering rates and making additional investment) led to the British competition authorities requiring divestment in each of these areas²⁶.

The economic regulation review process²⁷ led to the conclusion that only Heathrow and Gatwick airports²⁸ must be subject to this regulation, taking into consideration the changes that had occurred in the market since the previous review, including the existence of different owners at Heathrow, Gatwick and Stansted²⁹ and their implementation of different commercial strategies.

In regard to the model selected by the regulator, this was a price capping mechanism for airport charges at Heathrow (CPI-1.5%) and Gatwick (CPI-0) for a period of 5 years under the single till approach, so that, as has been explained earlier, the revenue obtained by the airport manager from its commercial activities was subtracted from its costs to calculate the regulated price.

2.3. Current trends in the sector

The most obvious reflection of the changes in the sector in recent decades has been the progressive transformation of the organisational, ownership and management models for airports, with the starting point generally being taken to be the privatisation of the airports under the *British Airport Authority* (BAA) in 1987.

In general terms, it can be accepted that there is no single, hermetic airport model; instead, each country adapts the infrastructure management and ownership formulae that fit its own needs. However, with the aim of characterising the different models more or less homogeneously, this analysis will focus in particular on the different international experiences by examining three characteristics that can be considered to define airport models: i.e., the ownership structure, the different management models and the possible methods of economic regulation.

2.3.1. Airport ownership structures

²⁶ In its decision of March 2011 in particular, the *British Competition Commission* required that Stansted and either Edinburgh or Glasgow airport be sold off.

²⁷ On 10 January 2014, the CAA approved its final decision regarding the economic regulations of these airports for the period 2014-2019

²⁸ The decision noted the deregulation of Stansted airport as of April 2014 as it considered it lacked sufficient market power.

²⁹ The economic regulation of Manchester airport ended in 2009.

The privatisation of the BAA airports in the United Kingdom at the end of the 80's is generally taken to be the first move toward a change in airport ownership patterns. Historically, prior to that time, alterations to the ownership and management of this type of infrastructure took place very discreetly. It was considered that these were strategic assets and therefore the owners must be responsible for safeguarding the general interests of both these infrastructures and the air navigation services by keeping ownership in the the hands of the government. After this, the total privatisation, but above all partial privatisation, of this type of infrastructure became a major international trend that slowed down at the end of the last decade. Now, however, it has had a strong resurgence in the international market, in line with the tendencies to globalisation and liberalisation found in the developed economies.

- The reasons for starting on a total or partial airport privatisation process are varied and not mutually exclusive. Among them, the ICAO³⁰ lists a search for higher levels of efficiency, attracting private capital so as to make needed investments in the section that could not be financed by the state at the present time, the use of privatisation as a source of revenue and the possible pressure exerted by private entities that, being present in other states, are pressuring for the inclusion of private participation in these infrastructures.

The presence and percentage of private capital in the management and/or ownership of airports will give rise to different models, depending on the level of participation. Regardless of the many case studies that each State could provide, the most common schemes are:

- Completely public ownership and management: different variations made be adopted of public management and ownership, such as the state's assigning the management to an autonomous body or the ownership and management to lower-level government bodies. This type of scheme would apply to airports that focus more on the traditional role of airports, which are less developed commercially and whose activity is generally linked to achieving some type of general interest, such as connectivity or territorial cohesion. In some cases, this option leads to a lack of consistency between airport policy and economic efficiency.
- Systems with the presence of private capital: Within this scheme, it is possible to differentiate in turn between different degrees of private participation and ways in which this transfer to the private sector is managed. On the one hand, the management of the airports, generally without the development of the infrastructure, is transferred through a management contract to a private entity for a limited time with the payment of a levy or fees. A greater degree of private participation would be structured around a lease or concession, under which the management and development of an airport or group of airports is transferred to a private

³⁰“Manual on privatization in the provision of airports and air navigation services”. ICAO. 2012

entity or consortium by means of short- medium- or long-term contracts³¹. A special case within this option is the so-called build-operate-transfer (BOT) contract, under which a private entity obtains the right to finance, build and exploit a certain facility, including the land or the buildings or both, for a pre-set period of time, at the end of which it must be returned to the owner.

- Majority or totally private ownership and management: in contrast to the first model, this type of airport is more oriented toward the market and a search for return on assets. The possible abuse of their dominant position by the managers of these infrastructures will determine whether economic regulations are imposed or not.

The selection of one route or another will be conditioned by different basic issues in each State, such as the legal and institutional framework, the financing needed to develop and manage the infrastructure, market conditions and political objectives.

The privatisation of European airports:

Europe can be presented as one of the major driving forces behind the liberalising policies for airport ownership and management models, only being outdone by Australia and New Zealand.

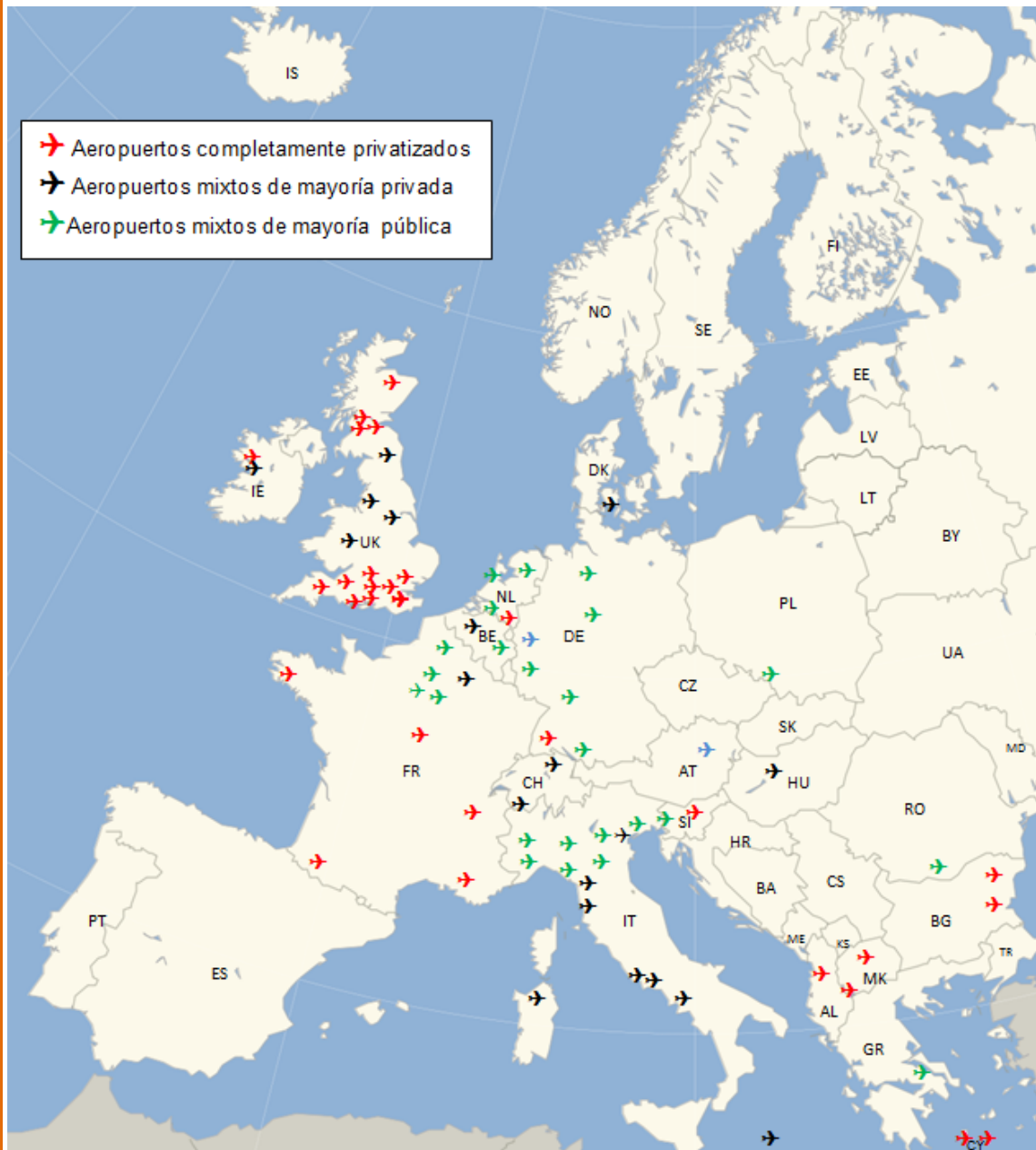
Even though these reforms have not been adopted in every country with the same intensity as in the United Kingdom, most of the countries in continental Europe have carried out an ongoing wave of privatisations at their major airports since the 90's. In some cases, the State has kept its share in them through minority percentages, imposing clauses to this effect or using a "golden share".

Figure 12 shows the map of European privatisations in 2010. It includes completely private airports, those with a greater percentage of private capital than public and those with a greater percentage of public capital than private. It can be seen how, of the 404 airports in Europe on that date, 35 were completely private, a considerably higher figure than the 12³² that existed in 2006, all of them in the United Kingdom. Also, it is observable how this trend has spread over continental Europe and how much the private capital in this type of infrastructure has increased in absolute terms. In addition, there is a significant number of airports with a majority holding by private capital, although with notable differences in the percentage share.

³¹ For example, in Europe, according to "The Ownership of Europe's airports 2010" ACI, 49% of airports are subject to 5 to 20 year concessions, 20% 20 to 50 year concessions, 3% concessions of over 50 years, and 28% unlimited concessions.

³² "Comparative Political Economy of Airport Infrastructure in the European Union: Evolution of Privatization, Regulation and Slot Reform" Gillen and Niemeir 2007

Figure 12. Distribution of privatised airports in Europe. 2010



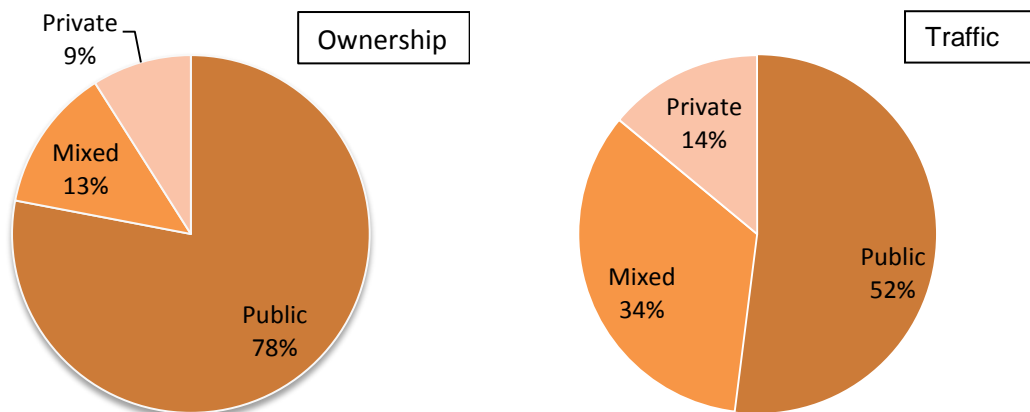
Note: The Vienna and Düsseldorf airports, marked on the map in blue, have 50% private capital. For easier viewing, the airports in Russia (2 completely private and 1 mainly public), Turkey (1 completely private and 6 with 50%), Georgia (2 completely private) and Armenia (1 completely private) have not been included on the map.

Source: Compiled by the authors based on data from "The ownership of Europe's airports". ACI. 2010.

Spain is the only big country with a large number of airports whose airport network has a total absence of privatisation³³.

Figure 13 also shows that in the same period 22% of European airports had partial or total private participation. However, from the analysis of these data and the passengers handled by airport type, it can be concluded that this 22% of airports handles 48% of European traffic, which indicates that private capital is mainly present in the big airports.

Figure 13. Airport ownership structures and division of traffic.



Source: *The ownership of Europe's airports*. ACI. 2010.

The economic literature abounds with studies that have analysed, on an empirical basis, the benefits and harm that different degrees of private participation in airports can bring to efficiency.

The most important results for these purposes may be those presented by Oum, Yan and Yu (2008). Their main conclusions, which coincided with those of Oum et al. 2006, suggest that countries that propose to implement privatisation processes should, in terms of cost efficiency, either carry out total privatisation or transfer the majority ownership to the private sector. In all cases, they should avoid mixed solutions with majority public ownership, as it may be empirically preferable to have completely public ownership rather than these mixed schemes.

In the first place, the greater cost efficiency of airports operating under entirely public or private regimes can respond to the absence in these designs of possible conflicts of interest and agency problems among the partners that occur by definition in mixed structures with asymmetrical information. There will also be a greater degree of homogeneity in the criteria chosen when making decisions.

In particular, the lesser degree of efficiency observed in completely public ownership and management schemes tends to be motivated by the *a priori*

³³Other countries in Europe have not undergone privatisation either (Portugal, Finland, Luxembourg, Sweden, Estonia and Lithuania) but the small size of these countries and/or the small number of airports do not permit a comparison with Spain.

definition of objectives, so that airports of this type are faced with weighing the search for economic profitability against the pursuit of general interests, which, as a general rule, causes these airports not to be situated at the most efficient point on their cost curve. Other reasons generally listed are a lack of transparency, an incorrect definition of their objectives and, in some cases, the pursuit of personal interests on the part of their managers.

Complete privatisation, on the other hand, is an example of a more profit-oriented approach, even if the actions of these companies are possibly subject to certain conditions set by the regulator in regard to capacity, quality and output. This more profit-oriented approach will lead to greater rationality in investment planning and cost analysis and, in the end, greater advantage being taken of productive resources and capital. It is also possible to observe more investment being targeted to the non-aeronautical segment at this type of airport.

The possible abuse of market power by private airports should also not be forgotten. Although on many occasions it has been considered that the use of market power in the aeronautical segment by these companies will be limited by the complementarity existing in the commercial segment, the proper definition of the regulations and the role played by the regulator in them are taken to be indispensable.

Lastly, in regard to mixed ownership and management formulas, although it is recognised that the mere incorporation of private capital into the structure can promote a profit-oriented approach and economic rationality when setting rates, the presence in the decision processes of both public and private interests and the different aims proposed by the two sides dilute these possible benefits, leading to inefficient results and a tendency to over-investment.

However, it should be noted that as has been stated in other sections of the study, the results that are presented here are similar and they will therefore be determined by the sample being studied. Similarly, in many cases, this efficiency is analysed from a static viewpoint, without presenting any considerations related to dynamic efficiency (how the airports have adapted to new situations and shown skill in developing new strategies or services).

2.3.2. Management models Centralised versus decentralised

Another two essential points that define airport models are the choice of the infrastructure management model and the capacity of the airports in the market for autonomous decision making.

Regardless of whether their ownership structure is public or private, as analysed in the previous chapter, two management models can be defined for these infrastructures, centralised and decentralised, with, in some cases, mixed solutions.

The centralised model means that one particular body jointly controls the major decision-making variables for managing the airports, i.e., the decisions on investments, sources of financing and the assignment of space in the terminals of all the existing airports, as if this were a network. This type of management, therefore, generates a financing model based on a common till for a number of

airports. This till is managed by one single body, and in it the results of loss-making airports are compensated by the revenue generated by the entire network as a set of cross-subsidies.

In contrast to this model, there are other types of individualised management, possibly referring to the management of one single airport or a small group of them, whereby each of these airports or groups autonomously decides the above variables, which would promote the introduction of competitive tensions. This management system has advantages, such as greater transparency in the mechanisms for financing loss-making airports and an increase in the competition between airports for services and/or products in their search for customers.

Management models in the European Union

Table 3 summarises the European experience with centralised and decentralised management.

Table 3. Individual and joint management models in the European Union

Form of management	Type of market	EU countries
Centralised and joint	Large	Spain
	Small	Estonia, Finland, Lithuania, Portugal, Romania.
Hybrids	Large	----
	Small	Sweden, Greece
Individual management	Large	Germany, France, Great Britain, Italy.
	Small	Austria, Belgium, Bulgaria, Cyprus Denmark, Slovakia, Slovenia, Holland, Hungary, Ireland, Latvia, Luxembourg, Malta, Czech Republic.

NOTE: The "large" market type has around 100 million passengers per year or more. The country with the most passengers in the "small market" is Holland, with less than 50 million per year.

Source: La reforma del modelo de gestión de aeropuertos en España: ¿Gestión conjunta o individual? (The reform of airport management in Spain: Joint or individual management?) Bel and Fageda (2010)

From the above, it can be seen that Spain is the only country in Europe with a centralised, joint management system, in the hands of Aena, with a large number of infrastructures and passengers. Again, although it is recognised that other countries are also using the joint management system, their situations cannot be compared to Spain's as these are countries with much lower volumes of traffic and smaller numbers of airports (according to the ACI, Romania, with 15 airports, is by far the closest to the Spanish case).

As can be seen, the general pattern in Spain is a trend toward individualised management by one company, whether public, private or mixed, a trend also

found in countries outside Europe (USA, Canada, Australia, Switzerland and New Zealand).

The importance of which of the two management methods is chosen has been illustrated by a number of authors, who, in most cases, noted that what is important in the airport ownership structure is not the "who", public or private, but the "how", i.e., the managers' differing capacity for independence and competition.

2.3.3. Economic regulation

In environments where sales of goods and services are competitive, the economic well-being of consumers must be left in the hands of the market forces as these forces lead, without any public involvement or costs, to more efficient results when prices, quality and innovation are determined by supply and demand. However, there can be non-competitive situations – for example, the presence of an operator with market power – in which the market, without efficient regulation, leads to results that could be improved. One of the possible risks of private participation in airports could be the hypothetical abuse of a dominant position by the operators of certain airports.

This is why, in many cases, although not always, privatisation processes have been accompanied by the economic regulation of prices, quality and investment, with different degrees of intensity, and the existence of an independent regulator charged with this very purpose.

In regard to the role of the regulator, there is an international consensus regarding the necessity of its independence, its responsibility to democratic bodies and the fact that the regulations should be necessary and unavoidable and be implemented through a transparent process that can be accessed by the interested parties. The coexistence in one single body of the duties of ownership and regulation would increase, at least theoretically, the possibility of the regulator being captured, mitigating the possible benefits of the introduction of private capital into the management.

There are currently few examples of internationally recognised, independent regulators (basically in the United Kingdom, the Netherlands and Ireland). In contrast, most neighbouring countries have carried out consultation processes on airport charges³⁴ in recent years.

In general terms, the enforcement of this regulation will seek, among other things, to minimise the risk of airports applying anti-competitive practices or abusing their possible dominant position, which, in the end, will result in the protection of the interests of passengers and other end users.

A high degree of heterogeneity can be seen in the different countries among the possible forms of economic oversight of airports, ranging from price capping to preventive monitoring of prices or simply having recourse to the ex post application of laws that defend competition. However, some consensus exists on the fact that this regulation should be limited to the activities in which a specific

³⁴Including before Directive 2009/12/EC of the European Parliament and of the Council, of 11 March 2009, on Airport Charges came into force.

airport has market power, especially aeronautical activities. This approach would give greater freedom when managing the commercial portion of the infrastructure, as it is considered that in this segment, even if the airport has some market power, the presence of potential competition can at least lessen any abuse of this power.

In addition to determining the type of activities over which direct regulation of pricing must be enforced, all the activities can be regulated indirectly by imposing a single till method, both for price capping and costs-based regulations. This choice (between a single or dual till) is one of the most lively debates currently on the economic regulation of airports in the more advanced countries. The essential difference between the two methods lies in the fact that the former (single till) takes the income from both aeronautical and commercial activities into consideration when regulating prices while the latter (dual till) only considers the revenue and costs directly linked to aeronautical activities when setting these limits.

In regard to the possible forms of economic regulation, the basic types of regulations are generally at, but not limited to, the price level.

- Price monitoring: this is the most relaxed approach to the economic regulation of pricing. Price levels are supervised in such a way that the regulators are not involved in setting them but continuously monitor them, with a threat of regulation should the rates, excessive profits or lower quality standards in the provision of services reach unacceptable levels. This approach is the one used in Australia and New Zealand.
- Costing-based profitability: this type of regulation (also known as service-based costing) limits the rates of return on airport capital to a level considered competitive. According to the ICAO³⁵, in spite of removing incentives to over-invest in airports with the aim of increasing the volume of profits, the use of this method does not create incentives to reduce costs or develop the commercial segment of the airport.
- Price cap: With this model, the regulator sets a maximum price level that is applicable to a pre-set period, calculated using the single or dual till approach. Normally, this limit is based on the consumer price index plus (or minus) a target or incentive factor of X. If the airport exceeds this objective, it can keep the excess income. Otherwise, it may not increase prices to compensate for the deficit and must turn to other sources of financing. One particular example within this type of limitation is the imposition of revenue capping³⁶, which is more advisable than regulating maximum prices when the costs do not vary with the units sold.

European regulatory methods:

Table 4 summarises the economic regulation models for the major European airports and the existence, or not, of independent regulators in those countries.

Table 4. Description of the major features of economic regulation at some

³⁵ Airport Economics Manual. CAO. 2013

³⁶ Generally known as *revenue cap regulation*.

European airports						
	Difference by airport	Regulation based on existing market power	Price control mechanism	Description of mechanism	Period	Dual/single till
UK	>5 mill pax	Regulation of airports with market power	Price cap	The CAA calculates capital and operating costs proactively to set the maximum rate per passenger	5 years	<i>Single till</i>
FR	Paris airports Large regional airports Local airports	Regulation of airports with market power	Price cap	The regulator sets a maximum limit for airport charges although it is possible to adjust them due to differences between the actual traffic and the forecast level.	5 years	<i>Single till</i>
DE	Primary Secondary Tertiary Quaternary	Regulation of airports with market power	Rate of return	Rate of return applied to the basis of regulated assets		<i>Single till</i>
			Price cap	Price cap based on revenue-sharing agreements with the airlines, including a risk parameter	3-4 years	<i>Dual till</i>
				Maximum prices are adjusted for growth in traffic above	5 years	<i>Dual till</i>

				or below the level set		
IT	>8 mill pax <= 8 mill pax		Price cap	The regulator sets a maximum limit for airport charges although it is possible to adjust them due to differences between the actual traffic and the forecast level.	5 years	<i>Dual till</i>
NL	Schiphol		Rate of return	The regulator sets the WACC applicable to airport assets, limiting the manager's risk in case of deviations from the forecast traffic level.	Annual	<i>Dual till</i>

Source: Compiled by the authors.

III. COMPETITION IN THE AIRPORT SECTOR

3.1 Competitive airport variables

In the last twenty years, the airport sector has been exposed to an increase in entrepreneurial thrust and significant competitive tensions. In simple terms, airports compete with other airports and modes of transport to attract and retain passengers (for example, through new routes and/or airlines) and new cargo services.

The airport construction boom and, as a result, increased competition in the market has led passengers and airlines to consider different alternatives in their decisions, both by altering their possible points of departure and/or destination and through inter-modal competition. In the case of passengers, their choice is conditioned primarily by the final price of the ticket, which includes aeronautical charges and some specific fees that certain airports impose on passengers, but it is also influenced by the services offered (for example, access to the airport and parking play an important role), the airport's perceived quality and the time needed to reach it. For the airlines, their choice of one airport over another is swayed by

airport charge levels and other airport costs, the variety of services offered, the amount of congestion and the metropolitan area covered by the airport.

This section will first of all analyse the main competitive variables that, when an airport modifies them, could affect demand and the main limitations on the impact of these variables. It will then describe which infrastructures can implement competition and profit from it.

The variables with which airport operators can compete with other infrastructures are basically pricing and the quality and/or variety of their services. In any case, it must not be forgotten that the impact of these variables on the attractiveness of the airlines/routes to the airport can be affected by other factors outside the airport's decision making scope, at least in the short term, such as the availability of air traffic slots and rights, in the case of flights outside the European Union.

Altering these variables will have a different impact on the airport's customer segments: airlines and passengers. Therefore, it can be said that altering aeronautical charges, improving pricing and the quality of ground handling, or the efficiency of approach and control tower management will only affect the airline segment directly, regardless of whether these lead to price changes later on or are totally absorbed.

Altering and diversifying the airport's commercial services, on the other hand, will have more impact on the passengers' decisions. However, the impact of these variables on the passengers' choice of airport will be limited by the existence of alternative routes at reasonable prices.

In any case, it should be noted that the effect of these variables on the decisions made by the one or the other will also depend on the degree of market power that the airport has in the area, so that variations in the price levels of an airport with no alternatives close by (and, as will be seen, not only from a geographical standpoint) may have no effect whatsoever on demand.

Pricing policies are one of the main variables through which competition appears in the market. At the theoretical level, in a competitive environment in which each economic operator seeks to have the biggest share of demand possible, price is one of the variables that is most easily altered by competitors and recognised by consumers.

From an empirical perspective, we should note the increasing intensity of the competition between airports, which is reflected in part in the pricing adjustments they have made in the last twenty years³⁷, with estimated airport charges falling by up to 50%. Also, there is a visible struggle to "cannibalise" the customers of other competing airports, with the necessary exception of the pricing policies implemented by the airports, as shown in table 5.

³⁷ According to the European Commission's "Evaluation of Directive 2009/12/EC on airport charges" by Steer Davies Gleave, studies such as "Comparing and Capping Airport Charges: a study for the UK CAA" (2012) have estimated a medium correlation between the evolution of aeronautical charges and airport competition.

Tabla 5. Percentage of European airports with higher, lower or unchanged airport charges.

Airport charges	2009	2010	2011
Increase	31%	36%	75%
No change	19%	47%	24%
Decrease	50%	17%	1%

Source: Economics report 2012, ACI.

The previous table shows that, according to the ACI, during the economic recession years (2009 and 2010), 69% of European airports kept their airport charges at the same level, while 64% lowered them. After 2011, however, the charges began to recover as the European economic situation improved. As the ACI recognised in its 2012 report, this significant price discipline could be attributed to the continuing increase in competition between the airports and the pressures to which they were subjected. However, it should also be emphasised that this body noted that these rises were of slight significance and that it was also necessary to take into account the fact that inflation could lead to these rate increases becoming reductions in real terms.

The debate and the interpretations of the changes in airport charges are wide-ranging. In relation to the above-mentioned data, IATA cites the information in the 2012 Leigh Fisher report: that in 2010 and 2011, 21 and 23 respectively of the 24 big European airports increased their charges. It therefore points to the small airports, which are more sensitive to falls in demand and financial difficulties, as being the ones responsible for lowered rates in aggregate terms.

Another possible estimate is the one offered by the Steer Davies Gleave study for the European Commission, which notes that the total average rates increased by 22% between 2009 and 2012³⁸. However, the comparability of these data with those cited above is very slight, since it is given at aggregate level and by aircraft type. In any case, if we analyse the division of these charges into those that refer strictly to the airlines and those that are passenger-related³⁹, a growing trend can be seen in recent years of a greater weight being given to the latter than to the former. In this way, the risk is being shared between the airports and the airlines, while, at the same time, the latter are profiting from lower charges for using the airport infrastructure and, in turn, they are guaranteed that the impact of the decrease on the number of passengers will also be directly acknowledged by the airports.

³⁸ To calculate the charges, the Steer Davies Gleave study defines four scenarios, related to the different existing types of aircraft. The 22% mentioned above corresponds to the first scenario, calculated for A320-200 aircraft.

³⁹ See section 2.2.2.

Table 6. Breakdown of European airport aeronautical revenue as a percentage.

Year	Passenger-related charges	Airline-related charges
2008	58%	42%
2009	61.5%	38.5%
2010	67%	33%
2011	67%	33%

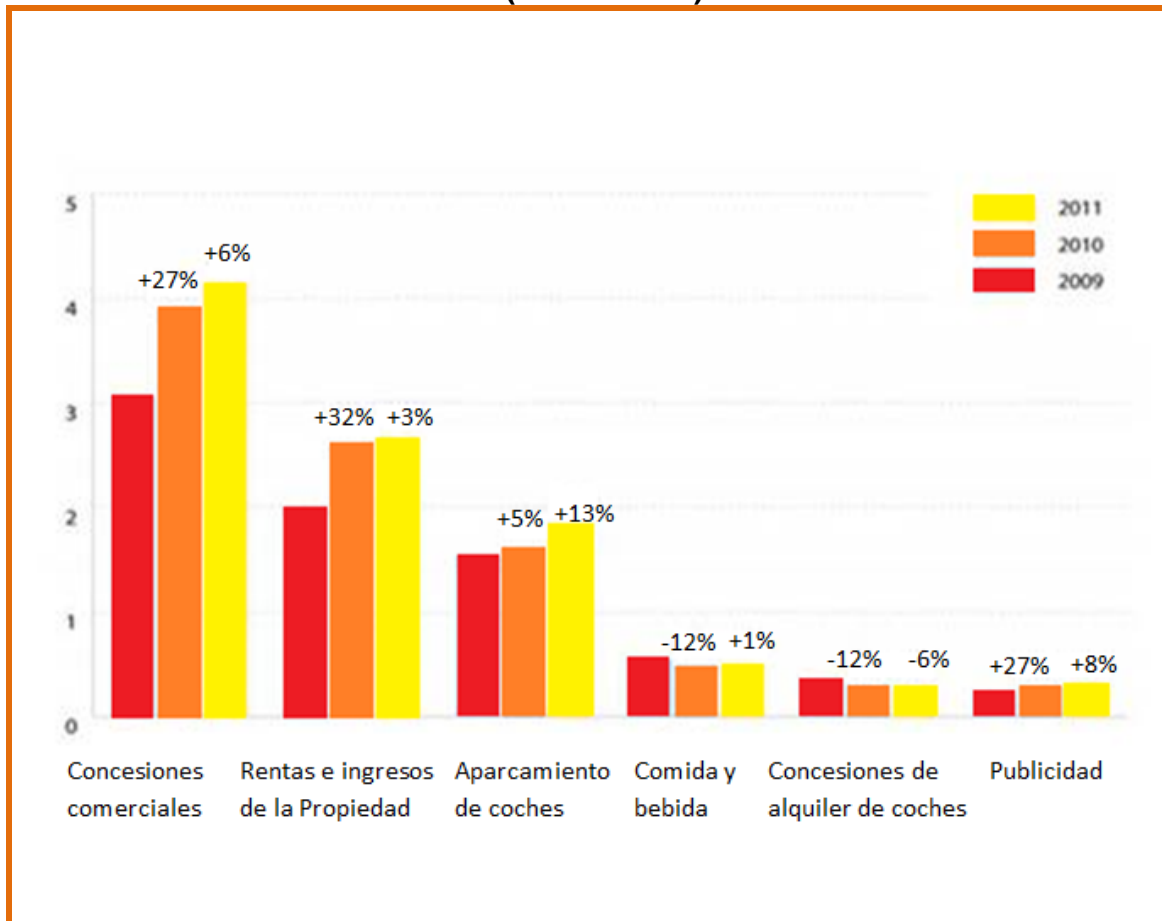
Source: Economics report 2012 ACI.

In addition to the effect that price variations can have on competition, the airports may differentiate themselves from their competitors by improving the quality, variety and cost of the services that they provide at their facilities. Similarly, providing some of these services efficiently, such as, for example, refuelling, baggage management or reduced turnaround times, will mean that the airlines increase their efficiency and have a similar effect on the lowering of prices.

Among the services that an airport can use to differentiate itself are the following:

- Commercial services: An airport's major revenue comes from charges for aeronautical services (runway usage, take-off and landing, aircraft parking, etc.). However, as we have seen in previous sections, there is another source of revenue of increasing importance: from the commercial exploitation of different areas of the airport (renting out offices, business premises and retail counters), parking concessions, car rentals and advertising, among others. Figure 14 shows the share of the major items in the non-aeronautical revenue of airports and their evolution in recent years.

Figure 14. Evolution of non-aeronautical revenue at European airports (billions of €).



Source: Economics report 2012 ACI.

In spite of the growing importance of this revenue for the total turnover of the airport managers, services of this type are invariably linked to the airport proper, so that the impact on competition with other airports is minimised by the fact that the competition between these services takes place within the airport itself, and, in any case, is less than the competitive tensions generated by price variations.

- **Ground handling services**: Ground handling involves the services that are used by an aircraft between landing and take-off, including handling, ramp and refuelling services, which may be provided by the airport or by third parties. How the maximum charges that can be required as compensation for this service or the conditions are set and the quality of these services can influence the total cost borne by the airlines at each infrastructure and therefore their decision whether to establish themselves there.

- **Air navigation services**: these services refer to, among others, the planning, management, coordination, exploitation, conservation and administration of air traffic, and telecommunications and aeronautical information services. The pricing levels for providing these navigation services may, once again, determine

an airline's access to an airport and therefore the competition between the different airports⁴⁰.

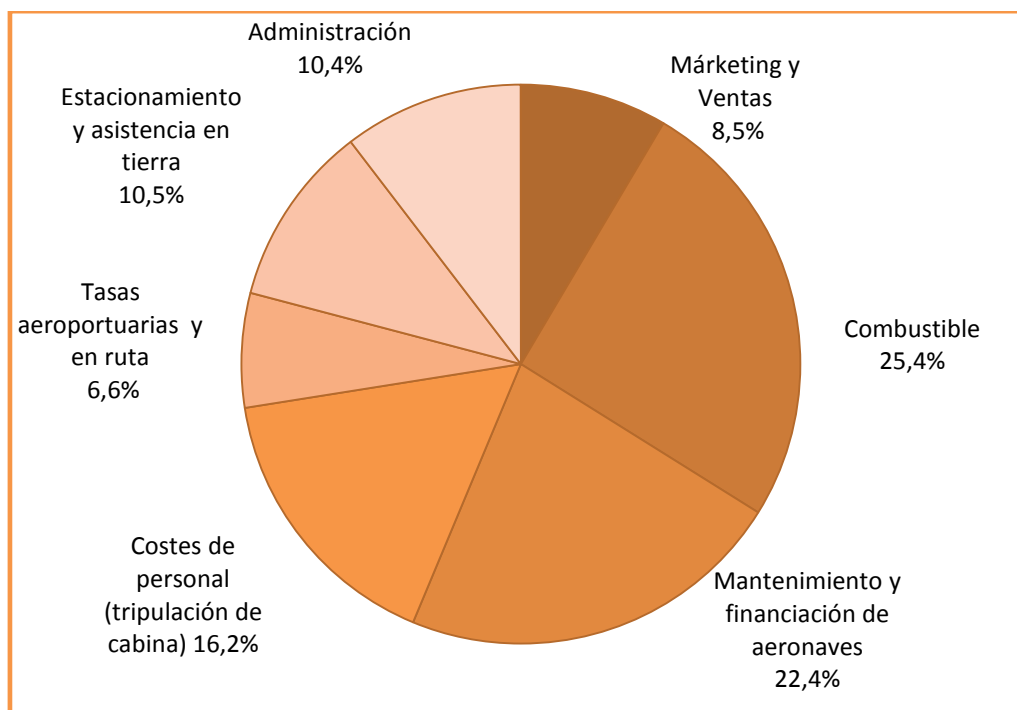
- Passenger services: The competition between airports in terms of services to passengers is one of the most highly developed in recent years. Especially in the case of airports with a large number of connecting flights, passenger facilities, understood as the least time spent on transfers, connections and identity and simple but safe baggage checks, are one of the policies that differentiate competing airports.

- Advertising and Marketing: Lastly, an airport can use advertising and marketing campaigns to attract airlines and passengers, both from other airports and newcomers to the market.

The impact of altering each of these airport-specific parameters will vary according to the type of airline, LCC or traditional, that is being referred to, and notable differences can even be found between airlines in the same category. Regardless of the above, figure 15 shows the cost structure of a traditional airline.

⁴⁰Although it is recognised that navigation services are common to all the airports in one country, the competition between the different airports is understood to extend to airports in other countries.

Figure 15. Cost structure of a traditional airline



Source: IATA: Vision 2050 (2011)

On the other hand, there are certain factors that can **limit the possible competition** between airports.

Firstly, the geographical location of airports and the impossibility of moving them can mean that any possible alterations to the levels of airport charges or improvements in the portfolio of services offered and the prices charged for them have no effect on increasing the number of airport customers due to the market power inherent in their location. Similarly, these alterations may not change the airport's revenue if there are no nearby alternatives, either in the form of another airport or another mode of transport.

In addition, the commercial policy of airports is limited by their capacity, such as the volume of passengers that the infrastructure can handle and the slots available. Let us imagine an airport that wishes to increase or change its customer portfolio in order to limit its possible dependence on one specific company or one airline model. For example, the airport could resort to lowering its charges or improving its services, but these are counter-productive actions if the airport is already congested. This congestion generates a competitive disadvantage between infrastructures and lessens the incentives for one particular airport to compete with others since, if it did obtain an additional share of the demand, it would not be able to satisfy it.

Airports may also be restricted in their ability to modify their commercial policy, for example, if they are subject to regulation, so that they cannot increase their capacity for legal reasons (e.g., environmental permits) or, ultimately, due to the

possible presence of subsidies or economic aid to substitute airports that distort the competitive play between infrastructures.

New guidelines on aid to airports and airlines in Europe:

One of the European Commission's major concerns in regard to the development of the air and airport sector has grown out of the proliferation of airports and low cost carriers due to public funding from different levels of government.

For this reason, on 20th February this year⁴¹ the Commission approved new guidelines for state aid to airports and airlines that resulted from a consultation process on modifying the framework in force since 2005.

The new regulatory framework is aimed at ensuring good connections between regions and the mobility of European citizens, while ensuring competition between airports and airlines by minimising the distortions that state aid could bring to competition in the Single Market. It therefore proposes an effective use of public resources, targeted economically to activities that will foster development, while, in particular, preventing excess capacity and the duplication of loss-making airports. In general terms, the aim is for competition to facilitate the allocation of resources to the sector and for it to be the passenger and not the tax payer who funds the cost of a trip.

Briefly, the major new items in these guidelines are grouped along three axes:

- **Aid to investment:** The new guidelines seek a more efficient use of public funding that does not hamper competition and prevents the problems of over-capacity and duplication of investments found in the market in recent years. Aid to investment in airport infrastructure will therefore only be permitted if a real, justified need exists to guarantee access to a region and the positive effects of this public financing are clear. As a result, the guidelines make the amount of aid contingent on the volume of passengers at the airport, with some flexibility in the case of infrastructures in remote regions.
- **Operating aid to regional airports**⁴² will be permitted for a transitional period of 10 years. During this time, the airports will need to adjust their business models and become capable of covering their costs with their revenue. The new guidelines include a special scheme with greater flexibility and percentages of aid for the special case of airports with fewer than 700,000 passengers per year.
- **Aid for launching new routes:** The new guidelines simplify the requirements for obtaining this type of aid by limiting the amount and time for its collection.

According to various studies, the Commission estimates that as a result of the

⁴¹“ *Guidelines on state aid to airports and airlines*”. Official Journal of the European Union, 4 April 2014.

⁴² The guidelines define airports with less than 3 million passengers per year as regional.

implementation of these guidelines no airport with over 500,000 passengers annually will have to close. However, some minor airports will have to do so as long as they are unable to improve their efficiency and increase their revenue.

Also, the calculations made by the European Commission show that, although the reduction in state funding could lead to increases in airport charges, these increases will be of little significance as they will be compensated by the gains in airport operating efficiency brought about by competition and a decrease in available public funding.

3.2 Competitive dynamics at airports

Identifying an airport's competitors is not a linear process; they must be analysed from various angles. As will be seen in the following sections, there are various approaches, all of them valid, and in general, needing to be used together. In the final instance, the starting point can be the fact that the substitutability of airports and other modes of transport will depend on both the ability and the willingness of passengers to change.

In simple terms, therefore, the process starts from a geographical criterion, which will determine the potential competitors according to the distance between the two airports, but this criterion will in turn be affected by another criterion associated with the types of flights (for example, because of a tourism model) that makes two airports that are beyond the maximum distance from a geographical standpoint obvious competitors.

At the same time, passengers can choose to use other modes of transport, in essence, high speed trains, more significantly in origin and destination cities that both share these infrastructures. The substitutability of the mode of transport will affect the total volume of passengers handled by airports, with a resulting impact on the total traffic handled by these infrastructures.

In conclusion, this section will analyse the main approaches for determining who an airport's competitors are.

3.2.1 Competition between airports

3.2.1.1 Competition between airports in overlapping geographical areas.

The most commonly accepted criterion for determining the substitutability of airports is delimiting their geographical areas, in other words, estimating the catchment area or area of influence of an airport. If two airports are in overlapping catchment areas, then it will be more probable that the one can substitute for the other and, therefore, they are in competition. In the same way, the greater the overlap, the greater the probability that the airports are competing for the same passengers.

This catchment area is calculated by drawing isochronous lines around the airports to include the entire area in which passengers can arrive at the airport from their starting point in less than a certain length of time.

The extent of this area in hours or kilometres varies according to the study consulted, but it ranges from 100 km or a one-hour drive to a distance of 130 km and 1.5 hours'⁴³ and even 2 hours'⁴⁴ travelling time. Other cases set the substitutability of airports as a percentage, between 10% and 20%, of the total flight time, as they consider that travellers on long-haul flights are prepared to spend more time travelling to get better economic conditions or services. Following the same line of argument, other studies prefer to set up a relationship between the ticket price and the distance from the airport, so that passengers would be prepared to travel more kilometres for a considerably reduced ticket price⁴⁵.

Regardless of the criterion chosen, this method presents several advantages, such as its ease of application, the possibility of differentiating between types of passengers using the airport (for example, using isochronous rings equivalent to an hour's travelling time for those travelling for work-related purposes or two hours for leisure-related purposes where there is greater elasticity).

The use of this criterion must be applied with a certain amount of caution or be supplemented by other analyses. First of all, the fact that two airports fall within one catchment area or the same isochronous lines does not mean that both of them belong to the same market, since the prices and services offered by these airports may not be interchangeable (imagine, for example, two airports that, even though they are in overlapping geographical areas, each specialise in different types of destinations, as will be seen below). In addition, although the airports may not be in overlapping areas, this does not preclude indirect relationships of substitutability between some airports and others, so that if airport A competes with B but not C, but B and C compete with each other, this competition may come to affect A.

⁴³ Used by, among others, the Civil Aviation Authority (CAA) and the FEDEA in their study "Taxonomy of Spanish airports". Criteria also present in the following concentrations at Community level: M. 4439 Ryanair/Aer Lingus, M. 3770 - Lufthansa/Swiss, M. 3280 - Air France/KLM, M. 2041 – United/US Airways, M. 2672 – SAS/Spainair. In Spain: C105/07 AIR BERLIN/LTU; C-0024/07, EASY JET/GB AIRWAYS; C-0044/08, AIR BERLIN/CONDOR

⁴⁴ According to ACI 2012, by applying this criterion within Europe, 63% of its citizens live at least a two hour drive from an airport. Also, 50% of passengers have more than one reasonable, alternative departure point.

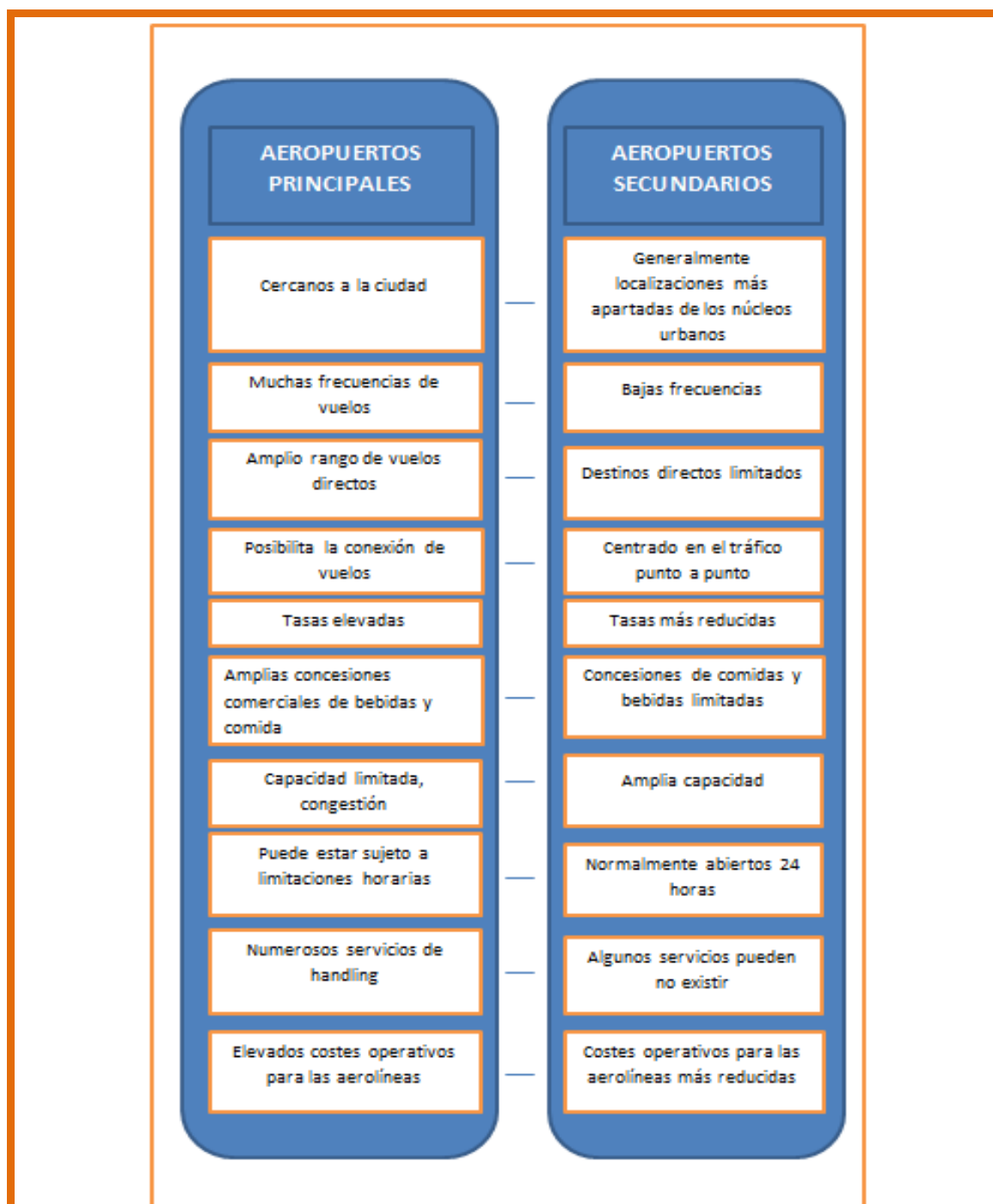
⁴⁵ In any case, as Forsyth (2004) notes, setting these thresholds will also depend on the structure of the market being analysed. For example, it is necessary to take into account the country's population density, the average distance between airports and the available means of accessing the airport.

An example of competition between airports in the same geographical area: Competition between major and secondary airports.

One of the consequences of the air traffic revolution has been the need for more airports, either newly created or through the reconversion of military aerodromes. In many cases, there is more than one airport in the same urban area, generally a major airport and one called secondary.

Figure 14 summarises some of the main differences between them, which have meant in most cases specialisation by type of airline (LCCs and traditional airlines) by the airports.

Figure 16. Comparison of the characteristics of major and secondary airports



Source. Adapted from "Competition between airports in the new millennium: what works, what doesn't work and why. 8th Hamburg Aviation Conference. M. Tretheway and I. Kincaid.

This trend, increasingly observable in Europe, has been fostered by the development of the LCCs and has led to two different effects that must be analysed individually for each airport. On the one hand, the appearance of a secondary airport in an area already covered by an airport can lead, *ceteris paribus*, to the transfer of passengers from the main airport to this new competitor. On the other hand, the creation of a new airport leads to a flow of

newly captured passengers mainly if the routes that this airport is implementing link different pairs of cities.

The most common reaction of main airports to this type of competition is to adjust their pricing and review their costs, which improves their levels of efficiency, bringing them closer to those of secondary airports. However, the greater efficiency of secondary airports should be due to their better differential performance and not aid or subsidies from the public sector.

3.2.1.2 Competition for destinations

Aside from the geographical criterion, it is also possible to find other types of competition between airports that extends beyond their above-mentioned geographical thresholds.

In competition for destinations, the competitive tensions are determined by the kind of tourism model that is dominant in the area in which the airport is located. Some substitutability is found between distant airports, depending on the dominant tourism or business model (sun and sand, snow, cultural, international fairs, etc.) in the region around the airport. An example of this is two airports that are located in different geographical markets but within the same relevant market as both are in a sun and sand tourism area. Then there are competitive tensions between them.

This type of competition will take on greater importance for airports with a large percentage of leisure passengers and will be more limited in those that "specialise" in work-related travel or visits to family and friends. Lastly, the importance of the pressure exerted by tour operators and travel agencies on competition for destinations should not be forgotten.

3.2.1.3 Competition between hubs

Another example of competition between airports is the case of airports that compete for connecting traffic, which is essentially provided by the so-called hub airports⁴⁶, where this type of traffic accounts for more than half of the flights. For almost all long-haul flights, there is at least one layover or many hours in the air and it is possible to find at least one alternative connection, which means that airports compete to attract this kind of connection. Airports of this type will compete to set up faster connections, shorter waiting times between flights, more facilities for passengers and improved capabilities for the airlines, such as matching the number of slots to the activity of the airline making the connections. In fact, European hubs offer significant discounts on their airport charges for connecting passengers, so as to make the airport more attractive to the airlines. It can therefore be said that, for competition between airports, the level of the

⁴⁶ Hubs are airports that are considered to be flight connection centres and are the operating base of a certain carrier or airline alliance.

charges at the hub is linked to the services offered by the airport when determining the competitive offer of each airport.

In any case, when analysing the competitive tensions between hubs, a broad geographical market must be proposed that includes those large airports that are connecting points for long-haul flights.

In addition, competitive tensions will exist at this type of airport as they seek to become the base for a particular airline or airline alliance, thereby producing a vertical linkage and more extensive use of the airport by the airline or group of airlines.

Analysis: Competition in Europe between hubs

Within the European market, five airports currently operate as hubs: Amsterdam (AMS), Charles de Gaulle in Paris (CDG), Frankfurt (FRA), Heathrow (LHR) and the smallest of these, Madrid (MAD)⁴⁷. Although there are notable differences between them (for this type of connection, Madrid has approximately one-third of the seating capacity of Amsterdam and one-quarter of that of Charles de Gaulle), it is considered that there are certain competitive tensions between them in regard to attracting connecting flights between European cities and long-range destinations.

The importance of this competition can be seen in the following figure, which examines the main competitors for each of the above airports. By analysing the pairs of cities that could be considered to be substitutes⁴⁸, with technically feasible connections and measuring, for example, the connection waiting time, it can be seen that the main source of competition for connecting traffic is these same five airports (with the exception of Madrid). It should be noted that according to these results, Madrid is not among the five major competitors of the other European hubs.

Table 7. Main competitors for the five European hubs. November 2012.

	Competitors					
	No. 1.	No. 2.	No. 3.	No. 4.	No. 5.	Other
AMS	CDG	FRA	LHR	IST	MUC	MAD: 9
CDG	FRA	AMS	LHR	MUC	IST	MAD: 8
FRA	CDG	AMS	LHR	MUC	IST	MAD: 11
LHR	FRA	CDG	AMS	MUC	EWR	IST: 7, MAD: 10
MAD	CDG	FRA	AMS	LHR	LIS	MUC: 10, IST: 15

Note: MUC refers to Munich; IST to Istanbul; EWR to Newark airport, New York.

⁴⁷ According to ACI 2012, 62% of transit passengers in Europe have an alternative hub to the one selected.

⁴⁸ In making this analysis, only traffic from/to the European Union was taken into consideration and internal long-range flights between member states were ignored, in order to make the comparison between other international hubs easier, which will not be dealt with in this section.

Source: “Hubs at risk: exposure of Europe’s largest hubs to competition on transfer city-pairs.”
Grosche and Klophaus. 1st meeting on transport economics and infrastructure. Barcelona
2014

In addition, Table 8 quantifies the importance of the competition faced by these airports and shows the percentage of pairs of cities connected at each hub that are exposed to competition from other hubs, whether inside or outside the European Union.

Table 8. Percentage of pairs of cities connected at the European hubs exposed to competition with other hubs. November 2012.

	No competition	Competition from 1 hub	Competition from 2 to 4 hubs	Competition from more than 4 hubs
AMS	27%	15%	30%	27%
CDG	34%	19%	27%	20%
FRA	23%	16%	34%	27%
LHR	15%	13%	34%	38%
MAD	40%	18%	24%	18%

Source: “Hubs at risk: exposure of Europe’s largest hubs to competition on transfer city-pairs.”
Grosche and Klophaus. 1st meeting on transport economics and infrastructure. Barcelona
2014.

It can therefore be seen that Madrid faces no competition for approximately 40% of the pairs of cities for which it acts as a hub. At the other extreme, London Heathrow faces no competition on 15% of its connecting flights but competes with four or more hubs on 38%.

3.2.1.4 Competition in the goods market.

It must also be mentioned, even though it is not one of the objectives of this study, that there is competition between airports for the transport of goods⁴⁹. The demand for goods transport is much more price-sensitive than passenger traffic, so that small variations in the price of the service will lead to transfers to other airports, thereby increasing the options of substitutability. The geographical area of influence of an airport will therefore expand and other features, such as the connecting modes of transport available at the airport, will be taken into consideration.

3.2.2 Intermodal competition

Although this section mainly looks at the airports that may be in competition with each other, we should not forget the importance of the pressure exerted in recent years by modes of transport other than air transport, such as transport by sea and, above all, high speed trains.

⁴⁹ According to estimates by the ACI, the importance of goods traffic for the annual revenue of airports is around 17%.

It is possible to mention situations in which maritime transport can mean competitive pressure for an airport, mainly on short-range passenger routes, such as those connecting the south-east of Spain with the Balearic Islands.

However, the pressure exerted on air transport by high-speed trains is more obvious.

There is a wealth of empirical evidence that shows how, under certain conditions, passengers transfer from planes to high-speed trains. Inconveniences, such as having to check in luggage an hour in advance, the cost in time and money of making two trips between the city and the airport and the greater possibility of delays when travelling by plane, have led to the fact that, for certain distances and times, it is considered that the two modes of transport are substitutable⁵⁰.

Example: Competition between high-speed trains and planes

As has already been noted, under certain conditions, the presence of a high-speed train line can attract customers away from airports. This is the case for Brussels-Paris, where the TVG connection has pushed Air France out of the market, and others of less significance, such as the connections between Paris and London, Osaka and Tokyo, and Rome and Bologna.

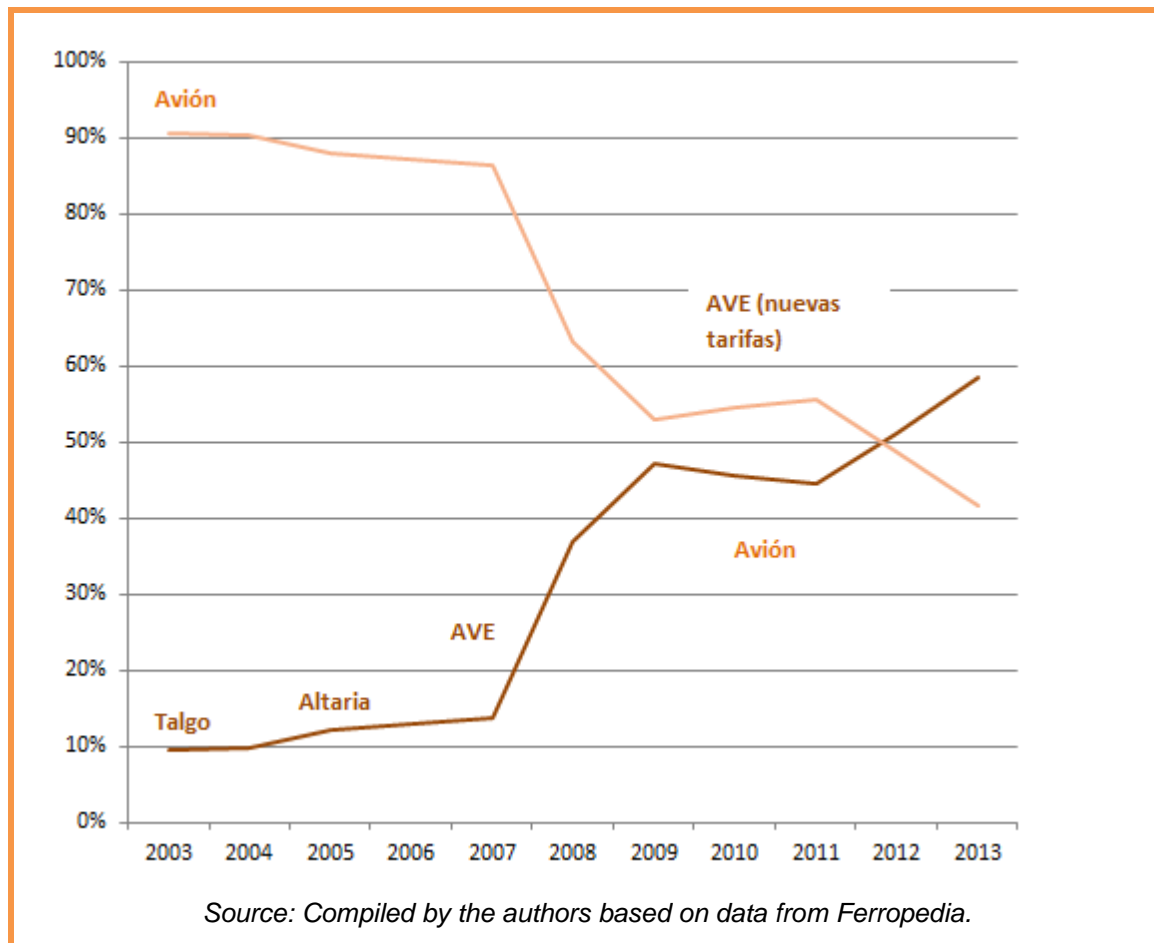
In the case of Spain, the analysis of this competition takes on a special importance for travel between Madrid and Barcelona, cities that are connected both by high-speed train (the AVE) and the so-called "air bridge". Other examples are the connections between Madrid and Seville and Madrid and Malaga.

Figure 16 shows the decline in air passenger traffic between these cities, which has been especially noteworthy since the AVE came into operation. It can therefore be seen that over a period of eight years the two modes of transport had converged, and then two years later a greater number of passengers preferred the AVE over the plane for this journey. This year, according to the available data, the trend has continued.

Several studies have analysed the impact of high-speed trains on air transport empirically, proving that after the opening of the lines, the frequency and market share of air transport falls significantly (for example, Jiménez and Betancourt (2102) found that there was a 17% drop on average) although the overall demand for the route from travellers increased.

Figure17. Evolution of passenger market share, Madrid- Barcelona 2003-2013.

⁵⁰ In regard to these figures, several approaches exist. Some consider that for less than 300 km the train is the more common mode of transport, while for over 1400 km it is the plane. Other studies have decided that for journey times of up to two and a half hours, there is an 80% preference for taking the train. This preference falls to 60% for journey times of between three and four and a half hours and to 40% for distances that take more than four and a half hours.



IV. THE SPANISH AIRPORT SECTOR

The previous sections have shown that the current dynamic in the airport sector worldwide tends toward decentralised airport management, leaving a margin for competition between them. As will be described in this section, the Spanish model differs from other international experiences in that it is almost all organised around one publicly owned monopoly: Aena Aeropuertos, S.A. (hereinafter, Aena Aeropuertos).

The aim of this section of the report is to highlight the importance of the airport sector in Spain and to describe the characteristics of the model and the situation of Aena before concluding with an evaluation that compares the results obtained by the Spanish operator with others in countries where airport management is decentralised and there is competition between various operators.

4.1 Economic importance of the air and airport sector in Spain

The airport sector is strategic for a country, due to both its economic impact, direct and indirect, and its ensuring the mobility of local residents. The connectivity by air of a particular area therefore generates economic activity that transcends the activity of the airport itself while linking it to the rest of the country.

In terms of its direct economic impact, the turnover of the Spanish airport sector was 2.925 billion Euros in 2013. This is, obviously, the turnover of Aena Aeropuertos, since it manages almost all Spanish airports that have commercial traffic. This figure represented approximately 0.3% of Spain's GDP.

In addition, according to a 2011 study on the benefits of air transport for Spain, the airlines that used the Spanish airports and air transport-related service companies generated 1.1% of Spain's GDP⁵¹.

As well as activities directly related to air transport, the airports generate significant economic activity from the arrival of passengers in a particular region. This is specially true of Spain, due to the importance of the tourist industry. In 2013, out of the 60.6 million tourists who visited Spain, 48.7 million⁵² (in other words, 80.4%) came in through the airports. It should be remembered that in 2013, 10.9% of Spain's GDP came from tourism and one in nine jobs were directly linked to tourism.

If one takes into account the fact that it is estimated that airport charges make up between 10% and 20% of an airline's costs, depending on whether they form part of a network or are an LCC, respectively⁵³, the competitiveness of the airports has

⁵¹Economic Benefits from Air Transport in Spain, 2011 (Oxford Economics)

⁵² According to "Estadística Movimientos Turísticos en Frontera" (Statistics on Tourist Movements over Borders) – Frontur (2013)

⁵³Estimated, based on IATA. Vision 2050", "CAA airline account information" and Eurocontrol, "Industry Monitor, Issue N°129. 29/04/2011".

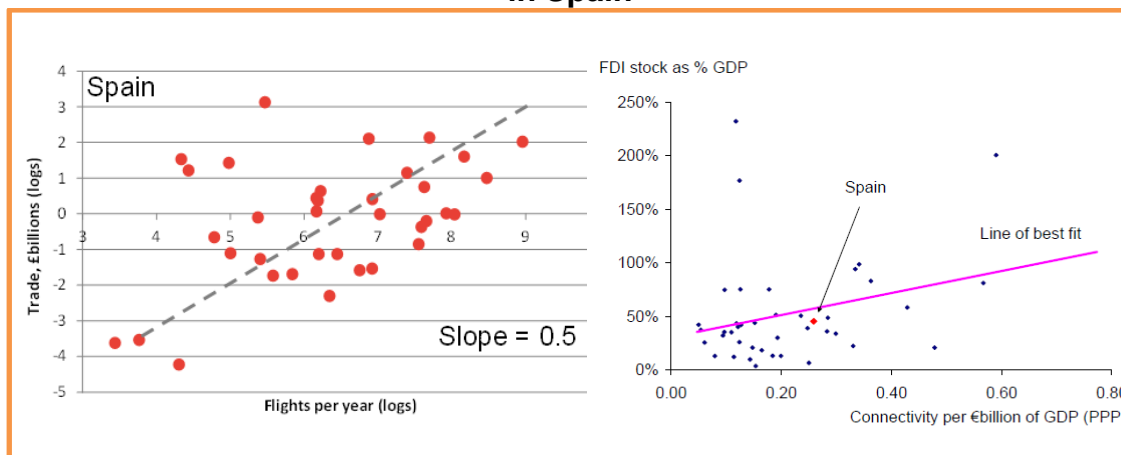
relevance for ensuring that Spain maintains its attraction, in the sense of guaranteeing the competitiveness of tourism as a strategic economic activity.

The airports also generate economic benefits for other areas of the Spanish economy. The air sector has a growing importance in international trade, given that the possibilities of exchange are increasing as there is connectivity with far distant destinations. The existence of long-haul routes makes it possible to increase trade with non-neighbouring countries or, in the case of Spain, those included in the European Free Trade Association.

As noted in section 2.1 above, there is a positive relationship between air connectivity and inter-state commerce. A positive relationship is also found between direct foreign investment and connectivity.

In regard to trade and investment, although it is not clear whether there is a causal relationship because the routes generate these economic relationships or because they generate the traffic needed to keep the routes operating, it is certain that there is a positive relationship between air connectivity and economic exchange, both in terms of trade and direct foreign investment. The figure below shows the relationship between the routes to one particular country and Spanish trade with that country, and the correlation between foreign investment and connectivity with different countries.

Figure 18. Impact of air connectivity on foreign trade and foreign investment in Spain



Source. “Missing trade opportunities”, Frontier Economics (2012) Economic Benefits from Air Transport in Spain, 2011 (Oxford Economics)

Lastly, in addition to their economic impact, airports, together with airlines, make a country cohesive, which is particularly important in a country like Spain because of its many islands. Ten⁵⁴ of the 46⁵⁵ Spanish airports managed by Aena Aeropuertos are situated on islands. In fact, two of the ten major routes in the

⁵⁴ Or, rather, eleven, if we count the Son Bonet airport, which is devoted to general aviation. General aviation is understood to mean aviation other than commercial or military.

⁵⁵ Up to 2013, Aena Aeropuertos managed 47 airports, although it gave up the Torrejón airport in 2013 (this is why it appears in the statistics in this report).

European Union link Madrid airport with Gran Canaria and Palma de Mallorca⁵⁶. Therefore, air connectivity makes it easier to ensure the mobility of citizens on island territories and the cohesion of these territories. The above data show the importance of airport services for countries in general and Spain in particular. For this reason, the aim of this section is to describe how these services are managed in Spain, by focusing on the public company Aena Aeropuertos. The situation of this monopoly as compared to other airport operators is described below and an assessment of the Spanish model is presented by way of a conclusion.

4.2 Legal and regulatory system

The Spanish airport sector is highly regulated, both by international and Community regulations and by its own internal legal system. The latter is based on the principles of the separation of regulatory and management functions and the obligation of non-discrimination and transparency in the setting of charges.

In the field of international air transport, the International Civil Aviation Organisation (ICAO), created by the Chicago Convention of 1944, to which Spain is a party, should be noted. The regulations and recommendation of this body are incorporated into the legislation of the member states and used in Community regulations.

In regard to Community regulations, after the liberalisation of air transport in the nineties, Community policy now focuses on improving safety⁵⁷, the efficiency of air navigation (which is separate from airport management)⁵⁸ and airport management.

Therefore, to improve airport capacity limitations, basic aspects of the access to these services have been regulated, such as access to slots⁵⁹, with the aim of increasing the transparency and economic and technical efficiency of the system.

Since 1996, under Directive 67/96/EC⁶⁰ the provision of ground handling certain services has been liberalised with the intention of lowering costs and improving

⁵⁶ Source: Eurostat. Statistics in Focus. 21/2012

(http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-SF-12-021/EN/KS-SF-12-021-EN.PDF)

⁵⁷ Regulation CE/300/2008, of the European Parliament and of the Council, of 11 March 2008, on common rules in the field of civil aviation security.

⁵⁸ For example, Commission Regulation (EC) 1794/2006 of 6 December 2006 on a common charging scheme for air navigation services (modified by Commission Regulation EU/1191/2010, of 16 December 2010) defines rules for calculating charges for the provision of en-route and approach air navigation services.

⁵⁹ Council Regulation EEC/95/1993, of 18 January 1993, on common rules for the allocation of slots at Community airports, subsequently revised in 2002, 2003, 2004 and 2009.

⁶⁰ Council Directive 67/96 of 15 October 1996, on access to the ground handling market at Community airports, liberalised the services for which there was no reason to limit the number of operators and permitted their limitation in cases where there were reasons for this, such as ramp services (baggage handling, runway operations handling, fuel and lubricant handling, and cargo and mail handling, in regard to the physical handling of the cargo and mail between the airport terminal and the aircraft, both on arrival and departure or while in transit). The regulation therefore guarantees free access by third parties, but makes it possible to limit the number of stakeholders,

customer service, by introducing new stakeholders independent of the airport operator.

Lastly, in regard to airport charges for the use of the airport operator's facilities or services for landing, take-off, lighting and aircraft parking and the handling of passengers and cargo, Directive EC/12/2009 of the European Parliament and Council, of 11 March,⁶¹ obliges the Member States to set up a mandatory periodic consultation process and an exchange of information between the airport management body and the airport users to set airport charges. The directive also includes the possibility of both sides having recourse to an independent supervisory authority and a transparency requirement under which the management body is obliged to make information on the items that serve as the basis for determining the system or the level for all charges applied at each airport available to its users.

Finally, it must be noted that the application of the above-mentioned regulation to the airport sector does not exclude the application of legislation defending competition (articles 101 and 102 of the Treaty on the Functioning of the European Union), including the regulations on public aid (art. 107 et seq.) which also apply to companies to which the State has granted special or exclusive rights (art. 106).

4.2.1 Spanish airport sector regulators and supervisors

Article 149.1.20 of the Spanish Constitution grants the State exclusive powers over the airports classified as being of general interest. The legislation that affects the airport sector can be found mainly in Act 48/1960 of 21 July on Air Navigation and Act 21/2003 of 7 July on Air Safety (hereinafter, ASA) and in the regulations developed from them. This legislation includes the above-mentioned provisions in Community law.

The regulatory and supervisory bodies that affect airport activities at the state level are as follows:

- The Ministry of Development is the civil aeronautical authority and its duties are to organise, supervise and control the different sectors of activity that make up civil aviation and to exercise disciplinary powers in this area⁶². The Civil Aviation Department is the body through which the Ministry of Development designs the strategy, directs aeronautical policy and acts as

one of which, at least, must be independent of the airport management body and the dominant airline. Accounting separation is also imposed on handling and infrastructure regulation activities and the separation of handling services, by forbidding the airport manager's ground handling support activity from being funded by revenue from its activities as the airport authority.

⁶¹ Directive EC/12/2009 does not apply to charges applied for the remuneration of en-route and approach navigation services, pursuant to Regulation (EC) 1794/2006, nor to the charges applied for the remuneration of ground handling services referred to in the appendix to Directive 96/67/EC, nor to the charges collected to finance assistance to disabled passengers and passengers with reduced mobility mentioned in Regulation (EC) 1107/2006.

⁶² It is the duty of the Ministry of Development to propose and execute Government policy in the areas of air transport infrastructure under state control; to control, organise and administratively regulate the corresponding transport services under the General State Administration; and to plan and schedule the investment for this infrastructure and services.

the regulator for the air sector, within the powers of the General State Administration.

The Ministry of Development must grant the authorisation to build, operate and close civilian airports that come under the General State Administration, with the prior approval of the Ministry of Defence. Both bodies must issue a prior, binding report regarding the preservation of state powers⁶³, when these are aerodromes, heliports, airports or plans that come under an Autonomous Community.

Lastly, the National Air Safety Agency is the state body reporting to the Ministry of Development through the Secretary General for Transport that acts as the supervisor of the air sector with the duties of organisation, supervision and inspection, to ensure that the civil aviation regulations are met in all aeronautical activities.

- For its part, Spain's National Authority for Markets and Competition has the duty to supervise and monitor certain markets and economic sectors and to apply Community and Spanish legislation defending competition, as well as to promote competition and efficient economic regulation. In the field of airports, it has the duty to supervise and monitor airport charges, so that it oversees that any proposal from AENA Aeropuertos to modify airport charges⁶⁴ (a) complies with the transparency and consultation procedure (art. 98 ASA); (b) guarantees the sustainability of the network of airports of general interest and (c) is justified in accordance with the provisions contained in steering plans, traffic demands, the requirements and needs of the airport user companies and suitable quality standards, and (d) it responds to the criteria of non-discrimination, objectivity and transparency (art.101 ASA).
- Finally, at the airports that are assigned to be managed and run by Aena Aeropuertos, the existence of Airport Coordinating Committees⁶⁵ is

⁶³ To determine the application of these to the structure, organisation and control of air space, air traffic and transport and their effect on airports of general interest or the surrounding areas subject to aeronautical easements.

⁶⁴ The same consultation and oversight procedure shall apply to Autonomous Community or privately owned airports open to commercial traffic whose traffic exceeds five million passengers per year in the terms set in the regulations.

⁶⁵ Pursuant to article 13 of RDL 13/2010, the duties of the Airport Coordinating Committee of the respective Autonomous Community or City are: (a) to oversee the quality of airport services and airport activities by proposing the actions that they consider necessary to promote the development of airport activities; (b) To cooperate with AENA Aeropuertos and, where appropriate, the competent public administrations in defining the strategy to be implemented in regard to airports under that Autonomous Community or City, especially in the area of commerce, taking into consideration its territorial and competitive context; (c) To get to know Aena Aeropuertos' proposals regarding the definition of the strategic lines of the airports, especially in regard to the Steering Plans for these airports, before they are submitted for approval by the Ministry of Development; (e) To get to know the consultation procedure implemented by Aena Aeropuertos for airport charges, pursuant to Act 21/2003, with a view to its modification, in regard to the airports under that Autonomous Community or City; (f) To channel actions related to the promotion of air transport,

planned, to guarantee the participation of the Communities and Cities with a statute of Autonomy, local corporations and representative employers' and social organisations.

4.2.2 Legal and regulatory system of the airport operator Aena Aeropuertos, S.A.

In 1990, the ownership, operation and management of Spanish airports was entrusted to the public business entity “Aeropuertos Españoles y Navegación Aérea” (Spanish Airports and Air Navigation), which also performed all the duties related to Air Navigation⁶⁶.

With the approval of Royal Decree-Law 13/2010 of 3 December on fiscal, labour and deregulatory initiatives designed to promote investment and create employment, these duties were divided up by the creation of the national mercantile company “Aena Aeropuertos S.A.”, which split off from the public business entity Aena.

In this manner, the public business entity Aeropuertos Españoles y Navegación Aérea (AENA), which is attached to the Ministry of Development, is the provider of Air Navigation services and responsible for the management and control of air transit, aeronautical information and the communication, navigation and surveillance network for Spanish airspace.

In regard to airport management, since 8 June 2011, the national mercantile company Aena Aeropuertos has managed and operated airport services for the network of airports and heliports managed by AENA up to the approval of Royal Decree-Law 13/2010. The assets, rights, debts and obligations of the public business entity that were associated with the implementation of airport and commercial activities or other state airport management-related services were incorporated into the assets of Aena Aeropuertos, S.A. (art. 9).

The public business entity “Aeropuertos Españoles y Navegación Aérea” (AENA) shall in all cases maintain the majority of the company capital of the Limited Company (art. 7).

The airport operator, Aena Aeropuertos, is governed pursuant to mercantile law, without prejudice to the administrative regulations that may be applicable to state companies and the special cases laid down in article 8 (RDL 13/2010). Therefore, for example, the same contracting scheme as the one for the public business

within their area of competence; (g) To promote the actions necessary to reinforce air connectivity by setting up and promoting new air routes, both national and international; (h) To collect data and information on any aspect of airport management that is needed in order to comply with the other duties assigned to it in this section; (i) To carry out any duties that it considers appropriate to increase air passenger and cargo transport, and any others that the provisions adopted in regard to airports of general interest may assign to it.

⁶⁶ Initially, the ownership, operation and management of civilian airports was granted in succession to the National Autonomous Bodies “Junta Nacional de Aeropuertos” (National Airport Board) and “Aeropuertos Nacionales” (National Airports) and then, in 1990, to the public business entity “Aeropuertos Españoles y Navegación Aérea” (Spanish Airports and Air Navigation) or AENA, pursuant to article 82 of Act 4/1990 of 29 June on the General State Budgets for 1990.

entity ANEA shall apply, being considered in themselves and for the General State Administration to be associated companies for the purposes of Act 31/2007 of 30 October on contractual procedures in the water, energy, transport and postal sectors.

Article 8 of RDL 13/21010 also confers on Aena Aeropuertos the status of beneficiary of the expropriations linked to the airport infrastructure under its management, incorporating the assets into its own assets and exempting it from obtaining a municipal licence for construction work carried out at an airport and in its service area. Finally, Aena Aeropuertos is subrogated on all employment contracts signed by AENA for personnel dedicated to airport activities.

As a state-owned company with the format of a limited company, it is subject to the special features of Act 33/2003 of 3 November on the Assets of Public Administrations (art. 166 et seq.) and the General Budgets Act. The Ministry of Development assumes the functional supervision of said company (under the Council of Ministers Agreement of 25 February 2011). Also, in accordance with the Aena Aeropuertos Statutes, the Ministry of Development appoints one-third of the Board Members and proposes the Chairman of the Board. Since the public business entity AENA is the majority shareholder, it must at least approve the accounts, the management of the board and the application of the Limited Company's financial results, regarding which it may also receive instructions from the Ministry of Finance (art. 170.3 BA).

Pursuant to Royal Decree-Law 13/2010, Aena Aeropuertos is responsible for operating all the airports and heliports in the network assigned to it to manage, without prejudice to its being able to carry out the individual operation of any of them by creating subsidiary management companies or through a contract for the concession of airport services (art. 10), although it has not made use of any of these legal entities.

Also, an economic regulation designed for these purposes is applicable to Aena Aeropuertos. It has the following characteristics:

- A **regulatory mechanism that ensures the coverage of the airport operator's costs prospectively**, including a suitable return on the capital invested.
- A **centralised system for determining charges**, which keeps them homogeneous for groups of airports predefined according to the number of passengers and updates, linearly, all the financial contributions of all the airports. According to the scheme included in the ASA, Aena Aeropuertos' charges are organised into six groups of airports by number of passengers: i) Adolfo Suárez Madrid-Barajas; ii) Barcelona-El Prat; iii) Alicante, Gran Canaria, Tenerife Sur, Málaga-Costa del Sol and Palma de Mallorca; iv) Bilbao, Fuerteventura, Girona, Ibiza, Lanzarote, Menorca, Santiago, Sevilla, Tenerife Norte and Valencia; v) Almería, Asturias, Coruña, Granada-Jaén, Jerez, La Palma, Murcia, Reus, Santander, Vigo and Zaragoza; and vi) Albacete, Algeciras, Badajoz, Burgos, Ceuta, Córdoba, Cuatro Vientos, Hierro, Huesca, La Gomera, León, Logroño, Melilla, Sabadell, Salamanca,

San Sebastián, Son Bonet, Pamplona, Torrejón, Vitoria and Valladolid. All the airports in a group apply the same charge levels.

- **A charge regulation model that provides disincentives to reaching custom agreements** even though the airport cost structure, which is mostly fixed, would make reaching this type of agreement advisable.
- **The application of a dual till system.**

4.2.3 The process of opening up airport management

The legal reforms of recent years have not changed the public nature of the AENA network and its direct management by the State. Although the regulations have progressively removed restrictions to the entry of new operators, the State has de facto reserved the ownership, operation and management of almost all airports for itself, through Aena Aeropuertos.

It should be noted that, as shown above, pursuant to the power sharing laid down in the Spanish Constitution (article 149.1, section 20)⁶⁷, the State has the exclusive power over airports classified as being of general interest and that, since 1981, all those that met the conditions for handling international traffic were considered to be such. In turn, the State has exercised this exclusive power by reserving the ownership and management of all these airports to itself, and since 1990 these have been conferred on the public entity AENA, which is attached to the General State Administration through the Ministry of Development.

Royal Decree 2828/1981 of 27 November on the qualification of civilian airports theoretically permits the State⁶⁸ to not reserve to itself the direct management of activities that are carried out in the airport area and are vital to the economic exploitation of the airport, even when the airport is classified as being of general national interest. This interpretation of power sharing was ratified by the Constitutional Court in Ruling 68/1984 of 11 June 1984.⁶⁹

⁶⁷ The State has exclusive power over the following matters: ports of general interest, airports of general interest, control of air space, air traffic and transport; meteorological services and registration of aircraft.

⁶⁸ It also states that state management shall be necessarily direct at the airports classified as being of general interest for national defence and that the direct management of an airport necessarily means the provision by the State Administration of the aeronautical services related to the control of air space and air traffic and transport, the services assigned to non-aeronautical public bodies, such as customs, police, the post, safety and services that, since they are not strictly aeronautical, may affect the former and that, depending on the volume of traffic at the airport in question, are declared to be indispensable for its proper functioning.

⁶⁹ Pursuant to Article 148.1.6 of the Spanish Constitution, the Autonomous Communities may assume the powers over ports of haven, recreational ports and airports and, in general, those that are not engaged in commercial activities. Pursuant to article 149.3 of the Spanish Constitution, matters not expressly assigned to the State by virtue of the Constitution may fall under the jurisdiction of the Autonomous Communities by virtue of their respective Statutes. These include airports not classified as being of general interest or the management of same, if this is conferred by the State. Pursuant to certain Statutes of Autonomy, such as the Valencian and Catalan

However, in its transitional resolution, Royal Decree 2858/1981 also lays down that all airports that are the property of the State, operated at the time by the Autonomous National Airports Body were understood to be classified as airports of general interest under direct state management.

With the approval of Act 53/2002 of 30 December on Fiscal, Administrative and Social Order Measures, the Territorial Public Administrations and private persons and bodies from a member state of European Union were permitted to build or participate in the construction of airports of general interest, with the prior authorisation of the Ministry of Development, and could keep the ownership of the airport area and take part in the operation of the activities that occurred within it under the terms laid down.

Therefore, the existence of airports of general interest with non-state ownership and/or management was permitted, so that the territorial public administrations and private entities also had entry to the airports classified as being of general interest (this was the formula adopted by the airports of Castellón, Región de Murcia, Ciudad Real and Lleida⁷⁰). It should be noted that at that time Royal Decree 2858/1981 considered the following to be airports of general interest: 1) all those that fulfilled the conditions for serving international traffic, 2) those that, due to their situation, characteristics or capacity to generate traffic, could affect the organisation of transport, air space or control thereof, 3) those that were suitable to be designated alternatives to the previous airports and 4) those that were of interest to national defence.

Finally, Royal Decree 1150/2011 of 29 July modifying Royal Decree 2858/1981 essentially permitted airports not classified as being of general interest to handle international traffic.

So, currently, to be classified as airports of general interest, they must be civilian airports and heliports affected by one of the following circumstances:

- a) Due to the importance of their traffic, they are included in the trans-European airport network as international or Community components;
- b) Their joint management is necessary to guarantee the proper functioning of the common transport network throughout the entire country;
- c) They can substantially affect the organisation of air transit and the structure and control of the air space;
- d) They are of interest for national defence; and
- e) They constitute the civilian portion of aerodromes used jointly by civilians and the military.

statutes, they may also assume this power when the state has not reserved the direct management to itself.

⁷⁰The Ciudad Real airport, inaugurated in 2008 and closed in 2012; the Lleida airport, opened to traffic in 2010, managed by the public body Aeroports de Catalonia; the Castellón airport, inaugurated in 2011 but without starting operations to date; the Teruel airport, inaugurated in 2013; the international airport of the Region of Murcia, which was planned to start operations by 2013 and to date is still not operational.

The classification of airports of general interest is the responsibility of the Ministry of Development, after obtaining the prior reports and agreements laid down in Royal Decree-Law 12/1978 of 27 April.

In addition, pursuant to additional resolution one of Royal Decree 1150/2011 of 29 July, mentioned above, the airports and heliports operated by Aena Aeropuertos, S.A. would keep their classification of being of general interest on the entry into force of said Royal Decree. It should be noted that, to be classified as airports of general interest, a criterion has been introduced under which their joint management is necessary in order to guarantee the proper functioning of the common transport network throughout the entire country. However, conversely, the possibility is also opened up of their ceasing to have this classification if they do not meet this requirement. In the latter case, the Autonomous Communities would have the power if, under their statutes, they have powers over the management of airports that are not of general interest.

In other words, currently, it is legally possible for airports to be built and new public and private operators to gain entry both to airports classified as being of general interest and those that are not, since the legislation is not *per se* as barrier to entry, even though it is true that it is the responsibility of the Ministry of Development to specify this right of access and there could be a conflict of interest with Aena Aeropuertos, which is also attached to this same Ministry.

On the other hand, the approval of Royal Decree-Law 13/2010 offered a second route to the individualised management of the airports owned by Aena Aeropuertos, in the shape of AENA subsidiaries or concessionaires. Aena Aeropuertos is responsible for operating all the airports and heliports in the network assigned to it to manage, without prejudice to its being able to carry out the individual operation of any of them by creating subsidiary management companies or through a contract for the concession of airport services (art. 10).

However, this new method of individualised airport management by means of concessions, which has not been explored, does not necessary imply the break-up of the common airport financing model, which, where appropriate, makes it possible for the profits from profitable airports to continue financing those that run at a loss.

4.3 The Spanish airport model

Almost all Spanish airports are under the ownership of Aena Aeropuertos. In 2003, when it was possible for independent operators to build new airports, the public operator already had airports in the areas with the most air traffic. Since then, Aena Aeropuertos has built five airports⁷¹ and two heliports to add to its network⁷², but all of them with very low levels of traffic.

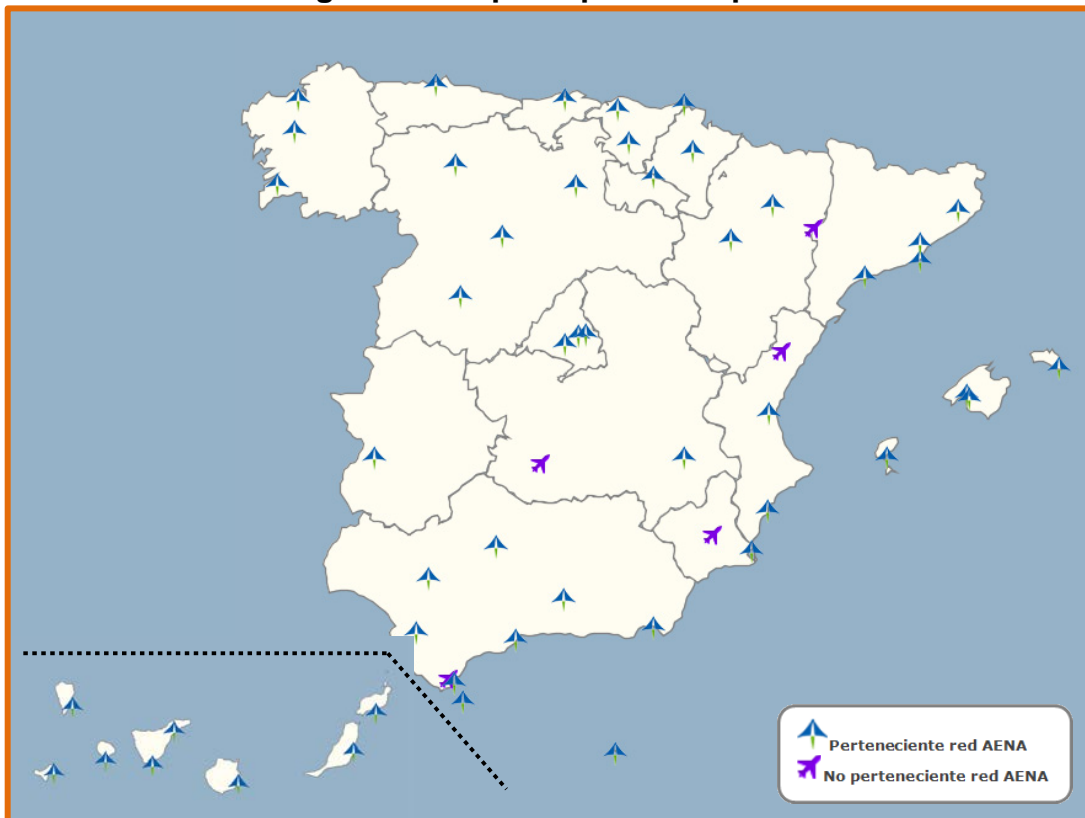
The management of Spanish airports therefore operates under an almost monopolistic regime, since 46 of the 51 national airports that have commercial traffic are managed by the public manager, Aena Aeropuertos, and the remaining

⁷¹ Albacete, Logroño, Son Bonet, Huesca Pirineos and Burgos.

⁷² Ceuta and Algeciras

five are either not operational (Ciudad Real and Castellón) or do not have passenger traffic (Teruel) or have not opened (Region of Murcia). As a result, the only airport with commercial traffic that is currently not managed by AENA Aeropuertos is Lleida, which maintains one single regular year-round route with two flights a week to Palma de Mallorca, operated by Air Nostrum.

Figure 19. Map of Spanish airports



Source. Compiled by the authors.

The structure of the airport sector is atypical. In fact, it is difficult to compare the situation of Aena Aeropuertos with that of other airport operators given the special features of the Spanish management method and its size. Even if Aena Aeropuertos' centralised management model is not unique, its size is. So, for example, ANA, the Portuguese airport manager, which is responsible for operating the three main Portuguese airports (Lisbon, Oporto and Faro) and six airports on the islands of Madeira and the Azores, is set up similarly, in terms of management, to Aena Aeropuertos, but there are significant differences in the numbers of passengers handled: ANA 30 million and Aena Aeropuertos 187 million.

As far as passenger handling is concerned, Aena Aeropuertos could be compared with Airports de Paris (AdP) and Fraport (Frankfurt Airport Services), with 192 and 188 million passengers respectively. However, unlike Aena Aeropuertos, AdP only directly manages the Paris airports, Charles de Gaulle (62 million passengers) and Orly (27 million passengers) together with Le Bourget (business aviation) and ten general aviation airports in the Île de France. Fraport directly manages the

Frankfurt airport (57 million passengers) and the rest by having a stake in other operators.

Thus, at the time the opening of new airports by operators other than AENA Aeropuertos was permitted in 2003, when the public manager already had a large network, a model was favoured in which AENA Aeropuertos had both the ownership and management of almost all the airports. In this context, the most appropriate short-term method for introducing competition into Spain would be to divide up this operator's airports.

4.4 Economic and financial situation of Aena Aeropuertos

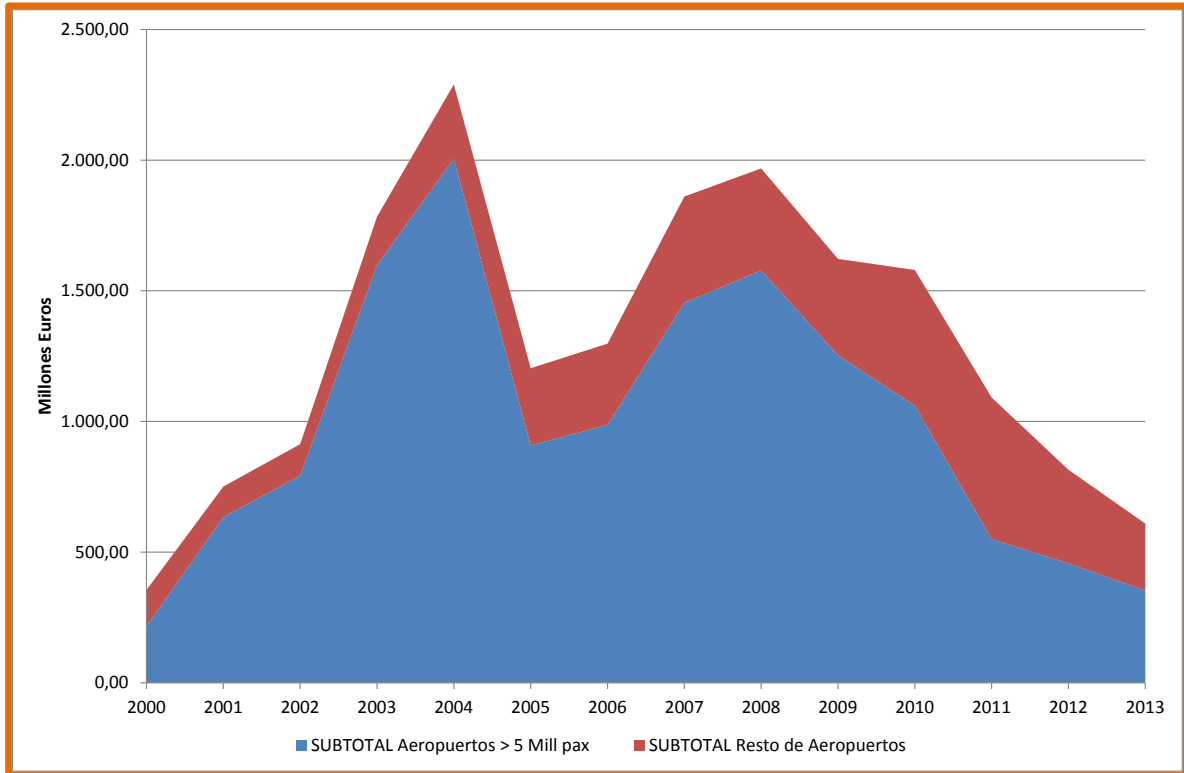
The management and ownership of almost the airports in Spain is, as has already been said, in the hands of AENA Aeropuertos. For this reason, an analysis of its management and its results is very relevant to a diagnosis of the Spanish airport sector. The financial results of this public body demonstrate significant differences from those observed in other airport operators, although it is difficult to compare them, as mentioned above, due to the special characteristics of the Spanish model.

The airport investment plan undertaken by Aena Aeropuertos between 200 and 2010 approached 17 billion Euros. The major undertakings were at Madrid (6.3 billion), Barcelona (3.5 million), Malaga (1.8 million), Canaries (3 billion),⁷³ Alicante (700 million) and Valencia (380 million). These investments took a very high percentage of its revenue: over 80% during the entire period studied.

However, the airport manager's investments have not been limited to the big airports; the smaller ones have also received significant resources. Since 2000, therefore, Aena Aeropuertos has invested 4.295 billion Euros in airports with fewer than five million passengers or almost 25% of its total investment, as shown below.

⁷³ The investments in the Canary Island airports will continue until 2020.

Figure 20. Investment in the Aena Aeropuertos airport network (2010-2013) in millions of Euros



Source: Requested from Aena Aeropuertos by the CNMC.

It should also be said, however, that this investment policy was in turn accompanied by the curbing of airport charges. This situation has led to significant indebtedness for the company, which reached its maximum level in 2011 as shown in the following table.

Table 9. Evolution of Aena Aeropuertos' debt (thousands of Euros)

	2009	2010	2011	2012	2013
Deuda	11.566.922	12.578.860	12.836.194	12.372.627	11.566.905

Source. Compiled by the authors based on data from AENA Aeropuertos.

AENA Aeropuertos' heavy investment and an insufficient increase in airport charges to cover this large-scale investment led to losses for company right up to 2013, as shown in the following table.

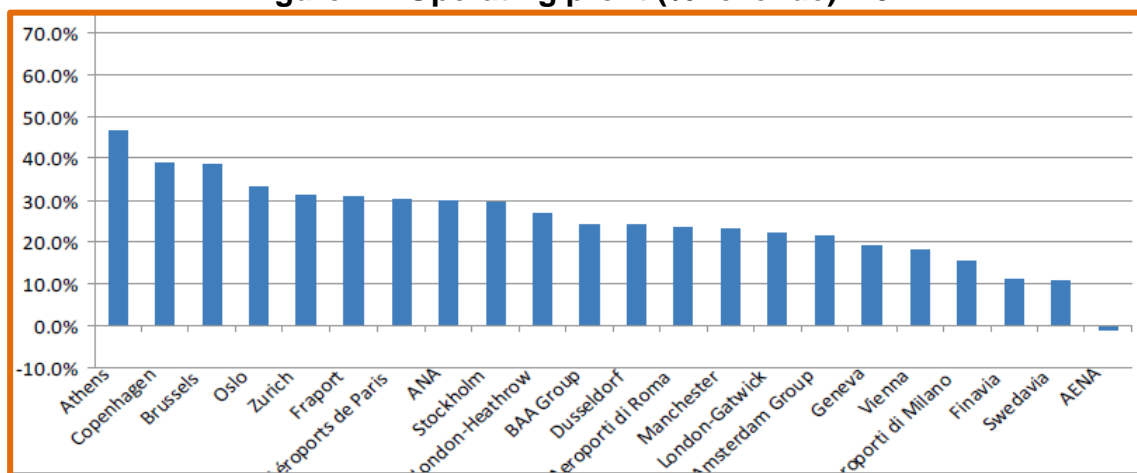
Table 10. Major sums on the Aena Aeropuertos network profit and loss statement (2009-2013) in thousands of Euros

<i>Miles de Euros</i>	2009	2010	2011	2012	2013
Ingresos de explotación	1.906.410	1.981.090	2.374.820	2.664.730	2.925.720
Cifra de negocios	1.859.720	1.918.580	2.309.200	2.589.500	2.871.000
Servicios Aeroportuarios	1.287.180	1.322.770	1.688.720	1.910.390	2.171.360
Servicios Comerciales	572.530	595.810	620.480	679.100	699.640
Otros ingresos	46.700	62.510	65.620	75.230	54.720
Otros Ingresos de Explotación	18.910	16.540	23.670	40.560	14.520
Imputación de Subvenciones e Ing. Excepcionales	27.780	45.970	41.950	34.670	40.200
Gastos de explotación	2.138.420	2.150.980	2.348.000	2.447.220	2.184.760
Gastos de personal	363.120	373.150	379.040	506.590	332.460
Otros gastos de explotación	919.970	973.030	1.110.100	1.107.880	1.035.190
Déficit Tarifa de Aproximación	181.190	62.880	28.930		
Amortizaciones	674.140	741.920	829.930	832.750	817.110
EBITDA	442.140	572.030	856.750	1.050.260	1.558.070
Resultado de Explotación (EBIT)	-232.000	-169.890	26.820	217.510	740.960
Resultado financiero	-236.230	-206.880	-341.240	-318.330	-254.850
Resultado antes de impuestos	-468.230	-376.770	-314.420	-100.820	486.120

Source: CRFA and requested from Aena Aeropuertos by the CNMC.

The evolution of the Spanish operator contrasts with that of the majority of European airport managers, who made a profit on their activities.

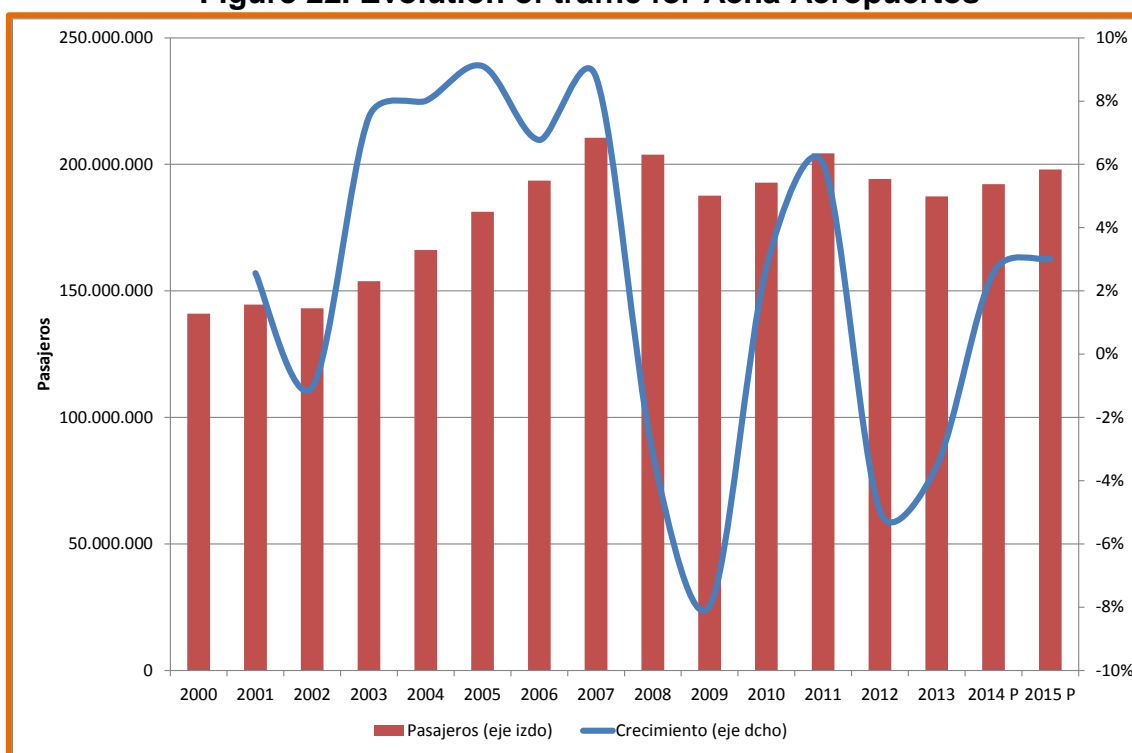
Figure 21. Operating profit (% revenue). 2011.



Source. Leigh Fisher. Airport performance indicators (2013).

The causes of Aena Aeropuertos' financial situation in recent years are varied. On the one hand, there is, as we have said, the investment made since 2000 when the public manager started its latest investment cycle. On the other hand, there is the impact on traffic of the economic crisis. As can be seen in the following figure, traffic at the airports in the Aena Aeropuertos network grew at an average rate of 6%, going from 140 million passengers in 2000 to more than 210 million in 2007. However, with the arrival of the economic crisis, there was a drop in passengers that meant traffic fell to approximately 187 million passengers by the end of 2013 (in other words, a drop of 23 million from the peak in 2007). Finally, it can be said that the forecasts for 2014 and 2015 point to some recovery of traffic, with growth of around 3% in these two years.

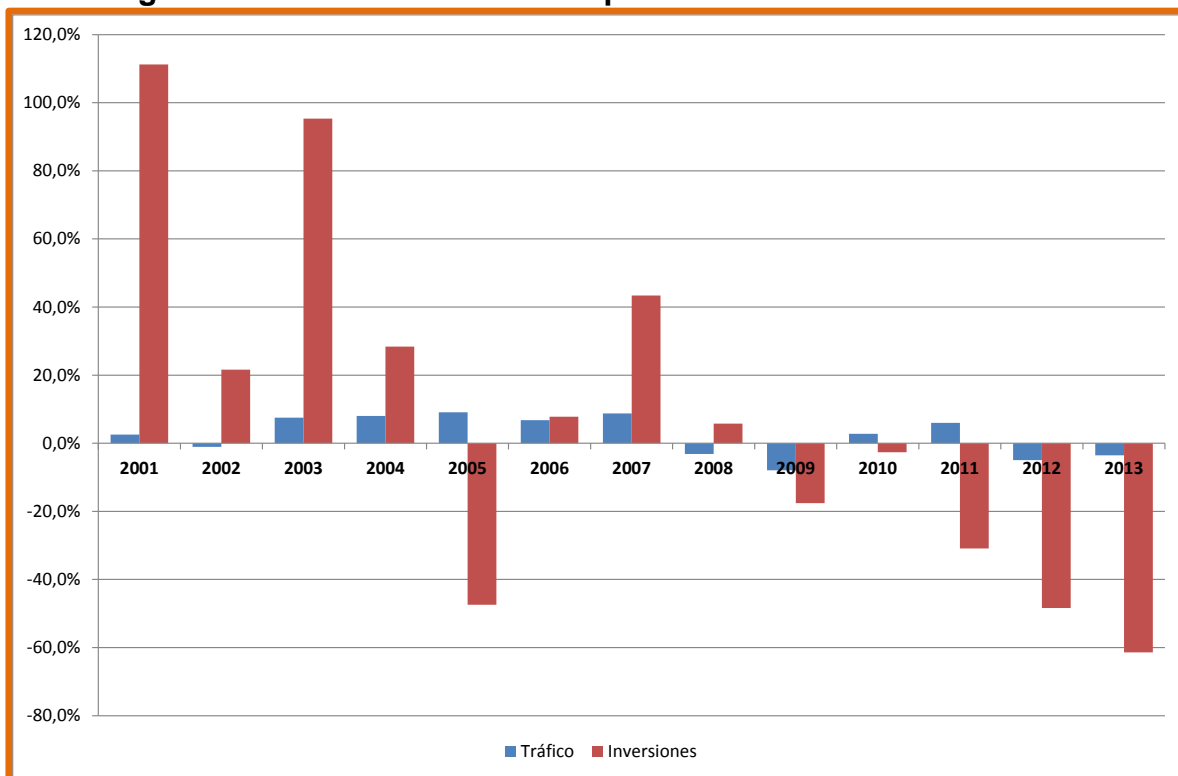
Figure 22. Evolution of traffic for Aena Aeropuertos



Source. Compiled by the authors based on data from AENA Aeropuertos.

In the aftermath of this fall in traffic, Aena Aeropuertos has made significant efforts to contain costs while at the same time reducing investment. In the investment side, as can be seen in the following figure, annual volume in 2013 experienced a 70% reduction as compared to 2010. According to the Aena Aeropuertos Multi-Year Action Plans (MAP), it is forecast that this trend will continue in the coming years, so that annual investment will be reduced from almost 1.6 billion Euros to less than 400 million. As can be seen in the following figure, the reductions in traffic occurring in 2008 and 2009 did not have a direct effect on Aena Aeropuertos' rate of investment, which did not alter until 2011, although, at least in part, this action could be due to the inertia resulting from investment in this type of infrastructure.

Figure 23. Evolution of Aena Aeropuertos' investment and traffic



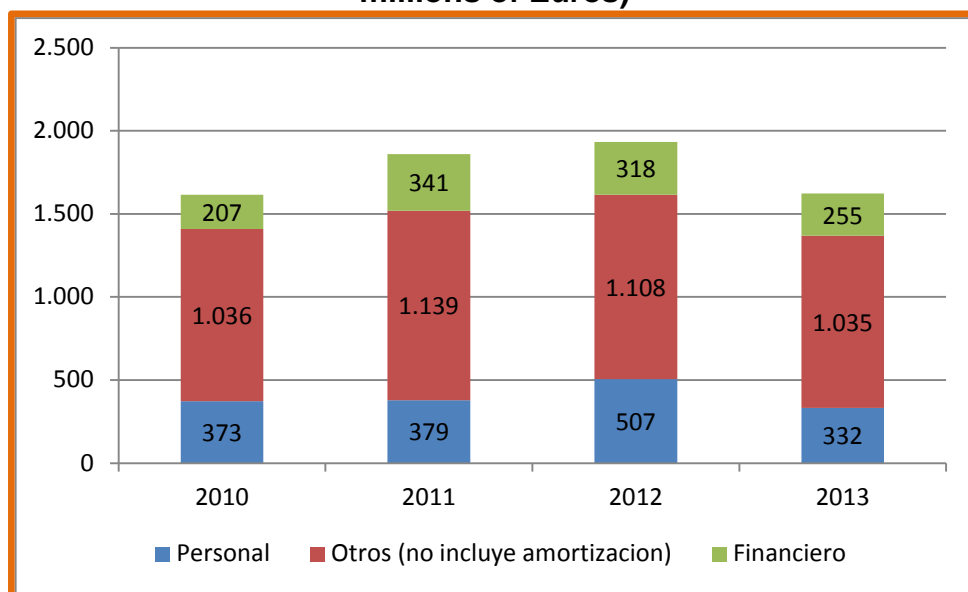
Source. Compiled by the authors based on data from AENA Aeropuertos.

On the cost side, it should be noted that in June 2012 the Ministry of Development presented the Airport Efficiency Plan to make the services offered by Aena Aeropuertos at 17 airports and two heliports match their real demand. This Plan, which targeted the airports with fewer than 500,000 passengers annually, has reduced their variable costs⁷⁴. In addition, Aena Aeropuertos has reduced personnel costs, by cutting back its workforce by 11%, and other spending on general provisions. Lastly, it should be noted that the financing conditions secured by Aena Aeropuertos have improved, which has considerably reduced the company's financial costs. These measures together reduced operating and financial costs for Aena Aeropuertos by more than 16% in 2013, compared to 2012.

⁷⁴The Plan had three action lines:

1. Adjusting the schedule to the demand for flights. A distinction will be made between two very different timeslots:
 - Airport schedule: a timeslot in which commercial passenger aviation operates with larger aircraft that require category 4 or higher protection from the Rescue and Fire Fighting Service (RFFS), depending on the aircraft.
 - Aerodrome schedule: here, only general aviation (aerial work, practice flights and sports aviation) operates, which requires an RFFS protection level of Category 1 or 2.
2. Matching the services to the needs. In the timeslots in which there are no passengers, and without endangering the level of quality, some services will be altered to match the real needs (maintenance, cleaning, security, etc.)
3. Flexible working day and workforce versatility and mobility Starting now, Aena will negotiate with trade union organisations on all labour-related measures: the flexible working day and workforce versatility and mobility.

Figure 24. Evolution of Aena Aeropuertos' major expenditure items (in millions of Euros)



Source: Requested from Aena Aeropuertos by the CNMC.

The above-mentioned actions have meant an increase in EBITDA and a reduction in debt, leading to a considerable improvement in Aena Aeropuertos' solvency.

It can definitely be considered that it was Aena Aeropuertos very substantial investment in infrastructure together with a policy of containing airport charges that produced high indebtedness. This led to Aena Aeropuertos' profitability being negative, until efforts to contain operating costs and investments were made and income increased due to the charges being raised. It must be emphasised that in other countries airport activity is profitable. The explanations for this difference in the case of Spain are numerous, with elements that affect both company management decisions and the current legal framework, which imposes certain restrictions on the decision making process.

4.5 Analysis of the current airport model

Previous sections described the Spanish airport model, which is based on the centralised management of almost all the country's airports by the public company Aena Aeropuertos. The singular nature of this model has also been noted. It contrasts with other countries, where the most widespread model is decentralisation with more flexible management of the individual airports. This section aims to analyse the results of the Spanish model in terms of its effectiveness, the achievement of the objectives assigned a priori to the airport sector, and its efficiency in complying with them.

4.5.1 The Spanish Airport Map

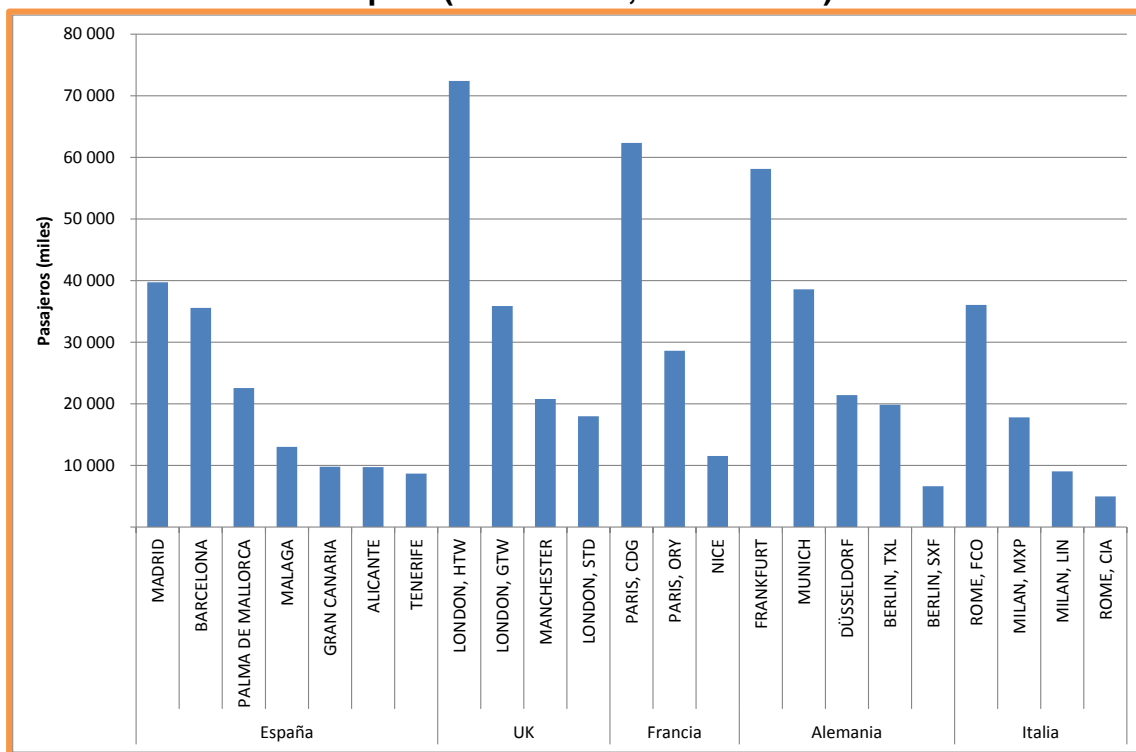
The main point to consider when evaluating the Spanish airport system is its capacity to guarantee the mobility of the public and confront the needs of the industries that depend on airports, especially tourism. To do this, this section analyses the size of the Aena Aeropuertos network in terms of the number of

airports, putting them in context compared with other European countries that handle a similar number of passengers and taking their size into consideration. After this, given the characteristics of the Spanish model, with its strong seasonal nature and the volatility of the air traffic, the capacity of the Spanish airports will be analysed, in order to evaluate whether Aena Aeropuertos has responded to the needs of the Spanish economy, given the importance of tourism in Spain.

4.5.1.1 Size of the AENA Aeropuertos network

The volume of passengers handled by the Spanish airport system is one of the highest in the world, with 187 million passengers in 2013. However, in 2007 it had reached 210 million passengers. As can be seen in the following figure, although the major Spanish airport, Madrid, is in 5th place in the ranking of major European airports, Spain has seven of the 40 major European airports, two more than Germany, three more than Italy and the United Kingdom, and four more than France.

Figure 25. Major airports in Germany, France, Italy, the United Kingdom and Spain (March 2014, annual data)



Source. Compiled by the authors based on data from the ACI.

In spite of the relatively large size of some of the airports in the Aena Aeropuertos network, it is necessary to note the large number of airports built in Spain, 46, which, according to the ACI⁷⁵, is 20 more than in Germany, Italy and the United Kingdom, and 11 more than in France. The number of airports in Spain causes them to have, on average, a low number of passengers when compared with the

⁷⁵ See "Airport ownership report" (2010).

data for the European countries with a similar size sector. Therefore, as can be seen in the following table, Spain has the second lowest average number of passengers in the countries compared, with an average of almost four million passengers per airport. Only France has fewer.

Table 11. Number and size of the airports in Germany, France, Italy, United Kingdom and Spain

	Nº aeropuertos	Nº pasajeros (2013)	Nº Pasajeros medio por aeropuerto	Nº Km2 por aeropuerto
Francia	36	138.330.825	3.842.523	18.761,58
Alemania	19	180.781.589	9.514.820	18.790,58
Italia	23	116.029.388	5.044.756	13.101,65
Reino Unido	25	210.468.756	8.418.750	9.744,40
España	47	187.731.973	3.994.297	10.737,13

Source. Compiled by the authors based on data from Eurostat and the ACI ("Airport ownership report" 2010).

This large number of airports does not seem to be in proportion with Spain's needs for connectivity, even if it is the second largest country in Europe, since, as can be seen in the previous table, the catchment areas found in Spain are among the lowest for the countries compared, with an average of some 10,700 Km² per airport. Even taking into account Aena Aeropuertos' eleven airports that are located on islands, the average is still only a little over 14,000 Km² per airport, very much less than in France (which is a bigger country than Spain) and Germany.

Therefore, as can be seen in the following table, almost 80% of the Spanish population is less than two hours by car from two airports, a figure that contrasts, according to the European Commission, with the Community average of 63%⁷⁶.

Table 12. Distribution of the population of Spain by distance from an airport

Habitantes	Tiempo					
	60 min		90 min		120 min	
al menos 5 aeropuertos	-	0,00%	585.963	1,24%	3.401.012	7,20%
4 aeropuertos	265.469	0,56%	2.227.623	4,71%	3.628.171	7,68%
3 aeropuertos	1.298.518	2,75%	7.540.508	15,95%	14.504.308	30,69%
2 aeropuertos	10.642.184	22,52%	12.801.494	27,08%	15.787.593	33,40%
1 aeropuerto	27.714.354	58,64%	21.464.681	45,41%	8.922.702	18,88%
al menos 1 aeropuerto	39.920.525	84,46%	44.620.269	94,40%	46.243.786	97,84%

Source. Compiled by the authors.

The reason for there being more choice in Spain is due to the close proximity of some airports, which leads to overlapping catchment areas and, *ceteris paribus*, a reduction in their average traffic. For example, the map below clearly shows that considerable overlap occurs between the catchment areas of the three airports in Galicia, since there is a distance of less than 100 km between them.

⁷⁶ See footnote 41.

Figure 26. Airports in the north-east of Spain⁷⁷

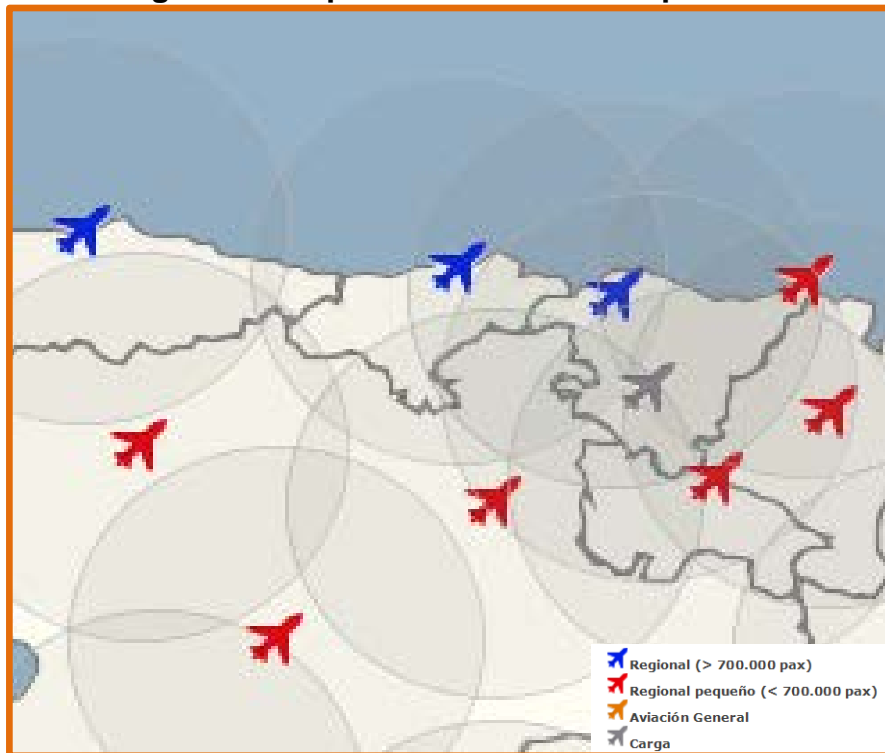


Source. Compiled by the authors.

Similarly, the airports in north-central Spain have strongly overlapping areas, as can be seen in the following figure.

⁷⁷ See the classification of Spanish airports included in section 5.

Figure 27. Airports in the north of Spain^{78,79}



Source. Compiled by the authors.

The Spanish airport sector is one of the biggest in Europe and has a large number of airports, higher than the big European countries. In it, big airports exist alongside others that do not reach the minimum size, so that, on average, the number of passengers per airport is relatively low. The number of airports in the Aena Aeropuertos network is high, even considering that Spain is the second largest country in the European Union and a number of the airports are located on islands.

4.5.1.2 Capacity of Spanish airports

As well as the number of airports, their available capacity and, in some cases, the current excess capacity is a significant variable when evaluating the situation of the Spanish airport sector and the actions of Aena Aeropuertos. If we look at the traffic for 2013, which, as has been said, was 23 million passengers less than the 2007 maximum, there was excess capacity at all the Spanish airports taken together of more than 98 million passengers. In other words, current over-capacity is around 35%.

As can be seen in the following figure, among the commercial airports, only Gran Canaria had more traffic than its theoretical capacity at peak hours⁸⁰. On average,

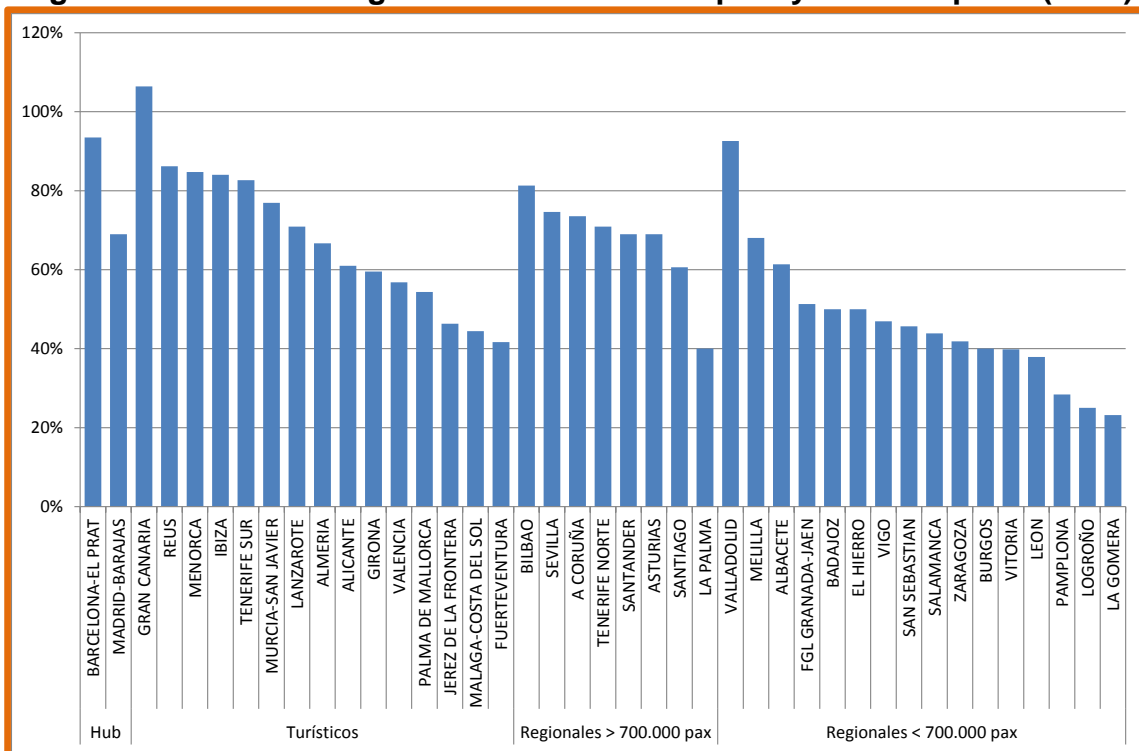
⁷⁸ See the classification of Spanish airports included in section 5.

⁷⁹ The Vitoria airport is included on this map even though it specialises in goods transport, as it also permits passenger traffic.

⁸⁰ According to information provided by AENA, the figures for airport capacity are calculated based on the passengers per design hour, which sets the number of passengers that it is possible to

the usage of tourist airports at peak hours was around 68% (the usage of the major tourist airports – Palma de Mallorca and Málaga – was below 60%), while it was around 67% at the biggest regional airports (those with over 700,000 passengers per year). The occupation of the smallest airports fell to 47%. Lastly, the two biggest airports in the network did not reach their maximum capacity, although the usage of Barcelona airport's theoretical capacity reached 93%. It is important to note that the index in the following figure does not show average usage for the year but usage of the airport's theoretical capacity at peak hours, which is to be understood as 97.5% of the hours in the year, excluding the 2.25% of the peak traffic hours for the year. Obviously, given the seasonal nature of the traffic through the Spanish airport system, the usage of the average capacity for the entire year would be higher.

Figure 28. Index of usage of the theoretical capacity of the airports (2013)



Source. Aena Aeropuertos.

From the above data, it can be concluded that Aena Aeropuertos has taken the action needed to have sufficient infrastructure to guarantee the growth of the tourist industry. These airports, therefore, have an excess capacity of more than 59.5 million passengers.

Similarly, the airports with the highest connecting capacity, which could make Spain's export activities easier, also have significant over-capacity. Lastly, it can

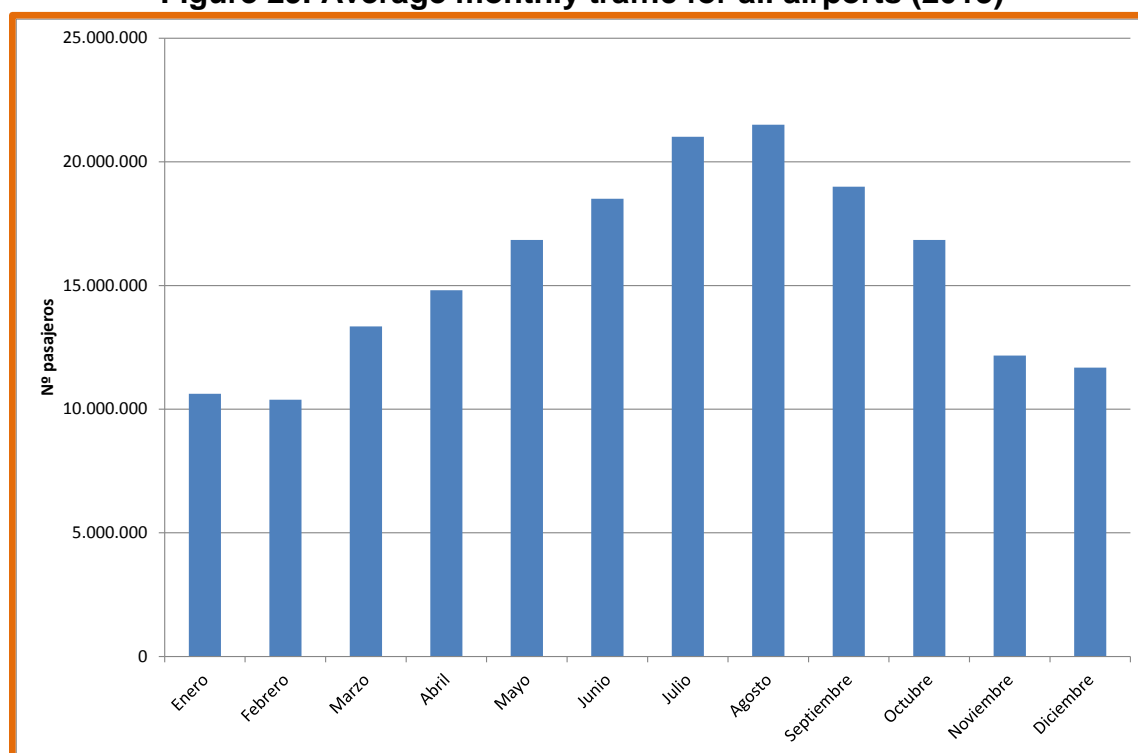
handle per hour with a pre-set level of quality. Therefore, given the seasonal nature of the traffic, both annually and daily, the infrastructure is not designed to respond to peak hours except by eliminating 2.25% of the busiest hours in the year. The index presented in the figure shows the usage of the theoretical capacity calculated based on passenger traffic being excessive during 97.75% of operating hours in, where appropriate, 2.25% of cases.

be seen that there is ample over-capacity at the smaller airports with an average usage of less than 47%.

From the economic point of view, the over-capacity of the airports could be considered inefficient insofar as there are resources lying idle. However, it is also necessary to consider, when making the evaluation, that the deadlines for when airport infrastructure should come into operation are far in the future at the time the decision to invest is made. Also, air traffic, especially tourism, which is very important to Spain, is very volatile since it is dependent on a multiplicity of factors, such as changes in the economies of the countries from which passengers come, the situation at competing destinations and the situation of the airlines, etc.. In this sense, by extrapolating the average growth in air traffic observed between 2000 and 2007, which rose by 6% up to 2013, the total traffic at Spanish airports would have grown to 298 million passengers, over 100 million more than those actually observed.

The management of over-capacity is more complicated at the Spanish airports that have significantly season traffic, due to the importance of tourism to Spain. Therefore, air traffic, as can be seen in the following figure, is, on average, 60% higher in August (when the peak is registered) than in February (the month with the least traffic). This pattern is even more noticeable at airports like Palma de Mallorca where the traffic in summer months is over five times the winter traffic.

Figure 29. Average monthly traffic for all airports (2013)



Source. Compiled by the authors based on data from AENA Aeropuertos.

Until 2013, the smaller airports, regional airports with less than 700,000 passengers, recorded a fall in traffic from the peak in 2007, with average decreases of around 50%, and, in some cases, over 75%. However, it should be

noted that the over-capacity that can be seen at these airports is not exclusively due to the drop in traffic observed in recent years but also to the fact that their size was excessively large, since already in 2007 disproportionate increases in traffic would be needed to reach economic equilibrium.

The regulatory framework encouraged these investments since the current methodology for setting charges makes a return on capital possible even at loss-making airports. The investment made in any airport, regardless of its profitability, therefore goes to form part of the regulated asset base on which capital costs are applied.

In fact, even though it can be seen that the big Spanish airports (those with over 700,000 passengers) have over-capacity according to the traffic observed in 2013, the evolution of traffic since 2007 and the strong seasonal nature of air traffic make it difficult to confirm where the actions taken in this regard were efficient or not. On the other hand, at the smaller airports it can be seen that, even when the traffic levels reached in 2007 are taken into consideration, their size is excessive.

Therefore, Aena Aeropuertos' management, with the significant drop in traffic observed in 2007 and after exhausting the cost reductions gained by reducing timetables, personnel costs, etc., seems to show a certain rigidity, since additional actions have not been taken to respond to the over-capacity found in the system by restructuring it and, where appropriate, closing non-viable airports or downgrading them to general aviation airports that, for example, do not have a control tower, in order to reduce costs. From the data presented in this section, it can be concluded that there is a high number of airports in Spain, compared to the number in other countries with an airport sector of a similar size. Therefore, in spite of having seven of the major European airports, the average number of passengers per airport is less than the average.

In addition, even though there is significant over-capacity at the big Spanish airports, there are factors in the Spain airport system, such as the seasonal nature of the traffic, that make it difficult to achieve a perfect correlation between capacity and use. However, when the investments made at smaller airports are analysed, it can be seen that the size of these infrastructures was not in line with realistic estimates of traffic growth.

In the opinion of this Authority, the current charge regulation methodology has contributed to over-investment in these airports by bringing the airport operator a return on capital even from loss-making infrastructures.

4.5.2 Competitiveness of Spanish airports

After analysing the Spanish airport map, it is now possible to analyse whether airport services are being provided efficiently, in other words, at the lowest cost possible, and to compare the competitiveness of Spanish airports with that of other competing countries.

To do this, it is necessary to look at the level of charges in Spain and Aena Aeropuertos' service provision costs. Also, as described above, the airports obtain their revenue not only from airport activities but also from other sources, such as commercial activities. This revenue is also important for guaranteeing an airport's

sustainability and competitiveness, so that an efficient manager must also be required to have a suitable revenue mix from all its activities. Finally, providing services that meet the needs of the airlines, in their role as airport customers, by customising the services offered, leads in turn to greater competitiveness for the airports.

An analysis of the competitiveness of Aena Aeropuertos airports requires a multidimensional analysis of the costs incurred by providing services, the revenue obtained from all airport activities and the innovation in and differentiation of the airport's range of offers in response to the needs of the airlines.

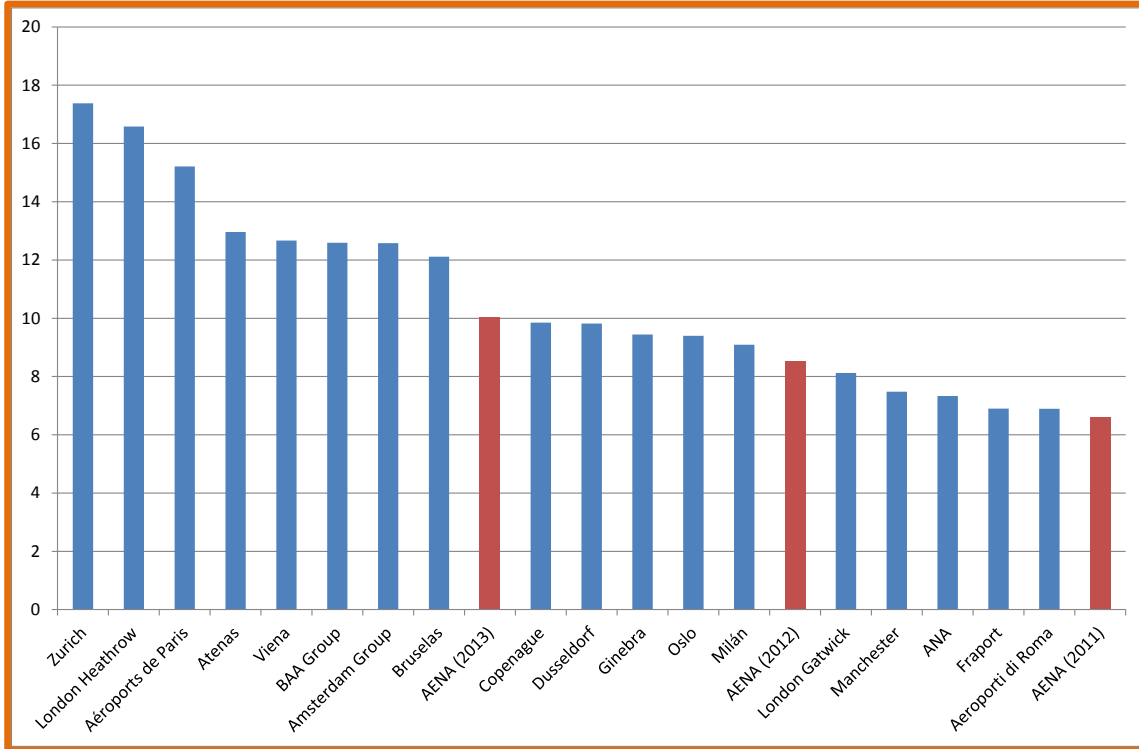
4.5.2.1 Level of airport charges in Spain

In the preceding sections it was concluded that airport charges, excluding en-route charges and ground handling costs, form a significant portion of an airline's costs, especially if it is an LCC. These charges can therefore play an important role when an airline decides whether or not to set up a route from a Spanish airport, so that it is necessary to analyse the relative position of Spanish airport charges when establishing the competitiveness of its airports.

As can be seen in the following figure, the average revenue in 2011 for Aena Aeropuertos from airport charges⁸¹ was one of the lowest in Europe. Even taking into consideration the increases made in 2012 and 2013 only for Aena Aeropuertos (there are no up-to-date data for the other airports), the average levels of revenue per passenger for airport services are situated at the bottom or middle in an international comparison, although there has been a significant increase in the last two years.

⁸¹ Average airport revenue per passenger is used as an approximation to airport charges so that the charges that are made, on the one hand, for airline movements and depend on their being an occupant of the airport and, on the other, those that are imposed on the passengers transported are more homogeneous. Average revenue also takes into account the discounts and bonuses offered by the airports.

Figure 30. Average revenue per passenger from airport services (in SDR⁸²)

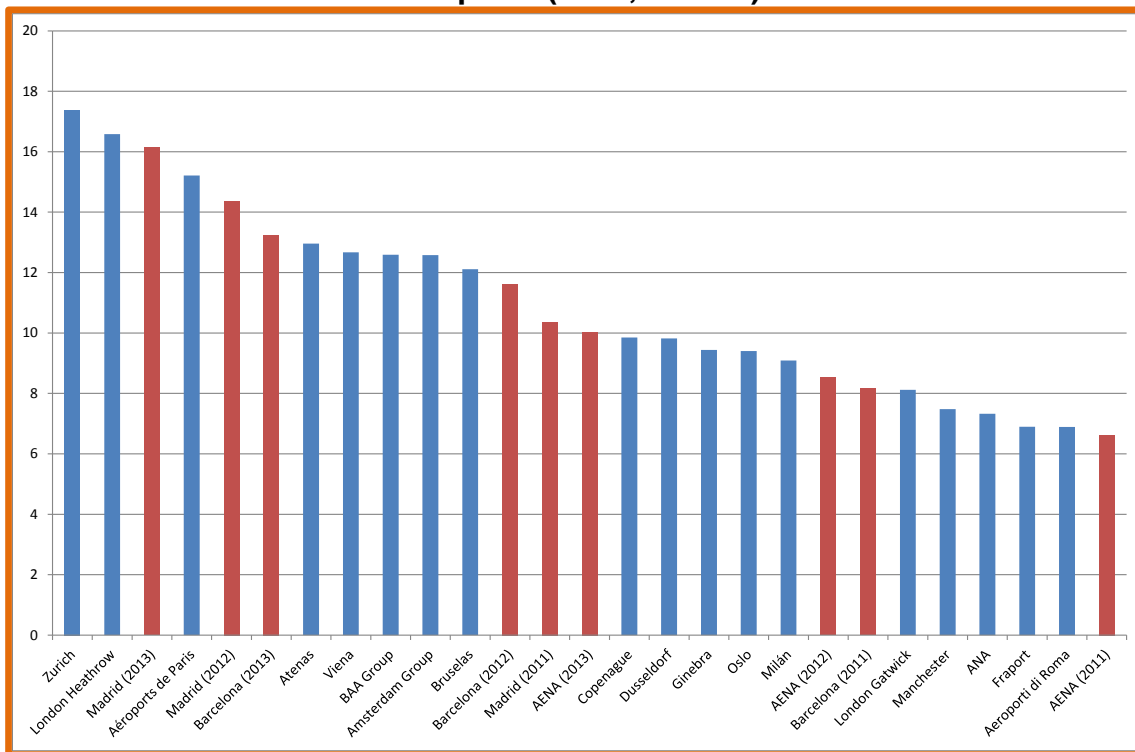


Source. Compiled by the authors based on data from AENA Aeropuertos and Leigh Fisher.

Since the Aena Aeropuertos data come from a large number of airports and heliports, which could rule out a comparison being made, it is necessary to break them down to obtain more comparable figures. Even taking into consideration the airports with the most traffic, such as Madrid and Barcelona, where the charges are highest, a comparison with other airports of a similar size results in relatively low airport charges, as can be seen in the following figure. However, the increases applied since then have raised the charges at these airports considerably, placing them in the upper half of the comparison (although the charges for the other airports date from 2011 as it has not been possible to obtain more up-to-date charges for them).

⁸²SDR: Special drawing right.

Figure 31. Average revenue per passenger from airport services at certain airports (2011, in SDR)



Source. Compiled by the authors based on data from AENA Aeropuertos and Leigh Fisher.

(*) Except in the case of Spain, where the data for 2012 and 2013 are included.

In fact, a comparison of the aeronautical revenue of the various airports, as an approximation of the airport charges, shows a significant rise in the charges applied by Aena Aeropuertos in recent years, especially at the major airports in the network. Even if on average the operator's median revenue per passenger is low, the same cannot be said if Madrid and Barcelona airports are included.

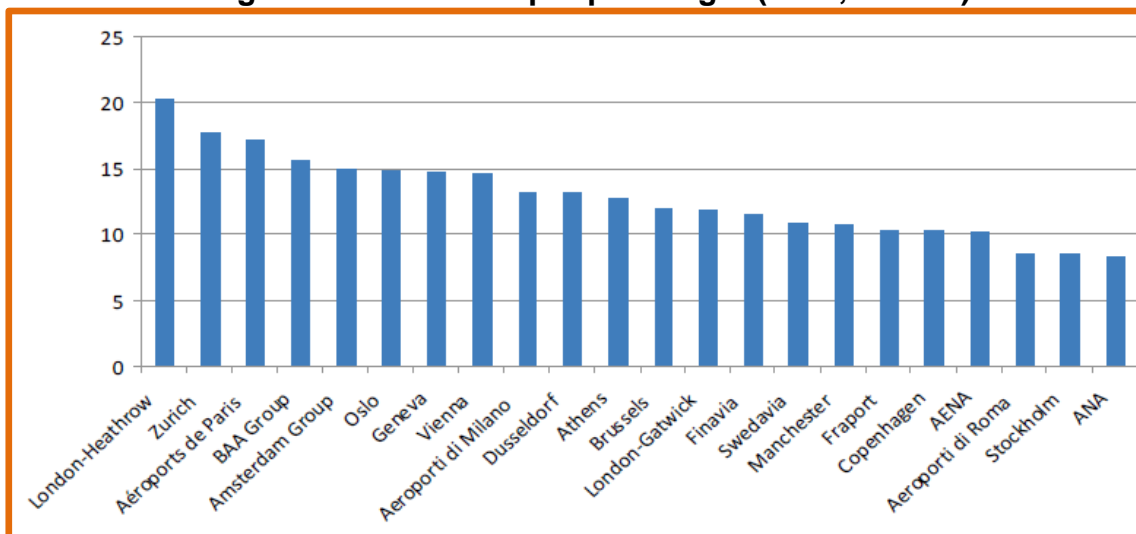
4.5.2.2 Cost efficiency

To analyse the cost efficiency of Aena Aeropuertos, the Leigh Fisher report⁸³ has been used, which has general acceptance in the sector. The comparison shows that the Spain operator's results are not out of line with those found on other European countries. Aena Aeropuertos' total cost per passenger is in fact among the lowest in the comparison, and this in spite of the fact that the Aena Aeropuertos network groups together 47⁸⁴ airports of widely varying characteristics that also differ noticeably from those of some of the big airports included in the sample.

⁸³ Airport performance indicators (2013).

⁸⁴ At the time of the comparison, Aena Aeropuertos was still managing the Torrejón de Ardoz airport.

Figure 32. Total cost per passenger (2011, in SDR)

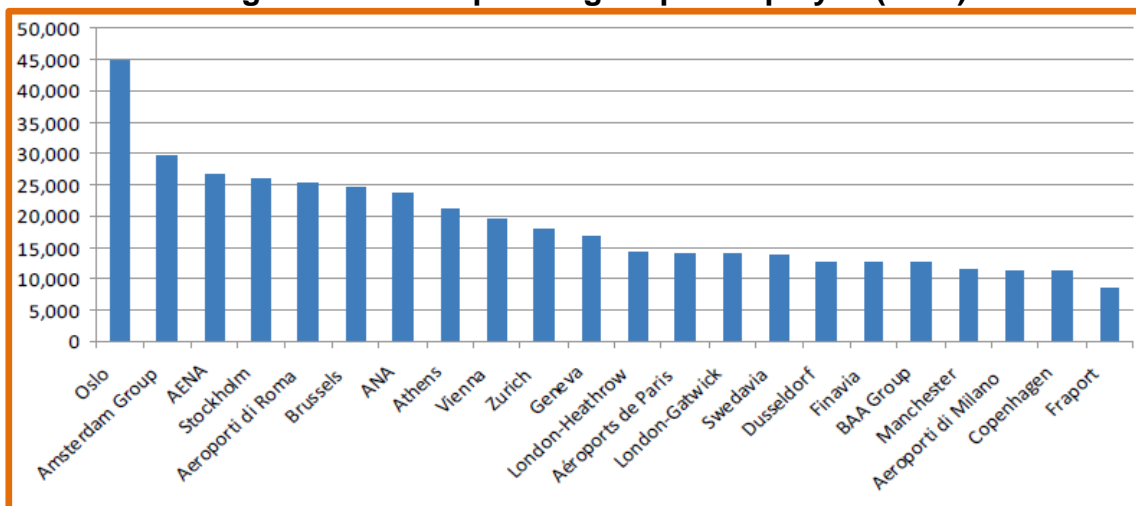


Source. Leigh Fisher. Airport performance indicators (2013).

This situation has continued if we consider operating costs (4th from the bottom, in front of ANA, Aeroporti di Roma and Stockholm airport), although Aena Aeropuertos falls in the middle of the comparison on other items, such as for the costs of materials and services (7th out of 22) and personnel (9th out of 22).

In operating terms, a comparison of Aena Aeropuertos with other airport operators shows data consistent with the preceding results in economic terms. For example, the Spanish operator comes third in number of passengers per employee, as shown in the following figure:

Figure 33. No. of passengers per employee (2011)



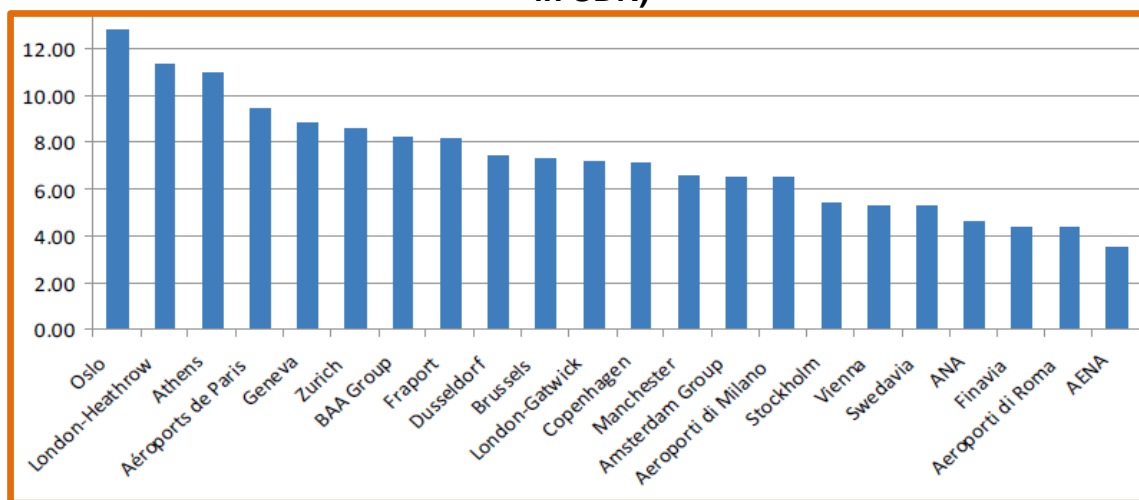
Source. Leigh Fisher. Airport performance indicators (2013).

Both a comparison of the total costs per passenger and the more operational ratio of the number of employees per passenger indicate that Aena Aeropuertos is not an inefficient operator in terms of the cost incurred to operate the entire Spanish airport network.

4.5.2.3 Non-aeronautical revenue

Airports obtain their revenue from both the activities of the airport proper and from the management of other activities that take place inside the airport, such as renting out spaces for commercial activities, etc.. This latter revenue represents an increasingly large proportion of the revenues of airport operators. In regard to this type of revenue, Aena Aeropuertos has an average revenue per passenger that is well below the mean, as can be seen in the following figure.

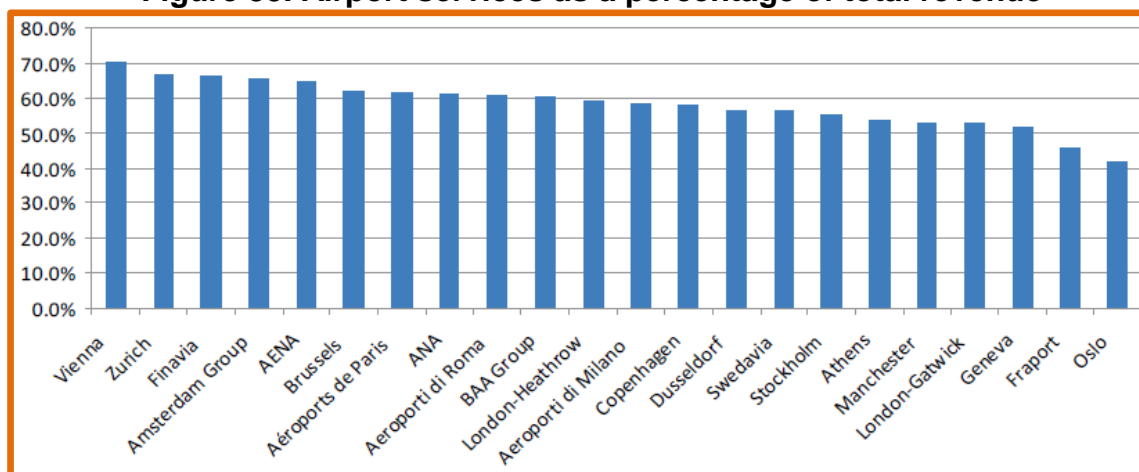
Figure 34. Average revenue per passenger from commercial activities (2011, in SDR)



Source. Leigh Fisher. Airport performance indicators (2013).

This fact causes the Spanish operator's revenue mix to be based on revenue from airport services, which represents more than 60% of total revenue.

Figure 35. Airport services as a percentage of total revenue



Source. Leigh Fisher. Airport performance indicators (2013).

4.5.2.4 Capacity for differentiation

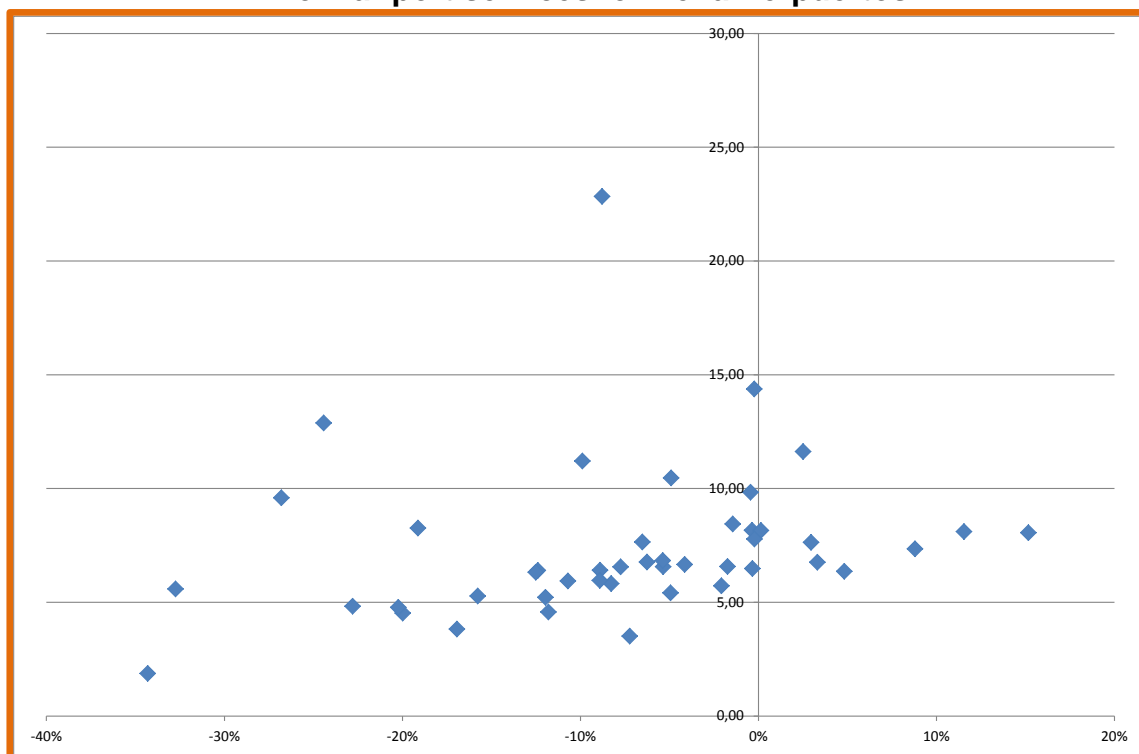
The management limitations mentioned above in regard to the centralised setting of airport changes and the homogeneity of the services provided limit

improvements to individualised airport management and the capacity to match airport services to the needs of the user airlines and, ultimately, of the passengers.

Managing charges centrally without taking the financial situation, traffic and seasonal nature of each airport into account is creating distortions because, even if the charges at the airports in a group are nominally the same, the actual usage of the services at each airport makes the average revenue per passenger different⁸⁵.

No correlations can therefore be seen between profitability and the airport revenue obtained. As can be seen in the following figure, which shows ROA (return on assets) on the horizontal axis and average revenue per passenger for airport services on the vertical axis, the low use of capacity at some airports plus the charges set by Aena Aeropuertos for the different groups of airports make profitability and average revenue very dissimilar.

Figure 36. Relationship between ROA and average revenue per passenger from airport services for Aena Aeropuertos



Source. Compiled by the authors based on data from AENA Aeropuertos.

It should be noted that the rates per airport group follow the logic of grouping the airports by number of passengers. However, there are high fixed costs for the maintenance of airport facilities and, as shown in Figure 28 above, there are

⁸⁵The differences in average revenue per passenger are due to the fact that airport charges differentiate, on the one hand, between payments per passenger and per aircraft and, on the other, charges for the use of the different airport services. See <http://www.aena.es/csee/ccurl/978/1003/Guia%20tarifas%20AA%202014%20marzo%20V2.pdf>

airports with significant excess capacity where it would be hoped that the Aena Aeropuertos charge policy would not only be in response to airport traffic.

Finally, setting airport charges centrally by only differentiating between the groups of airports by current demand (the number of passengers at the airport) does not correspond to the economic logic expected of an efficient business policy. In spite, therefore, of the fact that the fixed costs that characterise airport cost structure should encourage the use of rate reductions in order to reach a critical mass, Aena Aeropuertos' centralised management means that the expected positive relationship between the average revenue per passenger and the rate of airport use cannot be found.

In contrast, decentralised management, where each airport is able to set up its own charge policy individually after taking market demand into account, would lead to improved management and a better use of resources within the Aena Aeropuertos' network.

Finally, in contrast to what has been observed at other airports, Aena Aeropuertos has not signed any customised service provision agreements with any airline, even though current legislation expressly provides for this possibility. The cost structure of an airport, which is essentially fixed, provides significant incentives to managers to reach agreements with the airlines that will ensure a minimum level of traffic in the long term, thereby reducing operating risks by reducing the average cost per passenger.

This situation contrasts with the trend in other countries, where a large number of airports are making long-term agreements with the airlines, for example, Gatwick and Stansted. A recent study shows that some 17% of the 200 major airports in Europe have signed bilateral agreements with airlines⁸⁶. Similarly, the European Commission⁸⁷ has noted that airports are differentiating their airport charges based on different criteria, including levels of services or traffic volumes, and even, in some cases, some airports are devoting specific terminals, with fewer services, to LCCs in return for pricing levels around 23-25% lower.

Once again, this Authority considers that the current legal framework, which has a certain legal uncertainty regarding the treatment of business incentives and customised agreements, is discouraging the reaching of this type of agreement, which could increase the efficiency of airport management. Current regulations limit the cases in which the manager can pass on business incentives to the general rate-setting framework, which must be financed, in most cases, out of the manager's profit margin.

It can be concluded from the analysis of the revenue and cost variables that, although Aena Aeropuertos had a relatively low airport charge level, especially when taking all the airports into consideration, the latest rises have meant that the big airports in the network are high on the list of European airports. In addition,

⁸⁶“*Airport incentive programmes: A European Perspective*”, R. Malina, S. Albers, N. Kroll. May 2012.

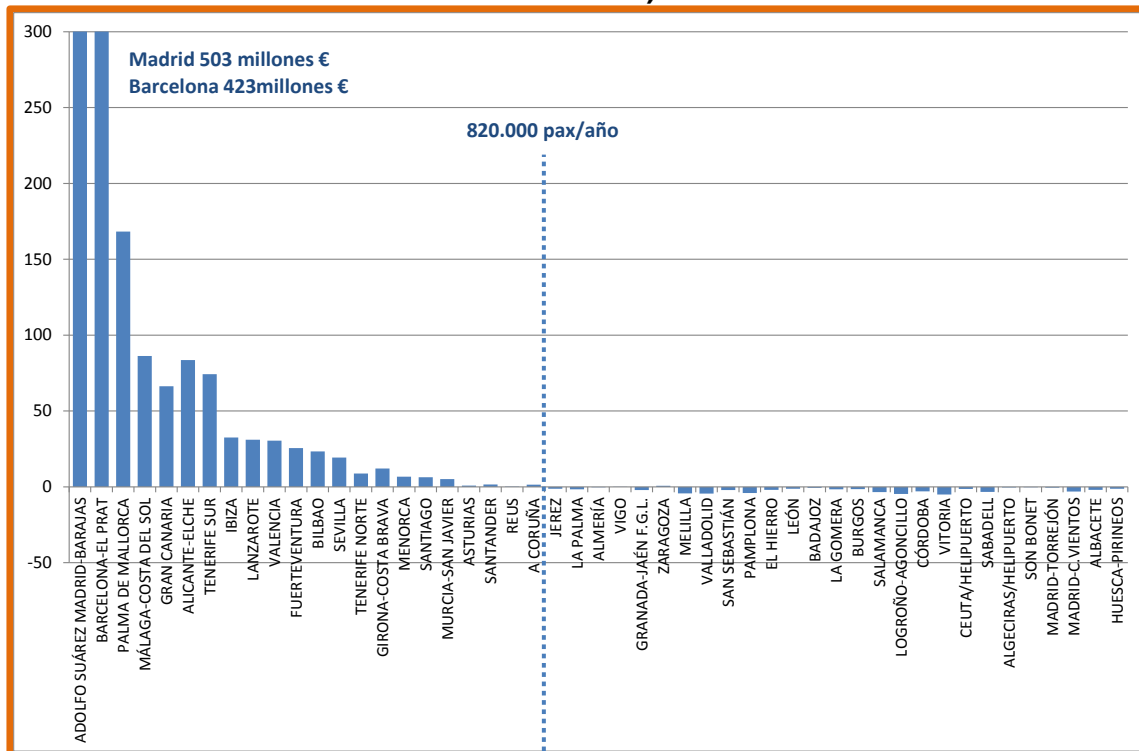
⁸⁷“*Evaluation of Directive 2009/12/EC on airport charges*”.

although Aena Aeropuertos shows high cost efficiency, its income-generating capacity in relation to its non-airport activities has limitations. As already noted, the current regulatory framework, which imposes centralised management on a very high number of airports, leads to rigidity and prevents any variation in airport charges and customised agreements with the airlines that could increase the efficiency of airport management.

4.5.3 Profitability of Spanish airports

The above-mentioned limitations are also reflected in the profitability of the airports, if they are taken individually. The aggregate figures for Aena Aeropuertos do not adequately bring out the underlying differences between the 47 airports and two heliports in the network. As a result, 24 of the 49 airports and heliports in the Aena Aeropuertos network had a positive EBITDA in 2013, of which 22 had a traffic level of over 820,000. Below this passenger threshold, only Vigo airport, with approximately 680,000 passengers, and Zaragoza, with 460,000, had a positive EBITDA. The situation of the Spanish airports has improved in comparison with the results for 2012, when all the airports with fewer than 1 million passengers per year had a negative EBITDA.

Figure 37. EBITDA of the airports in the Aena Aeropuertos network (2013, € millions)

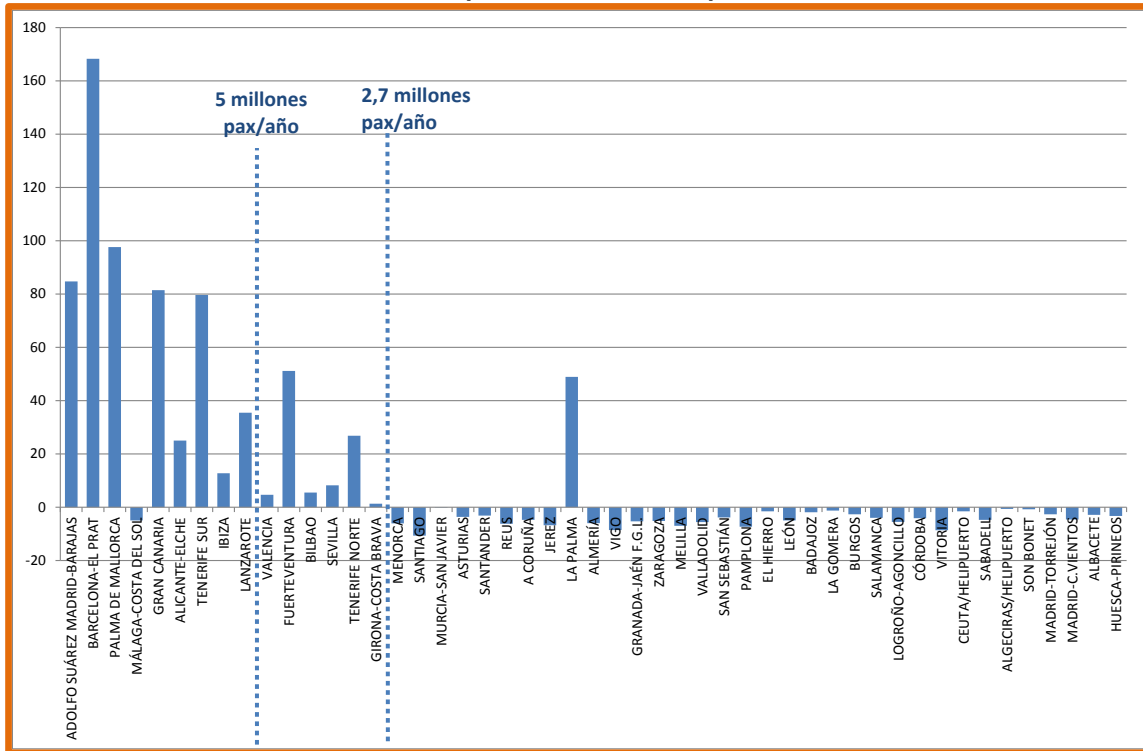


Source. Compiled by the authors based on data from AENA Aeropuertos.

If the after-tax earnings of the airports are analysed, it can be seen that all those with fewer than 2.7 million passengers per year, except for La Palma, had negative results in 2013 (i.e., 33 airports). Above this threshold, all the airports in the network, except for Malaga, with almost 13 million passengers, had positive final results. The efficiency plan applied by Aena Aeropuertos has meant that this

situation contrasts with the one in 2012, when the profitability threshold for Aena Aeropuertos airports was 4 million passengers.

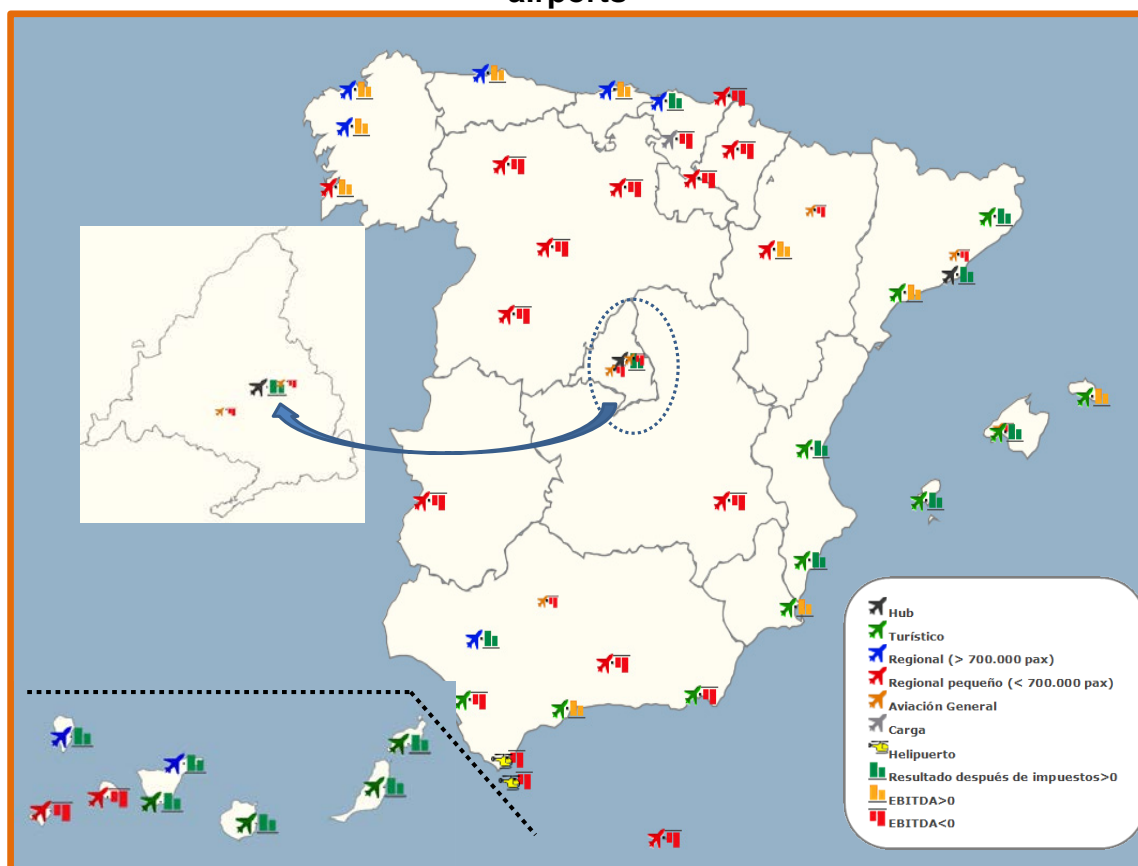
Figure 38. After-tax earnings of the airports in the Aena Aeropuertos network (2013, €millions)



Source. Compiled by the authors based on data from AENA Aeropuertos.

The following map summarises the economic status of the airports in the Aena Aeropuertos network.

Figure 39. Summary of the economic condition of Aena Aeropuertos' airports⁸⁸



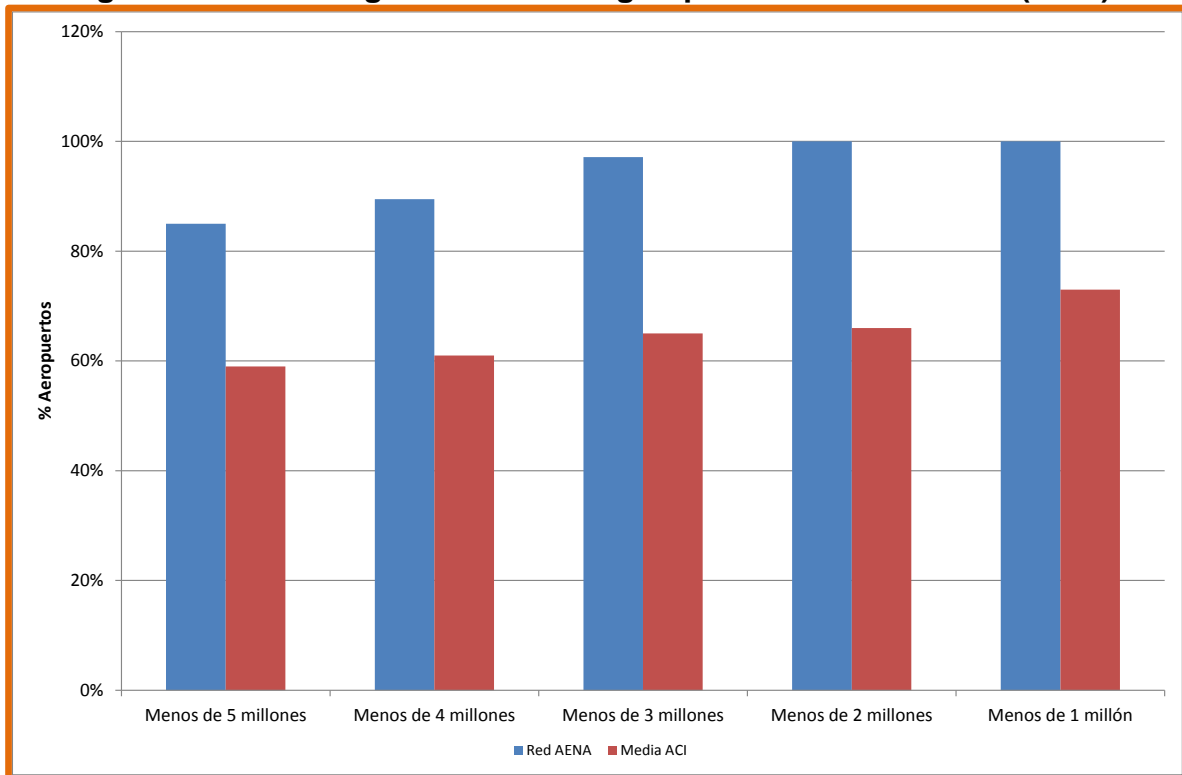
Source. Compiled by the authors based on data from AENA Aeropuertos.

As noted above, the empirical evidence (Doganis&Thomson⁸⁹) and the European Commission suggest that the minimum annual traffic with which an airport can be profitable is between 700,000 and 500,000 passengers. The ACI has also calculated the proportion of profitable airports based on number of passengers. As can be seen in the following figure, Aena Aeropuertos airports are less profitable than airports of a comparable size in other countries.

⁸⁸ See the classification of Spanish airports included in section 5.

⁸⁹ "Airport economics in the seventies" (1978).

Figure 40. Percentage of loss-making airports based on traffic (2011)



Source. Compiled by the authors based on data from the ACI (Economics Report 2012) and Aena Aeropuertos.

In terms of EBITDA, the profitability threshold achieved by Aena Aeropuertos in 2013 was around 800,000 passengers per annum. In terms of net earnings, however, the break-even point was higher, around 2.7 million passengers. These data indicate that the Aena Aeropuertos airports require on average a much higher number of passengers to be profitable than their peers in other countries. The fact that a profitability threshold based on EBITDA or total profits differs so much indicates that investment and the financial costs associated with them are having a very significant impact on a large number of Aena Aeropuertos airports.

In 2013, depreciation and financial costs accounted for over 40% of the total costs of the airports, while for some, they were over 60%. Debt rose last year to more than €11 billion, which, as has been said, leads to a highly leveraged structure according to the comparison with other operators described above.

It can therefore be concluded that the investment made at some airports by Aena Aeropuertos has not been consistent with the revenue from their activities, making the profit frontier in Spain higher than expected for this activity and thereby creating inefficiency in the use of public resources.

In addition, Aena Aeropuertos' centralised management and the current legal framework have prevented actions from being taken to resize the Spanish operator's network in the light of the drop in traffic registered in recent years. This has led, as indicated in section 4.5.1.2 above, to the existence of a series of

airports that are very close to each other geographically, which prevents them from attaining critical mass in terms of minimum efficiency.

V. POSSIBILITIES FOR COMPETITION IN THE SPANISH AIRPORT SECTOR

In section two it was emphasised that the Spanish airport sector is an exception compared to other countries of a similar size, where there are several operators who are the owners of one or various airports in that country. Section three showed how competition between airports is possible, depending on their characteristics, and how competition can improve the bottom line of airports, to the benefit of the users and the airlines.

Finally, sections four and five analysed the Spanish model, which is based on the centralised management by Aena Aeropuertos of almost all the airports currently in operation. This analysis has shown that, although in terms of capacity and airport charges the model may be competitive as compared with other countries, the current model suffers from certain management limitations.

Because of this situation, this section will analyse the possibilities of an alternative airport management scheme, by reviewing the possibilities for competition between the airports in Spain and the restrictions that could arise given the characteristics of this sector in Spain.

5.1 Classification of Aena Aeropuertos Airports

Section 3.2.1 set up two categories of competing airports. The first category contains airports that only serve the geographical area in which they are located (competition for overlapping geographical areas). The other contains airports that compete for wider areas, either because their traffic comes mainly from tourism and therefore is dependent on the location of the airport (competition for destinations) or because they compete for connecting traffic (competition between hubs).

Following this classification, it is necessary, first of all, to establish which category of airports can be found in the Aena Aeropuertos network and then to analyse the possible competition between them. It will also be necessary to consider not only the traffic that they have currently but also the potential competition that they could exert in a context of competition between operators for the existing infrastructure.

Based on the classification in section 3.2.1, Aena Aeropuertos' airports can be classified as follows:

- **Airports that compete for overlapping geographical areas (regional).** This group includes airports with little international traffic, given that they are essentially providing a service for the connectivity needs of the geographical area in which they are located. In the case of Aena Aeropuertos, this group includes some very different airports, so that it is necessary to distinguish between those whose traffic is over 700.000

passengers⁹⁰ per year and those that are smaller. As we have seen, the number of passengers determines the viability of an airport and, according to some studies, this is the threshold that determines whether an airport can potentially be profitable.

The group containing regional airports (with over 700,000 passengers p.a.) would therefore include the airports of Bilbao, Sevilla, Santiago, Tenerife Norte, Santander, La Palma, Asturias and A Coruña.

The group containing small regional airports whose annual traffic is fewer than 700,000 passengers includes Granada, Vigo, Albacete, Badajoz, Burgos, León, Logroño, Melilla, Pamplona, Salamanca, San Sebastián, Valladolid, Hierro and Gomera. The airports of Zaragoza and Vitoria are included in this group even though they are airports that specialise in cargo as they also so have passenger traffic.

The differences between the two groups lies mainly in the possibility of the second group, the small regional airports, attaining positive profitability.

- **Airports that compete for destinations (tourism)** This group is made up of the airports whose annual traffic is over 700,000 passengers and includes a significant percentage of international passengers (over 50%). The difference between this category of airports and the former lies in the fact that, as mentioned above, tourist airports are more exposed to competition from other international tourist destinations.

Among the airports included in the group that is exposed to competition from other international destinations are: Tenerife Sur, Alicante, Málaga, Palma de Mallorca, Gran Canaria, Girona, Fuerteventura, Lanzarote, Valencia, Ibiza, Menorca, Murcia, Reus, Almería and Jerez.

- **Hub airports** The final sort of competition to be described applies to airports that specialise in connecting traffic, or hubs. These airports are characterised by having a much larger number of passengers than would be expected given their area of influence and, also, a high percentage of transit passengers, en route to other destinations. In the Aena Aeropuertos network, the Madrid and Barcelona airports can be included in the hub category because of their numbers of passengers, 39.7 and 35.2 million passengers respectively, and their capacity.

In the case of Madrid airport, almost one quarter of its passengers are in transit, while Barcelona caters for a much lower percentage, less than 5%. Currently, therefore, the only airport in the Aena Aeropuertos network that can be considered to be a hub is Madrid, although Barcelona could potentially become one.

Another of the differences between a hub and the other airports considered is the number of long-haul routes. An airline that sets up a hub at an airport

⁹⁰This number of passengers has been chosen as the threshold in accordance with the Guidelines on State Aid to airports and airlines (see footnote 41). This document establishes a more flexible regime for airports with less than 700,000 passengers per year.

designs its routes to feed passengers from short-haul flights to long-haul routes. By analysing the percentage of different routes by distance, the following table shows how the passengers on long-haul routes (international) handled at Madrid airport form a greater percentage of the total number of passengers than at Barcelona.

Table 13. Passengers on long-haul routes, Madrid and Barcelona

	Madrid	Barcelona
Internacional*	25%	8%
Nacional	30%	29%
Europa y Schengen	45%	63%

(*) This international table includes passengers from non-domestic destinations that do not belong to Europe or the Schengen area.

Source. Compiled by the authors based on data from AENA Aeropuertos.

The final category includes the airports that handle mainly general aviation (Córdoba, Huesca-Pirineos, Madrid-Cuatro Vientos, Son Bonet and Sabadell⁹¹) and the Ceuta and Algeciras heliports. Due to their specialisation, these airports do not enter into the analysis.

5.2 Analysis of competition between airports

Using the preceding classification of the airports in the Aena Aeropuertos network, it is now necessary to establish which airports could compete, based on their specific characteristics.

5.2.1 Regional airports

Regional airports compete both for passengers from the area in which they are located and by trying to attract airlines in order to increase their number of available destinations. An airport's catchment area can potentially extend to 200 km. or two hours by car, although the probability of passengers falls as the costs of transports rise, both in terms of money and time. For this reason, the analysis, which has a conservative focus, will concentrate on journey times of less than 60 minutes, even if, in some cases, for illustrative purposes, longer travelling times will be included.

The following sections will describe the airports that could potentially compete, depending on their location and characteristics, their situations and the limitations of this competition.

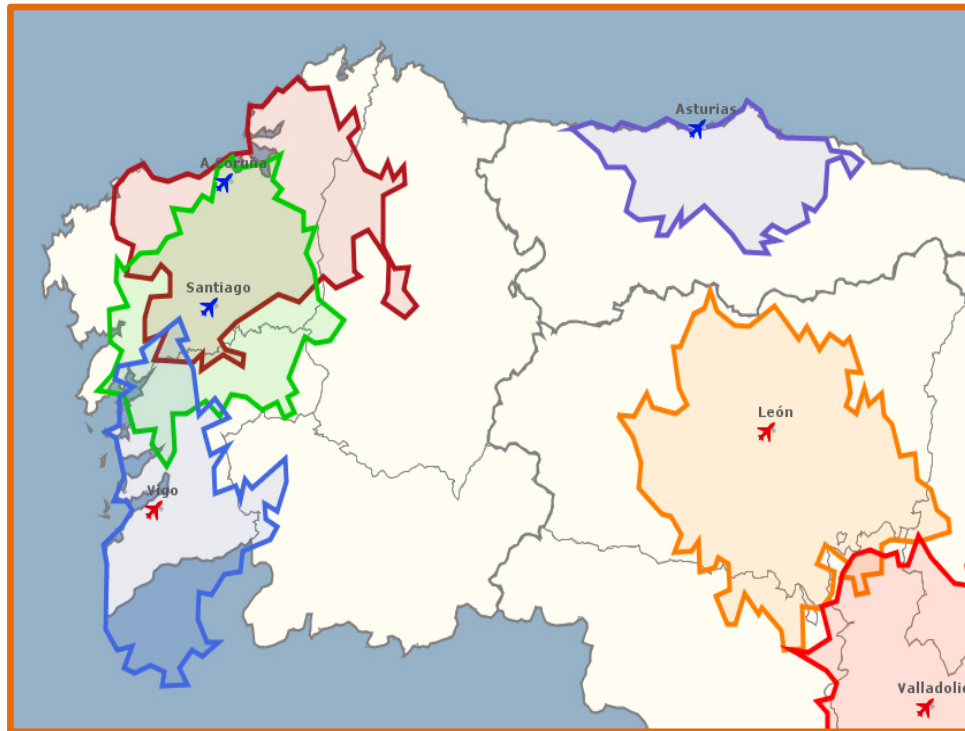
5.2.1.1 Airports in the north-west of Spain

Galicia has three airports, Vigo, Santiago and A Coruña, which are very close to each other. As the following figure shows, the catchment areas of the three airports overlap considerably for a journey time of 60 minutes⁹².

⁹¹ As has been said, until 2013 the Torrejón de Ardoz airport would be included in this category.

⁹² As noted, some economic studies consider that an airport's catchment area includes a maximum radius of a 60 minute journey by car from the airport.

Figure 41. Airport catchment areas for a 60 minute journey by car



Source. Compiled by the authors.

Obviously, if longer distances are considered (90 or 120 minutes of driving time), the catchment areas of the airports increase, leading to even more significant areas of overlap. In fact, if a two hour journey by car is taken into account, it would make no difference to parts of the province of Lugo whether they travel to A Coruña airport or Vigo. It is also necessary to point out that the Oporto airport is located approximately one hour's driving time from the Spanish border, although it is not included in this report.

Therefore, as shown in the following table, with driving times of 90 and 120 minutes, the catchment areas of the three airports in Galicia overlap almost completely. If this time is reduced, because of its position, more population falls into the catchment area of the Santiago airport than the other two, while Vigo airport has the largest number of people with no alternative airport.

Table 14. Overlapping population of the airports in Galicia

	60 min			90 min			120 min		
	A Coruña	Santiago	Vigo	A Coruña	Santiago	Vigo	A Coruña	Santiago	Vigo
Población cubierta por 1 aeropuerto	361.946	115.930	710.735	80.464	2.931	167.914	46.171	-	72.282
Población cubierta por 2 aeropuertos	705.379	956.808	251.429	926.511	1.605.429	678.918	456.366	567.416	156.239
Población cubierta por 3 aeropuertos	106.357	106.357	106.357	687.509	687.509	687.509	1.967.706	1.967.706	1.925.859
Total	1.173.682	1.179.095	1.068.521	1.694.484	2.295.869	1.534.341	2.470.243	2.535.122	2.154.380
% población con aeropuerto alternativo	69,16%	90,17%	33,48%	95,25%	99,87%	89,06%	98,13%	100,00%	96,64%

Source. Compiled by the authors.

In this context, according to what was concluded in section III, competition between these airports would be possible.

Having established that the catchment areas of these airports intersect to a large degree, it is time to analyse their situations. In regard to the total traffic of the Galician airports, it can be said that in 2013 they handled rather more than 3.5 million passengers, which means a significant decrease from the more than 4.5 million peak reached in 2011. In other words, they handle approximately 2% of the total traffic for the Aena Aeropuertos network.

Table 15. Evolution of traffic at airports in Galicia

	2008	2009	2010	2011	2012	2013
Santiago	1.917.466	1.944.068	2.172.869	2.464.330	2.194.611	2.073.055
<i>Crecim. (%)</i>		1,4%	11,8%	13,4%	-10,9%	-5,5%
A Coruña	1.174.970	1.068.823	1.101.208	1.012.800	845.451	839.837
<i>Crecim. (%)</i>		-9,0%	3,0%	-8,0%	-16,5%	-0,7%
Vigo	1.278.762	1.103.285	1.093.576	976.152	828.725	678.720
<i>Crecim. (%)</i>		-13,7%	-0,9%	-10,7%	-15,1%	-18,1%
Total	4.373.206	4.118.185	4.369.663	4.455.293	3.868.787	3.591.612
<i>Crecim. (%)</i>		-5,8%	6,1%	2,0%	-13,2%	-7,2%

Source. Compiled by the authors based on data from AENA Aeropuertos.

In economic terms, although the three Galician airports had negative earnings before tax, their EBITDA improved in recent years, giving all three positive results in 2013.

Table 16. Key economic figures for the airports in Galicia

<i>miles euros</i>	EBITDA			Resultado después impuestos			Deuda		
	2011	2012	2013	2011	2012	2013	2011	2012	2013
Santiago	3.953,80	- 3.922	6.397	- 5.531,40	- 19.730	- 10.655	293.900,04	335.516	348.855
A Coruña	-1.726,12	- 2.365	1.505	- 6.837,57	- 7.718	- 4.775	119.833,96	161.320	182.244
Vigo	-7.742,06	- 2.967	142	-10.607,60	- 9.145	- 8.586	104.884,65	144.383	163.640
Total	- 5.514	- 9.254	8.044	- 22.977	- 36.593	- 24.016	518.619	641.219	694.739

Source. Compiled by the authors based on data from AENA Aeropuertos.

In terms of EBITDA, the results are important when looking at the solvency of these airports and their ability to pay their debts, which, as shown in the following table, are very high. So, in the best case scenario, which is that of the Santiago airport, it would take 55 years for it to pay back its current debt at current EBITDA levels, a figure that contrasts with Aena Aeropuertos in its entirety, where it would take less than eight years.

Table 17. Accumulated debt of the airports in Galicia

	EBITDA (miles €)	Deuda (miles €)	Deuda/EBITDA	Deuda/EBITDA AENA Aerop.
Santiago	6.396,67	348.855	55	8
Vigo	142,23	163.640	1.151	
A Coruña	1.505,27	182.244	121	

Source. Compiled by the authors based on data from AENA Aeropuertos.

From the above it can be concluded that there are doubts about the sustainability of the airport map in Galicia in an environment where there is competition between the three airports. The following table therefore shows a conservative estimate of the minimum number of passengers that each airport would require, taking into account the average revenue per passenger in 2013. It can be seen that Santiago airport would need very little growth in its number of passengers to reach break-even point (without including return on capital), while A Coruña would need to increase its traffic by 24% and Vigo does not currently have sufficient capacity to increase it to the level needed.

Table 18. Estimation of the traffic needed to reach break-even point

	Santiago	Vigo	A Coruña
Ingreso medio/pasajero (euros)	7,23	6,64	6,64
Incremento pasajeros para break even	1.474.291	1.293.692	718.980
Incremento con respecto tráfico 2013 (%)	-28,9%	113%	-14%
Capacidad aeropuerto (pasajeros)	3.420.541	1.445.674	1.142.178
EBITDA (miles euros)	17.051	9.737	6.280
Deuda/EBITDA	20	17	29

Source. Compiled by the authors based on data from AENA Aeropuertos.

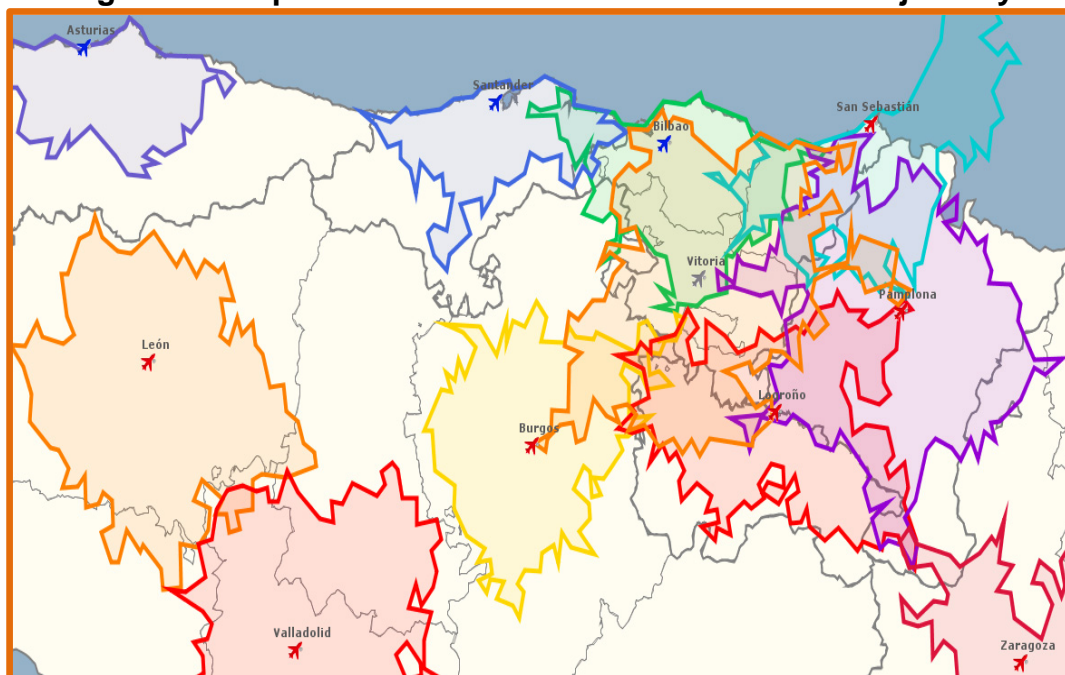
As a whole, by maintaining the current cost structure, the Galician airports need almost 5 million passengers to make the current airport map sustainable, which means an increase of 40% over current traffic. As shown in Table 15, in 2011, traffic reached this level but with a spread of passengers that only allowed Santiago airport to reach break-even point. A Coruña airport still needed another 40,000 passengers to break even. However, these traffic levels could be altered by the introduction of competition, which could increase the efficiency of these airports while reducing their costs and making the operators of these airports seek new carriers and routes. It is also necessary to consider that the arrival of the AVE to Galicia could reduce the total traffic at these airports considerably. It is therefore estimated that this means of transport will reduce traffic by between 50% and 75%, depending on the evolution of traffic on the airlines that compete with the AVE, average travelling times, location of the stations, etc..

In any case, given their geographical location, competition between these airports would be possible, where appropriate. In this case, competition would mean the ability of each of the airports to compete to attract additional traffic, which would end up in their becoming viable.

5.2.1.2 Airports in north-central Spain

Although it is true that the population of north-central Spain is large, 6.8 million inhabitants, the area also has a high number of airports located very close to each other geographically. As can be seen in the following figure, there are four airports on the Cantabrian coast (San Sebastián, Bilbao, Santander and Asturias), plus another five in close proximity (Vitoria, Pamplona, Logroño, Burgos and León). The last of these has a catchment area that overlaps with that of Valladolid airport (if we consider a travelling time of 90 to 120 minutes). Similarly, the Zaragoza airport is also an alternative to the Pamplona and Logroño airports.

Figure 42. Airport catchment areas for a 60 minute car journey



Source. Compiled by the authors.

In 2013, these airports together handled almost seven million passengers, less than 4% of the total number handled by Aena Aeropuertos (even though this area contains over 30% of the network, by number of airports). There are also significant differences between these ten airports. Three of them (Bilbao, Asturias and Santander) had over 5.8 million passengers; in other words, 85% of the traffic of the ten airports together.

Table 19. Evolution of traffic at the airports in north-central Spain

	2008	2009	2010	2011	2012	2013
BILBAO	4.172.903	3.654.957	3.888.955	4.046.172	4.171.065	3.800.789
<i>Crecim. (%)</i>		-12,4%	6,4%	4,0%	3,1%	-8,9%
ASTURIAS	1.530.245	1.316.212	1.355.364	1.339.010	1.309.770	1.039.409
<i>Crecim. (%)</i>		-14,0%	3,0%	-1,2%	-2,2%	-20,6%
SANTANDER	856.606	958.157	919.871	1.116.398	1.117.630	974.043
<i>Crecim. (%)</i>		11,9%	-4,0%	21,4%	0,1%	-12,8%
ZARAGOZA	594.952	528.313	605.912	751.097	551.406	457.284
<i>Crecim. (%)</i>		-11,2%	14,7%	24,0%	-26,6%	-17,1%
VALLADOLID	479.689	365.720	392.689	462.504	378.418	260.271
<i>Crecim. (%)</i>		-23,8%	7,4%	17,8%	-18,2%	-31,2%
SAN SEBASTIAN	403.191	315.294	286.077	248.050	262.783	244.952
<i>Crecim. (%)</i>		-21,8%	-9,3%	-13,3%	5,9%	-6,8%
PAMPLONA	434.477	335.612	291.553	238.511	190.329	155.939
<i>Crecim. (%)</i>		-22,8%	-13,1%	-18,2%	-20,2%	-18,1%
LEON	123.183	95.189	93.373	85.725	51.061	30.890
<i>Crecim. (%)</i>		-22,7%	-1,9%	-8,2%	-40,4%	-39,5%
BURGOS	13.037	27.716	33.595	35.447	21.057	18.905
<i>Crecim. (%)</i>		112,6%	21,2%	5,5%	-40,6%	-10,2%
LOGROÑO	47.896	35.663	24.527	17.877	19.263	10.598
<i>Crecim. (%)</i>		-25,5%	-31,2%	-27,1%	7,8%	-45,0%
VITORIA	67.818	39.933	42.073	28.211	24.389	6.912
<i>Crecim. (%)</i>		-41,1%	5,4%	-32,9%	-13,5%	-71,7%
Total	8.723.997	7.672.766	7.933.989	8.369.002	8.097.170	6.999.990
<i>Crecim. (%)</i>		-12,0%	3,4%	5,5%	-3,2%	-13,6%

Source. Compiled by the authors based on data from AENA Aeropuertos.

In regard to the economic indicators for these airports, in 2013 four of the ten analysed had a positive EBITDA but only Bilbao turned a profit in terms of overall earnings. Also, taken together, the airports in this region had a debt level or over 1.2 billion Euros, of which more than 720 million (56% of the total) was concentrated in airports with a negative EBITDA.

Table 20. Key economic indicators for the airports in north-central Spain

<i>Miles euros</i>	EBITDA			Resultado después impuestos			Deuda		
	2011	2012	2013	2011	2012	2013	2011	2012	2013
BILBAO	21.299	18.115	23.384	1.705	285	5.458	183.817	182.498	180.883
ASTURIAS	-442	1.164	844	-4.509	-3.230	-3.642	75.972	86.813	93.211
SANTANDER	181	-545	1.576	-4.830	-5.313	-3.184	106.459	108.027	111.732
ZARAGOZA	-2.527	-1.816	762	-7.764	-7.997	-5.174	151.595	160.824	170.263
VALLADOLID	-3.821	-4.581	-4.449	-5.348	-5.864	-5.612	64.296	71.281	75.727
SAN SEBASTIAN	-3.495	-4.096	-2.093	-5.042	-5.348	-3.857	64.233	68.884	73.423
PAMPLONA	-4.984	-5.737	-4.029	-7.778	-8.729	-7.334	120.460	131.126	138.063
LEON	-2.149	-2.767	-1.224	-6.579	-6.405	-4.935	111.130	118.033	120.410
BURGOS	-2.662	-1.620	-1.477	-4.719	-6.299	-2.695	68.122	80.168	82.326
LOGROÑO	-4.472	-4.572	-4.668	-5.313	-5.706	-5.496	69.666	74.666	78.841
VITORIA	-8.762	-16.648	-5.001	-10.236	-17.275	-8.634	145.983	139.276	152.552
Total	11.836	-23.105	3.625	-60.413	-71.881	-45.106	1.161.734	1.221.597	1.277.432

Source. Compiled by the authors based on data from AENA Aeropuertos.

The airports with a positive EBITDA were also seriously in debt, except for Bilbao, with ratios of debt to EBITDA ranging from 70 at Santander to 110 at Asturias and over two hundred at Zaragoza airport.

In addition to the above-mentioned debt problems, these airports have a very strong dependence on the leading airline operating out of them. Therefore, except for Bilbao and Asturias, the leading airline accounts for 90% of the traffic at four of the airports and more than 70% at eight. This makes airport traffic very dependent on this company.

Table 21. Market share of the major airline by airport.

Airport	Airline	2013 share
BILBAO	Vueling	35%
ASTURIAS	Iberia	40%
SANTANDER	Ryanair	82%
ZARAGOZA	Ryanair	70%
VALLADOLID	Ryanair	75%
SAN SEBASTIAN	Air nostrum	83%
PAMPLONA	Air nostrum	99%
LEON	Air nostrum	96%
BURGOS	Air nostrum	92%
LOGROÑO	Air nostrum	99%

Source. Compiled by the authors based on data from AENA Aeropuertos.

This situation is especially significant at Santander, Zaragoza and Valladolid, where the leading company is Ryanair, with the low switching rates mentioned above.

As in the previous case, in geographical terms, the catchment areas of the airports analysed overlap, which would permit competition between them. However, there are some doubts as to the economic viability of all the existing airports in north-central Spain, given the current levels of traffic and their high indebtedness.

In any case, opening these airports up to competition could alter these conclusions. Cost efficiency could improve, they could specialise or they could compete to attract new airlines, so that, if there is competition, the consolidation of the sector would occur based on criteria of efficiency.

5.2.1.3 Airports in the south of Spain

In Andalusia there are both regional airports (Sevilla, Almería and Granada) and tourist airports (Málaga and Jerez) that, as has been described above, face different competitive conditions. Since the catchment areas of the two types of airport overlap and there is excess capacity at the tourist airports, the possible competition that could exist between them will be analysed without taking into account the differentiating elements that will be described below in regard to the competition exerted on the Andalusian tourist airports by the airports of other tourist destinations.

The five Andalusian airports serve the region's 8.5 million inhabitants and over 7.8 million incoming tourists. As can be seen in the following table, showing the evolution of traffic at the different airports in this Autonomous Community, the Andalusian airports have a large number of passengers, especially Malaga, with almost 13 million passengers. The traffic at the five Andalusian airports accounts for almost 10% of Aena Aeropuertos' total traffic.

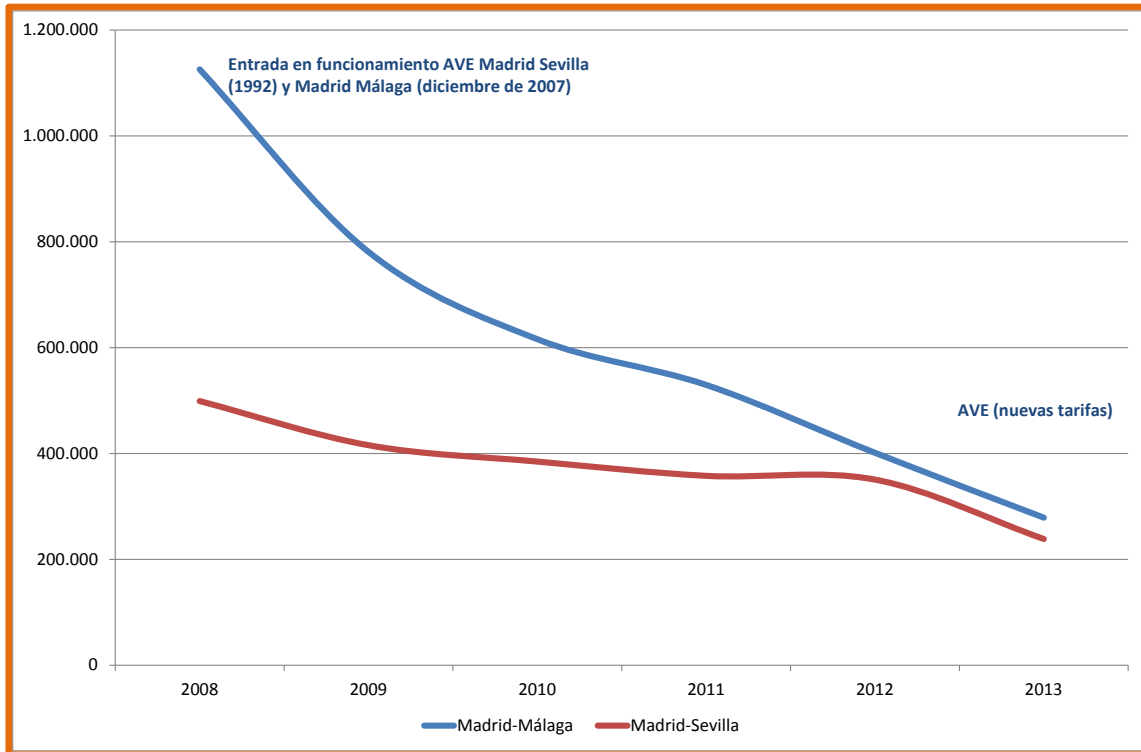
Table 22. Evolution of traffic at airports in Andalusia

	2008	2009	2010	2011	2012	2013
MALAGA	12.813.472	11.622.429	12.064.521	12.823.117	12.581.944	12.922.403
<i>Crecim. (%)</i>		-9,3%	3,8%	6,3%	-1,9%	2,7%
SEVILLA	4.392.148	4.051.392	4.224.718	4.959.359	4.292.020	3.687.727
<i>Crecim. (%)</i>		-7,8%	4,3%	17,4%	-13,5%	-14,1%
ALMERIA	1.024.303	791.837	786.877	780.853	749.720	705.552
<i>Crecim. (%)</i>		-22,7%	-0,6%	-0,8%	-4,0%	-5,9%
FGL GRANADA- JAEN	1.422.014	1.187.813	978.254	872.752	728.428	638.289
<i>Crecim. (%)</i>		-16,5%	-17,6%	-10,8%	-16,5%	-12,4%
JEREZ DE LA FRONTERA	1.303.817	1.079.616	1.043.163	1.032.493	913.394	811.504
<i>Crecim. (%)</i>		-17,2%	-3,4%	-1,0%	-11,5%	-11,2%
Total	20.955.754	18.733.086	19.097.533	20.468.574	19.265.506	18.765.475
<i>Crecim. (%)</i>		-10,6%	1,9%	7,2%	-5,9%	-2,6%

Source. Compiled by the authors based on data from AENA Aeropuertos.

This evolution is more noteworthy if we consider that air transport competes with the AVE in the main Andalusian cities. For example, the Madrid route alone has attracted over a million passengers away from the Málaga and Sevilla airports. As can be seen in the following figure, which shows air passengers on the route linking Madrid with Malaga and Sevilla, the introduction of the AVE led to a drop of more than 75% in the number of passengers. In the case of Sevilla, however, this effect is not seen as the route started up in 1992, although the fare decrease of 2013 did have an obvious impact on the number of travellers.

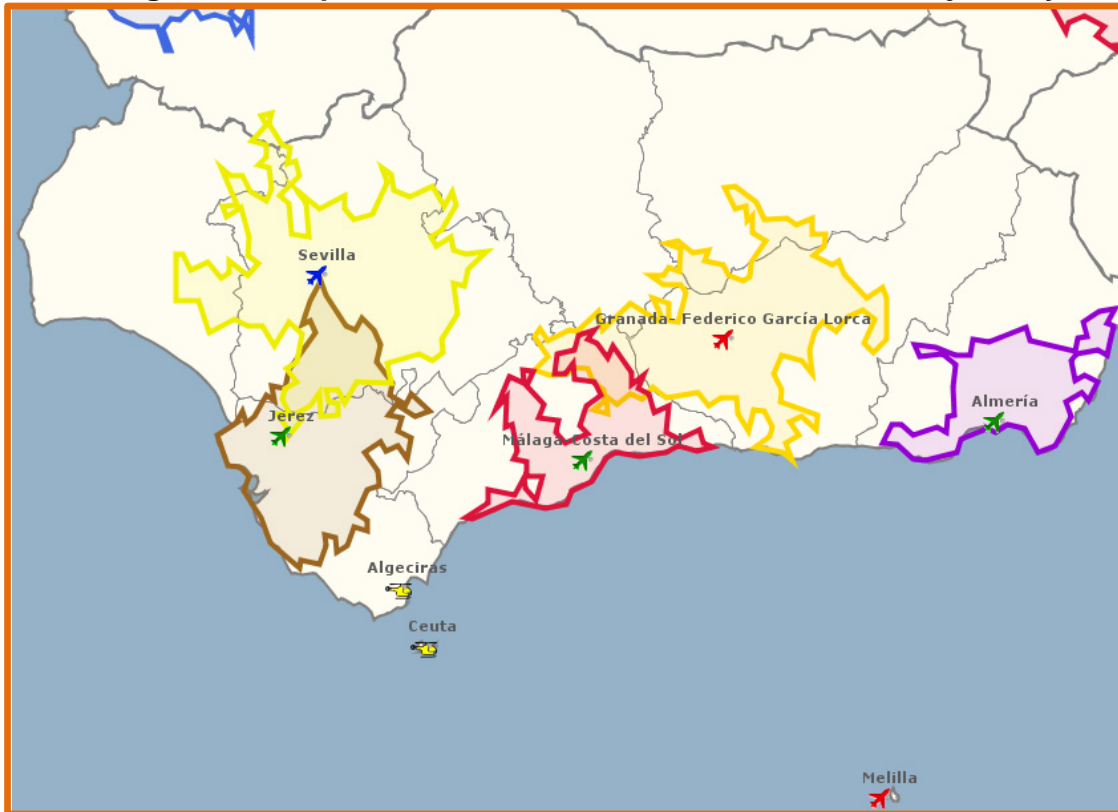
Figure 43. Air passengers on the routes affected by the AVE.



Source. Compiled by the authors based on data from AENA Aeropuertos.

The following figure shows that the catchment areas of the Jerez and Seville airports on the one hand, and the Granada and Malaga airports on the other, overlap considerably for 60 minute driving times. In the case of Andalusia, taking into account longer journey times (90 and 120 minutes) does not appreciably alter the above conclusions, except in the cases of Granada and Almeria, where there is more overlap.

Figure 44. Airport catchment areas for a 60 minute car journey



Source. Compiled by the authors.

The possibilities of competition provided by the geographical location of the Andalusian airports are strengthened by their excess capacity. Therefore, given its current configuration, Seville airport could take over all the traffic from Jerez, while the latter could compete for only 2% of Seville's traffic. In the case of the other potential competitors, Malaga and Granada, the situation is different. Here, Malaga could take on all of Granada's traffic but Granada only 5% of Malaga's.

In economic terms, only the two biggest airports in Andalusia have a positive EBTIDA but it must be noted that the other three are close to the minimum passenger level at which this indicator is positive for the Aena network as a whole. As shown in Figure 37, 820,000 passengers per airport per year is the threshold to a positive EBITDA. In terms of earnings after tax, only Seville airport, which also has very little debt, has a positive bottom line.

Table 23. Key economic figures for the airports in Andalusia

Miles euros	EBITDA			Resultado después impuestos			Deuda		
	2011	2012	2013	2011	2012	2013	2011	2012	2013
MALAGA	53.383	59.347	86.259	-20.592	-23.516	-4.962	1.007.648	963.721	924.852
SEVILLA	17.835	13.938	19.305	6.052	4.035	8.179	-	-	-
ALMERIA	-2.753	-3.490	-259	-7.972	-8.519	-5.988	116.609	126.369	128.335
FGL GRANADA-JAEN	-2.588	-3.612	-2.048	-6.069	-7.861	-5.323	89.492	94.281	100.064
JEREZ DE LA FRONTERA	-3.736	-4.679	-1.209	-9.422	-9.928	-6.761	133.657	142.530	142.273
Total	62.140	61.504	102.047	- 38.002	- 45.789	- 14.856	1.347.406	1.326.901	1.295.523

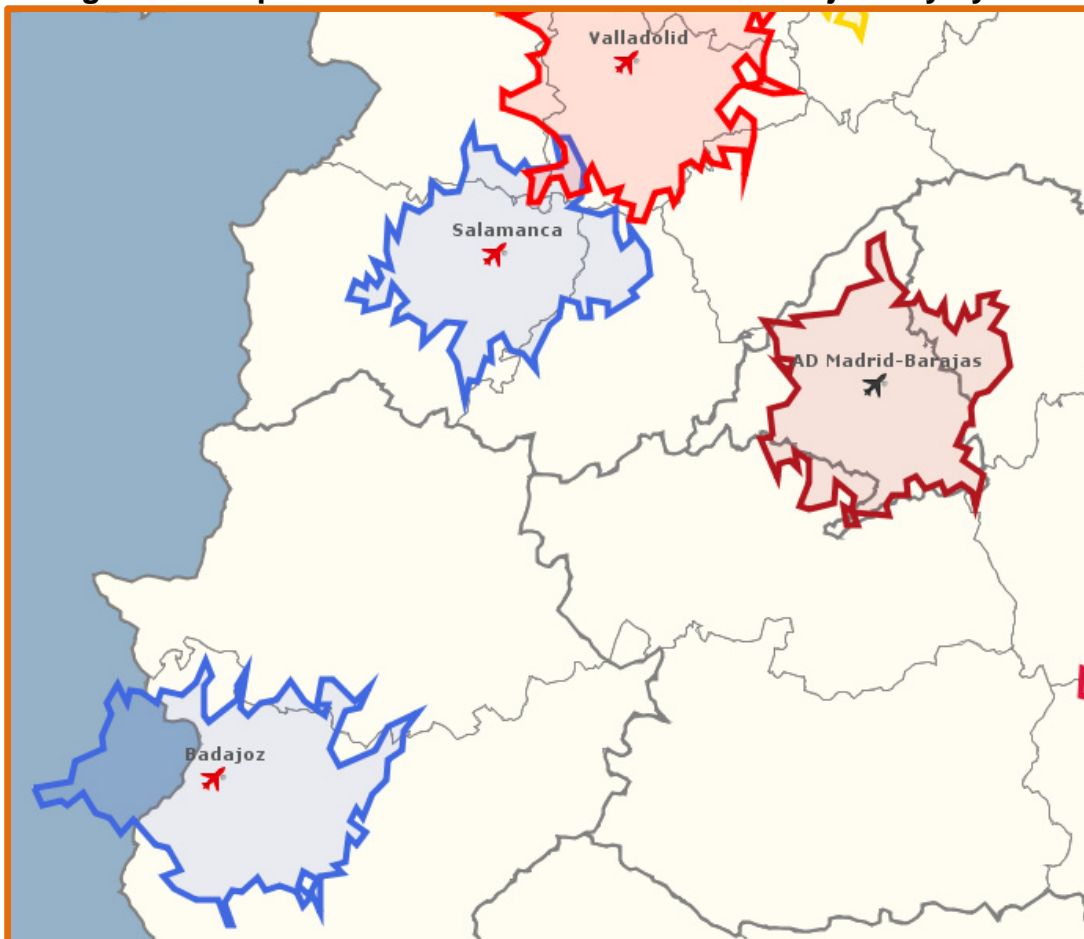
Source. Compiled by the authors based on data from AENA Aeropuertos.

It should finally be noted, as shown in the following table, that the airports with a negative EBITDA are also heavily in debt, which raises the question of their viability without a substantial change in their management to increase revenue through increased numbers of passengers, or to lower costs.

5.2.1.4 Airports in the centre of Spain

In the case of the centre of the country, competition is low, as small regional airports (Badajoz, Salamanca and Valladolid) would be competing with a hub like Adolfo Suárez-Madrid Barajas. This is tough competition, both in terms of capacity (the other airports could not take on Madrid's traffic) and geographical location, since within an hour of Madrid its area of influence contains over six million passengers, with no potential competition.

Figure 45. Airport catchment areas for a 60 minute journey by car



Source. Compiled by the authors.

The close proximity of a hub like Madrid and its possibilities of connecting flights further complicate competition with the other airports in the region.

Table 24. Overlapping population of the airports in the central region

	60 min				90 min				120 min			
	Valladolid	Salamanca	Badajoz	Madrid	Valladolid	Salamanca	Badajoz	Madrid	Valladolid	Salamanca	Badajoz	Madrid
Población cubierta por 1 aeropuerto	674.461	301.948	624.612	6.852.834	82.542	278.081	721.461	7.367.141	2.730	158.214	481.276	3.433.563
Población cubierta por 2 aeropuertos	17.509	10.578	-	-	1.071.122	796.588	63.305	47.205	389.745	4.230.666	516.276	4.322.415
Población cubierta por 3 aeropuertos	-	-	-	-	119.552	87.687	-	60.755	575.724	435.444	59.891	311.320
Población cubierta por 4 aeropuertos	-	-	-	-	180.900	-	-	-	778.455	566.785	-	79.129
Población cubierta por al menos 5 aeropuertos	-	-	-	-	-	-	-	-	291.889	-	-	3.606
Total	691.970	312.526	624.612	6.852.834	1.454.116	1.162.356	784.766	7.475.101	2.038.543	5391109	1.057.443	8.150.033
% población con aeropuerto alternativo	2,5%	3,4%	0,0%	0,0%	94,3%	76,1%	8,1%	1,4%	99,9%	97,1%	54,5%	57,9%

Source. Compiled by the authors.

In addition, Madrid airport handles six times more traffic than the area of influence covered by an hour's travelling time. Its difference, therefore, from the other airports in the central region (small regional airports) can be seen in the following table.

Table 25. Passengers handled and exclusive one-hour area of influence

	Pasajeros (2013)	Población cubierta en trayectos de 1 hora
MADRID-BARAJAS	39.729.027	6.852.834
VALLADOLID	260.271	624612
BADAJEZ	29.113	624.612
SALAMANCA	15.830	312526

Source. Compiled by the authors based on data from AENA Aeropuertos.

The traffic at these airports has fallen in recent years and Badajoz, Salamanca and Valladolid airports have a high dependency on one single airline, which, in all cases, has over 50% of the market share.

Table 26. Market share of the major airline by airport.

	Aerolínea	Cuota 2013
MADRID-BARAJAS	Iberia*	27%
VALLADOLID	Ryanair	56%
BADAJEZ	Air Europa	83%
SALAMANCA	Air Nostrum	82%

(*) 35% including Iberia Express

Source. Compiled by the authors with data from AENA Aeropuertos.

Therefore, for Madrid, the competition, were it to exist, is not with nearby airports but with other international hubs, such as Heathrow, Paris, Amsterdam and Frankfurt and, at the domestic level, with Barcelona airport.

5.2.2 Tourist airports

Airports, like other sectors, compete with each other more strongly when they offer a similar product or this product satisfies one of the end consumer's needs. It is therefore necessary for there to be a certain degree of substitutability in the service offered.

The variable on which airports compete most directly is location. However, location has greater or lesser importance depending on the passengers' purpose for travelling. In other words, location will be more important if the purpose for the trip is for family matters, to visit friends or for business and less important when it is leisure-related (tourism).

The different motivations of the passengers mean that two airports, even if geographically distant from each other, can compete for passengers and for the airlines that operate on these routes⁹³ and that, therefore, competition is different in the case of tourist airports.

So, the competition faced by tourist airports is related, among other items, to the importance of having charter flights⁹⁴ and flights by LCCs

In the case of Aena Aeropuertos, its major international competitor airports are determined by the destinations that are considered to compete with Spain. The Institute of Tourism Studies (Spanish initials, IET) estimates that Spain's competitors for tourism are: Turkey, Tunisia, Egypt, Morocco, Croatia, Cyprus, Bulgaria, Greece, Italy, Dominican Republic, Cuba, Mexico, Brasil, USA, Germany, United Kingdom, France and Portugal.

However, the major competitors among these destinations are those that tourists have considered most frequently as alternatives before choosing Spain. Among those other destinations, in order of importance, are Italy, France, Portugal, Greece and Turkey. The following table shows Spain's main competitors by nationality.

⁹³In the case of the LCCs, they do not only compete with other tourist airports, also included are airports that have routes that permit them to continue operations in line with their business plan, regardless of whether the destination is for tourism or business.

⁹⁴The important of charters is due to the fact that since these are not routes with any particular frequency, they make it possible to reduce destination switching rates and generate more direct competition, even if in recent years the relative importance of charter flights has fallen with the increase in LCCs.

Table 27. Alternative destinations for international tourists

Destinos alternativos	Países de residencia						Total
	Reino Unido	Alemania	Países nórdicos	Italia	Países Bajos	Francia	
1	Portugal	Italia	Grecia	Grecia	Portugal	Portugal	Italia
2	Francia	Grecia	Italia	Portugal	Italia	Marruecos	Portugal
3	Grecia	Turquía	Turquía	Francia	Francia	Grecia	Grecia
4	Italia	Portugal	Francia	Reino Unido	Turquía	Italia	Francia
5	Turquía	Francia	Egipto	Italia	Grecia	EEUU	Turquía
% sobre total	63,5	63,1	63,9	67,6	73,6	86,8	61,6

Source: IET

Tourist airports are more exposed to competition, both domestic and international, because of the importance that passengers who are not travelling due to personal issues and therefore are more sensitive to pricing have on an airport's traffic and the fact that the traffic at these airports is determined by the market share held by LCCs. It should be noted that Spain is the second highest country in Europe in terms of LCC traffic.

The importance of LCC traffic for tourism is shown in the regular reports produced by the IET on the evolution of the LCCs and the fact that, by the end of 2013⁹⁵, over 50% of passengers (54.2%) had used LCCs while 45.6% had taken traditional airlines.

Notwithstanding the fact that the Aena Aeropuertos network does not permit competition between the airports, since they all belong to the same operator, Spanish airports are in fact operating in a competitive environment due to pressure from other tourist airports/destinations. However, to understand the intense competition that these airports are exposed to, it is necessary to take other variables into consideration.

For tourist airports, it is important to consider the other services offered by the destination, such as price and quality, since travellers normally evaluate the total cost of tourist services.

The distance from the starting point to the destination should also be noted, especially now that there is a trend for tourist visits to be for increasingly shorter stays. As a result, shorter stays increase the weighting of the cost of transportation in the total cost of the trip⁹⁶, so that competition is more intense.

⁹⁵

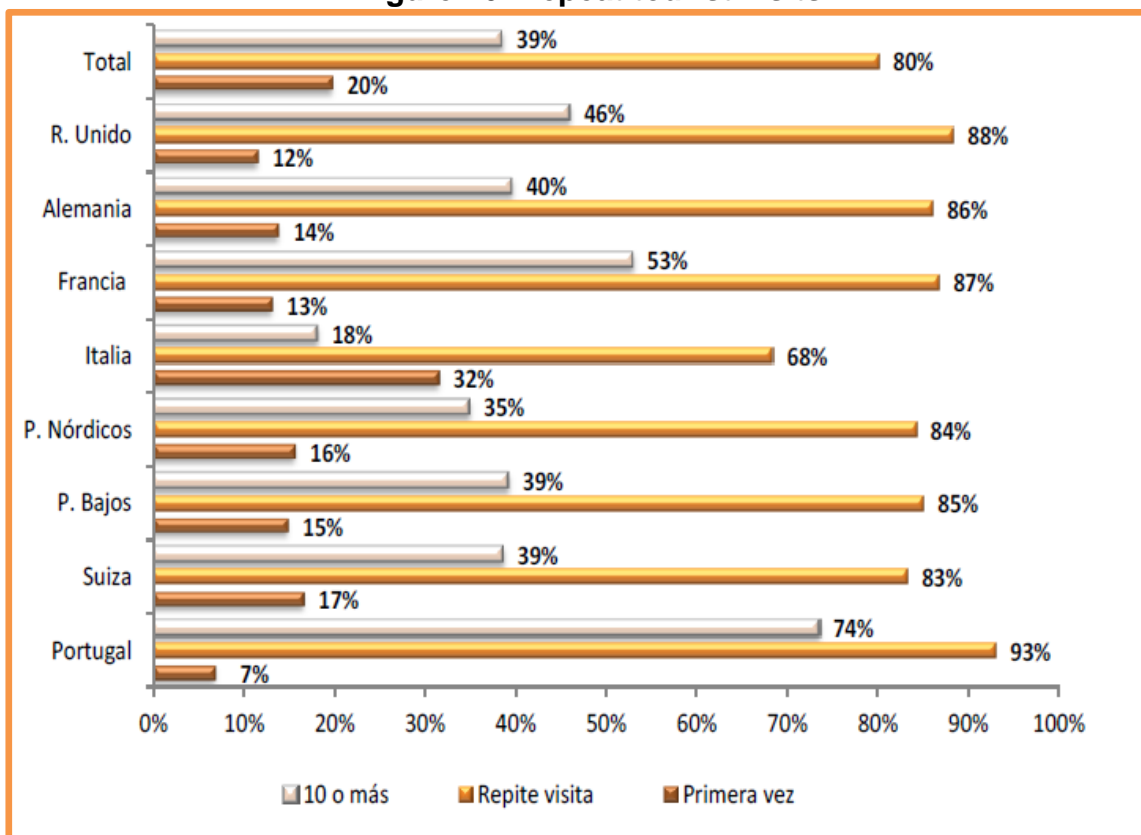
<http://www.iet.tourspain.es/es-ES/estadisticas/otrasestadisticas/companiabajocoste/mensuales/Nota%20de%20coyuntura%20de%20CBC.%20Diciembre%202013.pdf>

⁹⁶In this case, it should be noted that the passengers' sensitivity is greater in the case of domestic tourism, since average stays are shorter at home than abroad.

Other aspects, such as tourist loyalty to a destination, indirectly permit an airport to have better positioning and reduce competitive pressure. In the case of Spain, as shown in the following figure, 80% of visitors are repeating a visit made at some time to the country, so that a link or loyalty exists that permits the competition between destinations (airports) to be less.

Also, the climate in some areas of Spain, especially the Canary Islands, permits certain airports to enjoy a competitive advantage in the winter season.

Figure 46. Repeat tourist visits



Source: IET

It should be noted that, although a tourist airport is more exposed to international competition as a result of the existence of other, similar tourist destinations, there will be more or less competitive pressure on it depending on whether the traffic on the competing routes consists of local residents⁹⁷ or foreigners. The potential

⁹⁷ Some Autonomous Communities are characterised by being mainly senders as they generate more trips than they receive, so that they are considered net senders. In contrast, the Autonomous Communities that receive more trips than generate them are considered net recipients.

Among the net sender Communities in 2012 were: the Community of Madrid, the Basque Country, Catalonia, Navarre, Murcia and Asturias. In the case of the Community of Madrid, it registered the largest negative balance of trips, generating approximately 17 million trips more than it received.

competition of an airport is reduced when the traffic on a route is weighted toward local passengers, as they are the more captive.

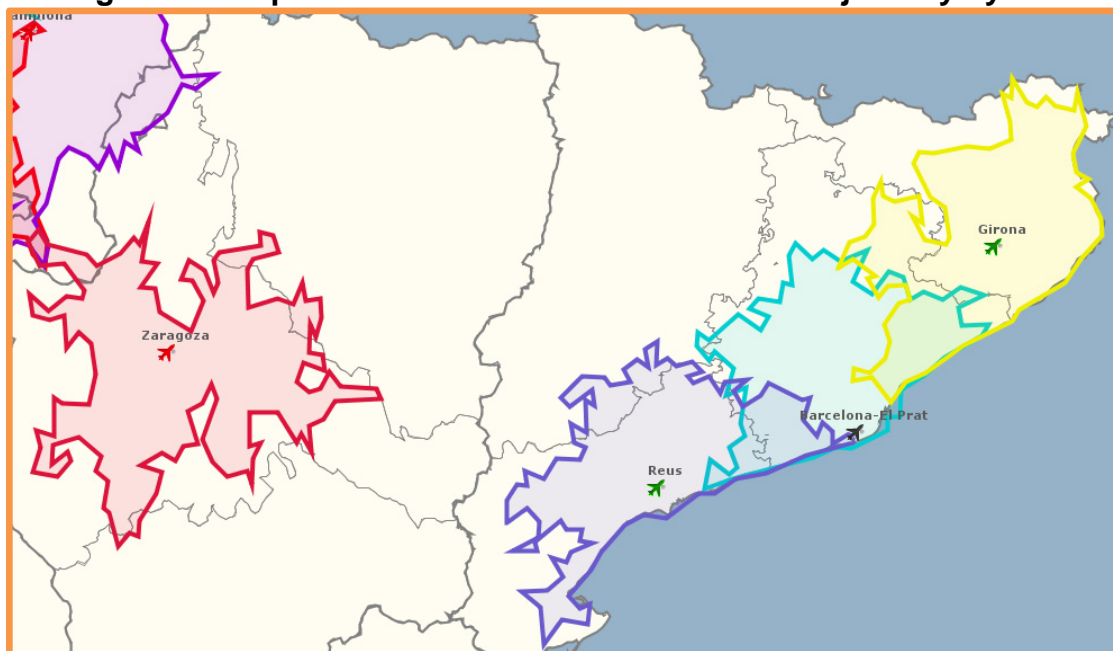
In short, although tourist airports are exposed to greater competition from other airports that are not exclusively located in the formers' catchment area, tourist preferences and the substitutability of the destination limit that competition. So, for example, in Spain, the tourism model shows international passengers with a certain loyalty to their destination and a high level of repeat visits. This reduces the competitive pressure faced by Aena Aeropuertos as the sole operator of these airports. For this reason, the question arises of whether the competition exerted by airports in other tourist destinations would be strengthened by the introduction of alternative operators in the main tourist regions of Spain.

Among the most notable cases of competition between tourist airports are the airports in Andalusia, which were discussed above, those in Catalonia (Barcelona, Girona and Reus) and those on the east coast in Valencia, Alicante and Murcia.

In the case of Andalusia, we have already seen in the previous section that Malaga airport is located a considerable distance from any other airport, so that it would not face any competition from another nearby airport. Competition would therefore be limited to that exerted by the other Spanish tourist airports and the international airports located at a substitute destination for the Costa del Sol.

For tourism to the Catalan coast, Girona and Reus airports could compete with Barcelona airport since the distances between them are small and there is considerable overlap between them, as can be seen in the following figure.

Figure 47. Airport catchment areas for a 60 minute journey by car



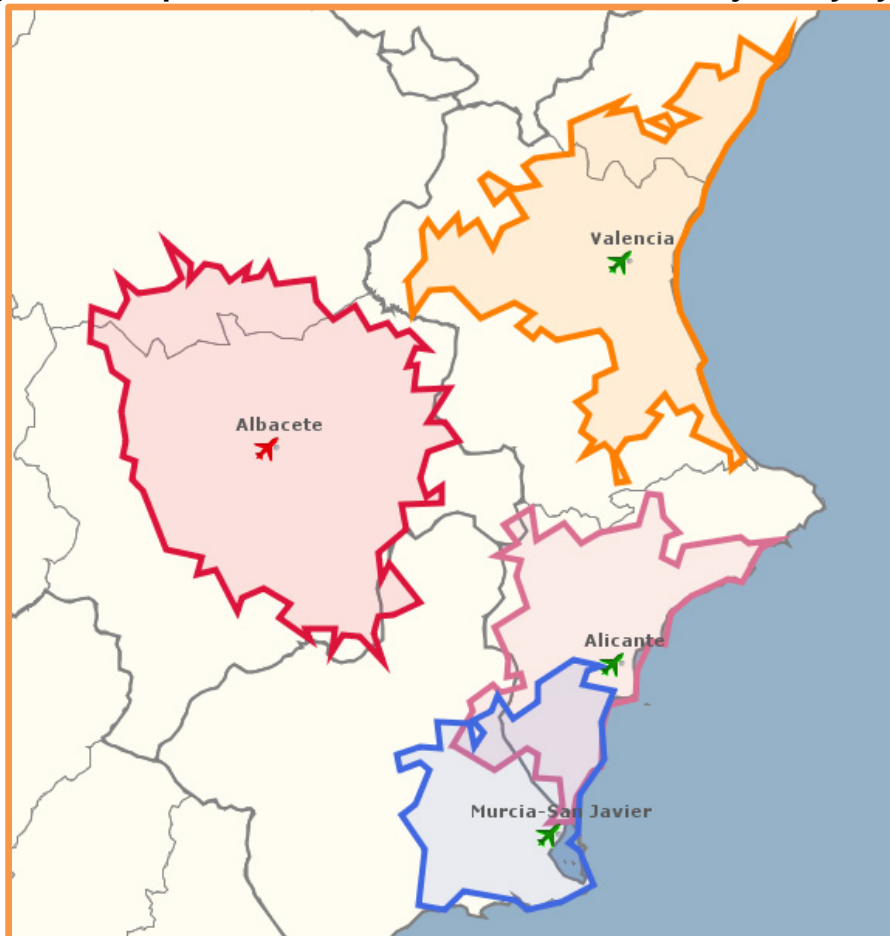
Source. Compiled by the authors.

Thus, in the competition between Catalan tourist airports in recent years (2008-2012), the passenger traffic at the Barcelona airport has risen by some five million, while at Girona and Reus it has fallen by three million (2.7 million and 0.3 million respectively). Therefore, as a destination, Catalonia region has managed to increase its passengers by some two million, but this increase has occurred as traffic fell at Barcelona's two competitor airports. In other words, traffic at Girona and Reus has probably fallen as a result of the increase registered at Barcelona.

In any case, it is obvious that, as well as receiving tourist traffic, Barcelona airport, as mentioned above for Madrid, has other variables that lessen the competitive pressure exerted by airports that, even if they are not very close by geographically, do not have the capacity and the locational advantages (proximity to the city of Barcelona) of the Barcelona airport.

The competition between the airports on the east coast could however be especially intense between Murcia and Alicante, as there is a considerable area of overlap for one hour's driving time. In this case too, the tourist traffic profile of both airports is very similar.

Figure 48. Airport catchment areas for a 60 minute journey by car



Source. Compiled by the authors.

Although the geographical competition might appear to be greater between Murcia and Alicante airports, it is true that the latter also competes, due to its central

location, with Valencia. In recent years, there has been a drop in the total number of passengers in the region (1.8 million) but this decrease has been shared by Valencia (1.2 million) and Murcia (0.7 million), while traffic at Alicante has remained stable. Therefore, although traffic fell in the region, there is one airport, located in between the other two, Alicante, where the share of the total traffic for the region increased while the others' share decreased.

In fact, the previous analysis shows that there is a possibility of introducing competition between the tourist airports on the mainland other than that already exerted by other international airports, since they have overlapping catchment areas. This is not the case, however, in the island tourist regions where, except for Tenerife, there is one single airport per island.

5.2.3 Competition with international airports (hubs)

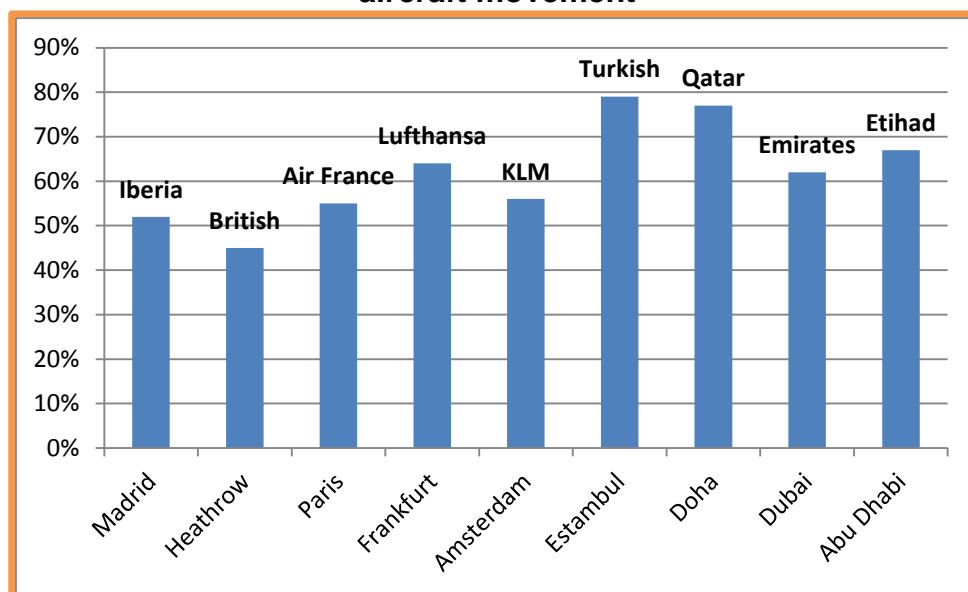
After examining the competition between airports competing in the same geographical area and between tourist airports that have greater competition due to pressure from alternative tourist destinations, we should now analyse the case of hub airports. These airports are more exposed to competition because of their high percentages of transit passengers.

An airport becomes a hub when transit passengers are added to the passengers within that airport's local area of influence, allowing the airlines to operate to more destinations and more frequently than they could with just local demand. Madrid airport handled 39.77 million passengers in 2013, six times the population of its one-hour driving time catchment area, which has 6.8 million inhabitants.

An airport's becoming a hub is determined by the existence of a major airline, as is the case of the main European hubs.

The majority of flights at the most important hubs are operated by one major airline, such as British Airways in London, Iberia in Madrid, KLM in Amsterdam and Lufthansa in Frankfurt. At Madrid airport, Iberia operates approximately 30% of the flights, with 35% of the passengers.

Table 28. Evolution of the Iberia market share at Madrid, passengers and aircraft movement



Source. OAG (typical week in April 2013); Iberia includes Iberia, Iberia Express, Air Nostrum and Vueling.

The only other airport in the Aena Aeropuertos network apart from Madrid that could be a hub is Barcelona, since it fulfils some of the conditions for being considered a hub, such as handling a large number of passengers⁹⁸. However, as discussed in the section on airport classification, it has a low percentage of transit passengers and the non-domestic traffic that it handles is mainly from Europe and the Schengen area, with less than 10% of its traffic coming from long-haul international flights, so that it cannot currently be considered a hub.

In any case, to create a hub it is necessary to have a high-capacity airport and a major airline with a significant market share at that airport. In the EU in general, a significant liberalisation process has been at work in the air sector and the major airlines at the hub airports have seen their market shares fall due to the entry of the LCCs. As a result, no new hubs have been created in recent years to add to Heathrow, Paris, Frankfurt, Amsterdam and Madrid. The hubs that have emerged in recent years have therefore been outside the EU: in Istanbul and the Middle East, in Doha, Dubai and Abu Dhabi. The major airlines installed at these airports have over 60% of the airport traffic.

The preceding analysis therefore shows that competition between airports is possible in Spain, both for the airports that compete for overlapping geographical areas and destinations, and hubs. In the case of competition for overlapping geographical areas, the airports in Galicia, the north-centre region and Andalusia could open up to competition by improving their cost efficiency, specialising and adopting sales policies designed to attract airlines.

⁹⁸ It handled 35.2 million passengers in 2013, six times the population of its one-hour driving time catchment area, which has 5.6 million inhabitants.

Similarly, the tourist airports already exposed to competition from alternative international destinations could increase their competitive pressure by introducing alternative operators into their overlapping areas. In contrast, competition would not be possible between the island tourist airports.

Lastly, in the case of competition between hubs, although Barcelona could compete with Madrid for this type of traffic, the need to have one airline as a base for connections at that airport limits this competition. And, in fact, no additional hub has been created in recent years inside the EU.

VI. CONCLUSIONS AND EVALUATION OF THE CURRENT AIRPORT MODEL

It can be concluded from the analysis that Spain, through Aena Aeropuertos, has been able to set up an airport network that offers services with high levels of quality and safety and sufficient capacity to respond to the needs for mobility of the public and of the industries that depend on air transport.

However, this report reveals that the model has led to certain inefficiencies in the development of the Spanish airport sector. In general terms, it can be said that these inefficiencies result from a combination of two groups of factors. Firstly, the effects and the incentives of a rigid institutional and regulatory framework, which focuses on a centralised, networked management of all airports. Secondly, the actions of Aena Aeropuertos, which are constrained by this framework and delineated by its managers and, in the final instance, by political decision-makers.

Starting with the first group of factors, in relation to the institutional and regulatory framework, the following inefficiencies should be noted:

- **A lack of counterbalances in the institutional design.** The nature and oversight of Aena, without the control of an independent regulator, plus the fact that this is an industry capable of generating significant cash flows and that is generally profitable, can lead, under certain conditions, to behaviour that does not heed the needs and dictates of the market.
- **An inappropriate regulatory model that introduces incentives to unjustified investment** As we have seen, in general terms, airport activity is profitable and capable of funding investment. However, the current regulatory framework is based on the principle of guaranteeing sufficient profitability for all the investment in the network, so that the current method of setting charges guarantees a return on capital even for loss-making airports. This situation is made even worse by a centralised management that permits unprofitable investments to be subsidised out of common resources.
- **Centralised setting of airport charges by groups.** The obligation under the legal framework to set homogeneous airport charges for groups of airports that are defined by the number of incoming passengers vitiates the efficient management of these infrastructures as it prevents differentiation to fit particular circumstances. Decentralised airport management would permit charges to be set based on all the variables involved in setting them efficiently,

such as capacity, seasonal traffic, elastic demand for the different services, etc., which would lead to improved airport management.

- **Legal rigidity preventing a flexible business policy, such as a lack of definition of the regulatory treatment of customised agreements and business incentives.** It is also necessary to emphasise the fact that the regulatory framework makes it difficult, on the one hand, to have customised agreements while, on the other, creating uncertainty regarding how they should be treated. Bonuses have been tried, depending on their nature, in different ways. In some cases, they were considered to be a cost financed by airport charges and, in other cases, they were excluded and were to be financed solely from the airport operator's margins. This situation may have discouraged Aena Aeropuertos from reaching such agreements.

The behaviour of Aena Aeropuertos in recent years has responded to the incentives generated by the regulatory framework and has given rise to significant deficiencies in:

- **Airport network planning.** The number of airports in the Aena Aeropuertos network does not appear to be justified, given the size of the country and the importance of the island territories. This has led to Spain's not having any airport among the biggest in the world and a low average number of passengers, despite the fact that this is one of the airport systems with the highest annual number of passengers overall and Aena is the biggest airport operator in the world.
- **Investment planning and airport charge setting** have led to a high level of debt. The efficiency of implementing a huge investment cycle like Aena Aeropuertos' within the short span of ten years is already questionable. Since this investment cycle was not carried out slowly and deliberately at the same time as a rational adjustment of the charge levels, it also led to a high level of debt that ended up in a sudden increase in airport charges within the space of two years. This situation has prevented Aena Aeropuertos from taking advantage of the benefits of having such a broad network of airports, which allows it to soften the impact of its investments.
- The **AENA Aeropuertos investment policy** has made the break-even points of Spain's airports reach much higher levels than those found among other operators. In fact, notwithstanding the rational nature of the investments at the time they were made, when they were probably also influenced by pressures that were not strictly economic or territorial, it is certain that the Spanish operator has not taken the steps needed to resize its network in order to face up to the reduced air traffic levels seen in recent years. The measures adopted, at least to date, in the area of airport operating costs, investment and business policy, have not been sufficient to reach break-even points similar to those found among other comparable operators. This means that the airports with negative earnings drain over 50 million Euros from AENA Aeropuertos' earnings as well as contributing to a debt of 4.09 billion Euros.
- **Obtaining resources other than those resulting from airport services.** On this point it is worth mentioning that, on the one hand, it was not until recently

that Aena Aeropuertos started to implement a proactive business policy by organising duty-free tenders and implementing new business channels that would bring in additional revenue to finance the company. On the other hand, as described above, Aena Aeropuertos' performance in obtaining additional resources from commercial activities is poor in comparison with similar European operators. Aena Aeropuertos has also not signed any customised agreements nor created a framework of business incentives that would make its services better fit the specific needs of the airlines and passengers, which lessens improvements in the management of the airports. In fact, the airport cost structure, which in large part consists of fixed costs, gives incentives to the managers to implement commercial policies designed to reach a minimum efficient level of traffic that will allow them to reach break-even point.

In addition, the current legal framework and the economic regulation system lack elements that will allow for the disciplining of Aena Aeropuertos' management and correct some of the deficiencies:

- **A lack, to date, of a truly independent supervisor.** One of the key points for ensuring that any economic regulatory mechanism operates properly is the appointment of a regulator that is completely independent of the sector's stakeholders and that has the powers and sufficient capacity to impose penalties, so as to guarantee confidence in the market and efficient economic regulation. To date, there has been no regulator, so that the independence at the organisational, functional and financial level that could in part have mitigated the deficiencies of a structurally defective model has not been guaranteed.

From the above, it is considered that there is room for improvement, both in the management of the airports and in the current legal framework, that would permit greater efficiency in the operation of Spain's airports.

VII. MAIN RECOMMENDATIONS FOR MODIFYING SPAIN'S AIRPORT MODEL

Regardless of the ownership structure (public or private), a series of reforms to the current model is proposed below, with the aim, in the final instance, of bringing greater efficiency to the functioning of the airport system and making it better fit the trends and needs of the sector.

1. Need for a predictable, uncontested regulatory framework:

The first of the requirements needed to modify the Spanish airport model is to start a prior process of reflection and consultation to weigh the different possible scenarios and select the one that most favours competition and efficient economic regulation and is targeted toward benefiting the economic operators and consumers. According to the ICAO, any change in the ownership or management of airport services or air navigation must be preceded by an in-depth debate and a plan, in which the objectives that it is wished to achieve are defined in the most

precise manner possible, since, without them, the reform could have adverse effects in the long term.

The reflection process should analyse the impact of the changes on both the efficiency of the economic system as a whole and the different interest groups associated with the airports (i.e., the General State Administration, the Autonomous Communities, local bodies, possible private participants, airport operators, passengers, airport and air navigation service employees and concessionaires). The last of these would be permitted to participate in the modifications through a consultation process. Understandably, so that the public debate is of use, the proposer must provide all the information possible regarding the proposed process and the real economic condition of the system.

Immediately after the consultation process, the institution of a legal regulatory framework is considered to be essential. Either the current framework will be modified or new legislation will be drafted to determine the main characteristics of the new system. Different international organisations have noted the importance of this framework's having stability, flexibility and transparency. In the first place, a suitable regulatory framework must be stable, so that the future managers of the system will not be discouraged from investing in their own infrastructure. The regulatory risk takes on, if possible, even more importance if the sector has taken into account some of the characteristics inherent in it, such as the immutability of assets, the presence of significant capital investment and ample periods of amortisation. There must therefore be a framework that guarantees its applicability both now and in the future with the presence of some common core elements.

The above does not preclude the existence of a certain degree of flexibility. So that the system functions properly, the legislation must include a provision for carrying out minor modifications to the model without having to totally rework it. In any case, following the recommendations given by the ICAO, the new legal framework could include provisions related, among other issues, to the possible transfer of ownership or management to the private sector, non-discrimination in access to the services and uniform quality standards.

2. Making the individual management of airports more flexible

One of the major conclusions that can be drawn from the data presented is the fact that, even if the Spanish centralised management model has made it possible to achieve certain objectives, it has led to some economically inefficient results that could therefore be improved. The most important reform would permit more flexible, decentralised airport management, ideally at the individual level. This system would allow them to adapt better to the competitive pressures imposed by the different market forces: airlines, passengers, other airports and other modes of transport. This report has shown that no economies result from managing the airports in groups or as a network, beyond the possibilities of investment in and the upkeep of unprofitable infrastructures, if this management is based on a common till and regulated under the principle of sufficient revenue.

In this regard, the search to open up the market to competition would require redirecting the centralised management system toward an individualised management scenario. In this scenario, while safeguarding public interest, the

managers of the different airports (or even groups of airports), whether public or private, would be free to set the main competitive variables for their businesses. The variables in this case would be essentially **charges and investments** but they would also be able to implement strategies aimed at increasing demand, such as autonomy in developing marketing policies or differentiating the commercial services that these managers can offer. In this scenario, the model would evolve by going beyond the current network management system and its inconveniences and it would make competition between airport infrastructures possible by attracting passengers and airlines.

In regard to charges, the model selected should overcome the rigidity of the public charge scheme, to allow airport managers to autonomously match the level and composition of their charges to their revenue and cost structure and their level of demand. In addition to encouraging the pursuit of increased economic efficiency at all the airports, charges that have been set in this way would provide the market with reliable indicators, such as, for example, the capacity of or the congestion at a particular airport.

Making the management of the network more flexible and decentralised would necessarily lead to breaking away from the single, centralised management system and cross-subsidy mechanisms. A flexible system cannot lapse into solutions that favour anti-competitive results, which are particularly dangerous if not avoided; for example, the creation of airport operators that group together airport infrastructures that are in close geographical proximity.

3. Principle of efficient investment

The new regulatory model should instil the principle that only efficient investments should be made and kept in the market. This principle is not incompatible with taking criteria of general interest into consideration and supporting certain infrastructures that are of obvious benefit to society. To do this, it would be advisable to take the following steps:

- The new regulatory framework should eliminate schemes ensuring the profitability of investments with doubtful justifiability in terms of their economic profitability, which have operated under Aena and are difficult to track, given the opacity that stems from centralised network management. Such a framework is compatible with the possible existence of regulations that could be based, where appropriate, on cost-based regulatory models, which generally lead to charges being set that permit the financial equilibrium of operators that are subject to regulation.
- On the other hand, it would be necessary to carry out a transparency and valuation exercise consisting of a rigorous in-depth study of the situation of each of the airports. This exercise should be carried out not only from an economic viewpoint but also bearing in mind the real impact of the airports on other criteria, such as the territorial cohesion of a region, a lack of alternative modes of transport and indirect economic benefits in the form of income and employment in the area where the airport is located. This analysis, which could be left to the market, for example, in a public tendering process for a concession, if it is implemented by the public sector,

should be carried out from a dynamic point of view, by evaluating the forecast variations in future demand and estimating the implications that different alternative models could have for the income and cost structures of the airports.

The results of this exercise could lead to some airports, for which the analysis revealed an overall negative result, having to propose being maintained under the Community rules for Services of General Economic interest (SGEI). Then they could possibly be privatised if the private sector could obtain returns not found in the public valuation, be closed or have their infrastructure temporarily used for other purposes, for example, by reorganising their infrastructure for general aviation. In this way, an attempt would be made to minimise the loss of accumulated physical and human capital.

Designed in this way, the construction of a flexible, decentralised management model under the principle of efficient investment would not imply *per se* the disappearance of some loss-making airports. Instead, they would have a strategic nature in terms of territorial cohesion (which would be the case for the island airports), and their permanence could be guaranteed. To do this, after an appropriate analysis of their need and proportionality had been made, other methods within the Community legislative framework that distort competition less could be applied, such as granting direct aid, guaranteeing that the airlines that operate in those areas break even, or, in the final instance, imposing public service obligations on certain routes.

One important consideration that should be borne in mind is that even if it is difficult to solve the problem of unprofitable airports, this cannot be used as an excuse for not reforming the model and not advancing toward decentralised management, flexibility and efficient investment. First of all, the supposed problem of unprofitable airports is not of such proportions that it justifies preserving inefficient regulation. In fact, if we add together the negative EBITDA of the airports with red figures, the result is little more than 50 million Euros per annum. Secondly, the problematic figure would be much smaller once it was explicitly permitted to apply the criteria for public aid for reasons of general interest individually and it would be even smaller still if these airports were managed individually.

4. Removing distortions to private initiative.

The model and the regulations should also take into account the possibility of other private operators developing their own airport initiatives alongside the Aena airports, to prevent the erecting of barriers to entry and activity and to safeguard the neutrality of the market.

In the first place, in regard to market entry, although the excessive expansion of the airports in the Aena network would not seem to offer an opportunity or a precise economic niche for the development of private initiatives, it is true that some attempts have been made in recent years.

As shown in previous sections, the airport market is intrinsically a market with significant barriers to entry, many of them of a legal nature. This is why the

regulations that implement the model must not interfere with the opening up of this type of infrastructure to private operators by imposing heavy administrative burdens or regulatory difficulties that are not necessary or proportional.

5. Existence of an independent regulator.

One of the essential elements for ensuring that the system functions correctly is the appointment of an independent regulator that, in combination with a stable regulatory framework, would be able to generate confidence in the market.

Modernising the Spanish airport system requires the presence of a body that will apply and resolve conflicts related to the different elements of the model when the risk of capture is minimal; that will guarantee information is delivered symmetrically to the operators; that has the ability to impose penalties; and whose independence is proven at the organisational, functional and financial levels, regardless of the information that it must duly deliver to supervisory bodies such as Parliament.

Among the functions assigned to the airport regulator, in addition to those related to the application of the regulatory framework and conflict resolution, would necessarily be the power to determine the airports with market power and, as a result, to possibly impose economic regulation in this regard.

Under these considerations, it would seem sensible to have an independent organisation that is not attached to the competent Ministry perform this role, with the following participation in the regulatory scheme:

- Determining the airports with market power. In a situation in which various airport operators are competing, the independent regulator should analyse which of them has market power by looking at their characteristics (size, insularity) and/or the existence of potential competitor airports.
- Determining the appropriate regulation. In cases where the independent regulator concludes that a particular airport has market power, after a process of reflection and consultation, it should be able to propose appropriate regulation, including schemes such as price setting or maximum revenue levels, regulation by comparison or by return rate.
- Determining the key variables of the regulatory model. When the regulator decides that it must impose a specific regulation, it should have the ability to determine or make pronouncements on the relevant variables, such as hypothetical traffic or revenue, charges (levels and composition), capital costs, suitability of investments, financial equilibrium of the operators, etc.
- Supervising the consultation process. Regardless of the existence of suitable regulation to lessen the possible existence of market power, the Community framework requires the holding of consultation processes to set airport charges. Current legislation, in this case, lays down that they must be supervised by the CNMC.

6. Control over public funding.

As has been said, one of major concerns in recent years of both the European Community and Spain has been the establishment of systems for controlling the

presence of public funds in the financing of airport construction and direct aid to airlines to launch new routes.

Without prejudice to the measures imposed at Community level to monitor these funds, the new airport model should oversee proper compliance with the related regulations, both from a theoretical standpoint and a basically practical one, starting with the implementation of a true control system. The proper functioning of this supervisory mechanism will not be possible without the necessary transparency when obtaining public funding, which the current model lacks. In any case, the receipt of this type of funding distorts airport activity, since it provides a disincentive to operators to seek efficiency.

This kind of action by the Public Administrations and Spanish airport managers and/or airlines takes different legal forms, ranging from cooperation agreements to advertising contracts, as stated in the past by Spain's Authority for Competition.⁹⁹.

7. Competition in the Market

Finally, although the essential tenor of these recommendations concerning changes to the Spanish airport model is to achieve effective competition between the airports, it should be mentioned that the new design cannot preclude the necessary care, both *ex ante* and *ex post*, regarding competition that is implemented "at the airport", such as that related to slots or activities in the non-aeronautical segment that take place inside the facilities.

First of all, in regard to commercial activities, since the airport has a monopoly over the services provided within this area (it seems unlikely, for example, that a passenger would go outside the airport to find a restaurant) and the customers are therefore captive, procedures for granting these concessions are essential for the existence of effective competition.

Similarly, it is advisable that, in the particular case of ground handling, real competition between suppliers and airlines is guaranteed, in line with Community directives. It is therefore necessary to effectively guarantee free, unrestricted access to the providers of these services at any airport, apart from any restrictions that are justified for reasons of general interest or efficiency,. It is especially important when supervising competition to ensure the vertical integration of the airlines with the handling suppliers and the fuel suppliers with the "into plane" fuel and lubricant suppliers.

Another vital aspect of access to the airport by the airlines is landing and taking off fees, which the airlines invariably consider to be a necessary and scarce resource. Regardless of the fact that it is acknowledged that these are subject to Community regulations, to promote the entry of new airlines to the airports in which they are interested the mechanisms for assigning slots must be reviewed. On the one hand, the allocation of these rights to and between airlines must be speeded up and the current system of "grandfathering" rights must be abandoned, under which the companies that have slots have the right to continue using them as long as

⁹⁹See the CNC's "3rd Annual Report on public aid in Spain" (2011).

they can show that they have effectively used them for at least 80% of the scheduled period. This method of distributing slots does not address the needs or the excess capacity of an airport or their value for the airlines.

VIII. POSSIBLE ENTRY OF PRIVATE CAPITAL INTO THE SPANISH AIRPORT MODEL

The recommendations in the previous section do not prejudice the nature of the ownership, public or private, of the capital of the airports. The CNMC is in fact very aware that the economic service provided by the airports is of general interest and that the Administration has a legitimate interest in and must necessarily be involved in the proper implementation and operation of these infrastructures.

This Authority considers that by following the recommendations made above a flexible system of decentralised management would be achieved, in which each airport could develop its full potential to take advantage of market dynamics. But it is obvious that the dynamism, profitability and ability to adapt to demand of the entire system would improve if private capital were allowed to enter the management and/or ownership of the airports based on competitive procedures.

The recent announcement by the government to permit a 49% private stake in Aena Aeropuertos¹⁰⁰ merits a positive reception, as it signifies a movement toward the prevailing trends elsewhere in the world that are seeking greater efficiency through the entry of private capital into a sector in which it seems there is considerable unanimity regarding its potential for improvement. However, the CNMC understands that, so that the presence of private capital can have full, positive effects, it would be necessary to provide more flexible management to individual airports and undertake a process of reform for the model along the lines indicated in this study. Having said this, a series of considerations will now be discussed regarding how to tackle the entry of private capital into the model, which need to be understood as being an addendum to the points in the previous section on reforming the model.

i. Individual tenders or in lots.

Assuming that the model is subjected to a process of management decentralisation and the desirable regulatory reform, the entry of private capital should ideally be carried out individually for certain units in the network or by the privatisation of the airports, but always safeguarding the public interests at stake. In this way, having a sufficient number of operators competing with each other in the market would maximise the value of the reforms by adding the gains in management provided by private capital to the advantages of decentralisation and differentiation.

However, it is possible that the rigidities of the legal framework or resistance of varying kinds will make it difficult to undertake a reform that will permit the decentralisation of the airports at the individual level or to find a solution in closing or restructuring unprofitable airports. In this case, the CNMC

¹⁰⁰According to the Report on the entry of private capital into Aena Aeropuertos, S.A. presented to the Council of Ministers on Friday 13 June 2014.

recommends that the possible privatisation should take place through the setting up and tendering of lots of airports. Of these, Aena Aeropuertos could retain some or become a holding company to centralise provisioning or services that may be necessarily or voluntarily common to all the airports. These lots would theoretically contain a minimum number of three airports, depending on the real possibilities of competition in the Spanish airport sector analysed above. Also, to minimise anti-competitive behaviour in the market, the lots should be composed of airports¹⁰¹ located in different relevant markets, not those in close geographic proximity and with different break-even points. It is therefore recommended that the Adolfo Suarez Madrid Barajas and Barcelona El Prat airports specifically should form separate lots, because these two are currently the biggest airports, have an international presence and are potential hubs. Creating such lots would make it possible for private capital with management capability to acquire a stake in certain airports, which at first glance would not seem apt for sale or an individual concession because they run at a loss.

Setting up lots, while at the same time adequately safeguarding competition during the tendering processes, their transparency¹⁰² and the autonomous decision-making power of the operators, would open the way for competitive tensions between operators and gains in efficiency, both at the individual level and in the airport system as a whole. This situation would also facilitate referential competition since it would permit information to be obtained and a comparison made between the different operators at the same time.

ii. Possible enforcement of regulation:

Once the entry of private capital has occurred, the sequence for establishing suitable regulation is as noted in the section on general recommendations: it will require a detailed analysis by the regulator of the possible market power of each airport, or group of airports, and then the enforcement of regulation.

As a result of the above, the possible imposition of economic regulation on the airports must be on an **individual basis**, after analysing each case in detail. Taking as examples neighbouring countries like France and the United Kingdom, this limitation on competition through regulation is only imposed, basically, on the airports in the capital city that do not pass the analysis.

¹⁰¹The inclusion of other lots containing one single airport could also be evaluated.

¹⁰²The importance of transparency in this type of process is demonstrated by the ICAO itself. In its proposals for carrying out the privatisation of airport and aeronautical services it states that "The complete process of selecting private participation or privatisation must be transparent, including the dissemination of information and the auction process with the aim of increasing the economic value of the transaction. This will create confidence in the process and permit the bidders to make realistic bids."

iii. Sequence for the entry of private capital.

Finally, to allow private capital to enter Spanish airports, there could be a gradual shift in focus by putting the different lots up for tender at intervals or, alternatively, all of them could be privatised at the same time.

Although it must be considered a minor recommendation in comparison with those already made, in the case of the Spanish airports, after taking into account the major modifications that must be made, a gradual approach to airport privatisation may be advisable, for example, by starting with the privatisation of the airports with the most traffic or those with little or average traffic in areas overlapping with other airports.

This option, implemented in countries such as Australia, would allow experience to be gained with the implementation of the processes, while at the same time revealing information on the profitability of airport management in Spain that does not come from Aena Aeropuertos as the incumbent public monopoly. It would then be possible to face the more ambitious phases of the project with greater guarantees of success.

As noted at the beginning of this section, a minority private stake, without management capability and without undertaking a reform of the model, would create a series of risks that must be assessed, even though it could have a positive effect on the supervision of public management. The first and most obvious risk is that it means starting to privatise a public monopoly, which will partially pass into private hands and in which special interests could clash with public interests when deciding the actions of the entire airport network, both in terms of investment and, where appropriate, pricing. The second risk is that after partially transferring the ownership of this monopoly into private hands, the reforms required, basically decentralisation and greater flexibility for the management of the network, may become obvious and more urgent, making it harder for the public sector to contemplate the airport sector liberalisation process needed.

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